Environmental Monitoring Report

Project No. 49107-009 Semi-Annual Report September 2022

India: Integrated Urban Flood Management for the Chennai-Kosasthalaiyar Basin Project

Prepared by Greater Chennai Corporation for the Asian Development Bank.

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

Semi Annual Environmental Monitoring Report

Project Number: ADB Loan 49107-009-IND

Country: India

Project Name- Integrated Urban Flood Management for Chennai – Kosasthalaiyar Basin Project

Reporting Period: 01/2022-06/2022

Prepared by Greater Chennai Corporation for the Asian Development Bank

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CURRENCY EQUIVALENTS

(As of July 2022)

Currency unit	-	Equivalent
₹ 1.00	=	\$ 0.013
\$1.00	=	₹ 79.97

ABBREVIATIONS

ADB	-	Asian Development Bank
AAQ	-	Ambient Air Quality
CGWB	-	Central Groundwater Board
СМА	-	Chennai Metropolitan Area
CRZ	-	Coastal Regulation Zone
CMRL	-	Chennai Metro Rail Limited
СРСВ	-	Central Pollution Control Board
CRO	-	Complaint Receiving Officer
DPR	-	Detailed Project Report
EA	-	Executing Agency
EAC	-	Expert Appraisal Committee
EC	-	Environmental Clearance
EHS	_	Environmental Health and Safety
EIA	-	Environmental Impact Assessment
EMP	_	Environmental Management Plan;
EMR	-	Environmental Monitoring Report
ES	_	Environmental Specialist
ESS	_	Environmental and Social Safeguards
GoI	-	Government of India
GoTN	_	Government of Tamil Nadu
GCC	-	Greater Chennai Corporation
GRM	-	Grievance Redress Mechanism
IA	-	Implementing Agency
IEE	-	Initial Environmental Examination;
IUFMCKB	-	Integrated Urban Flood Management for the Chennai-Kosasthalaiyar Basin

IUCN	_	International Union for Conservation of Nature
LPM	_	Litres Per Minute
MLD	_	Million litres per day
MAWS	_	The Municipal Administration and Water Supply Department
MOEF&CC	_	Ministry of Environment, Forest and Climate Change
NOC	_	No Objection Certificate
NH	_	National Highways
NGO	_	Non-Governmental Organization
NAAQ	-	National Ambient Air Quality
NCZMA	-	National Coastal Zone Management Authority
O&M	-	Operation and Maintenance
PIU	_	Project Implementation Unit;
PSC	-	Project Support Consultants
PWD	_	Public Works Department
PMU	_	Project Management Unit
RCC	_	Reinforced Cement Concrete
REA	_	Rapid Environmental Assessment Checklist
SEIAA	_	State Environmental Impact Assessment Authority
SEMP	_	Site-Specific Environmental Management Plan
SO	-	Safeguards Officer
SOP	-	Standard Operating Procedures
SEMP	_	Site environmental management plan
SPS	-	Safeguard Policy Statement, 2009
ТЛРСВ	-	Tamil Nadu Pollution Control Board
TNSCZMA	-	Tamil Nadu State Coastal Zone Management Authority

WEIGHTS AND MEASURES

°C	-	degree centigrade
dB	-	Decibels
dia	-	diameter
kg	-	kilo gram
Kl	-	kilolitre
km	-	kilometre
kmph	-	kilometre per hour
ha	-	hectares
HP	-	Horsepower
LPCD	-	liters per capita per day
lps	-	litres per second
m	-	meter
m ³	-	Cubic meter
mg	-	Milligram
mm	-	Millimetre
mcm	-	million cubic metres
sq.km	-	Square Kilometre

NOTE{S}

In this report, "\$" refers to United States dollars.

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1 INTRODUCTION

1.1 About the Project

Integrated Urban Flood Management for Chennai – Kosasthalaiyar Basin Project- Chennai, located on the coromandel coast of the Bay of Bengal, and is the fourth-largest metropolitan area in India, with an estimated population of 10.7 million. Watershed area in Chennai has been divided into 4 major water basins (i) Kosasthalaiyar, (ii) Cooum, (iii) Adyar, and (iv) Kovalam. Greater Chennai Corporation (GCC) together with the state Public Works Department (PWD) are the responsible departments/ organizations in maintaining the infrastructure for the disposal of the storm water in GCC area, spread over 426 km². The floods that occurred in the past were severe along the waterways of Adyar, Cooum, Kosasthalayar Rivers, Buckingham Canal and along the Pallikaranai Marshland. Chennai region has also been battered by incessant heavy rainfall during the year 2015 causing water stagnation and inundation. To address the issues relating to water stagnation and inundation, as a first step, the GCC has initiated the improvement of storm water drainage system in Adyar and Cooum basins with financial support from the World Bank, the project is in the verge of completion. A similar project for the Kovalam basin is contemplated with financial support from the KfW. For the Kosasthalaiyar basin, GCC proposed the "Integrated Urban Flood Management for the Chennai Kosasthalaiyar Basin (IUFMCKB) Project " for implementation, with the financial assistance of Asian Development Bank (ADB).

Kosasthalaiyar River Basin is in the northern part of Chennai consisting of an area of 127.80 km² covering GCC administrative zones 1, 2, 3, and 7 (fully covered) and 6 and 8 (partially covered). The project area has been divided into eleven (11) watersheds based on the topography and natural flow patterns. The total length of the existing storm water drain is 280 km, of which 105 km length of drain is in good condition which will be retained. The remaining 175 km of drain is required to be rehabilitated due to inadequate hydraulic carrying capacity. Apart from the existing drain (280 km), a new drain for a length of 588 km have been proposed. Necessary interlinking of water bodies through the existing or proposed drain has also been considered to maintain the water balance and achieve maximum water storage within the Kosasthalaiyar drainage basin. In addition, improvements to four out of seven macro drains/surplus canals of total length 11 km in the project area, which are managed by the Public Works Department (PWD) are also included in the ADB funded project for improvement. Improvement of remaining 3 macro drains / surplus canals of total length 18 km will be implemented by PWD, for which DPR has already been prepared. The size of storm water drains ranges from a minimum of 600 mm (wide) x 750 (deep) mm to a maximum of 7,000 mm x 2500 mm. Concrete rectangular drains with a cover slab have been proposed.

In the project area (Kosasthalaiyar drainage basin), the eastern portion of the north Buckingham Canal watershed is lower than the canal bed level, hence an existing pumping station equipped with 2 nos. of 10 HP pumps having a capacity of 2833 LPM each and 3m diameter sump was constructed near Kargil Nagar to pump the rainwater into Buckingham Canal during floods. Based on the detailed analysis, it was found that existing pumps are very old and does not have sufficient capacity to pump the rainwater during floods. Hence, an additional pumping station comprising of 3 nos higher capacity pumps are proposed in Kargil Nagar. Based on the detailed analysis, a new storm water pumping station has been proposed at Ernavoor to avoid flood inundation.

Project implementation arrangements

The Municipal Administration and Water Supply Department (MAWS) of GOTN is the state-level executing agency. Greater Chennai Corporation (GCC) is the Implementing Agency (IA) for this project. A Project Management Unit (PMU) has been established in GCC headed by Commissioner, GCC as a Project Director (PD) and comprising of dedicated full-time staff from GCC for the overall project and financial management. A Project Implementation Unit (PIU) has been established in the storm water drainage department of GCC which will be headed by Project Managers (Chief Engineer and Superintending Engineer) and comprising of dedicated full-time staff of the GCC for the day-to-day implementation of the project. An Executive Engineer in PIU shall be the nodal person for safeguards implementation who will be supported by a dedicated Environmental Officer to ensure compliance with EMP. The PIU will be supported by Project Support Consultant (PSC). Environmental Expert of the PSC will assist PIU (Environmental Officer) in the implementation of the project in compliance with EMP and will carry out all necessary tasks.

Project implementation schedule

Entire scope of work under the project is split into 46 construction packages, which are further classified into 3 phases based on the severity of flood prone areas and topography i.e., upstream to downstream. Upstream locations are being covered under Phase 1 and downstream locations are being covered under Phase 2 and 3. All phases are being implemented simultaneously. Based on the volume of work in each package, the construction period varies between 24 to 36 months. The Bidding process for all the packages is completed with package 26 being awarded last on 21st December 2021 and work commencing from January 2022.

Sl. No.	Details	Information
1	Area of Greater Chennai Corporation	426 km ²
2	Catchment Area considered in Kosasthalaiyar Basin within Corporation based on topography	127.80 km ²
3	Population of project area (2011 Census)	2.58 million
4	Ground elevation range (MSL)	-0.41 to 26.96 m
5	Total road network (based on surveys conducted)	1,315 km
6	No. of major and minor water bodies	8 Nos + 66 Nos.
7	Water ways (River/ Canal)	7 Nos + 5 Nos.
8	Average Annual Rainfall	1,317.7 mm
9	Highest rainfall recorded in the year (2015) in a day	320 mm
10	Severely affected Flood Prone Area	11.27 km ²
11	% of area severely vulnerable to flood	8.82%
12	Total Estimated Project Cost (GCC+PWD Component)	INR 26140.6 million
13	Total Annual O&M Cost	INR 382.6 million
14	Project Implementation Agency	Greater Chennai Corporation
15	Total Number of Packages	46
16	Total Project Implementation Period	36 Months

1.2 Project Outputs and Outcome

The Project outputs are as follows:

Output 1: Climate-resilient urban flood protection infrastructure improved in the Chennai–Kosasthalaiyar River basin. This will include structural measures such as (i) constructing 588 km of new stormwater drains; (ii) rehabilitating or replacing 175 km of stormwater drains; (iii) improving 11 km stretches in the Ambattur, Ariyallur, Kadappakkam, and Korattur channels to enhance water-carrying capacity; (iv) constructing one new stormwater pumping station and upgrading one pumping station; (v) constructing 23,000 catchpits at regular intervals in roadside drains to recharge the groundwater aquifer; and (vi) rehabilitating four disaster relief camps and ensuring these are gender-responsive and socially inclusive. The flood modelling adopted in the designs ensures that the proposed stormwater drains can safely convey stormwater flow from 1:2-year return period rainfall, with a provision to cope with 79 mm per hour and a sea level rise of 21.7 centimetres under the RCP 8.5 scenario to 2050. The hydraulic design of four surplus channels has the capacity to cope with 1:5-year floods, providing safe floodwater discharge during the worst-case scenario—combining increased precipitation, a projected sea level rise, and a storm surge caused by a cyclone.

Output 2: Urban flood preparedness of the Greater Chennai Corporation and project communities enhanced. This will include the following non-structural measures: (i) GCC endorsement of guidelines on integrating flood hazard zoning with spatial plans and land use, building, and development regulations; (ii) the establishment of the baseline flood resilience index to identify the flood vulnerability, target priority interventions, and establish a framework for continuous improvement throughout Chennai City; (iii) the operationalization of a flood citizen observatory with a software platform to obtain real-time information in flood areas, water levels, and damage; (iv) GCC endorsement of a manual for green infrastructure design, including rainwater harvesting; (v) knowledge enhancement in the community, including for women, of the benefits of green infrastructure, including rainwater harvesting; (vi) raised beneficiary awareness of flood risks and impacts and the links that connect flooding, solid waste management, house sewerage connections, and the protection of water bodies, including activities targeting women; and (vii) improved GCC staff capacity to plan and design stormwater drainage systems in coordination with the management of solid waste and flood risk. Lessons and good practices from the project will be packaged into knowledge products and shared with key government officials and sector experts to further promote integrated flood management.

Output 3: Measures for sustaining operation and maintenance of stormwater drainage system established in the Greater Chennai Corporation. This will include (i) performance-based incentives (PBIs) for zonal offices linked to operational efficiency and the sustainability of stormwater drainage systems; (ii) a plan formulated to improve the sustainable and inclusive O&M of stormwater drainage systems; (iii) a road map for enhancing municipal resource mobilization by the GCC; (iv) improved knowledge of GCC staff on sustainable O&M of drainage systems, and management of solid waste and flood risk; and (v) improved knowledge and skills of desilting and conservancy workers on cleaning and maintaining stormwater drainage systems. The PBIs will be awarded based on a reporting system and database of key performance indicators for all zonal offices that will be established by 2023, with a focus on improving GCC management of drainage systems with timely maintenance services. The incentive payments will be used for additional activities that support the project's objective. The Sustainable O&M Improvement Plan will enable the GCC to ensure adequate O&M of the created assets, based on the newly established asset management system and the experiences of the PBI program. The Road Map for Enhanced Municipal Resource Mobilization will provide a strategic implementation plan to improve revenue management in terms of revenue coverage, valuation, liability, collection, and taxpayer services; strengthen information interlinkage with other utilities; and promote digital transformation with enhanced data analytics. With robust economic growth and rising populations, the GCC is poised to increase its own municipal revenues. The road map will help it create an enabling framework for efficient, equitable, and accountable revenue management while phasing in improvements that are socially acceptable and operationally efficient.

1.3 Environmental Category

Integrated Urban Flood Management for Chennai – Kosasthalaiyar Basin Project is classified as Category B according to ADB Safeguard Policy Statement (SPS), 2009 (project components judged to have some adverse environmental impacts, but of lesser degree and/or significance than those for Category A). All subprojects in Integrated Urban Flood Management for Chennai – Kosasthalaiyar Basin Project are classified as Category B, and the impacts of all subprojects are assessed through Initial Environmental Examination (IEE) as per ADB SPS, 2009.

1.4 About this Report

This is the Semi-annual Environmental Monitoring Report (SEMR) prepared by Greater Chennai Corporationfor the monitoring period of 1st January 2022- 30th June 2022. This is the 2nd SEMR since the loan effectiveness on 07th January 2022. This SEMR provides the status of project, presents preparation and implementation of environmental management, mitigation and monitoring actions and reports status of compliance with Environmental Management Plans (EMPs) and loan covenants



Figure 1-1Location of Project Towns

2 **PROJECT IMPLEMENTATION ARRANGEMENTS**

The following figure shows the Project Implementation arrangements planned for the project.



Figure 2-1Project Implementation Arrangements



The Following figure shows the project safeguard implementation arrangements.

Figure 2-2Project Environmental Safeguards Organogram

Table 2-1 Project Environmental Safeguards Team

S.No Position		Office	Name	Contact Number	Email/Remarks	
PMU		I			L	
1	Project Director: Commissioner GCC	GCC	Mr. Gagandeep Singh Bedi	044-25381330	commissioner@chennaicorporation.gov.in	
2	Deputy Project Director: Deputy Commissioner (Works)	GCC	Mr. M. S. Prasanth	044-25619351	dcworks@chennaicorporation.gov.in	
3	Deputy Project Director (Technical): Chief Engineer (General)	GCC	Mr. S. Rajendiran	044-25383692	cegeneral@chennaicorporation.gov.in	
4	Financial Advisor/CAO	GCC	Mr.M. Raja	044-25619211	fa@chennaicorporation.gov.in	
PIU		I	1			
1	Executive Engineer (Nodal Officer -Safeguards)	GCC	Mr. Sivakumar		kosasthalaiyardrainage.chennail@gmail.com	
2	Environment Officer	GCC	Mr. Anandraj		-	
PSC					L	
1	Environment Expert	PSC	Mrs. K. Vijayalakshmi			
2	Safeguard Support Staff	PSC	Mr. C. Singaravelan			
3	Safeguard Support Staff	PSC	Mr. B. Vignesh		<u>environment.kbp@haskoningindia.co.in</u>	
4	Safeguard Support Staff	PSC	Mr. S. Manojie		1	

Package No	Position	Office	Name of the Environmental Safeguard Officer	Name of the Safety/Accident Prevention Officer	Remarks
1	M/s Adithya Infrastructure Pvt Ltd - Gurunanak Engineering Services (JV)	Contractor	Mr. Sathish	Mr. Hemanth	
2	M/s P & C – RPP (JV)	Contractor	Mr. Udhayakumar*	Mr. Praveen Kumar	*Project Manager cum additional charge for EMP implementation since the ESO left the organisation
3	M/s. KCP Engineers Pvt Ltd - M/s. Rock & Arch Constructions (I) Pvt Ltd (JV)	Contractor	Mr. Mahendra Kumar	Mr. K.Saravanan	
4	M/s RKN Constructions	Contractor	Mr. Sudhagar*	Mr. P. Balamurugan	*Project Manager cum additional charge for EMP implementation since the ESO left the organisation
5	M/s. Gurumurthy Engineering Enterprises – M/s. Thomas Iyadurai Infrastructure Pvt Ltd (JV)	Contractor	Ms. Monisha	Mr. Arun Kumar	
6	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu	Contractor	Mr. G. Robin	Mr. K. Janakiraman	
7	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu	Contractor	Mr. X. Raj kumar	Mr. Vivek	

 Table 2-2 Contractor Environmental Safeguards Team

Package No	Position	Office	Name of the Environmental Safeguard Officer	Name of the Safety/Accident Prevention Officer	Remarks
8	M/s. Gurumurthy Engineering Enterprises, Tamil Nadu	Contractor	Mr. Saivari	Mr. G. Thiyagarajan	
9	Th. R. Rama Rao	Contractor	Mr. N. S. Abhilash	Mr. Sathish Kumar	
10	M/s. Annai Infra Developers Limited	Contractor	Mr. S. Jejo	Mr. S. Udhayakumar	
11	Th. K. Subramani	Contractor	Mr. Francis Suresh Balan	Mr. S. Gowrishankar	
12	M/s.RKSD – JV	Contractor	Mr. Stephan. M. S	Mr. K. Kalimuthu	
13	M/s. Landmark Corporation Pvt Ltd	Contractor	Mr. Pugazh. G	Mr. Anish Shajo	
14	M/s Sree Saravana Engineering Bhavani (P) Ltd.,	Contractor	Mr. Mugilan	Mr. Selvam	
15	M/s RPP - Sathyamoorthy (JV)	Contractor	Mr. Udhayakumar*	Mr. Moulisan	Project Manager cum additional charge for EMP implementation since the ESO left organisation
16	M/s. Mars Construction	Contractor	Mr. Deepika	Mr. Nirmal Kumar	
17	M/s. M. Kavitha - M/s. Velan Builders (JV)	Contractor	Ms. Nishanthi	Mr. Jagadish	
18	M/s. Thirumalagiri Infra Project Ltd – M/s. Shanmugavel Construction JV	Contractor	Mr. Parthasarathy*	Mr. Gopinath	Project Manager cum additional charge for EMP implementation since the ESO left organisation

Package No	Position	Office	Name of the Environmental Safeguard Officer	Name of the Safety/Accident Prevention Officer	Remarks
19	M/s Sree Saravana Engineering Bhavani (P) Ltd.,	Contractor	Dr.JegadeeshChandira Bose. U	Mr. Selvam	
20	Th. V. Narayanan	Contractor	Mr. Kalaiarasan*	Mr. Balachandar	Project Manager cum additional charge for EMP implementation since the ESO left organisation
21	M/s. KCP Engineers Pvt Ltd	Contractor	Mr. Dhanush	Mr. Sudhagar	
22	M/s. CR Construction – M/s. Rock & Arch Construction India Pvt Ltd (JV)	Contractor	Mr. Vinoth	Mr. Harris Paul	Project Manager cum additional charge for EMP implementation since the ESO left organisation
23	Th. K. Subramani, M/s. Balaji Enterprises & M/s. Thirumalagiri Infra Projects (Pvt) Ltd (JV)	Contractor	Mr. Shruthika	Mr. Gowri Shankar	
24	M/s. Kumar Builders - Annai Infra Developers Limited (JV)	Contractor	Mr. Dhinesh*	Mr. Madhu Sudhanan	Project Manager cum additional charge for EMP implementation since ESO left organisation
25	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu	Contractor	Mr. S. Veeraprabhu	Mr. Saroj Kannan	
26	M/s. CMK Projects Private Ltd (JV)	Contractor	Mr. Eashwaran	Mr. Sathish	

Package No	Position	Office	Name of the Environmental Safeguard Officer	Name of the Safety/Accident Prevention Officer	Remarks
27	M/s RPP Infra Projects Ltd	Contractor	Mr. Jayakumar	Mr. Arun J	
28	M/s P&C Projects (P) Ltd	Contractor	Mr. Vinoth*	Mr. Sankaranarayanan	Project Manager cum additional charge for EMP implementation since the ESO left organisation
29	M/s. KCP Engineers Pvt Ltd	Contractor	Mr. Vinoth K. N	Mr. Mohammed Safvan	
30	M/s. Sri Sivaram& Co	Contractor	Ms. Meena K	Mr. Karthik	
31	M/s. Sakthi Engineers - Vijay Gowtham (JV)	Contractor	Mr. A. Subramanian	Mr. Dinesh G	
32	M/s. Deivanai Construction JV Rock & Arch Construction	Contractor	Ms. Monisha	Mr. Rajesh	
33	M/s KCP Engineers Pvt. Ltd	Contractor	Mr. S. Mani	Mr. Mohammed Faris	
34	M/s. SreeVenkateswara Road Constructions (P) Ltd	Contractor	Mr. Sheikh Yunoos*		*Project Manager cum additional charge for EMP implementation and Safety/Accident Prevention since the personnel left the organisation.

Package No	Position	Office	Name of the Environmental Safeguard Officer	Name of the Safety/Accident Prevention Officer	Remarks
35	M/s. SreeVenkateswara Constructions - SreeVenkateswara Road Construction Pvt.Ltd (JV)	Contractor	Ms. Kowsalya	Mr. Ashok*	*Project Manager cum additional charge for Safety since the personnel left the organisation.
36	M/s. Sowmya Construction - Rock and Arch Constructions (I) Pvt.Ltd (JV)	Contractor	Mr. Ramadoss A	Mr. Suresh Kannan	
37	M/s. CMK Projects Private Ltd (JV)	Contractor	Mr. Azhagarasan	Mr. R. Sathishkumar	
38	M/s Sakthi Constructions	Contractor	Mr. Vinoth	Mr. Sanakaranarayanan	*Project Manager cum additional charge for EMP implementation since the ESO left the organisation.
39	M/s. Gurumoorthy Engineering Enterprises – Thomas Iyyadurai Infrastructure Pvt Ltd (JV)	Contractor	Mr. Shandra Banu	Mr. Selvaraj	
40	M/s Vijay Gowtham Engineering works	Contractor	Mr. Karthikeyan	Mr. T. R. Ashwin Christo	
41	M/s. R K & Sons	Contractor	Mr. M. Sasi Kumar	Mr. Suresh	
42	M/s. Gurumurthy Engineering Enterprises – Thomas Iyyadurai Infrastructure Pvt Ltd (JV)	Contractor	Mr. Shandra Banu	Mr. Mano A	

Package No	Position	Office	Name of the Environmental Safeguard Officer	Name of the Safety/Accident Prevention Officer	Remarks
43	M/s Sri Sivaram& Co.	Contractor	Ms. Meena K	Mr. Karthick	
44	M/s Annai Infra Developers Limited	Contractor	Mr. Senthil	Mr. Udhayakumar	
45	M/s. C.R.Construction - M/s Rock & Arch Constructions (India) Pvt.Ltd (JV)	Contractor	Mr. Vinoth*	Mr. Harris Paul	*Project Manager cum additional charge for EMP implementation
46	M/s. Aditya Infrastructure Pvt Ltd - D. Shanmugavel JV	Contractor	Mrs. Elakkiya Chitra	Mr. Hemanth	

2.1 Project implementation Status

All subprojects / packages are Construction of Strom Water Drains and Canals with desilting activities awarded to individual contractors. The work has been initiated in all the packages for construction of drains with no activity scheduled in the CRZ influence region without prior approval. The recommendation by the state Coastal Zone Management Authority (SCZMA) to the National Coastal Zone Management Authority (NCZMA) for CRZ clearance has been given vide letter no. 693/EC 3/2022-1, dated 14-02-2022 and the final clearance is awaited from NCZMA.

Detailed implementation progresses of each of the awarded packages are given in Table 2.3.

Packag e	Pac	ekage status	Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Date of Award	10-Feb-21					
	Date of mobilization	15-Feb-21					
	Duration	24 months	1004	-		/	
1	Scheduled Completion	15-Feb-23	100%	76.98	29.95	7.52 / SWD	1.04
	Contractor	M/s Adithya Infrastructure Pvt Ltd - Gurunanak Engineering Services (JV)					
	Date of Award	15-Feb-2021		15.38			5.62
	Date of mobilization	20-Feb-2021	100%				
2	Duration	36 months			5.09	47.84/SWD	
	Scheduled Completion	05-Feb-2024					
	Contractor	M/s P & C - RPP (JV)					
	Date of Award	03-Feb-2021					
	Date of mobilization	08-Feb-2021					2.79
	Duration	24 months					
3	Scheduled Completion	08-Feb-2023	100%	21.43	4.64	17.87 / SWD	
	Contractor	M/s. KCP Engineers Pvt Ltd -M/s. Rock & Arch Constructions (I) Pvt Ltd (JV)					
	Date of Award	08-Feb-2021					
4	Date of mobilization	13-Feb-2021	100%	59.04	48.03	14.02 / SWD	5.00

 Table 2-3 Implementation Status of Awarded Subprojects / Packages

Packag e	Package status		Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Duration	24 months					
	Scheduled Completion	13-Feb-2023					
	Contractor	M/s RKN Constructions					
	Date of Award	16-Feb-2021					
	Date of mobilization	21-Feb-2021					
	Duration	30 months		43.67	24.11		
5	Scheduled Completion	10-Aug-2023	100%			21.84 / SWD	5.08
	Contractor	M/s. Gurumurthy Engineering Enterprises – M/s. Thomas Iyyadurai Infrastructure Pvt Ltd (JV)					
	Date of Award	15-Feb-2021					
	Date of mobilization	20-Feb-2021		17.47	9.07	31.36 / SWD	3.46
<i>c</i>	Duration	30 Months	1000				
6	Scheduled Completion	09-Aug-2023	100%				
	Contractor	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu					
	Date of Award	15-Feb-2021					
	Date of mobilization	20-Feb-2021					
_	Duration	30 Months	1000		12.20	22.25 / GWT	2.11
7	Scheduled Completion	09-Aug-2023	100%	17.61	12.38	23.35 / SWD	2.44
	Contractor	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu					

Packag e	Рас	kage status	Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Date of Award	10-Feb-2021					
	Date of mobilization	15-Feb-2021					
	Duration	30 Months	1000	20.01	26.25		10.00
8	Scheduled Completion	31-Jan-2024	100%	39.81	26.35	45.09 / SWD	10.28
	Contractor	M/s. Gurumurthy Engineering Enterprises, Tamil Nadu					
	Date of Award	12-Jan-2021					
	Date of mobilization	17-Jan-2021					
9	Duration	24 Months	100%	58.26	44.86	5.22 / SWD	1.24
	Scheduled Completion	17-Jan-2023					
	Contractor	Th. R. Rama Rao					
	Date of Award	11-Feb-2021					
	Date of mobilization	16-Feb-2021					
10	Duration	36 Months	1000	17.84	12.79	10 41 / 0100	2.00
10	Scheduled Completion	31-Jan-2024	100%	17.84	13.78	18.41 / SWD	2.08
	Contractor	M/s. Gurumurthy Engineering Enterprises, Tamil Nadu					
	Date of Award	04-Feb-2021					
11	Date of mobilization	09-Feb-2021	100%	65.60	35.40	4.19 / SWD	2.76
11	Duration	24 Months					
	Scheduled Completion	09-Feb-2023					

Packag e	Рас	kage status	Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Contractor	Th. K. Subramani					
	Date of Award	08-Feb-2021					
	Date of mobilization	13-Feb-2021					
12	Duration	24 Months	100%	62.54	56.36	12.92 / SWD	2.95
	Scheduled Completion	13-Feb-2023					
	Contractor	M/s. RKSD – JV					
	Date of Award	24-Jul-2021					4.15
	Date of mobilization	29-Jul-2021					
13	Duration	30 Months	100%	17.57	4.35	33.27 / SWD	
	Scheduled Completion	28-Oct-2023					
	Contractor	M/s. Landmark Corporation Pvt Ltd					
	Date of Award	01-Mar-2021					
	Date of mobilization	06-Mar-2021					
14	Duration	36 Months	100%	13.65	6.80	37.17 / SWD	2 10
14	Scheduled Completion	05-Mar-2024	100%	15.05	0.80	37.177 SWD	3.10
	Contractor	M/s Sree Saravana Engineering Bhavani (P) Ltd.,					
	Date of Award	25-Feb-2021					
15	Date of mobilization	02-Mar-2021	100%	10.04	4.15	45.74 / SWD	2.57
15	Duration	36 Months	100%	10.94			
	Scheduled Completion	01-Mar-2024					

Packag e	Рас	kage status	Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Contractor	M/s RPP - Sathyamoorthy (JV)					
	Date of Award	25-Feb-2021					
	Date of mobilization	02-Mar-2021					
16	Duration	24 Months	100%	81.20	45.14	12.82 / SWD	2.52
	Scheduled Completion	02-Mar-2023					
	Contractor	M/s. Mars Construction					
	Date of Award	23-Feb-2021					
	Date of mobilization	28-Feb-2021					
17	Duration	24 Months	100%	42.79	27.09	14.1 / SWD	3.55
	Scheduled Completion	28-Feb-2023					
	Contractor	M/s. M. Kavitha - M/s. Velan Builders (JV)					
	Date of Award	23-Feb-2021					
	Date of mobilization	28-Feb-2021					3.23
	Duration	24 Months					
18	Scheduled Completion	28-Feb-2023	100%	51.24	35.13	11.01/ SWD	
	Contractor	M/s. Thirumalagiri Infra Project Ltd – M/s. Shanmugavel Construction JV					
	Date of Award	26-Feb-2021					
19	Date of mobilization	03-Mar-2021	100%	16.03	10.4	27.31/ SWD	2.91
	Duration	30 Months					

Packag e	Pac	skage status	Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Scheduled Completion	01-Sep-2023					
	Contractor	M/s. Gurumurthy Engineering Enterprises, Tamil Nadu					
	Date of Award	18-Feb-2021					
	Date of mobilization	23-Feb-2021		41.05	22.99		
20	Duration	24 Months	100%			4.09 / Canal	0.23
	Scheduled Completion	23-Feb-2023					
	Contractor	Th. V. Narayanan					
	Date of Award	15-Feb-2021					
	Date of mobilization	20-Feb-2021	100%	32.83		13.29 / SWD	4.68
21	Duration	30 Months			9.05		
	Scheduled Completion	21-Aug-2023					
	Contractor	M/s. KCP Engineers Pvt Ltd					
	Date of Award	23-Feb-2021					
	Date of mobilization	28-Feb-2021					
	Duration	24 Months					
22	Scheduled Completion	28-Feb-2023	100%	36.71	27.88	15.71 / SWD	3.18
	Contractor	M/s. CR Construction – M/s. Rock & Arch Construction India Pvt Ltd (JV)					
23	Date of Award	26-Feb-2021	100%	57.53	28.79	9.62 / SWD	3.84

Packag e	Package status		Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Date of mobilization	03-Mar-2021					
	Duration	24 Months					
	Scheduled Completion	03-Mar-2023					
	Contractor	Th. K. Subramani, M/s. Balaji Enterprises & M/s. Thirumalagiri Infra Projects (Pvt) Ltd (JV)					
	Date of Award	25-Feb-2021					
	Date of mobilization	02-Mar-2021					
	Duration	36 Months					
24	Scheduled Completion	01-Mar-2024	100%	20.23	11.52	16.18/ SWD	3.15
	Contractor	M/s. Kumar Builders - Annai Infra Developers Limited (JV)					
	Date of Award	26-Feb-2021					
	Date of mobilization	03-Mar-2021					
	Duration	30 Months	100.01	17.50			1.50
25	Scheduled Completion	01-Sep-2023	100%	15.68	7.61	15.15 / SWD	1.59
	Contractor	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu					
	Date of Award	11 Jan 2022					
26	Date of mobilization	16 Jan 2022	100%	26.30	21.52	4.06 / SWD	3.78
	Duration	16 July 2024					

Packag e	Package status		Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Scheduled Completion	30 months					
	Contractor	M/s. CMK Projects Private Ltd (JV)					
	Date of Award	24-Feb-2021	100%	32.60	7.15	10.45 / SWD	2.24
27	Date of mobilization	01-Mar-2021					
	Duration	24 Months					
	Scheduled Completion	01-Mar-2023					
	Contractor	M/s RPP Infra Projects Ltd					
	Date of Award	26-Feb-2021	100%	22.63	6.52	15.10 / SWD	3.32
	Date of mobilization	03-Feb-2023					
28	Duration	36 Months					
	Scheduled Completion	03-Mar-2023					
	Contractor	M/s P&C Projects (P) Ltd					
	Date of Award	23-Feb-2021	100%	16.57	5.00	13.10 / SWD	2.18
	Date of mobilization	28-Feb-2021					
29	Duration	36 Months					
_,	Scheduled Completion	29-Aug-2023					
	Contractor	M/s. KCP Engineers Pvt Ltd					
	Date of Award	24-Feb-2021	100%	31.01	16.00	16.81/ SWD	3.72
30	Date of mobilization	01-Mar-2021					
	Duration	30 Months					

Packag e	Package status		Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Scheduled Completion	30-Aug-2023					
	Contractor	M/s. Sri Sivaram& Co					
	Date of Award	01-Mar-2021	100%	41.13	23.60	10.52 / SWD	1.44
31	Date of mobilization	06-Mar-2021					
	Duration	30 Months					
	Scheduled Completion	31-Jan-2024					
	Contractor	M/s. Sakthi Engineers - Vijay Gowtham (JV)					
	Date of Award	23-Feb-2021	100%	27.03	25.10	8.53 / SWD	1.16
	Date of mobilization	28-Feb-2021					
	Duration	24 Months					
32	Scheduled Completion	28-Feb-2023					
	Contractor	M/s. Deivanai Construction JV Rock & Arch Construction					
	Date of Award	12-Feb-2021	100%	4.44	0.00	16.04 / SWD	0.65
	Date of mobilization	17-Feb-2021					
33	Duration	30 Months					
	Scheduled Completion	16-Aug-2023					
	Contractor	M/s KCP Engineers Pvt. Ltd					
	Date of Award	12-Jan-2021	100%	40.00	14.58	7.83 / SWD	1.26
34	Date of mobilization	17-Jan-2021					
	Duration	24 Months					
Packag e	Package status		Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
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	Scheduled Completion	17-Jan-2023					
	Contractor	M/s. SreeVenkateswara Road Constructions (P) Ltd					
	Date of Award	15-Feb-2021					
	Date of mobilization	20-Feb-2021					
	Duration	24 Months					
35	Scheduled Completion	20-Feb-2023	100%	53.73	18.71	11.22 / SWD	2.39
	Contractor	M/s. SreeVenkateswara Constructions – SreeVenkateswara Road Construction Pvt. Ltd (JV)	ıd				
	Date of Award	16-Feb-2021					
	Date of mobilization	21-Feb-2021					
	Duration	36 Months					
36	Scheduled Completion	20-Aug-2023	100%	25.79	2.23	15.95 / SWD	1.88
	Contractor	M/s. Sowmya Construction - Rock and Arch Constructions (I) Pvt. Ltd (JV)					
	Date of Award	26-Feb-2021					
	Date of mobilization	03-Mar-2021					
37	7 Duration 36 Me	36 Months	100%	46.59	32.64	32.45 / SWD	7.32
	Scheduled Completion	02-Mar-2024			52101	52.457540	
	Contractor	M/s. CMK Projects Private Ltd (JV)					

Packag e	Package status		Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Date of Award	26-Feb-2021					
	Date of mobilization	03-Mar-2021					
38	Duration	24 Months	100%	10.68	2.05	14.7 / SWD	2.73
50	Scheduled Completion	15-Mar-2023	10070	10.00	2.05	14.77 5 00 D	2.15
	Contractor	M/s Sakthi Constructions					
	Date of Award	10-Mar-2021					
	Date of mobilization	15-Mar-2021			19.79	9.09 / SWD	1.05
	Duration	24 Months		41.91			
39	Scheduled Completion	15-Mar-2023	100%				
	Contractor	M/s. Gurumurthy Engineering Enterprises – Thomas Iyyadurai Infrastructure Pvt Ltd (JV)					
	Date of Award	26-Feb-2021					
	Date of mobilization	03-Mar-2021					1.05
40	Duration	24 Months	100%	34.03	10.15	13.35 / SWD	
	Scheduled Completion	03-Mar-2023				15.5576412	
	Contractor	M/s Vijay Gowtham Engineering works					
	Date of Award	05-Feb-2021					
41	Date of mobilization	10-Feb-2021	100%	38.02	25.46	16.91 / SWD	2.35
41	Duration	24 Months	10070	50.02	25.46		2.33
	Scheduled Completion	10-Feb-2023					

Packag e	Package status		Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Contractor	M/s. R K & Sons					
	Date of Award	10-Mar-2021					
	Date of mobilization	15-mar-2021					
	Duration	36 Months					
42	Scheduled Completion	15-Mar-2023	100%	19.30	14.26	14.21 / SWD	1.19
	Contractor	M/s. Gurumurthy Engineering Enterprises – Thomas Iyyadurai Infrastructure Pvt Ltd (JV)					
	Date of Award	24-Feb-2021					
	Date of mobilization	01-Mar-2021		33.55	21.11	13.1 / SWD	
	Duration	30- Months					
43	Scheduled Completion	28-Aug-2023	100%				4.50
	Contractor	M/s Sri Sivaram& Co.					
	Date of Award	15-Feb-2021					
	Date of mobilization	20-Feb-2021					
44	Duration	36 Months	100%	3.36	3.42	7.56 / Canal	0.28
	Scheduled Completion	20-Jan-2024	100%				
	Contractor	M/s Annai Infra Developers Limited					
	Date of Award	23-Feb-2021					
45	Date of mobilization	28-Feb-2021	100%	20.25	6.62	3.33 / Canal	0.30

Packag e	Package status		Design Progress to date	Construction progress to date in %	Financial progress to date	Total length to be completed as per design (kms)/ Component	Length of Works conducted during the reporting period (kms)
	Duration	30 Months					
	Scheduled 27-Aug-2024						
	Contractor	M/s.C.R.Construction - M/s Rock & Arch Constructions (India) Pvt.Ltd (JV					
	Date of Award	26-Feb-2021					
	Date of mobilization	03-Feb-2021					
	Duration	24 Months	1004			10900 Nos of Silt	
46	Scheduled Completion	03-Mar-2023	100%	12.5	13.67	Catch pits	730 Nos
	Contractor	M/s. Aditya Infrastructure Pvt Ltd - D. Shanmugavel JV					

2.1.1 Compliance status with statutory environmental requirements

Status of Clearances

Detailed status of each clearance/permission is provided in **Table 2.4**. Copies of clearances/permissions attached in **Appendix 1**.

Package Number	List of Clearances / permission required	Status	Validity period	Renewal and validity period	Remarks
GCC/KB/001	CTE/CTO from TNPCB	Obtained	30.11.2022	NA	
GCC/KB/002	CTE/CTO from TNPCB	Obtained	31.03.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/003	CTE/CTO from TNPCB	Obtained	31.03.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/004	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/005	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/006	CTE/CTO from TNPCB	Obtained	11.02.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/007	CTE/CTO from TNPCB	Obtained	11.02.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/008	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/009	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/010	CTE/CTO from TNPCB	Obtained	11.02.2022	Expired	Application for renewal submitted

Table 2-4 Status of Statutory Clearances

Package Number	List of Clearances / permission required	Status	Validity period	Renewal and validity period	Remarks
					Renewal under process
GCC/KB/011	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	
GCC/KB/012	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/013	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/014	CTE/CTO from TNPCB	Obtained	13.03.2024	NA	
GCC/KB/015	CTE/CTO from TNPCB	Obtained	31.03.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/016	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/017	CTE/CTO from TNPCB	Obtained	31.03.2026	NA	
GCC/KB/018	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	
GCC/KB/019	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	
GCC/KB/020	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	
GCC/KB/021	CTE/CTO from TNPCB	Obtained	31.03.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/022	CTE/CTO from TNPCB	Obtained	11.02.2022	Expired	Application for renewal submitted Renewal under process

Package Number	List of Clearances / permission required	Status	Validity period	Renewal and validity period	Remarks
GCC/KB/023	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	
GCC/KB/024	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	
GCC/KB/025	CTE/CTO from TNPCB	Obtained	11.02.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/026	CTE/CTO from TNPCB	Obtained	31.03.2029	NA	
	CTE/CTO from TNPCB	Obtained	31.03.2027	NA	
GCC/KB/027	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
GCC/KB/028	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/029	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	
GCC/KB/030	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/031	CTE/CTO from TNPCB	Obtained	31.03.2027	NA	
	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/032	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC.

Package Number	List of Clearances / permission required	Status	Validity period	Renewal and validity period	Remarks
					No works were initiated in CR Z influence areas.
GCC/KB/033	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	
	CTE/CTO from TNPCB	Obtained	31.03.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/034	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	
GCC/KB/035	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
	CTE/CTO from TNPCB	Obtained	31.03.2027	NA	
GCC/KB/036	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
GCC/KB/037	CTE/CTO from TNPCB	Obtained	31.03.2029	NA	

Package Number	List of Clearances / permission required	Status	Validity period	Renewal and validity period	Remarks
	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/038	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/039	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
	CTE/CTO from TNPCB	Obtained	31.03.2022		
GCC/KB/040	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
GCC/KB/041	CTE/CTO from TNPCB	Obtained	31.03.2023	NA	

Package Number	List of Clearances / permission required	Status	Validity period	Renewal and validity period	Remarks
	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/042	CRZ Clearance	Application submitted			Awaiting CRZ clearance from MoEF&CC. No works were initiated in CR Z influence areas.
GCC/KB/043	CTE/CTO from TNPCB	Obtained	31.03.2024	NA	
GCC/KB/044	CTE/CTO from TNPCB	Obtained	11.02.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/045	CTE/CTO from TNPCB	Obtained	11.02.2022	Expired	Application for renewal submitted Renewal under process
GCC/KB/046	CTE/CTO from TNPCB	Obtained	30.11.2022	NA	

2.2 Compliance with loan covenants

2.2.1 Environmental Covenants Compliance

Status of compliance with environmental safeguard related loan covenants is given in the below **Table 2.5**

Specific Covenants	Status/Issues
Procurement, Schedule 4-4	
The Borrower shall ensure, or cause	(a) Draft IEE has been cleared and disclosed in the ADB
the EA and IA to ensure, that no	website (https://www.adb.org/projects/documents/ind-49107-
Works contract which involves	<u>009-iee</u>)
environmental impacts is awarded	(b) Complied. EMP provisions included into the Works
until	contract.
(a) the relevant authority of the	
Borrower and/or State, as required, has	
granted the approval of the IEE, and	
the EA has obtained ADB's clearance	
of the IEE based on the final design;	
and	
(b) the EA has incorporated the	
relevant provisions from the EMP into	
the Works contract	
Safeguards, Environment, Schedule	4-8
The Borrower shall ensure, or cause	a) All the contractors are following applicable laws, rules and
the EA and IA to ensure that the	regulations of environment, health, and safety.
preparation, design, construction,	b) Environmental Safeguards followed by the contractors
implementation, operation and	i) During the initial stages of the project many contractors found
decommissioning of the Project, and	it difficult to save trees, but through frequent visits, suggestions
all Subprojects' facilities comply with	and advice of PSCs80no's of trees are saved by the contractors
(a) all applicable laws and regulations	till now during the construction Process. 19 trees along the
of the Borrower and the State relating	alignment were removed by the contractor due to unavoidable
to	situation after intimation to GCC. To compensate, PSC
environment, health, and safety.	suggested planting 190 trees in the nearby area/Parks.
(b) the Environmental Safeguards.	ii) Air, Water, noise, soil monitoring carried out by the
(c) all measures and requirements set	contractors at regular intervals. Few of the packages are done
forth in the IEE and EMP, and any	under the PSC Supervision.
corrective or preventive actions set	iii) The biodiversity in the project was not majorly affected.
forth in a Safeguards	

Table 2-5 Status of Compliance with Environmental Loan Covenants

Monitoring Report.	iv) Water sprinkling followed 3 times a dayby contractors to
	mitigate dust pollution
Human and Financial Resources to In	mplement Safeguards Requirements, Schedule 4-12
The Borrower shall ensure, or cause	Ensured. Necessary budgetary and human resources provisions
the EA and IA to ensure, that all	to fully implement the EMP as required is made available.
necessary budgetary and human	
resources to fully implement the EMP	
and the RP as required, are made	
available on a timely basis.	
Safeguards- Related Provisions in Bio	dding Documents and Works Contracts, Schedule 4-13
The Borrower shall ensure, or cause	a. All contractors strictly abide by the bidding agreement and
the EA and IA to ensure, that all	ADB safeguards policy statement 2009.
bidding documents and contracts for	b. Budget provided for environmental and social measures.
Works contain provisions that require	c. No Unanticipated impacts have been encountered to date.
contractors to:	Unanticipated environmental impacts during construction, if
A- comply with the measures relevant	any will be intimated to PMU.
to the contractor set forth in the	d. The condition of roads, agricultural land and other
IEE, the EMP and the RP (to the	infrastructure prior to starting the construction work is being
extent they concern impacts on	carried out through Transect Walk.
affected people during	e. Agreed
construction), and any corrective	
or preventative actions set forth in	
a Safeguards Monitoring Report;	
B- make available a budget for all	
such environmental measures; and	
C- provide the EA with a written	
notice of any unanticipated	
environmental, resettlement or	
indigenous peoples risks or	
impacts that arise during	
construction, implementation or	
operation of the Project that were	

not considered in the IEE, the EMP and the RP; D- adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and E- reinstate pathways, other local land to at least their pre-project condition upon the completion of construction. Safeguards Monitoring and Reporting condition of the works and disclose relevant annual Safeguards (A) Regular semi-annual monitoring reports are being submitted to the ADB. Annual report for the period of January 2021 to December 2021 has been cleared and annual Safeguards Monitoring Reports to ADB during operation of the Works and disclose relevant information from such reports to affected persons promptly upon submission. (M) Regular semi-annual monitoring reports are being submitted to the ADB. Annual report for the period of January 2021 to December 2021 has been cleared and disclose relevant information from such reports to affected persons promptly upon submission. (M) Regular semi-annual monitoring reports are being submitted to the ADB. Annual report for the period of submitted to the ADB. Annual report for the period of generation of the Works and disclose relevant information from such reports to a disclose and annual Safeguards Monitoring Reports to ADB during operation of the tropice tot to approximation from such reports to approximati			
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transportmaterialsand construction; andE-reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction		roads, agricultural land and other	
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submission. B- 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 IEEs, the EMP 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;		information from such reports to	(B) Agreed. If any unanticipated environmental risks arise
B- 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 IEEs, the EMP 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;		affected persons promptly upon	during the construction, implementation or operation stage,
environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEEs, the EMP 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;		submission.	a detailed note with a corrective action plan will be
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construction, implementation or operation of the Project that were not considered in the IEEs, the EMP 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;		environmental and/or social risks	(C) Agreed. Any breach of compliance with the measures and
operation of the Project that were not considered in the IEEs, the EMP 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;		and impacts arise during	requirements set forth in the EMP will be reported to ADB
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EMP 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;		operation of the Project that were	<u>49107-009-emr-0</u>
ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan;		not considered in the IEEs, the	
risks or impacts, with detailed description of the event and proposed corrective action plan;		EMP and the RP, promptly inform	
description of the event and proposed corrective action plan;		ADB of the occurrence of such	
proposed corrective action plan;		risks or impacts, with detailed	
		description of the event and	
and		proposed corrective action plan;	
		and	

C- Report any breach of compliance	
with the measures and	
requirements set forth in the EMP	
or the RP promptly after becoming	
aware of the breach.	
Prohibited List of Investments, Scher	hulo / 15
The Borrower shall ensure, or cause	Agreed and will be ensured.
	Agreed and will be ensured.
the EA and IA to ensure, that no	
proceeds of the Loan	
are used to finance any activity	
included in the list of prohibited	
investment activities provided in	
Appendix 5 of the SPS.	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
Labor Standards, Health and Safety,	
The Borrower shall ensure, or cause	All the contractors are following the labor laws & regulations
the EA and IA to ensure, that Works	and statutory provisions on labor.
contracts under the	Many of the contractors have conducted COVID 19 awareness
Project follow all applicable labor	programs, HIV Awareness program and TBT at the SWD
laws of the Borrower and the State and	work site.
that these further	
include provisions to the effect that	
contractors,	
(a) carry out HIV/AIDS awareness	
programs	
for labor and disseminate information	
at worksites on risks of sexually	
transmitted diseases and HIV/AIDS as	
part of health and safety measures for	
those employed during construction;	
and	
(b) follow and implement all statutory	
provisions on labor (including not	
employing or using children as labor,	

and aqual new for aqual work) health
and equal pay for equal work), health,
safety, welfare, sanitation, and
working conditions. Such contracts
shall also include clauses for
termination in case of any breach of
the stated provisions by the
contractors.

2.3 Preparation and Approval of Environmental Assessment Reports

Draft Initial Environmental Examination (IEE) report has been uploaded on the ADB website. The Initial Environmental Examination report common for all 46 Packages. Based on IEE's Site specific EMPs for each package are prepared by the contractor and implemented on site. The implementation of the same is monitored by Environment Safeguards team of PSC and inspected by the PIU/PMU

2.4 Status of Disclosure of Safeguard Documents

Draft IEE for all packages has been cleared and disclosed (<u>https://www.adb.org/projects/documents/ind-49107-009-iee</u>). IEE will be updated if there are any changes in the project during implementation and will be submitted to ADB for review, clearance and disclosure. Design of drains in some sections are being modified, and IEE will be updated once the design is complete, but prior to commencement of works in revised design sections. Environmental Monitoring Report for the period from January 2021 to December 2021 has been cleared and disclosed in ADB Website (<u>https://www.adb.org/projects/documents/ind-49107-009-emr-0</u>)

2.5 Safeguards provisions in Bid Documents and Contracts

Safeguard provisions are duly included in the bid documents / contracts, and these are followed uniformly across all the bids and contracts. Following Table 2.6 shows package-wise status.

Package Number	Type of Bid / Contract	Bid / Contract Clauses related to environment, health and safety; labour standards	IEE / EMP included in Bid / contract Yes / No	
	Contract	Yes / No		
GCC/KB/001	Works	Yes	Yes	
GCC/KB/002	Works	Yes	Yes	
GCC/KB/003	Works	Yes	Yes	
GCC/KB/004	Works	Yes	Yes	
GCC/KB/005	Works	Yes	Yes	
GCC/KB/006	Works	Yes	Yes	
GCC/KB/007	Works	Yes	Yes	
GCC/KB/008	Works	Yes	Yes	
GCC/KB/009	Works	Yes	Yes	
GCC/KB/010	Works	Yes	Yes	
GCC/KB/011	Works	Yes	Yes	
GCC/KB/012	Works	Yes	Yes	
GCC/KB/013	Works	Yes	Yes	
GCC/KB/014	Works	Yes	Yes	
GCC/KB/015	Works	Yes	Yes	
GCC/KB/016	Works	Yes	Yes	
GCC/KB/017	Works	Yes	Yes	
GCC/KB/018	Works	Yes	Yes	
GCC/KB/019	Works	Yes	Yes	
GCC/KB/020	Works	Yes	Yes	
GCC/KB/021	Works	Yes	Yes	
GCC/KB/022	Works	Yes	Yes	
GCC/KB/023	Works	Yes	Yes	

 Table 2-6EHS provisions and EMP inclusions in Bid / Contract

Package Number	Type of Bid / Contract	Bid / Contract Clauses related to environment, health and safety; labour standards	IEE / EMP included in Bid / contract	
	Contract	Yes / No	Yes / No	
GCC/KB/024	Works	Yes	Yes	
GCC/KB/025	Works	Yes	Yes	
GCC/KB/026	Works	Yes	Yes	
GCC/KB/027	Works	Yes	Yes	
GCC/KB/028	Works	Yes	Yes	
GCC/KB/029	Works	Yes	Yes	
GCC/KB/030	Works	Yes	Yes	
GCC/KB/031	Works	Yes	Yes	
GCC/KB/032	Works	Yes	Yes	
GCC/KB/033	Works	Yes	Yes	
GCC/KB/034	Works	Yes	Yes	
GCC/KB/035	Works	Yes	Yes	
GCC/KB/036	Works	Yes	Yes	
GCC/KB/037	Works	Yes	Yes	
GCC/KB/038	Works	Yes	Yes	
GCC/KB/039	Works	Yes	Yes	
GCC/KB/040	Works	Yes	Yes	
GCC/KB/041	Works	Yes	Yes	
GCC/KB/042	Works	Yes	Yes	
GCC/KB/043	Works	Yes	Yes	
GCC/KB/044	Works	Yes	Yes	
GCC/KB/045	Works	Yes	Yes	
GCC/KB/046	Works	Yes	Yes	

*Type of Bid – Works / DBO / DB etc.

2.6 Status of EMP Implementation

2.6.1 Preparation of Site-Specific Environmental Management Plan

Preparation and submission of Site-specific Environmental Management Plan (SEMP) and Health and Safety Plan (HSP) including Health & Safety COVID-19 Plan by contractor and approval of PMU is a requirement prior to commencement of works. All contractors have prepared a site specific EMP with an Health and Safety Plan to be implemented in their respective packages Details of EMP's submitted by awarded packages are presented in the following Table 2.7.

Table 2-7 Status of SEMPs

Package Number	Contractor	Package Status	SEMP Prepared by Contractor (Yes/No)	SEMP approved by PIU/PMU (Yes/No)	SEMP includes H&S Plan (Yes/No)	Remarks
			(165/110)			
GCC/KB/001	M/s Adithya Infrastructure Pvt Ltd - Gurunanak Engineering Services (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/002	M/s P & C – RPP (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/003	M/s. KCP Engineers Pvt Ltd - M/s. Rock & Arch Constructions (I) Pvt Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/004	M/s RKN Constructions	Under Construction	Yes	Yes	Yes	
GCC/KB/005	M/s. Gurumurthy Engineering Enterprises – M/s. Thomas Iyadurai Infrastructure Pvt Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/006	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu	Under Construction	Yes	Yes	Yes	
GCC/KB/007	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu	Under Construction	Yes	Yes	Yes	
GCC/KB/008	M/s. Gurumurthy Engineering Enterprises, Tamil Nadu	Under Construction	Yes	Yes	Yes	
GCC/KB/009	Th. R. Rama Rao	Under Construction	Yes	Yes	Yes	

Package Number	Contractor	Package Status	SEMP Prepared by Contractor (Yes/No)	SEMP approved by PIU/PMU (Yes/No)	SEMP includes H&S Plan (Yes/No)	Remarks
GCC/KB/010	M/s. Annai Infra DevelopersLimited	Under Construction	Yes	Yes	Yes	
GCC/KB/011	Th. K. Subramani	Under Construction	Yes	Yes	Yes	
GCC/KB/012	M/s.RKSD – JV	Under Construction	Yes	Yes	Yes	
GCC/KB/013	M/s. Landmark Corporation Pvt Ltd	Under Construction	Yes	Yes	Yes	
GCC/KB/014	M/s Sree Saravana Engineering Bhavani (P) Ltd.,	Under Construction	Yes	Yes	Yes	
GCC/KB/015	M/s RPP - Sathyamoorthy (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/016	M/s. Mars Construction	Under Construction	Yes	Yes	Yes	
GCC/KB/017	M/s. M. Kavitha - M/s. Velan Builders (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/018	M/s. Thirumalagiri Infra Project Ltd – M/s. Shanmugavel Construction JV	Under Construction	Yes	Yes	Yes	
GCC/KB/019	M/s Sree Saravana Engineering Bhavani (P) Ltd.,	Under Construction	Yes	Yes	Yes	
GCC/KB/020	Th. V. Narayanan	Under Construction	Yes	Yes	Yes	

Package Number	Contractor	Package Status	SEMP Prepared by Contractor (Yes/No)	SEMP approved by PIU/PMU (Yes/No)	SEMP includes H&S Plan (Yes/No)	Remarks
GCC/KB/021	M/s. KCP Engineers Pvt Ltd	Under Construction	Yes	Yes	Yes	
GCC/KB/022	M/s. CR Construction – M/s. Rock & Arch Construction India Pvt Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/023	Th.K.Subramani, M/s.Balaji Enterprises & M/s.Thirumalagiri Infra Projects (Pvt) Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/024	M/s.Kumar Builders - Annai Infra Developers Limited (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/025	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu	Under Construction	Yes	Yes	Yes	
GCC/KB/026	M/s.CMK Projects Private Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/027	M/s RPP Infra Projects Ltd	Under Construction	Yes	Yes	Yes	
GCC/KB/028	M/s P&C Projects (P) Ltd	Under Construction	Yes	Yes	Yes	
GCC/KB/029	M/s. KCP Engineers Pvt Ltd	Under Construction	Yes	Yes	Yes	
GCC/KB/030	M/s. Sri Sivaram& Co	Under Construction	Yes	Yes	Yes	
GCC/KB/031	M/s.Sakthi Engineers - Vijay Gowtham (JV)	Under Construction	Yes	Yes	Yes	

Package Number	Contractor	Package Status	SEMP Prepared by Contractor (Yes/No)	SEMP approved by PIU/PMU (Yes/No)	SEMP includes H&S Plan (Yes/No)	Remarks
GCC/KB/032	M/s. Deivanai Construction JV Rock & Arch Construction	Under Construction	Yes	Yes	Yes	
GCC/KB/033	M/s KCP Engineers Pvt. Ltd	Under Construction	Yes	Yes	Yes	
GCC/KB/034	M/s. SreeVenkateswara Road Constructions (P) Ltd	Under Construction	Yes	Yes	Yes	
GCC/KB/035	M/s. SreeVenkateswara Constructions – SreeVenkateswara Road Construction Pvt.Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/036	M/s. Sowmya Construction - Rock and Arch Constructions (I) Pvt. Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/037	M/s. CMK Projects Private Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/038	M/s Sakthi Constructions	Under Construction	Yes	Yes	Yes	
GCC/KB/039	M/s. Gurumurthy Engineering Enterprises – Thomas Iyyadurai Infrastructure Pvt Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/040	M/s Vijay Gowtham Engineering works	Under Construction	Yes	Yes	Yes	
GCC/KB/041	M/s. R K & Sons	Under Construction	Yes	Yes	Yes	

Package Number	Contractor		SEMP Prepared by Contractor (Yes/No)	SEMP approved by PIU/PMU (Yes/No)	SEMP includes H&S Plan (Yes/No)	Remarks
GCC/KB/042	GCC/KB/042 M/s. Gurumurthy Engineering Enterprises – Thomas Iyyaduras Infrastructure Pvt Ltd (JV)		Yes	Yes	Yes	
GCC/KB/043	M/s Sri Sivaram& Co.	Under Construction	Yes	Yes	Yes	
GCC/KB/044	M/s Annai Infra Developers Limited	Under Construction	Yes	Yes	Yes	
GCC/KB/045	M/s. CR Construction – M/s. Rock & Arch Construction India Pvt Ltd (JV)	Under Construction	Yes	Yes	Yes	
GCC/KB/046	M/s. Aditya Infrastructure Pvt Ltd - D. Shanmugavel JV	Under Construction	Yes	Yes	Yes	

*Status: Design / construction / operation

2.7 EMP Implementation Supervision and Monitoring

Of the 46 packages awarded, construction works are being conducted in all 46 packages. Package-wise status is presented in the below **Table 2.8**, and details of site visits conducted by safeguard staff is given in **Appendix 2**.

Package		Contractor EHS	Monthly EMP	Site Monitoring/	
Number	Current Status	Supervisor Appointed	implementation reports	Verification	Remarks
Number		& Mobilized on Site	submitted by contractor	Conducted by PSC	
GCC/KB/001	Construction	Yes	No	Yes	Instructions given to the EHS officer to submit
	Construction	105		105	EMP's monthly
					Instructions given to deploy an Environmental
GCC/KB/002	Construction	No	No	Yes	Safeguard Officer at the site. In the interim period
0CC/KB/002	Construction	110	110	105	Contractor Project Manager of the package has been
					instructed to govern the EMP implementations.
GCC/KB/003	Construction	Yes	Yes	Yes	
					Instructions given to deploy an Environmental
GCC/KB/004	Construction	No	No	Yes	Safeguard Officer at the site. In the interim period
GCC/KD/004	Construction	INO	INO	165	Contractor Project Manager of the package has been
					instructed to govern the EMP implementations.
GCC/KB/005	Construction	No	Yes	Yes	Instructions given to deploy an Environmental
UCC/KD/003	Construction	110	1 05	165	Safeguard Officer at the site to implement EMP
GCC/KB/006	Construction	Yes	Yes	Yes	
GCC/KB/007	Construction	Yes	Yes	Yes	
GCC/KB/008	Construction	Yes	Yes	Yes	

Table 2-8 Status of EHS Staff, SEMP Preparation and Monitoring

Package Number	Current Status	Contractor EHS Supervisor Appointed & Mobilized on Site	Monthly EMP implementation reports submitted by contractor	Site Monitoring/ Verification Conducted by PSC	Remarks
GCC/KB/009	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.
GCC/KB/010	Construction	Yes	Yes	Yes	
GCC/KB/011	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.
GCC/KB/012	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.
GCC/KB/013	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.
GCC/KB/014	Construction	Yes	Yes	Yes	
GCC/KB/015	Construction	No	No	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site. In the interim period Contractor Project Manager of the package has been instructed to govern the EMP implementations.
GCC/KB/016	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.
GCC/KB/017	Construction	Yes	Yes	Yes	
GCC/KB/018	Construction	No	No	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site. In the interim period Contractor Project Manager of the package has been instructed to govern the EMP implementations.
GCC/KB/019	Construction	Yes	Yes	Yes	

Package Number	Current Status	Contractor EHS Supervisor Appointed & Mobilized on Site	Monthly EMP implementation reports submitted by contractor	Site Monitoring/ Verification Conducted by PSC	Remarks
GCC/KB/020	Construction	No	No	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site. In the interim period Contractor Project Manager of the package has been instructed to govern the EMP implementations.
GCC/KB/021	Construction	Yes	Yes	Yes	
GCC/KB/022	Construction	No	Yes	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site to implement EMP
GCC/KB/023	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.
GCC/KB/024	Construction	No	No	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site. In the interim period Contractor Project Manager of the package has been instructed to govern the EMP implementations.
GCC/KB/025	Construction	Yes	Yes	Yes	
GCC/KB/026	Construction	Yes	Yes	Yes	
GCC/KB/027	Construction	Yes	Yes	Yes	
GCC/KB/028	Construction	No	No	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site. In the interim period Contractor Project Manager of the package has been instructed to govern the EMP implementations.
GCC/KB/029	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.

Package Number	Current Status	Contractor EHS Supervisor Appointed & Mobilized on Site	Monthly EMP implementation reports submitted by contractor	Site Monitoring/ Verification Conducted by PSC	Remarks
GCC/KB/030	Construction	No	Yes	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site to implement EMP
GCC/KB/031	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.
GCC/KB/032	Construction	No	Yes	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site to implement EMP
GCC/KB/033	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.
GCC/KB/034	Construction	No	No	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site. In the interim period Contractor Project Manager of the package has been instructed to govern the EMP implementations.
GCC/KB/035	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.
GCC/KB/036	Construction	Yes	Yes	Yes	
GCC/KB/037	Construction	Yes	Yes	Yes	
GCC/KB/038	Construction	No	No	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site. In the interim period Contractor Project Manager of the package has been instructed to govern the EMP implementations.
GCC/KB/039	Construction	Yes	Yes	Yes	
GCC/KB/040	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.

Package Number	Current Status	Contractor EHS Supervisor Appointed & Mobilized on Site	Monthly EMP implementation reports submitted by contractor	Site Monitoring/ Verification Conducted by PSC	Remarks
GCC/KB/041	Construction	Yes	Yes	Yes	
GCC/KB/042	Construction	No	Yes	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site to implement EMP
GCC/KB/043	Construction	Yes	Yes	Yes	
GCC/KB/044	Construction	Yes	No	Yes	
GCC/KB/045	Construction	No	Yes	Yes	Instructions given to deploy an Environmental Safeguard Officer at the site to implement EMP
GCC/KB/046	Construction	Yes	No	Yes	Instructions given to contractor EHS officer to submit EMP's monthly.

2.8 Contractors Compliance with Statutory and Contractual Requirements

Following Table 2.9 shows the compliance with statutory requirements in terms of obtaining licenses, permissions, clearances and insurance coverage etc., required to conduct construction work.

Table 2-9 Contractors' Compliance with Statutory Clearances

	Labo	ur license	Workmen compensation policy			Contractor all risk insurance		Construction vehicles & equipment (PUC, fitness, insurance, license etc)		clearances (e.g., al supply) \$
55 Contractor	Status	Validity up to	status	Validity up to	status	Validity up to	All vehicles & equipment complies with Rules	Contractor documentation satisfactory	All 3rd party suppliers comply with Rules	Contractor documentation satisfactory
	Yes/No	date	Yes/No	date	Yes/No	date	Yes/No	Yes/No	Yes/No	Yes/No
P-1	Yes	31.12.2022	Yes	28/09/2021 to 27/09/2022	Yes	29/09/2021 to 28/09/2022	Yes	Yes	Yes	Yes
P-2	Yes	21.06.2024	Yes	09/10/2021 to 08/10/2022	Yes	28/07/2021 to 27/07/2024	Yes	Yes	Yes	Yes
P-3	Yes	31.12.2022	Yes	24/12/2021 to 23/12/2022	Yes	01/09/2021 to 31/08/2022	Yes	Yes	Yes	Yes
P-4	Yes	31.12.2022	Yes	17/11/2021 to 16/11/2022	Yes	01/09/2021 To 31/08/2022	Yes	Yes	Yes	Yes
P-5	Yes	31.12.2022	Yes	30/07/2021 to 29/07/2022	Yes	28/07/2021 to 31/08/2023	Yes	Yes	Yes	Yes
P-6	Yes	31.12.2022	Yes	27/07/2021 to 26/07/2022	Yes	27/07/2021 to 26/07/2024	Yes	Yes	Yes	Yes
P-7	Yes	31.12.2022	Yes	27/07/2021 to 26/07/2022	Yes	27/07/2021 to 26/01/2024	Yes	Yes	Yes	Yes
P-8	Yes	31.12.2022	Yes	27/07/2021 to 26/07/2022	Yes	29/03/2021 to 28/03/2025	Yes	Yes	Yes	Yes
P-9	Yes	31.12.2022	Yes	23/07/2021 to 22/07/2022	Yes	26/07/2021 to 25/07/2023	Yes	Yes	Yes	Yes
P-10	Yes	31.12.2022	Yes	27/07/2021 to 26/07/2022	Yes	27/07/2021 to 26/01/2024	Yes	Yes	Yes	Yes

	Labour license			Workmen compensation policy		Contractor all risk insurance		Construction vehicles & equipment (PUC, fitness, insurance, license etc)		3 rd party clearances (e.g., material supply) \$	
Contractor	Status	Validity up to	status	Validity up to	status	Validity up to	All vehicles & equipment complies with Rules	Contractor documentation satisfactory	All 3rd party suppliers comply with Rules	Contractor documentation satisfactory	
	Yes/No	date	Yes/No	date	Yes/No	date	Yes/No	Yes/No	Yes/No	Yes/No	
P-11	Yes	31.12.2022	Yes	13/08/2021 to 12/08/2022	Yes	13/08/2021 to 30/06/2023	Yes	Yes	Yes	Yes	
P-12	Yes	31.12.2022	Yes	09/10/2021 to 08/10/2022	Yes	28/07/2021 to 27/07/2024	Yes	Yes	Yes	Yes	
P-13	Yes	31.12.2022	Yes	21/08/2021 to 20/08/2022	Yes	26/08/2021 to 21/08/2021	Yes	Yes	Yes	Yes	
P-14	Yes	31.12.2022	Yes	13/08/2021 to 12/08/2022	Yes	20/05/2021 to 19/06/2024	Yes	Yes	Yes	Yes	
P-15	Yes	31.12.2022	Yes	03/09/2021 to 02/09/2022	Yes	21/06/2021 to 20/12/2023	Yes	Yes	Yes	Yes	
P-16	Yes	31.12.2022	Yes	06/08/2021 To 05/08/2022	No		No	No	Yes	Yes	
P-17	Yes	31.12.2022	Yes	19/10/2021 to 19/10/2022	Yes	19/10/2021 to 31/03/2023	Yes	Yes	Yes	Yes	
P-18	Yes	31.12.2022	Yes	25/10/2021 to 24/10/2022	Yes	05/10/2021 to 24/10/2022	Yes	Yes	Yes	Yes	
P-19	Yes	31.12.2022	Yes	27/07/2021 to 26/07/2022	Yes	27/07 2021 to 26/02/2024	Yes	Yes	Yes	Yes	

	Labour license			orkmen sation policy		Contractor all risk insurance		Construction vehicles & equipment (PUC, fitness, insurance, license etc)		3 rd party clearances (e.g., material supply) \$	
Contractor	Status	Validity up to	status	Validity up to	status	Validity up to	All vehicles & equipment complies with Rules	Contractor documentation satisfactory	All 3rd party suppliers comply with Rules	Contractor documentation satisfactory	
	Yes/No	date	Yes/No	date	Yes/No	date	Yes/No	Yes/No	Yes/No	Yes/No	
P-20	Yes	31.12.2022	Yes	20/10/2021 to 19/10/2022	Yes	09/02/2022 to 30/06/2023	Yes	Yes	Yes	Yes	
P-21	Yes	31.12.2022	Yes	24/12/2021 to 23/12/2022	Yes	01/09/2021 to 31/08/2022	Yes	Yes	Yes	Yes	
P-22	Yes	31.12.2022	Yes	27/07/2021 to 26/07/2022	Yes	27/07/2021 to 26/08/2023	Yes	Yes	Yes	Yes	
P-23	Yes	31.12.2022	Yes	13/08/2021 to 12/08/2022	Yes	13/08/2021 to 31/12/2023	Yes	Yes	Yes	Yes	
P-24	Yes	31.12.2022	Yes	11/06/2022 to 09/01/2024	Yes	11/06/2022 to 09/01/2024	Yes	Yes	Yes	Yes	
P-25	Yes	31.12.2022	Yes	27/07/2021 to 26/07/2022	Yes	27/07/2021 to 26/02/2024	Yes	Yes	Yes	Yes	
P-26	Yes	31.12.2023	Yes	22/07/2020 to 21/07/2021	Yes	15/02/2022 to 14/05/2024	Yes	Yes	Yes	Yes	
P-27	Yes	31.12.2022	Yes	19/07/2021 to 18/07/2022	Yes	07/08/2021 to 06/08/2022	Yes	Yes	Yes	Yes	
P-28	Yes	31.12.2022	Yes	30/08/2021 to 29/08/2022	Yes	11/05/2021 to 10/05/2023	Yes	Yes	Yes	Yes	

	Labour license			orkmen ation policy		Contractor all risk insurance		Construction vehicles & equipment (PUC, fitness, insurance, license etc)		3 rd party clearances (e.g., material supply) \$	
Contractor	Status	Validity up to	status	Validity up to	status	Validity up to	All vehicles & equipment complies with Rules	Contractor documentation satisfactory	All 3rd party suppliers comply with Rules	Contractor documentation satisfactory	
	Yes/No	date	Yes/No	date	Yes/No	date	Yes/No	Yes/No	Yes/No	Yes/No	
P-29	Yes	31.12.2022	Yes	03/09/2021 to 02/09/2022	Yes	03/09/2021 to 02/09/2022	Yes	Yes	Yes	Yes	
P-30	Yes	31.12.2022	Yes	08/10/2021 to 07/10/2022	Yes	24/02/2021 to 23/08/2023	Yes	Yes	Yes	Yes	
P-31	Yes	31.12.2022	Yes	23/08/2020 to 22 /08/2022	Yes	10/06/2021 to 09/12/2023	Yes	Yes	Yes	Yes	
P-32	Yes	31.12.2021	Yes	05/08/2021 to 04/08/2022	Yes	30/07/2021 to 19/02/2023	Yes	Yes	Yes	Yes	
P-33	Yes	31.12.2021	Yes	03/09/2021 to 02/09/2022	Yes	03/09/2021 to 02/09/2022	Yes	Yes	Yes	Yes	
P-34	Yes	31.12.2021	Yes	24/01/2022 to 03/07/2022	Yes	24/01/2022 to 03/07/2022	Yes	Yes	Yes	Yes	
P-35	Yes	31.12.2021	Yes	20/07/2021 to 19/07/2022	Yes	20/07/2021 to 30/06/2023	Yes	Yes	Yes	Yes	
P-36	Yes	31.12.2022	Yes	19/07/2021 to 18/07/2022	Yes	07/08/2021 to 06/08/2022	Yes	Yes	Yes	Yes	
P-37	Yes	31.12.2022	Yes	22/07/2020 to 21/07/2021	Yes	16/08/2021 to 25/02/2024	Yes	Yes	Yes	Yes	

	Labour license			Workmen compensation policy		Contractor all risk insurance		Construction vehicles & equipment (PUC, fitness, insurance, license etc)		3 rd party clearances (e.g., material supply) \$	
Contractor	Status	Validity up to	status	Validity up to	status	Validity up to	All vehicles & equipment complies with Rules	Contractor documentation satisfactory	All 3rd party suppliers comply with Rules	Contractor documentation satisfactory	
	Yes/No	date	Yes/No	date	Yes/No	date	Yes/No	Yes/No	Yes/No	Yes/No	
P-38	Yes	31.12.2022	Yes	13/02/2021 to 12/02/2022	Yes	19/01/2022 to 09/05/2024	Yes	Yes	Yes	Yes	
P-39	Yes	31.12.2022	Yes	23/09/2021 to 22/09/2022	Yes	20/09/2021 to 31/05/2023	Yes	Yes	Yes	Yes	
P-40	Yes	31.12.2022	Yes	04/08/2021 to 03/08/2022	Yes	04/08/2021 to 03/08/2022	Yes	Yes	Yes	Yes	
P-41	Yes	31.12.2022	Yes	03/05/2021 to 02/05/2022	Yes	20/10/2021 to 19/10/2022	Yes	Yes	Yes	Yes	
P-42	Yes	31.12.2022	Yes	23/09/2021 to 22/09/2022	Yes	20/09/2021 to 31/05/2023	Yes	Yes	Yes	Yes	
P-43	Yes	31.12.2022	Yes	08/10/2021 to 07/10/2022	Yes	24/02/2021 to 23/08/2023	Yes	Yes	Yes	Yes	
P-44	Yes	31.12.2022	Yes	27/07/2021 to 26/07/2022	Yes	17/07/2021 to 16/08/2024	Yes	Yes	Yes	Yes	
P-45	Yes	31.12.2022	Yes	27/07/2021 to 26/07/2022	Yes	09/08/2021 to 08/03/2024	Yes	Yes	Yes	Yes	
P-46	Yes	31.12.2022	Yes	28/09/2021 to 27/09/2022	Yes	29/09/2021 to 28/09/2022	Yes	Yes	Yes	Yes	

2.8.1 Implementation of EMP Measures and Compliance Status

Implementation of mitigation measures as per the approved IEE & EMP / SEMP is reviewed for each package and status is presented in the following Tables. **Table 2.11** shows the implementation and compliance status of pre-construction stage mitigation measures. **Table 2.12** shows the implementation and compliance status of construction stage mitigation measures. This compliance is based on the monthly checklists submitted by Contractors and site verification visits and monitoring conducted by PSC, and periodic visits by PIU/PMU safeguard team. Contractor's Monthly EMP Implementation Reports and PSC Site Verification / Monitoring Reports are presented package-wise in **Appendix 3**. For each package one sample monthly report (latest of reporting period) of contractor and one site visit report of PSC is provided in the Appendix.

S. No	Anticipated Impact	C C	Responsible agency for implementation	Included in project design for implementation? Included / Not Included	Reason (if "not included" or "partially included"	Remarks, if any	
			/ PIU	/ Partially included	Included		
	Prevention of flooding	Micro drains are designed to handle the maximum rainfall of 70mm/hour for 2 years return period. Macro drains and surplus canals connecting all major lakes are designed to handle the maximum rainfall of 106mm/hour for 5 years return period	DPR consultant / PSC /	Included			
	recharge	Silt catch pits with rainwater harvesting structure will be constructed along the drains at every 30 m interval.	DPR consultant / PSC /	Included			
1	Sediment Control	For control of sediments, it is proposed to construct a silt catch pit at 10m interval so that the sediments are deposited in the silt catch pit and settle over there, which can be removed periodically	DPR consultant / PSC /	Included			
	Prevention of solid waste into drains	Micro drains will be constructed as box type drain in RCC with a cover slab on top which will curtail dumping of solid waste in the drains. ii. Major drains belonging to Greater Chennai Corporation are open canals and will be provided with chain link fencing side cover in MS frame with wire mesh to prevent dumping solid waste.	DPR consultant / PSC / PIU	Included			
	Safety in maintenance	Inspection doors will be provided at an interval of 10m to facilitate maintenance activities only by machineries.	DPR consultant / PSC / PIU	Included			

 Table 2-10 Design Stage Mitigation Measures: Compliance Status
S. No	Anticipated Impact	Mitigation measures	Responsible agency for implementation DPR consultant / PSC	Included in project design for implementation? Included / Not Included	Reason (if "not included" or "partially included"	Remarks, if any
	Traffic Loads and	Micro drains shall be constructed as box type drain	/ PIU DPR consultant / PSC /	/ Partially included		
	People access in	in RCC with a cover slab on top which can also take traffic loads due to vehicular movements.i. Minimize removal of trees by adopting to site	PIU	Included		
	Tree cutting	i. Whining the removal of trees by adopting to site condition and with appropriate alignmentii. Obtain prior permission for tree cutting	DPR consultant / PSC / PIU	Included		
2	Noise	 i. Procure good quality latest technology high pressure pumps that guarantee controlled noise at a level of around 80 dB(A) at a distance of 1 m ii. Use acoustic enclosures – manufacturer specified for all pumps, motors ii. Procure only CPCB approved generators with low emission and low noise fitted with acoustic enclosures iv. Provide sound mufflers for ventilators in the plant rooms and soundproof doors v. Provide earplugs to workers 	DPR consultant / PSC / PIU	Included		
	Energy Consumption	i.Using low-noise and energy-efficient pumping systems	DPR consultant / PSC / PIU	Included		

Table 2-11 Pre-construction Stage Mitigation Measures: Compliance Status

S / Satisfactory - mitigation measures implemented satisfactorily

PS / Partially Satisfactory - mitigation measures implemented but requires improvement

US / Unsatisfactory - Mitigation measures not implemented / poorly implemented

Field	Impact	Impact fields and		Comp		e ratin Measu	0	-			f EMI		Remarks
	Impact	Mitigation Measures	P 1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Submission of updated EMP / SEMP; EMP implementation and reporting	Unsatisfactory compliance with EMP	Appoint EHS Supervisor to ensure EMP implementation	S	US	S	US	US	S	S	S	S	S	Since the deployed personnel has left the organisation midway the Project Manager will take up the responsibility of EMP Implementations.
		Submission of updated EMP/ SEMP prior to starting of work	S	S	S	S	S	S	S	S	S	S	
		Timelysubmissionofmonthlymonitoringreportsincludingdocumentaryevidence	US	US	S	US	S	S	S	S	US	S	InstructedtheContractorstosubmitcompliance

Field	Impact	Impact fields and		Comp				[mplei packa			f EMI	P	Remarks
		Mitigation Measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		EMP implementation such											reports on EMP
		as photographs											implementation
													with
													documentary
													evidence and
													photos. Trainings
													are given
													individually by
													safeguards team
													apart from
													orientations to
													ease preparation
													of compliance
													reports. Draft
													reports are
													reviewed by
													Environmental
													Safeguards team
													and support
													provided on

Field	Impact	Impact fields and		Comp			g for l res – j	-			f EM	P	Remarks
		Mitigation Measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
													updating the reports.
		SEMP documents shall include information about tree cutting, construction of labour camps, storage areas, hauling roads, regulatory permissions, disposal areas for solid and hazardous wastes, sensitive features like schools and hospitals	PS	PS	S	PS	S	S	S	S	PS	S	Although the EMP implementations are satisfactory which are verified by site visits, the compliance reports haven't been furnished. The contractors are requested to submit the EMP compliance reports regularly
Utilities	Telephone lines,electric poles andwires, water lineswithin	Identify and include locations and operators of these utilities in the detailed design documents	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Impact fields and		Comp			-	-	menta ge-wis		f EMI	2	Remarks
		Mitigation Measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
	proposed project	to prevent unnecessary											
	area	disruption of services											
		during the construction											
		phase; and											
		Require contractors to											
		prepare a contingency plan											
		to include actions to be	S	S	S	S	S	S	S	S	S	S	
		taken in case of											
		unintentional interruption											
		of services											
		Contractor to provide prior											
		(at least 1 week)											
		information to public on	G	G	G	G	G	G	G	C	G	G	
		likely utility service	S	S	S	S	S	S	S	S	S	S	
		disruptions, and											
		contingency measures to be put in place											
Construction of labour	Conflict with the	Prioritize areas within or											
camps, stockpile	local	nearest possible vacant											
areas, storage areas	community;	space in the project	S	S	S	S	S	S	S	S	S	S	
and disposal areas	disruption	location.											

Field	Impact	Impact fields and		Comp			0	-	menta ge-wis		f EMI	2	Remarks
		Mitigation Measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
	to traffic	If it is deemed necessary to											
	flow and	locate elsewhere, consider											
	sensitive	sites that will not promote											
	receptors	instability and result in the	S	S	S	S	S	S	S	S	S	S	
		destruction of property	3	3	3	3	3	3	3	3	3	3	
		vegetation, irrigation, and											
		drinking water supply											
		systems.											
		Do not consider residential	S	S	S	S	S	S	S	S	S	S	
		areas	0	5	5	5	5	5	5	5	5	5	
		Take extreme care in											
		selecting sites to avoid											
		direct disposal of											
		excavated earth /	S	S	S	S	S	S	S	S	S	S	
		demolition waste to a water	~	~	~	~	~	~		~	~	~	
		body which will cause											
		inconvenience to the											
		community											
		For excess spoil disposal,											
		ensure (a) site shall be	S	S	S	S	S	S	S	S	S	S	
		selected preferably from											

Field	Impact	Impact fields and		Comp			g for l res – j	-			f EMI	Р	Remarks
		Mitigation Measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		barren, infertile lands. In											
		case agricultural land											
		needs to be selected,											
		written consent from											
		landowners (not lessees)											
		will be obtained; (b) debris											
		disposal site shall be at											
		least 200 m away from											
		surface water bodies; (c)											
		no residential areas shall be											
		located within 50 m											
		downwind side of the site;											
		and (d) site is minimum											
		250 m away from sensitive											
		locations like settlements,											
		ponds/lakes or other water											
		Bodies											
Sources of Materials	Extraction of	Obtain construction											
	materials can	materials only from	S	S	S	S	S	S	S	S	S	S	
	disrupt natural	government-approved											

Field	Impact	Impact fields and		Comp			0	-	menta ge-wis		f EMI	P	Remarks
		Mitigation Measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
	landcontoursandvegetationresultinginacceleratederosion,disturbanceinnaturaldrainagepatterns, pondingandwaterlogging,and	quarrieswithpriorapproval of PIUPIU to review, and ensurethatproposedquarrysources have all necessaryclearances/permissions inplaceprior to approvalContractorto submit toPIUthedocumentationeverymonth	S	S	S	S	S	S	S	S	S	S	
	water pollution.	details of the material obtained from each source (quarry/ borrow pit)	S	S	S	S	S	S	S	S	S	S	
		Avoid the creation of new borrow areas, quarries, etc., for the project; if unavoidable, contractor to obtain all clearances and permissions as required under law, including Environmental Clearance	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Impact fields and		Comp			g for l res – j	-			f EMI	р	Remarks
		Mitigation Measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		(EC) prior to approval by											
		PIU											
Consents, permits,	Extraction of	Obtain all necessary											
clearances, NOCs, etc	materials can	consents, permits,	S	S	S	S	S	S	S	S	S	S	
	disrupt natural	clearance, NOCs, etc. prior	3	5	5	5	5	3	3	5	5	5	
	land contours	to the award of civil works.											
	and vegetation	No works shall be											No works has
	resulting in	commenced until CRZ											been initiated in
	accelerated	clearance is obtained											CRZ influence
	erosion,	(Packages with CRZ: 27,	S	S	S	S	S	S	S	S	S	S	areas of Packages
	disturbance	32, 34, 35, 36, 37, 38, 39,											27, 32, 34, 35, 36,
	in	40, 41 and 42)											37, 38, 39, 40, 41
	natural drainage												and 42.
	patterns, ponding	Ensure that all necessary											
	and water	approvals for construction											
	logging, and	to be obtained by the	S	S	S	S	S	S	S	S	S	S	
	water pollution	contractor are in place	3	3	3	3	3	3	3	3	3	3	
		before the start of											
		construction											
		Acknowledge in writing	S	S	S	S	S	S	S	S	S	S	
		and provide a report on	5	5	5	5	5	5	5	5	5	5	

Field	Impact	Impact fields and		Comp			0	[mplei packa			f EMI)	Remarks
		Mitigation Measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Chance finds	Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or stoppage of works	 compliance of all obtained consents, permits, clearance, NOCs, etc Contractors to follow these measures in conducting any excavation work Create awareness among the workers, supervisors, and engineers about the chance finds during excavation work Stop work immediately to allow further investigation if any finds are suspected. 	P1 S	P2 S	P3 S	P4	P5 S	P6 S	P7	P8	P9	P10	
		 Inform Tamil Nadu Archaeological Department if a find is suspected and taking any action they require to ensure its removal or protection in situ 											

		Impact fields and	Con	plianc	e ratin	ig for I	mplen	nentati	on of l	EMP N	Ieasur	es –	
Field	Impact	Mitigation				I	packag	ge-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
Submission of	Unsatisfactory	Appoint EHS											Since the
updated EMP /	compliance with	Supervisor to											deployed
SEMP; EMP	EMP	ensure EMP											personnel has left
implementation and		implementation											the organisation
reporting			S	S	S	S	PS	S	S	PS	s	PS	midway the
			2	2	2	2	1.0	2	2	1.0	2	1.0	Project Manager
													will take up the
													responsibility of
													EMP
													Implementations.
		Submission of											
		updated EMP/	S	S	S	S	S	S	S	S	S	S	
		SEMP prior to	3	3	3	3	3	5	3	3	3	3	
		starting of work											
		Timely submission											Instructed the
		of monthly											Contractors to
		monitoring reports	US	US	US	S	US	US	S	US	S	US	submit
		including	05	03	03	3	05	05	3	05	3	05	compliance
		documentary											reports on EMP
		evidence on EMP											implementation

(b) Pre-construction Stage Mitigation Measures: Compliance Status

		Impact fields and	Con	npliano	ce ratin	ng for I	mplen	nentati	on of l	EMP N	Ieasur	es –	
Field	Impact	Mitigation				I	oackag	ge-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		implementation											with documentary
		such as photographs											evidence and
													photos. Trainings
													are given
													individually by
													safeguards team
													apart from
													orientations to
													ease preparation
													of compliance
													reports. Draft
													reports are
													reviewed by
													Environmental
													Safeguards team
													and support
													provided on
													updating the
													reports.
		SEMP documents	PS	PS	PS	S	PS	PS	S	PS	S	PS	Although the
		shall include	10	10	10		15	15		10			EMP

		Impact fields and	Con	npliano	e ratin	g for I	mplen	nentati	on of l	EMP N	leasur	es –	
Field	Impact	Mitigation				ŀ	oackag	e-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		information about											implementations
		tree cutting,											are satisfactory
		construction of											which are verified
		labour camps,											by site visits, the
		storage areas,											compliance
		hauling roads,											reports haven't
		regulatory											been furnished.
		permissions,											The contractors
		disposal areas for											are requested to
		solid and hazardous											submit the EMP
		wastes, sensitive											compliance
		features like schools											reports regularly
		and hospitals											
Utilities	Telephone lines,	Identify and include											
	electric	locations and											
	poles, and	operators of these											
	wires, water	utilities in the	S	S	S	S	S	S	S	S	S	S	
	lines within the	detailed design	5	3	5	3	3	3	5	3	5	5	
	proposed project	documents to											
	area	prevent unnecessary											
		disruption of											

		Impact fields and	Con	npliano	e ratin	ig for I	mplen	nentati	on of l	EMP N	Ieasur	es –	
Field	Impact	Mitigation				I	packag	e-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		services during the											
		construction phase;											
		and											
		Require contractors											
		to prepare a											
		contingency plan to											
		include actions to	S	S	S	S	S	S	S	S	S	S	
		be taken in case of	3	3	2	2	3	2	2	3	2	3	
		unintentional											
		interruption of											
		services											
		Contractor to											
		provide prior (at											
		least 1 week)											
		information to											
		public on likely	G	G	S	S	G	S	C C	S	S	S	
		utility service	S	S	2	2	S	S	S	3	2	S	
		disruptions, and											
		contingency											
		measures to be put											
		in place											

		Impact fields and	Con	npliano	e ratin	g for I	mplen	nentati	on of l	EMP N	leasur	res –	
Field	Impact	Mitigation				I	packag	ge-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
Construction of	Conflicts with	Prioritize areas											
labour camps,	the local	within or nearest											
stockpile areas,	community;	possible vacant	S	S	S	S	S	S	S	S	S	S	
storage areas and	disruption to	space in the project											
disposal areas.	traffic flow and	location.											
	sensitive	If it is deemed											
	receptors	necessary to locate											
		elsewhere, consider											
		sites that will not											
		promote instability											
		and result in the	S	S	S	S	S	S	S	S	S	S	
		destruction of											
		property vegetation,											
		irrigation, and											
		drinking water											
		supply systems.											
		Do not consider	S	S	S	S	S	S	S	S	S	S	
		residential areas	5	5	5	5	5	5	5	5	5	5	
		Take extreme care											
		in selecting sites to	S	S	S	S	S	S	S	S	S	S	
		avoid direct											

		Impact fields and	Con	npliano	ce ratin	g for l	mplen	nentati	ion of l	EMP N	/leasur	es –	
Field	Impact	Mitigation				1	packag	e-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		disposal of											
		excavated earth /											
		demolition waste to											
		a water body which											
		will cause											
		inconvenience to											
		the community											
		For excess spoil											
		disposal, ensure (a)											
		site shall be selected											
		preferably from											
		barren, infertile											
		lands. In case											
		agricultural land	S	S	S	S	S	S	S	S	S	S	
		needs to be	5	5	5	5	5	5	5	5	5	5	
		selected, written											
		consent from											
		landowners (not											
		lessees) will be											
		obtained; (b) debris											
		disposal site shall											

		Impact fields and	Con	plianc	e ratin	g for I	mplen	nentati	on of I	EMP N	/leasur	es –	
Field	Impact	Mitigation				I	packag	e-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		be at least 200 m											
		away from surface											
		water bodies; (c) no											
		residential areas											
		shall be located											
		within 50 m											
		downwind side of											
		the site; and (d) site											
		is minimum 250 m											
		away from sensitive											
		locations like											
		settlements,											
		ponds/lakes or other											
		water bodies											
Sources of Materials	Extraction of	Obtain construction											
	materials can	materials only from											
	disrupt natural	government-	S	S	S	S	S	S	S	S	S	S	
	land contours and	approved quarries	3	3	3	3	3	3	5	3	3	3	
	vegetation	with prior approval											
	resulting in	of PIU											

		Impact fields and	Con	nplianc	e ratin	g for I	mplen	nentati	on of l	EMP N	leasur	es –	
Field	Impact	Mitigation				I	packag	ge-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
	accelerated	PIU to review, and											
	erosion,	ensure that											
	disturbance in	proposed quarry											
	natural drainage	sources have all	S	c	S	S	S	S	S	S	S	S	
	patterns, ponding	necessary	2	S	3	2	3	3	3	3	2	S	
	and water	clearances/											
	logging, and	permissions in place											
	water pollution.	prior to approval											
		Contractor to											
		submit to PIU the											
		documentation											
		every month with	S	S	S	S	S	S	S	S	S	S	
		the details of the	3	3	3	3	3	3	3	5	3	3	
		material obtained											
		from each source											
		(quarry/ borrow pit)											
		Avoid the creation											
		of new borrow											
		areas, quarries, etc.,	S	S	S	S	S	S	S	S	S	S	
		for the project; if											
		unavoidable,											

		Impact fields and	Con	nplianc	e ratin	g for I	mplen	nentati	on of l	EMP N	Ieasur	es –	
Field	Impact	Mitigation				I	packag	e-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		contractor to obtain											
		all clearances and											
		permissions as											
		required under law,											
		including											
		Environmental											
		Clearance (EC)											
		prior to approval by											
		PIU											
Consents, permits,	Extraction of	Obtain all necessary											
clearances, NOCs, etc	materials can	consents, permits,											
	disrupt natural	clearance, NOCs,	S	S	S	S	S	S	S	S	S	S	
	land contours	etc. prior to the	3	3	3	3	3	3	3	3	3	5	
	and vegetation	award of civil											
	resulting in	works.											
	accelerated	No works shall be											No works has
	erosion,	commenced until											been initiated in
	disturbance in	CRZ clearance is	S	S	S	S	S	S	S	S	S	S	CRZ influence
	natural drainage	obtained (Packages											areas of Packages
	patterns, ponding	with CRZ: 27, 32,											27, 32, 34, 35, 36,

		Impact fields and	Con	nplianc	e ratir	ng for l	mplen	nentati	ion of l	EMP N	Aeasur	es –	
Field	Impact	Mitigation				I	packag	ge-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
	and water	34, 35, 36, 37, 38,											37, 38, 39, 40, 41
	logging, and	39, 40, 41 and 42)											and 42.
	water pollution	Ensure that all											
		necessary approvals											
		for construction to											
		be obtained by the	S	S	S	S	S	S	S	S	S	S	
		contractor are in											
		place before the											
		start of construction											
		Acknowledge in											
		writing and provide											
		a report on											
		compliance of all	S	S	S	S	S	S	S	S	S	S	
		obtained consents,											
		permits, clearance,											
		NOCs, etc											
Chance finds	Failure to obtain	Contractors to											
	necessary	follow these											
	consents, permits,	measures in	S	S	S	S	S	S	S	S	S	S	
	NOCs, etc. can	conducting any											
	result todesign	excavation work											

		Impact fields and	Con	nplianc	e ratin	g for l	mplen	nentati	on of l	EMP N	/leasur	es –	
Field	Impact	Mitigation				1	packag	e-wise					Remarks
		Measures	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
	revisions and/or stoppage of works	 ➢ Create awareness among the workers, supervisors, and engineers about the chance finds during excavation work ➢ Stop work immediately to allow further investigation if any finds are suspected. ➢ Inform Tamil Nadu Archaeological Department if a find is suspected and taking any action they require to ensure ➢ its removal or protection in 											

		Impact fields and	Com	plianc	e ratin	0	-			EMP	Measu	res –	
Field	Impact	Mitigation					packag			-	-		Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		Appoint EHS Supervisor to ensure EMP implementation	S	US	S	US	PS	S	S	US	S	US	Since the deployed personnel has left the organisation midway the Project Manager will take up the responsibility of EMP Implementations.
SubmissionofupdatedEMPSEMP;EMPimplementationand	Unsatisfactory compliance with EMP	SubmissionofupdatedEMP/SEMPpriortostarting of work	S	S	S	S	S	S	S	S	S	S	
reporting		Timely submission of monthly monitoring reports including documentary evidence on EMP implementation such as photographs	S	S	US	US	S	S	S	US	US	S	Instructed the Contractors to submit compliance reports on EMP implementation with documentary evidence and photos. Trainings are given individually by

(c) Pre-construction Stage Mitigation Measures: Compliance Status

		Impact fields and	Com	plianc	e ratir	ng for]	Impler	nentat	ion of	EMP	Measu	res –	
Field	Impact	Mitigation]	packa	ge-wise	9				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
													safeguards team apart
													from orientations to
													ease preparation of
													compliance reports.
													Draft reports are
													reviewed by
													Environmental
													Safeguards team and
													support provided on
													updating the reports.
		SEMP documents											Although the EMP
		shall include											implementations are
		information about											satisfactory which are
		tree cutting,											verified by site visits,
		construction of											the compliance
		labour camps,	S	S	PS	PS	S	S	S	PS	PS	S	reports haven't been
		storage areas,											furnished. The
		hauling roads,											contractors are
		regulatory											requested to submit
		permissions,											the EMP compliance
		disposal areas for											reports regularly

		Impact fields and	Com	plianc	e ratir	g for]	Impler	nentat	ion of	EMP	Measu	res –	
Field	Impact	Mitigation]	packag	ge-wise	e				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		solid and hazardous											
		wastes, sensitive											
		features like											
		schools and											
		hospitals											
		Identify and include											
		locations and											
		operators of these											
		utilities in the											
		detailed design											
	Telephone lines,	documents to	S	S	S	S	S	S	S	S	S	S	
	electric	prevent	5	5	5	5	5	5	D D	5	5	5	
Utilities	poles, and	unnecessary											
	wires, water lines	disruption of											
	within the proposed	services during the											
	project area	construction phase;											
		and											
		Require contractors											
		to prepare a	S	S	S	S	S	S	S	S	S	S	
		contingency plan to	5	5	5	5	5	5	5	5	5	5	
		include actions to											

		Impact fields and	Com	plianc	e ratir	g for]	Impler	nentat	ion of	EMP	Measu	res –	
Field	Impact	Mitigation				1	packag	ge-wise	e				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		be taken in case of											
		unintentional											
		interruption of											
		services											
		Contractor to											
		provide prior (at											
		least 1 week)											
		information to											
		public on likely	S	S	S	S	S	S	S	S	S	S	
		utility service	5	0	5	5	0	5	5	5	5	5	
		disruptions, and											
		contingency											
		measures to be put											
		in place											
Construction of		Prioritize areas											
labour camps,	Conflictswith	within or nearest											
stockpile areas,	thelocalcommunity;	possible vacant	S	S	S	S	S	S	S	S	S	S	
storage areas and	disruptionto traffic	space in the project											
disposal	flow and sensitive	location.											
areas	receptors	If it is deemed	S	S	S	S	S	S	S	S	S	S	
		necessary to locate	2	2	2	2	2	2	5	5	0	5	

		Impact fields and	Com	plianc	e ratin	g for 1	[mplen	nentat	ion of	EMP I	Measu	res –	
Field	Impact	Mitigation]	packag	ge-wise	e				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		elsewhere, consider											
		sites that will not											
		promote instability											
		and result in the											
		destruction of											
		property											
		vegetation,											
		irrigation, and											
		drinking water											
		supply systems.											
		Do not consider	S	S	S	S	S	S	S	S	S	S	
		residential areas	3	3	3	3	3	3	3	3	3	3	
		Take extreme care											
		in selecting sites to											
		avoid direct											
		disposal of	S	S	S	S	S	S	S	S	S	S	
		excavated earth /	3	3	3	3	3	3	3	3	3	3	
		demolition waste to											
		a water body which											
		will cause											

		Impact fields and	Com	plianc	e ratir	g for 1	Impler	nentat	ion of	EMP	Measu	res –	
Field	Impact	Mitigation]	packag	ge-wise	9				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		inconvenience to											
		the community											
		For excess spoil											
		disposal, ensure (a)											
		site shall be											
		selected preferably											
		from barren,											
		infertile lands. In											
		case agricultural											
		land needs to be											
		selected, written											
		consent from	S	S	S	S	S	S	S	S	S	S	
		landowners (not											
		lessees) will be											
		obtained; (b) debris											
		disposal site shall											
		be at least 200 m											
		away from surface											
		water bodies; (c) no											
		residential areas											
		shall be located											

		Impact fields and	Com	plianc	e ratin	g for]	Impler	nentat	ion of	EMP I	Measu	res –	
Field	Impact	Mitigation]	packag	ge-wise	e				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		within 50 m											
		downwind side of											
		the site; and (d) site											
		is minimum 250 m											
		away from sensitive											
		locations like											
		settlements,											
		ponds/lakes or											
		other water bodies											
Sources of Materials	Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated	Obtain construction materials only from government- approved quarries with prior approval of PIU	S	S	S	S	S	S	S	S	S	S	
	erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution.	PIU to review, and ensure that proposed quarry sources have all necessary clearances/	S	S	S	S	S	S	S	S	S	S	

		Impact fields and	Com	plianc	e ratir	g for]	Impler	nentat	ion of	EMP	Measu	res –	
Field	Impact	Mitigation]	packag	ge-wise	9				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		permissions in											
		place prior to											
		approval											
		Contractor to											
		submit to PIU the											
		documentation											
		every month with	S	S	S	S	S	S	S	S	S	S	
		the details of the	5	5	5	5	5	5	5	5	5	5	
		material obtained											
		from each source											
		(quarry/ borrow pit)											
		Avoid the creation											
		of new borrow											
		areas, quarries, etc.,											
		for the project; if											
		unavoidable,	S	S	S	S	S	S	S	S	S	S	
		contractor to obtain	3	3	3	3	3	2	3	3	3	S	
		all clearances and											
		permissions as											
		required under law,											
		including											

		Impact fields and	Com	plianc	e ratir	ng for 1	Impler	nentat	ion of	EMP]	Measu	res –	
Field	Impact	Mitigation				1	packag	ge-wise	e				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		Environmental											
		Clearance (EC)											
		prior to approval by											
		PIU											
	Extraction of materials can disrupt natural land contours and	Obtainallnecessary consents,permits, clearance,NOCs, etc. prior tothe award of civilworks.	S	S	S	S	S	S	S	S	S	S	
Consents, permits, clearances, NOCs, etc	vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and	No works shall be commenced until CRZ clearance is obtained (Packages with CRZ: 27, 32, 34, 35, 36, 37, 38, 39, 40, 41 and 42)	S	S	S	S	S	S	S	S	S	S	No works has been initiated in CRZ influence areas of Packages 27, 32, 34, 35, 36, 37, 38, 39, 40, 41 and 42.
	water pollution	Ensure that all necessary approvals for construction to be	S	S	S	S	S	S	S	S	S	S	

		Impact fields and	Com	plianc	e ratin	g for]	Impler	nentat	ion of	EMP]	Measu	res –	
Field	Impact	Mitigation]	packag	ge-wise	9				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		obtained by the											
		contractor are in											
		place before the											
		start of construction											
		Acknowledge in											
		writing and provide											
		a report on											
		compliance of all	S	S	S	S	S	S	S	S	S	S	
		obtained consents,											
		permits, clearance,											
		NOCs, etc											
		• Contractors											
		to follow these											
	Failure to obtain	measures in											
	necessary consents,	conducting any											
Chance finds	permits, NOCs, etc.	excavation work	S	S	S	S	S	S	S	S	S	S	
	can result to design	• Create	~	~	~	~	-	~	~	~	~	~	
	revisions and/or	awareness among											
	stoppage of works	the workers,											
		supervisors, and engineers about											
		the chance finds											

		Impact fields and	Com	plianc	e ratir	ng for]	Impler	nentat	ion of	EMP I	Measu	res –	
Field	Impact	Mitigation]	packag	ge-wise	e				Remarks
		Measures	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		during excavation work• Stop work immediately to allow further investigation if any finds are suspected.• Inform Tamil Nadu Archaeological Department if a find is suspected and taking any action they require to ensure• its removal or protection in situ											

(d) Pre-construction Stage Mitigation Measures: Compliance Status

Field	Impact	Impact fields and	Con	plian	ce rati	ng for	Imple	menta	ation o	f EMP	' Meas	ures	Remarks
		Mitigation Measures				_	packa	ige-wi	se				
			P3	P3	P3	P3	P3	P3	P3	P3	P3	P4	
			1	2	3	4	5	6	7	8	9	0	
Submission of updated	Unsatisfactory	Appoint EHS											Since the deployed
EMP / SEMP; EMP	compliance with	Supervisor to ensure											personnel has left
implementation and	EMP	EMP implementation											the organisation
reporting													midway the Project
			S	S	S	US	S	S	S	US	S	S	Manager will take
													up the
													responsibility of
													EMP
													Implementations.
		Submission of updated											
		EMP/ SEMP prior to	S	S	S	S	S	S	S	S	S	S	
		starting of work											
		Timely submission of											Instructed the
		monthly monitoring											Contractors to
		reports including											submit compliance
		documentary evidence	US	S	S	US	US	S	S	US	S	S	reports on EMP
		on EMP implementation	03	5	5	03	03	5	5	03	5	3	implementation
		such as photographs											with documentary
													evidence and
													photos. Trainings

Field	Impact	Impact fields and	Con	nplian	ce rati	ng for	Imple	ementa	tion o	f EMP	• Meas	ures	Remarks
		Mitigation Measures				_	packa	nge-wi	se				
			P3	P3	P3	P3	P3	P3	P3	P3	P3	P4	
			1	2	3	4	5	6	7	8	9	0	
													are given
													individually by
													safeguards team
													apart from
													orientations and
													sample reports
													were shown to ease
													preparation of
													compliance reports.
		SEMP documents shall											Although the EMP
		include information											implementations
		about tree cutting,											are satisfactory
		construction of labour											which are verified
		camps, storage areas,											by site visits, the
		hauling roads,	PS	S	PS	PS	PS	S	S	PS	S	S	compliance reports
		regulatory permissions,											haven't been
		disposal areas for solid											furnished. The
		and hazardous wastes,											contractors are
		sensitive features like											requested to submit
		schools and hospitals											the EMP

Field	Impact	Impact fields and	Con	plian	ce rati	ng for	Imple	menta	tion o	f EMF	• Meas	ures	Remarks
		Mitigation Measures				-	packa	ige-wi	se				
			P3	P3	P3	P3	P3	P3	P3	P3	P3	P4	
			1	2	3	4	5	6	7	8	9	0	
													compliance reports
													regularly
Utilities	Telephone lines,	Identify and include											
	electric	locations and operators											
	poles, and	of these utilities in the											
	wires, water	detailed design	S	S	S	S	S	S	S	S	S	S	
	lines within the	documents to prevent	5	5	D	5	D	5	5	5	5	5	
	proposed project	unnecessary disruption											
	area	of services during the											
		construction phase; and											
		Require contractors to											
		prepare a contingency											
		plan to include actions	S	S	S	S	S	S	S	S	S	S	
		to be taken in case of											
		unintentional											
		interruption of services											
		Contractor to provide											
		prior (at least 1 week)	S	S	S	S	S	S	S	S	S	S	
		information to public on											
		likely utility service											

Field	Impact	Impact fields and	Con	nplian	ce rati	ng for	Imple	menta	tion o	f EMF	[•] Meas	sures	Remarks
		Mitigation Measures				_	packa	ige-wis	se				
			P3	P3	P4								
			1	2	3	4	5	6	7	8	9	0	
		disruptions, and											
		contingency measures to											
		be put in place											
Construction of labour	Conflicts	Prioritize areas within or											
camps, stockpile areas,	with	nearest possible vacant	S	S	S	S	S	S	S	S	S	S	
storage areas and	the local	space in the project	3	3	3	3	3	3	3	3	3	3	
disposal areas	community;	location.											
	disruption	If it is deemed necessary											
	to traffic	to locate elsewhere,											
	flow and	consider sites that will											
	sensitive	not promote instability											
	receptors	and result in the	S	S	S	S	S	S	S	S	S	S	
		destruction of property											
		vegetation, irrigation,											
		and drinking water											
		supply systems.											
		Do not consider	S	S	S	S	S	S	S	S	S	S	
		residential areas	5	5	5	5	5	5	5	5		5	
		Take extreme care in	S	S	S	S	S	S	S	S	S	S	
		selecting sites to avoid	5	5	5					5			
FieldImpactImpactfieldsandCompliance rating for Implementation of EMP Measures								ures	Remarks				
--	--	----------------------------	-----------	-----------	-----------	-----------	-----------	--------	-----------	-----------	----	----	--
		Mitigation Measures				-	packa	nge-wi	se				
			P3	P3	P3	P3	P3	P3	P3	P3	P3	P4	
			1	2	3	4	5	6	7	8	9	0	
		direct disposal of											
		excavated earth /											
		demolition waste to a											
		water body which will											
		cause inconvenience to											
		the community											
		For excess spoil											
		disposal, ensure (a) site											
		shall be selected											
		preferably from barren,											
		infertile lands. In case											
		agricultural land needs											
		to be selected, written	S	S	S	S	S	S	S	S	S	S	
		consent from											
		landowners (not lessees)											
		will be obtained; (b)											
		debris disposal site shall											
		be at least 200 m away											
		from surface water											
		bodies; (c) no residential											

Field	Impact	Impact fields and	and Compliance rating for Implementation of EMP M								Meas	ures	Remarks
		Mitigation Measures				-	packa	ige-wi	se				
			P3	P3	P3	P3	P3	P3	P3	P3	P3	P4	
			1	2	3	4	5	6	7	8	9	0	
		areas shall be located											
		within 50 m downwind											
		side of the site; and (d)											
		site is minimum 250 m											
		away from sensitive											
		locations like											
		settlements, ponds/lakes											
		or other water bodies											
Sources of Materials	Extraction of	Obtain construction											
	materials can	materials only from											
	disrupt natural	government-approved	S	S	S	S	S	S	S	S	S	S	
	land contours	quarries with prior											
	and vegetation	approval of PIU											
	resulting in	PIU to review, and											
	accelerated	ensure that proposed											
	erosion,	quarry sources have all	S	S	S	S	S	S	S	S	S	S	
	disturbance in	necessary clearances/	3	3	ാ	്	ാ	3	3	3	5	ാ	
	natural drainage	permissions in place											
	patterns,	prior to approval											

Field	Impact	Impact fields and	Con	nplian	ce rati	ng for	Imple	menta	tion o	f EMP	• Meas	ures	Remarks
		Mitigation Measures				_	packa	nge-wi	se				
			P3	P4									
			1	2	3	4	5	6	7	8	9	0	
	ponding and	Contractor to submit to											
	water logging,	PIU the documentation											
	and water	every month with the											
	pollution.	details of the material	S	S	S	S	S	S	S	S	S	S	
		obtained from each											
		source (quarry/ borrow											
		pit)											
		Avoid the creation of											
		new borrow areas,											
		quarries, etc., for the											
		project; if unavoidable,											
		contractor to obtain all											
		clearances and	S	S	S	S	S	S	S	S	S	S	
		permissions as required											
		under law, including											
		Environmental											
		Clearance (EC) prior to											
		approval by PIU											
Consents, permits,	Extraction of	Obtain all necessary	S	S	S	S	S	S	S	S	S	S	

100

clearances, NOCs, etc materials

can consents,

permits,

Field	Impact	Impact fields and	Con	nplian	ce rati	ng for	Imple	menta	tion of	f EMP	Meas	ures	Remarks
		Mitigation Measures				_	packa	ige-wi	se				
			P3	P3	P3	P3	P3	P3	P3	P3	P3	P4	
			1	2	3	4	5	6	7	8	9	0	
	disrupt natural	clearance, NOCs, etc.											
	land contours	prior to the award of											
	and vegetation	civil works.											
	resulting in	No works shall be											No works has been
	accelerated	commenced until CRZ											initiated in CRZ
	erosion,	clearance is obtained	S	S	S	S	S	S	S	S	S	S	influence areas of
	disturbance	(Packages with CRZ:	3	3	3	3	3	3	3	3	3	3	Packages 27, 32,
	in	27, 32, 34, 35, 36, 37,											34, 35, 36, 37, 38,
	natural drainage	38, 39, 40, 41 and 42)											39, 40, 41 and 42.
	patterns,	Ensure that all necessary											
	ponding and	approvals for											
	water logging,	construction to be											
	and water	obtained by the	S	S	S	S	S	S	S	S	S	S	
	pollution	contractor are in place											
		before the start of											
		construction											
		Acknowledge in writing											
		and provide a report on	S	C	G	G	G	c	C	c	G	G	
		compliance of all	5	S	S	S	S	S	S	S	S	S	
		obtained consents,											

Field	Impact	Impact fields and	Con	nplian	ce rati	ng for	Imple	ementa	tion o	f EMP	• Meas	ures	Remarks
		Mitigation Measures					packa	nge-wi	se				
			P3	P3	P3	P3	P3	P3	P3	P3	P3	P4	
			1	2	3	4	5	6	7	8	9	0	
		permits, clearance,											
		NOCs, etc											
Chance finds	Failure to obtain	Contractors to follow											
	necessary	these measures in											
	consents,	conducting any											
	permits, NOCs,	excavation work											
	etc. can result to design revisions and/or stoppage of works	 Create awareness among the workers, supervisors, and engineers about the chance finds during excavation work Stop work immediately to allow further investigation if any finds are suspected. Inform Tamil Nadu Archaeological Department if a find is suspected and taking any action they require 	S	S	S	S	S	S	S	S	S	S	

Fie	eld	Impact	Impact	fields	and	Com	pliano	ce rati	ng for	Imple	menta	tion of	f EMP	Meas	ures	Remarks
			Mitigatio	on Measu	res				_	packa	ge-wis	se				
						P3	P3	P3	P4							
						1	2	3	4	5	6	7	8	9	0	
				s remov on in situ												

Field	Impact	Impact fields and Mitigation	Im	pleme	mplian ntation	of EM	P Mea	sures	Remarks
		Measures	P41	P42	– pack P43	P44	se P45	P46	
Submission of updated EMP / SEMP; EMP implementation and reporting	Unsatisfactory compliance with EMP	Appoint EHS Supervisor to ensure EMP implementation	S	US	S	S	US	S	Since the deployed personnel has left the organisation midway the Project Manager will take up the responsibility of EMP Implementations.
		Submission of updated EMP/ SEMP prior to starting of work	S	S	S	S	S	S	
		Timely submission of monthly monitoring reports including documentary evidence on EMP implementation such as photographs	S	S	S	S	S	US	Instructed the Contractors to submit compliance reports on EMP implementation with documentary evidence and photos. Trainings are given individually by safeguards team apart from orientations and

(e) Pre-construction Stage Mitigation Measures: Compliance Status

Field	Impact	Impact fields and Mitigation Measures	Im	pleme	mplian ntation – pack	of EM	IP Mea	sures	Remarks
			P41	P42	P43	P44	P45	P46	
									sample reports were shown to ease preparation of compliance reports.
		SEMP documents shall include information about tree cutting, construction of labour camps, storage areas, hauling roads, regulatory permissions, disposal areas for solid and hazardous wastes, sensitive features like schools and hospitals	S	S	S	S	S	US	AlthoughtheEMPimplementationsaresatisfactorywhich areverifiedby sitevisits,the compliancereportshaven'tbeenfurnished.Thecontractorsarerequested to submit theEMPcompliancereportsregularly
Utilities	Telephone lines,electric poles, and wires, water lines within the	Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during the construction phase; and	S	S	S	S	S	S	

Field	Impact fields and Mitigation Measures			pleme	mplian ntation – pack	of EM	P Mea	sures	Remarks
			P41	P42	P43	P44	P45	P46	
	proposed project area	Require contractors to prepare a contingency plan to include actions to be taken in case of unintentional interruption of services	S	S	S	S	S	S	
		Contractor to provide prior (at least 1 week) information to public on likely utility service disruptions, and contingency measures to be put in place	S	S	S	S	S	S	
Construction of labour camps, stockpile areas,	Conflicts with the local	Prioritize areas within or nearest possible vacant space in the project location.	S	S	S	S	S	S	
storage areas and disposal areas	community; disruption to traffic flow and sensitive receptors	If it is deemed necessary to locate elsewhere, consider sites that will not promote instability and result in the destruction of property vegetation, irrigation, and drinking water supply systems.	S	S	S	S	S	S	
		Do not consider residential areas	S	S	S	S	S	S	
		Take extreme care in selecting sites to avoid direct disposal of excavated earth	S	S	S	S	S	S	

Field	Impact	Impact fields and Mitigation Measures	Im	Co pleme			P Mea	sures	Remarks
			P41	P42	P43	P44	P45	P46	
		/ demolition waste to a water body which							
		will cause inconvenience to the community							
		For excess spoil disposal, ensure (a) site							
		shall be selected preferably from barren,							
		infertile lands. In case agricultural land							
		needs to be selected, written consent							
		from landowners (not lessees) will be							
		obtained; (b) debris disposal site shall be							
		at least 200 m away from surface water	S	S	S	S	S	S	
		bodies; (c) no residential areas shall be							
		located within 50 m downwind side of							
		the site; and (d) site is minimum 250 m							
		away from sensitive locations like							
		settlements, ponds/lakes or other water							
		bodies							
Sources of	Extraction of	Obtain construction materials only from							
Materials	materials can	government-approved quarries with	S	S	S	S	S	S	
	disrupt natural	prior approval of PIU							

Field	Impact	Impact fields and Mitigation Measures	Im	pleme	mplian ntation – pack	of EM	P Mea	sures	Remarks
			P41	P42	P43	P44	P45	P46	
	land contours andvegetationresultingaccelerated	PIU to review, and ensure that proposed quarry sources have all necessary clearances/ permissions in place prior to approval	S	S	S	S	S	S	
	erosion, disturbance in natural drainage patterns, ponding	Contractor to submit to PIU the documentation every month with the details of the material obtained from each source (quarry/ borrow pit)	S	S	S	S	S	S	
	and water logging, and water pollution.	Avoid the creation of new borrow areas, quarries, etc., for the project; if unavoidable, contractor to obtain all clearances and permissions as required under law, including Environmental Clearance (EC) prior to approval by PIU	S	S	S	S	s	s	
Consents, permits, clearances,	Extractionofmaterialscandisruptnatural	Obtain all necessary consents, permits, clearance, NOCs, etc. prior to the award of civil works.	S	S	S	S	S	S	
NOCs, etc	landcontoursandvegetationresultingin	No works shall be commenced until CRZ clearance is obtained (Packages	S	S	S	S	S	S	No works has been initiated in CRZ influence areas of

Field	Impact	Impact fields and Mitigation Measures	Im	Con	mplian ntation – pack	of EM	IP Mea	sures	Remarks
			P41	P42	P43	P44	P45	P46	
	accelerated erosion, disturbance in	with CRZ: 27, 32, 34, 35, 36, 37, 38, 39, 40, 41 and 42)							Packages 27, 32, 34, 35, 36, 37, 38, 39, 40, 41 and 42.
	naturaldrainagepatterns,pondingandwaterlogging, and water	Ensure that all necessary approvals for construction to be obtained by the contractor are in place before the start of construction	S	s	S	S	s	s	
	pollution	Acknowledge in writing and provide a report on compliance of all obtained consents, permits, clearance, NOCs, etc	S	S	S	S	S	S	
Chance finds	Failure to obtain necessary consents, permits, NOCs, etc. can result todesign revisions and/or stoppage of works	Contractors to follow these measures in conducting any excavation work ➤ Create awareness among the workers, supervisors, and engineers about the chance finds during excavation work ➤ Stop work immediately to allow further investigation if any finds are suspected. ➤ Inform Tamil Nadu Archaeological Department if a find is	S	S	S	S	S	S	

Field	Impact	Impact fields and Mitigation Measures	Im	pleme	mplian ntation – pack	of EM	P Mea	sures	Remarks
			P41	P42	P43	P44	P45	P46	
		suspected and taking any action they require to ensure➢ its removal or protection in situ							

Table 2-12 Construction Stage Mitigation Measures: Compliance Status

S / Satisfactory - mitigation measures implemented satisfactorily

PS / Partially Satisfactory - mitigation measures implemented but requires improvement

US / Unsatisfactory - Mitigation measures not implemented / poorly implemented

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP N	leasure	2S-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
EMP Implementation Training	Irreversible impact to the environment, workers, and community	Project manager and all key workers will be required to undergo training on EMP implementation including spoils/waste management, Standard operating procedures (SOP) for construction works; occupational health and safety (OH and S), core labour laws, applicable environmental laws, etc.	S	S	S	S	S	S	S	S	S	S	
Generation of silt/soil	Land and water pollution due to silt/disposal	 (i) Prepare and implement a Construction Waste (Spoils) Management Plan (ii) As far as possible utilize the debris, silt and excess soil in construction purpose, for example for raising the ground level or construction of access roads etc. (iii) Avoid stockpiling any excess spoils at the site for long time. Excess 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP M	leasure	s-	Remarks
			P 1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 excavated soils should be disposed off to approved designated areas immediately (Kodungaiyur dumping yard and Perungudi Dump Yard of GCC are the identified dumping areas for the project). (iv) Surplus soil may be used as daily cover / intermediate cover at the dump site Monitoring the quality sediment/silt generated from desilting activity for presence of hazardous substances, and follow the suitable method as per the quality; hazardous material should be disposed at hazardous waste disposal facility approved by TNPCB 											
Desilting works	Environmental pollution and occupation health and health and safety	 (i) Desilting process of surplus canals shall be conducted during the summer season for the storm water and surplus canals. no flow season only (ii) Prior to desilting process, the drains shall be allowed dry so that there is no standing water on silt / 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP N	leasure	s-	Remarks
			P 1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		sediment (iii) Do not conduct manual desilting process, use appropriate equipment / implements (iv) Desilting shall be conducted in small sections, accumulated water, if any shall not be pumped out, but pumped to adjoining section within the same drain (v) Desilting process shall be conducted in such a way that water content of the silt/sediment is low, so that contaminated water is not spilled during the loading, transport and unloading process. The excavated sludge shall be placed temporary in dry areas / desilted portion / banks of the canal/ drain, which will allow the water content in the sludge to drain back to the canal; in no case contaminated water is allowed to flow outside the drain/canal (i) This process shall	P1	P2	P3	P4		Ť		P8	P9	P10	
		generate sludge. The excavated sludge shall be											
		stored temporary in dry areas											

Field	Impact	Mitigation Measures	C	omplia	nce ra	ting for		mentat ge wise		EMP M	leasure	es-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		near the banks of the canal/											
		drain, which will allow the											
		water content in the sludge to											
		drain back to the canal, then											
		the sludge, will be packed in											
		the gunny bags or cloth bags											
		to prevent mixing and											
		flowing into the drain. The											
		desilting process shall be											
		conducted mechanically by											
		Robotic excavator and											
		Amphibian Vehicle (manual											
		desilting process shall be											
		avoided). This also helps in											
		further dewatering of the											
		sludge, which will reduce the											
		weight. The packed gunny											
		bags are then transported to											
		designated dumping											
		locations. Currently some of											
		the identified dumping											
		grounds are Perungudi Dump											
		Yard and Kodungaiyur											
		Dump Yard. During the											
		process, the Workers shall be											
		provided with appropriate											
		PPE's, masks with for safety.											
		Oxygen cylinders and first											
		aid kit shall be made											
		available at the site, which											
		shall be utilised during											
		emergency.											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for	r imple Packa			EMP N	leasure	es-	Remarks
			P 1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Air Quality	Dust, and emissions (carbon monoxide, sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons.) from construction vehicles, equipment, and machinery used for drain construction	 For all construction works Provide a dust screen around e construction sites of storm water pumping stations. Damp down the soil and any stockpiled material on-site by water sprinkling. Stabilize surface soils where loaders, support equipment, and vehicles will operate by using water and maintain surface soils in a stabilized condition Apply water prior to levelling or any other earth- moving activity to keep the soil moist throughout the process Cover the soil stocked at the sites with tarpaulins Control access to the work area, prevent unnecessary movement of the vehicle, public trespassing into work areas; limiting soil disturbance will minimize dust generation Use tarpaulins to cover the loose material (soil, 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP M	leasure	es-	Remarks
	₽	g	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 sand, aggregate, etc.,) when transported by open trucks; Control dust generation while unloading the loose material (particularly aggregate, sand, soil) at the site by sprinkling water and unloading inside the barricaded area Clean wheels and undercarriage of haul trucks prior to leaving the construction site Ensure that all the construction equipment, machinery are fitted with pollution control devices, which are operating correctly, and have valid pollution under control (PUC) certificate For Drain works Barricade the construction area using hard barricades (of 2 m height) on both sides Initiate site clearance and excavation work only after barricading of the site is done Confine all the material, excavated soil, debris, 											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP N	leasure	s-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 equipment, machinery (excavators, cranes, etc.,), to the barricaded area Limit the stocking of excavated material at the site; remove the excess soil from the site immediately to the designated disposal area Undertake the work section-wise, a 500m section should be demarcated and barricaded; open up several such sections at a time, but care shall be taken to locate such sections in different zones Conduct work sequentially - excavation, drain construction, backfilling, testing section-wise (for a minimum length as possible) so that backfilling, stabilization of soil can be done. vii. Backfilled trench at any completed section after removal of barricading will be the main source of dust pollution. The traffic, 											

Field	Impact	Mitigation Measures	C	complia	nce ra	ting for	r imple Packa			EMP M	leasure	es-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		pedestrian movement, and wind will generate dust from the backfilled section.											
Surface water quality	Mobilization of settled silt Materials and chemical contamination from fuels and lubricants during construction can contaminate nearby surface water quality.	 All earthworks are conducted during the dry season to prevent the problem of soil/silt runoff during rains Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets. Prioritize the re-use of excess spoils and materials in the construction works. If spoils will be disposed off , only designated disposal areas shall be used; Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. Store fuel, construction chemicals, etc., on an impervious floor, also 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	Complia	nce rat	ting for		mentat ge wise		EMP M	leasure	s-	Remarks
		 avoid spillage by careful handling; provide spill collection sets for effective spill management Dispose of any wastes generated by construction activities in designated sites. Conduct surface quality inspection according to the Environmental Management Plan (EMD) 	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Groundwater quality	Water accumulation in trenches/pits	 Management Plan (EMP). As far as possible control the entry of runoff from upper areas into the excavated pits, and work area by creation of temporary drains or bunds around the periphery of the work area Pump out the water collected in the pits/excavations to a temporary sedimentation pond; dispose off only clarified water into drainage Canals/streams after sedimentation in the temporary ponds Consider safety aspects related to pit collapse due to accumulation of water 	S	s	S	s	s	s	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for	r imple Packa			EMP M	leasure	s-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Noise Levels	Increase in noise level due to earth- moving and excavation equipment, and the transportation of equipment, materialsand people	 Plan activities in consultation with PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in the least disturbance. Minimize the noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimise sound impact to surrounding sensitive receptor; and Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s. Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity. Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach. 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	Complia	nce rat	ting for		mentat ge wise		EMP M	leasure	S-	Remarks
			P 1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		• Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals.											
Landscape and aesthetics – waste generation	Impacts due to excess excavated earth, excess construction materials and solid waste such as removed concrete, wood, packaging	 Prepare and implement a Construction Waste (spoils) Management Plan As far as possible utilize the debris and excess soil in construction purpose, for example for raising the ground level or construction of access roads, etc., Avoid stockpiling any excess spoils at the site for a long time. Excess excavated soils should be disposed off to approved designated areas immediately If the disposal is required, the site shall be selected preferably from barren, infertile lands; sites should locate away from residential areas, forests, water bodies and any other sensitive land uses Solid wastes should be 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP N	leasure	es-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 properly segregated in biodegradable and non-biodegradable for collection and disposal to the designated solid waste disposal site; create a compost pit at designated sites for disposal of biodegradable waste; non-biodegradable waste; non-biodegradable waste shall be collected separately and disposed to approved designated areas. Residual and hazardous wastes such as oils, fuels, and lubricants shall be disposed off in disposal sites approved by TNPCB. Prohibit burning of construction and/or domestic waste. Ensure that wastes are not haphazardly thrown in and around the project site; provide proper collection bins and create awareness to use the dustbins. Conduct site clearance and restoration to original condition after the completion of construction work. PIU to ensure that the site 											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP M	leasure	s-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Management of flood and drainage during construction works	Impact on the construction site, materials and labours	 is properly restored prior to issuing of construction completion certificate Contractor in coordination with GCC to plan and schedule the existing drains rehabilitation and surplus canal works duly considering the flood management aspect Plan existing drains rehabilitation and surplus canal works during dry 	P1	P2	P3	P4		Ť		P8	P9	P10	
		 canal works during dry season and ensure that works are complete before the onset of monsoon If the full works cannot be completed within one dry season (which is likely as the construction period is at least 2 years), works shall be conducted section-wise so that surplus canals and/or existing drains are put into operation prior to onset of monsoon; work sections shall be cleared of construction materials, debris and any obstructions creating for construction shall be removed To safeguard works and avoid flood/ water logging, 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat			mentat ge wise		EMP M	leasure	S-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		the contractor will prepare a suitable site-specific temporary drainage management plan (including emergency response, clean-up kit and trained personnel, to assist with mitigating the damage) and will implement the same											
Biological environment	Adverse impacts on Creek and coastal /terrestrial ecosystems due to construction works	• No works in the CRZ shall be until clearance under CRZ Notification, 2019 is obtained and complied with conditions, if any, stipulated therein.	S	S	S	S	S	S	S	S	S	S	No works has been initiated in CRZ influence areas of Packages 27, 32, 34, 35, 36, 37, 38, 39, 40, 41 and 42.

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP M	leasure	s-	Remarks
1 Iciu	Impact	Minigation Measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Kemar K5
		 displacement. Conduct monitoring of sediment and water quality in water bodies and creek as per EMP Do not use heavy equipment on the coastal zone; use machinery to the minimum possible extent, and restrict the movement to drain/work area Do not place / store materials, waste or debris in the coastal zone Do not remove vegetation or trees Create awareness among the workers and staff on the coastal environment sensitivity, and ensure no damage/disturbance to flora and fauna 											
Accessibility and traffic disruptions	Traffic problems and conflicts near project locations and haul road.	 Drain Construction Prepare a traffic management plan for drains works along the roadsPrepare a drain construction implementation plan in each zone separately and undertake the work accordingly; ensure that for each road where the 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP N	leasure	es-	Remarks
Tiona	Impuer		P 1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 work is being undertaken there is an alternative road for the traffic diversion; take up the work in a sequential way so that public inconvenience is minimal Plan the drain construction in coordination with the traffic police; provide temporary diversions, where necessary and effectively communicate with the general public Avoid construction work in all roads in a colony at one go; it will render all roads unusable due to excavations at the same time, creating large scale inconvenience Undertake the work section wise, a 500 m section should be demarcated and barricaded; open up several such sections at a time, but care shall be taken to locate such sections in different zones 											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP N	leasure	S-	Remarks
1 Iciu	Impuct		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Remarks
		 Confine work areas in the road carriageway to the minimum possible extent; all the activities, including material and waste/surplus soil stocking should be confined to this area. Proper barricading should be provided; avoid material/surplus soil stocking in congested areas – immediately removed from site/ or brought to the site as and when required Limit the width of trench excavation as much as possible by adopting best construction practices; adopt vertical cutting approach with proper shoring and bracing; this is especially to be practiced in narrow roads and wider/deeper drains; i deep trenches are excavated with slopes, the roads may render completely unusable during the construction period 											

Field	Impact	Mitigation Measures	C	omplia	nce ra	ting for		mentat ge wise		EMP N	leasure	es-	Remarks
Titla	Impuer		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 Leave spaces for access between mounds of soil to maintain access to the houses/properties; access to any house or property shall not be blocked completely; alternative arrangements, at least to maintain pedestrian access at all times Provide pedestrian access in all the locations; provide wooden/metal planks over the open trenches at each house to maintain the access. Inform the local population 1-week in advance about the work schedule Plan and execute the work in such a way that the period of disturbance/ loss of access is minimum. Keep the site free from all unnecessary obstructions. Notify affected public by public information notices, providing signboards informing nature and duration of 											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP M	leasure	es-	Remarks
	F		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 construction works and contact numbers for concerns/complaints. Provide information to the public through media newspapers and local cable television (TV) services At the worksite, public information/caution boards shall be provided including contact for public complaints Hauling (material, waste/debris, and equipment) activities Plan transportation routes so that heavy vehicles do not use narrow local roads, except near delivery sites Schedule transport and hauling activities during non-peak hours; Locate entry and exit points in areas where there is low potential for traffic congestion; Drive vehicles in a considerate manner Notify affected public by public information notices, providing 											

Field	Impact	Mitigation Measures	C	omplia	ince rat	ting for		mentat ge wise		EMP N	leasure	s-	Remarks
1 Iolu	Impuer		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	itemu no
<u> </u>		signboards informing nature and duration of construction works and contact numbers for concerns/complaints.											
Socio- Economic Loss of access to houses and business	Loss of income	 Inform all businesses and residents about the nature and duration of any work well in advance so that they can make necessary preparations; Do not block any access; leave spaces for access between barricades/mounds of excavated soil and other stored materials and machinery, and providing footbridges so that people can crossover open trenches Barricade the construction area and regulate the movement of people and vehicles in the vicinity, and maintain the surroundings safely with proper direction boards, lighting and security personnel – people should feel safe to move around Control dust generation 	S	S	S	S	S	s	S	s	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP M	leasure	s-	Remarks
	Impuet		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	itemu no
		 Immediately consolidate the backfilled soil and restore the road surface; this will also avoid any business loss due to dust and access inconvenience of construction work. Employee best construction practices, speed up construction work with better equipment, increase the workforce, etc., in the areas with predominantly commercial, and with sensitive features like hospitals, and schools; Consult businesses and institutions regarding operating hours and factoring this in work schedules; and Provide signboards for pedestrians to inform the nature and duration of construction works and contact numbers for concerns/complaints. 											
Socio- Economic - Employment	Generation of temporary employment	 Employ local labour force as far as possible Comply with labour laws 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	Complia	nce rat	ting for				EMP N	leasure	ès-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Field Occupational Health and Safety	Impact and an increase in local revenue Occupational hazards which can arise during work	 Mitigation Measures Follow all national, state and local labour laws (an indicative list is given in Appendix 2); Develop and implement site-specific occupational health and safety (OH and S) Plan which shall include measures such as (a) safe and documented construction procedures to be followed for all site activities; (b) ensuring all workers are provided with and use personal protective equipment; (c) OH and S, training for all site personnel, (d) excluding public from 			1	_	Packa	ge wise				P10	Remarks
		 the work sites; and (e) documentation of work-related accidents; Follow International Standards such as the World Bank Group's Environment, Health, and Safety Guidelines. Ensure that qualified first-aid specialist is 											

Field	Impact	Mitigation Measures	C	Complia	nce ra	ting for		mentat ge wise		EMP M	leasure	es-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 provided at all times in the project area. Equipped first-aid stations shall be easily accessible throughout the sites; Secure all installations from unauthorized intrusion and accident risks Provide OH and S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted; Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy 											
Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP N	leasure	s-	Remarks
-------	--------	--	-----------	--------	-----------	-----------	----	-------------------	-----------	-----------	-----------	-----	---------
	I		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 equipment operating areas; Ensure moving equipment is outfitted with audible back-up alarms; Mark and provide signboards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be following international standards and be well known to, and easily understood by workers, visitors, and the public as appropriate; and Disallow worker exposure to noise level greater than 85 dBA for more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. Provide supplies of potable drinking water. Provide clean eating areas where workers are 											

Field	Impact	Mitigation Measures	C	Complia	nce ra	ting for				EMP N	leasure	es-	Remarks
	•	0	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Field COVID 19 response	Impact Spread of infection which causes serious symptoms like difficulty in breathing, chest pain and loss of speech or movement. If not treated it will lead to death	 Mitigation Measures not exposed to hazardous or noxious substances Taking cognizance of situation at time of mobilization, the Contractor shall undertake a COVID risk assessment of project area and prepare a COVID Response and Management Plan (C- R&MP) and submit to GCC and PSC for approval. The preparation of C- R&MP shall consider guidance of Government of India, World Health Organization, International Labour Organization, International Financial Corporation and World 		-			Packa	ge wise	:			T	Remarks
		 Corporation and world Bank's interim guidance note etc. The key points on COVID Response and Management measures The contractor shall submit a weekly monitoring and progress report to GCC and PSC. 											

Field	Impact	Mitigation Measures	C	Complia	nce ra	ting for	r imple Packa			EMP M	leasure	es-	Remarks
	F		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and waste transportation	 Confine work areas; prevent public access to all areas where construction works are on-going through the use of barricading and security personnel Attach warning signs, blinkers to the barricading to caution the public about the hazards associated with the works, and presence of road side excavation Minimize the duration of time when the drain trench is left open through careful planning; plan the work properly from excavation to refilling Control dust pollution – implement dust control measures as suggested under air quality section Ensure appropriate and safe passage for pedestrians along with the worksites Provide road signs and flag persons to warn of on- going trenching activities. 	s	s	S	s	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ing for		mentat ge wise		EMP N	leasure	S-	Remarks
Ticiu	Impuct	integration measures	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Remarks
		 Restrict construction vehicle movements to defined access roads and demarcated working areas (unless in the event of an emergency) Enforce strict speed limit (20 kmph) for plying on unpaved roads, construction tracks Provide temporary traffic control (e.g. flagmen) and signs where necessary to improve safety and smooth traffic flow Where traffic is diverted around crossings, traffic control or careful selection of the exit from the working areas will be provided to ensure that vehicles join the road in a safe manner. At sensitive locations particularly where there are schools and markets close to the road, awareness of safety issues will be raised through neighborhood awareness meetings All drivers and 											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentati ge wise		EMP M	leasure	s-	Remarks
1 Iolu	Impuer		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	itemu no
		 equipment operators will undergo safety training Maintain regularly the construction equipment and vehicles; use manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. 											
Safety Requirements for Deep Trench works	Accidents, and risk hazard		S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP M	leasure	es-	Remarks
1 Iolu	Impuce	The second secon	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 workmen engaged in excavation work and calamities for the public Where medical facilities (including hospitals) are not available nearby, first-aid kit should be available. This shall be kept at a conspicuous place in the charge of trained person(s). The kit shall be recouped periodically. Labors shall be instructed to use safety devices and appliances provided to them whenever it is necessary to do so Labors who are not aware of the hazards peculiar to the work shall not be permitted to proceed with the work without being properly instructed. Safety helmets shall be worn by all persons entering trench where hazards from falling stones, timber or other materials exist Appropriate safety footwear (rubber boots, protective covers, etc.,) 											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP N	leasure	S-	Remarks
1 Iciu	Impuct	This gation measures	P 1	P2	P3	P4	P5	P6	P7	P8	P9	P10	itemui kö
		 shall be worn by labours who are engaged in work requiring such protection All trenches in soil more than 1.5 m deep shall be securely shored and timbered. All trenches in friable or unstable rock exceeding 2 m in depth shall be securely shored and timbered Where the sides of trenches are sloped but not within 1.5 m of the bottom, the vertical sides shall be shored and the shoring shall extend at least 30 cm above the vertical sides. When open spaced sheathing is used, a toe board shall be provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls. Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done 											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for	· imple Packa			EMP M	leasure	s-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 before the excavation commences. Approved quality of sal wood shall be used for shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the purpose 											
Work Camps and worksites	Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels,oils, solvents, and lubricants Unsanitary and poor living conditions for workers	 Consult PIU before locating project offices, sheds, and construction plants; Select a campsite away from residential areas (at least 100 m buffer shall be maintained) or locate the campsite within the existing facilities of GCC offices Avoid tree cutting for setting up camp facilities Provide a proper 	S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ing for		mentat ge wise		EMP M	leasure	es-	Remarks
	F		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 Separate the workers living areas and material storage areas clearly with a fencing and separate entry and exit Ensure conditions of livability at work camps are always maintained at the highest standards possible; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be used as accommodation for workers Camps shall be provided with proper drainage, there shall not be any water accumulation Provide drinking water, water for other uses, and sanitation facilities for employees Prohibit labours from 											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentat ge wise		EMP M	leasure	S-	Remarks
Tielu	Impuct	initigation measures	P 1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Remarks
		 cutting of trees for firewood; The contractor should provide cooking fuel (cooking gas); use of firewood is not allowed Train employees in the storage and handling of materials which can potentially cause soil contamination Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements Recover used oil and lubricants and reuse or remove from the site; Manage solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in the local market 											

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for		mentati ge wise		EMP M	leasure	S-	Remarks
			P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 Remove all wreckage, rubbish, or temporary structures which are no longer required; and At the completion of work, the camp area shall be cleaned and restored to pre-project conditions, and submit a report to PIU; PIU to review and approve camp clearance and closure of worksite 											
Post- construction clean-up	Damage due to debris, spoils, excess construction materials		S	S	S	S	S	S	S	S	S	S	

Field	Impact	Mitigation Measures	C	omplia	nce rat	ting for	r imple Packa			EMP M	leasure	S-	Remarks
	-		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	
		 within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the re-vegetation specification that forms part of this document. The contractor must arrange the cancellation of all temporary services. Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work. 											

5.11	T .		Con	npliance	e rating	for imp			f EMP]	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures	P11	P12	P13	P14	P15	ise P16	P17	P18	P19	P20	Remarks
EMP Implementatio n Training	Irreversible impact to the environment, workers, and community	Project manager and all key workers will be required to undergo training on EMP implementation including spoils/waste management, Standard operating procedures (SOP) for construction works; occupational health and safety (OH and S), core labour laws, applicable environmental laws, etc.	S	S	S	S	S	S	S	S	S	S	
Generation of silt/soil	Land and water pollution due to silt/disposal	 Prepare and implement a Construction Waste (Spoils) Management Plan As far as possible utilize the debris, silt and excess soil in construction purpose, for example for raising the ground level or construction of access roads etc. 	S	S	S	S	S	S	S	S	S	S	

(b) Construction Stage Mitigation Measures: Compliance Status

			Con	npliance	e rating	for imp	plement	ation of	f EMP]	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 Avoid stockpiling any excess spoils at the site for long time. Excess excavated soils should be disposed off to approved designated areas immediately (Kodungaiyur dumping yard and Perungudi Dump Yard of GCC are the identified dumping areas for the project). Surplus soil may be used as daily cover / intermediate cover at the dump site Monitoring the quality sediment/silt generated from desilting activity for presence of hazardous substances, and follow the suitable method as per the quality; hazardous material should be disposed at hazardous waste disposal facility approved by TNPCB 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
Desilting works	Environmental pollution and occupation health and health and safety	 Desilting process of surplus canals shall be conducted during the summer season for the storm water and surplus canals. no flow season only Prior to desilting process, the drains shall be allowed dry so that there is no standing water on silt / sediment Do not conduct manual desilting process, use appropriate equipment / implements Desilting shall be conducted in small sections, accumulated water, if any shall not be pumped out, but pumped to adjoining section within the same drain Desilting process shall be conducted in such a way that water content of the silt/sediment is low, so 	S	S	S	S	S	s	s	s	S	S	

			Con	npliance	e rating	for imp	olement	ation of	f EMP]	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					wi	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 that contaminated water is not spilled during the loading, transport and unloading process. The excavated sludge shall be placed temporary in dry areas / desilted portion / banks of the canal/ drain, which will allow the water content in the sludge to drain back to the canal; in no case contaminated water is allowed to flow outside the drain/canal This process shall generate sludge. The excavated sludge shall be stored temporary in dry areas near the banks of the canal/ drain, which will allow the water content in the sludge to drain back to the canal, then the sludge, will be packed in the gunny bags or cloth bags to prevent mixing and 											

			Con	pliance	e rating	for imp	olement	ation of	f EMP]	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					wi	se					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		flowing into the drain. The desilting process shall be conducted mechanically by Robotic excavator and Amphibian Vehicle (manual desilting process shall be avoided). This also helps in further dewatering of the sludge, which will reduce the weight. The packed gunny bags are then transported to designated dumping locations. Currently some of the identified dumping grounds are Perungudi Dump Yard and Kodungaiyur Dump Yard. During the process, the Workers shall be provided with appropriate PPE's, masks with for safety. Oxygen cylinders and first aid kit shall be made available at the site, which shall be utilised											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		during emergency.											
Air Quality	Dust, and emissions (carbon monoxide, sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons.) from construction vehicles, equipment, and machinery used for drain construction	 For all construction works Provide a dust screen around e construction sites of storm water pumping stations. Damp down the soil and any stockpiled material on-site by water sprinkling. Stabilize surface soils where loaders, support equipment, and vehicles will operate by using water and maintain surface soils in a stabilized condition Apply water prior to levelling or any other earth- moving activity to keep the soil moist throughout the process Cover the soil stocked at the sites with tarpaulins Control access to the work area, prevent unnecessary movement of the vehicle, public 	S	S	S	S	s	s	s	S	s	S	

			Cor	npliance	e rating	for imp	plement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 trespassing into work areas; limiting soil disturbance will minimize dust generation Use tarpaulins to cover the loose material (soil, sand, aggregate, etc.,) when transported by open trucks. Control dust generation while unloading the loose material (particularly aggregate, sand, soil) at the site by sprinkling water and unloading inside the barricaded area Clean wheels and undercarriage of haul trucks prior to leaving the construction site Ensure that all the construction equipment, machinery are fitted with pollution control devices, which are operating correctly, and have valid pollution under control (PUC) certificate Barricade the construction 											
		area using hard barricades											

			Con	npliance	e rating	for imp	plement	ation o	f EMP	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 (of 2 m height) on both sides Initiate site clearance and excavation work only after barricading of the site is done Confine all the material, excavated soil, debris, equipment, machinery (excavators, cranes, etc.,), to the barricaded area Limit the stocking of excavated material at the site; remove the excess soil from the site immediately to the designated disposal area Undertake the work section-wise, a 500m section should be demarcated and barricaded; open up several such sections at a time, but care shall be taken to locate such sections in different zones Conduct work 											

			Con	npliance	e rating	for imp			f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures		T	1	1		ise		1			Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 sequentially - excavation, drain construction, backfilling, testing section-wise (for a minimum length as possible) so that backfilling, stabilization of soil can be done. Backfilled trench at any completed section after removal of barricading will be the main source of dust pollution. The traffic, pedestrian movement, and wind will generate dust from the backfilled section. 											
Surface water quality	Mobilization of settled silt Materials and chemical contamination from fuels and lubricants during	 All earthworks are conducted during the dry season to prevent the problem of soil/silt run-off during rains Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets. 	S	S	S	S	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
	construction can contaminate nearby surface water quality.	 Prioritize the re-use of excess spoils and materials in the construction works. If spoils will be disposed off, only designated disposal areas shall be used; Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. Store fuel, construction chemicals, etc., on an impervious floor, also avoid spillage by careful handling; provide spill collection sets for effective spill management Dispose of any wastes generated by construction activities in designated 											

			Con	npliance	e rating	for imp	olement	ation of	f EMP	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
Surface and Groundwater quality	Water accumulation in trenches/pits	 sites. Conduct surface quality inspection according to the Environmental Management Plan (EMP). As far as possible control the entry of runoff from upper areas into the excavated pits, and work area by creation of temporary drains or bunds around the periphery of the work area Pump out the water collected in the pits/excavations to a temporary sedimentation pond; dispose off only clarified water into drainage Canals/streams after sedimentation in the 	s	S	S	S	S	S	S	S	s	S	
		 Consider safety aspects related to pit collapse due to accumulation of water 											
Noise Levels	Increase in noise level due to earth-	• Plan activities in consultation with PIU so that activities with the greatest potential to	S	S	S	S	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
	moving and excavation equipment, and the transportation of equipment, materials and people	 generate noise are conducted during periods of the day which will result in the least disturbance; Minimize the noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimise sound impact to surrounding sensitive receptor; and Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s. Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity; Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; Consult local communities in advance of the work to identify and address key 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
	x ,	issues, and avoid working at sensitive times, such as religious and cultural festivals.											
Landscape and aesthetics – waste generation	Impacts due to excess excavated earth, excess construction materials and solid waste such as removed concrete, wood, packaging	 Prepare and implement a Construction Waste (spoils) Management Plan (refer Appendix 3) As far as possible utilize the debris and excess soil in construction purpose, for example for raising the ground level or construction of access roads, etc., Avoid stockpiling any excess spoils at the site for a long time. Excess excavated soils should be disposed off to approved designated areas immediately If the disposal is required, the site shall be selected preferably from barren, infertile lands; sites should locate away from residential areas, forests, water bodies and any other sensitive land uses 	S	S	S	S	S	S	S	S	S	S	
		• Solid wastes should be properly segregated in											

			Con	npliance	e rating	for imp	olement	ation of	f EMP]	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					Wi	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 biodegradable and non-biodegradable for collection and disposal to the designated solid waste disposal site; create a compost pit at designated sites for disposal of biodegradable waste; non-biodegradable waste; non-biodegradable waste shall be collected separately and disposed to approved designated areas. Residual and hazardous wastes such as oils, fuels, and lubricants shall be disposed off in disposal sites approved by TNPCB. Prohibit burning of construction and/or domestic waste. Ensure that wastes are not haphazardly thrown in and around the project site; provide proper collection bins and create awareness to use the dustbins. Conduct site clearance and restoration to original condition after the completion of construction work. PIU to ensure that the site 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
Management of flood and drainage during construction works	Impact on the construction site, materials and labours	 is properly restored prior to issuing of construction completion certificate Contractor in coordination with GCC to plan and schedule the existing drains rehabilitation and surplus canal works duly considering the flood management aspect Plan existing drains rehabilitation and surplus canal works during dry season and ensure that works are complete before the onset of monsoon If the full works cannot be completed within one dry season (which is likely as the construction period is at 	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 least 2 years), works shall be conducted section-wise so that surplus canals and/or existing drains are put into operation prior to onset of monsoon; work sections shall be cleared of construction materials, debris and any obstructions creating for construction shall be removed To safeguard works and 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		avoid flood/ water logging, the contractor will prepare a suitable site-specific temporary drainage management plan (including emergency response, clean-up kit and trained personnel, to assist with mitigating the damage) and will implement the same											
Biological environment	Adverse impacts on Creek and coastal /terrestrial ecosystems due to construction works	 No works in the CRZ shall be until clearance under CRZ Notification, 2019 is obtained and complied with conditions, if any, stipulated therein. Implement all measures suggested to manage surface water runoff and quality during the construction works Where necessary, before the monsoon measures actions like, diversion ditches can be created in order to intercept and slow down the speed of runoff into the Creek; small, compacted soil berms can be created to intercept runoff and reduce erosion 	S	S	S	S	S	S	S	S	S	S	No works has been initiated in CRZ influence areas of Packages 27, 32, 34, 35, 36, 37, 38, 39, 40, 41 and 42.

			Con	npliance	e rating	for imp	olement	ation o	f EMP]	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					wi	se					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 and sediment transport and can reduce the area of water displacement. Conduct monitoring of sediment and water quality in water bodies and creek as per EMP Do not use heavy equipment on the coastal zone; use machinery to the minimum possible extent, and restrict the movement to drain/work area Do not place / store materials, waste or debris in the coastal zone Do not remove vegetation or trees Create awareness among the workers and staff on the coastal environment sensitivity, and ensure no damage/disturbance to flora and fauna 											
Accessibility and traffic	Traffic problems and	 Drain Construction Prepare a traffic management plan for 											
disruptions	conflicts near project	drains works along the roadsPrepare a drain construction implementation plan in each zone separately and	S	S	S	S	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
	locations and haul road.	 undertake the work accordingly; ensure that for each road where the work is being undertaken there is an alternative road for the traffic diversion; take up the work in a sequential way so that public inconvenience is minimal Plan the drain construction in coordination with the traffic police; provide temporary diversions, where necessary and effectively communicate with the general public Avoid construction work in all roads in a colony at one go; it will render all roads unusable due to excavations at the same time, creating large scale inconvenience Undertake the work section wise, a 500 m section should be demarcated and barricaded; open up several such sections at a 											

			Con	npliance	e rating	for imp	olement	ation of	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 time, but care shall be taken to locate such sections in different zones Confine work areas in the road carriageway to the minimum possible extent; all the activities, including material and waste/surplus soil stocking should be confined to this area. Proper barricading should be provided; avoid material/surplus soil stocking in congested areas – immediately removed from site/ or brought to the site as and when required Limit the width of trench excavation as much as possible by adopting best construction practices; adopt vertical cutting approach with proper shoring and bracing; this is especially to be practiced in narrow roads and wider/deeper drains; i deep trenches are 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP]	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 excavated with slopes, the roads may render completely unusable during the construction period Leave spaces for access between mounds of soil to maintain access to the houses/properties; access to any house or property shall not be blocked completely; alternative arrangements, at least to maintain pedestrian access at all times to be provided Provide pedestrian access in all the locations; provide wooden/metal planks over the open trenches at each house to maintain the access. Inform the local population 1-week in advance about the work schedule Plan and execute the work in such a way that the period of disturbance/ loss of access is minimum. 											

			Con	npliance	rating	for imp	olement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 Keep the site free from all unnecessary obstructions. Notify affected public by public information notices, providing signboards informing nature and duration of construction works and contact numbers for concerns/complaints. Provide information to the public through media – newspapers and local cable television (TV) services At the worksite, public information/caution boards shall be provided including contact for public complaints Hauling (material, waste/debris, and equipment) activities Plan transportation routes so that heavy vehicles do not use narrow local roads, except near delivery sites Schedule transport and hauling activities during non- peak hours; Locate entry and exit 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
Socio- Economic Loss	Loss of income	residents about the nature and duration of any work											
of access to houses and business		 well in advance so that they can make necessary preparations; Do not block any access; leave spaces for access between barricades/mounds of excavated soil and other stored materials and machinery, and providing footbridges so that people can crossover open trenches Barricade the construction area and regulate the movement of 	S	S	S	S	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	olement	ation of	f EMP]	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 people and vehicles in the vicinity, and maintain the surroundings safely with proper direction boards, lighting and security personnel – people should feel safe to move around Control dust generation Immediately consolidate the backfilled soil and restore the road surface; this will also avoid any business loss due to dust and access inconvenience of construction work. Employee best construction work. Employee, best construction practices, speed up construction work with better equipment, increase the workforce, etc., in the areas with predominantly commercial, and with sensitive features like hospitals, and schools; Consult businesses and institutions regarding operating hours and factoring this in work schedules; and 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		• Provide signboards for pedestrians to inform the nature and duration of construction works and contact numbers for concerns/complaints.											
Socio- Economic -	Generation of	 Employ local labour force as far as possible Comply with labour laws 											
Employment	temporary employment and an increase in local revenue	• Compry with fabour faws	S	S	S	S	S	S	S	S	S	S	
Occupational Health and Safety	Occupational hazards which can arise during work	 Follow all national, state and local labour laws (an indicative list is given in Appendix 2); Develop and implement site-specific occupational health and safety (OH and S) Plan which shall include measures such as (a) safe and documented construction procedures to be followed for all site activities; (b) ensuring all workers are provided 	S	S	S	S	S	S	S	S	S	S	
			Con	npliance	e rating	for imp	olement	ation of	f EMP	Measur	es-Pac	kage	
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Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 with and use personal protective equipment; (c) OH and S, training for all site personnel, (d) excluding public from the work sites; and (e) documentation of work-related accidents; Follow International Standards such as the World Bank Group's Environment, Health, and Safety Guidelines. Ensure that qualified first-aid specialist is provided at all times in the project area. Equipped first-aid stations shall be easily accessible throughout the sites; Secure all installations from unauthorized intrusion and accident risks Provide OH and S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 and preventing injuring to fellow workers; Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted; Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; Ensure moving equipment is outfitted with audible back-up alarms; Mark and provide signboards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be following international 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 standards and be well known to, and easily understood by workers, visitors, and the public as appropriate; and Disallow worker exposure to noise level greater than 85 dBA for more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. Provide supplies of potable drinking water. Provide clean eating areas where workers are not exposed to hazardous or noxious substances 											
COVID 19 response	Spread of infection which causes serious symptoms like difficulty in breathing, chest pain and	 Taking cognizance of situation at time of mobilization, the Contractor shall undertake a COVID risk assessment of project area and prepare a COVID Response and Management Plan (C-R&MP) and submit to GCC and PSC for approval. The preparation of C- 	S	S	S	S	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	olement	tation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
	loss of speech or movement. If not treated it will lead to death	 R&MP shall consider guidance of Government of India, World Health Organization, International Labour Organization, International Financial Corporation and World Bank's interim guidance note etc. The key points on COVID Response and Management measures is at Appendix 14. The contractor shall submit a weekly monitoring and progress report to GCC and PSC. 											
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and waste transportation	 Confine work areas; prevent public access to all areas where construction works are on-going through the use of barricading and security personnel Attach warning signs, blinkers to the barricading to caution the public about the hazards associated with the works, and presence of road side excavation Minimize the duration of 	S	S	S	S	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	olement	ation of	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 time when the drain trench is left open through careful planning; plan the work properly from excavation to refilling Control dust pollution – implement dust control measures as suggested under air quality section Ensure appropriate and safe passage for pedestrians along with the worksites Provide road signs and flag persons to warn of on- going trenching activities. Restrict construction vehicle movements to defined access roads and demarcated working areas (unless in the event of an emergency) Enforce strict speed limit (20 kmph) for plying on unpaved roads, construction tracks Provide temporary traffic control (e.g. flagmen) and signs where necessary to improve 											

			Con	npliance	e rating	for imp	plement	tation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 safety and smooth traffic flow Where traffic is diverted around crossings, traffic control or careful selection of the exit from the working areas will be provided to ensure that vehicles join the road in a safe manner. At sensitive locations particularly where there are schools and markets close to the road, awareness of safety issues will be raised through neighborhood awareness meetings All drivers and equipment operators will undergo safety training Maintain regularly the construction equipment and vehicles; use manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. 											

			Con	npliance	e rating	for imp	plement	ation of	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
Safety Requirements for Deep Trench works	Accidents, and risk hazard	 Sides of excavation shall be inspected by PSC during excavation from time to time and after every rain, storm, or other hazard- increasing occurrence and protection against slides and cavings shall be increased, if necessary Complete information on the underground structures (such as water pipelines, sewers, gas mains, electrical conduit system and other civic facilities) should be collected before doing the excavation work. Proper precautions shall be taken to prevent accident to the workmen engaged in excavation work and calamities for the public Where medical facilities (including hospitals) are not available nearby, firstaid kit should be kept at a conspicuous place in the charge of trained person(s). The kit 	S	S	S	S	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	plement	ation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 shall be recouped periodically. Labors shall be instructed to use safety devices and appliances provided to them whenever it is necessary to do so Labors who are not aware of the hazards peculiar to the work shall not be permitted to proceed with the work without being properly instructed. Safety helmets shall be worn by all persons entering trench where hazards from falling stones, timber or other materials exist Appropriate safety footwear (rubber boots, protective covers, etc.,) shall be worn by labours who are engaged in work requiring such protection All trenches in soil more than 1.5 m deep shall be securely shored and timbered. 		P12	P13	P14	PIS	P16			P19	P20	
		 All trenches in friable or unstable rock exceeding 2 											
		m in depth shall be											

			Con	npliance	e rating	for imp	olement	ation of	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 securely shored and timbered Where the sides of trenches are sloped but not within 1.5 m of the bottom, the vertical sides shall be shored and the shoring shall extend at least 30 cm above the vertical sides. When open spaced sheathing is used, a toe board shall be provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls. Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences. Approved quality of sal wood shall be used for shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be 											

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
Work Camps and worksites	Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels,oils, solvents, and lubricants Unsanitary and poor living conditions for workers	 used for the purpose Consult PIU before locating project offices, sheds, and construction plants; Select a campsite away from residential areas (at least 100 m buffer shall be maintained) or locate the campsite within the existing facilities of GCC offices Avoid tree cutting for setting up camp facilities Provide a proper fencing/compound wall for campsites Campsite shall not be located near (100 m) water bodies, flood plains flood-prone/low lying areas, or any ecologically, socially, archeologically sensitive areas Separate the workers living areas and material storage areas clearly with a fencing and separate entry and exit Ensure conditions of livability at work camps are always maintained at 	S	S	S	S	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	olement	tation o	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 the highest standards possible; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be used as accommodation for workers Camps shall be provided with proper drainage, there shall not be any water accumulation Provide drinking water, water for other uses, and sanitation facilities for employees Prohibit labours from cutting of trees for firewood; The contractor should provide cooking fuel (cooking gas); use of firewood is not allowed Train employees in the storage and handling of 											

		Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es-Pac	kage	
Impact	Mitigation Measures					W	ise					Remarks
		P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
	 materials which can potentially cause soil contamination Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements Recover used oil and lubricants and reuse or remove from the site; Manage solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in the local market Remove all wreckage, rubbish, or temporary structures which are no longer required; and 											
	work, the camp area shall											
	Impact	 materials which can potentially cause soil contamination Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements Recover used oil and lubricants and reuse or remove from the site; Manage solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable waste, and non-biodegradable // recyclable waste shall be collected and sold in the local market Remove all wreckage, rubbish, or temporary structures which are no longer required; and At the completion of 	Impact Mitigation Measures P11 materials which can potentially cause soil contamination • P11 • Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements • • Recover used oil and lubricants and reuse or remove from the site; • • Manage solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in the local market • Remove all wreckage, rubbish, or temporary structures which are no longer required; and • At the completion of	Impact Mitigation Measures P11 P12 materials which can potentially cause soil contamination • Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements • Recover used oil and lubricants and reuse or remove from the site; • Manage solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable waste, and non-biodegradable waste, shall be collected and sold in the local market • Remove all wreckage, rubbish, or temporary structures which are no longer required; and • At the completion of	Impact Mitigation Measures P11 P12 P13 materials which can potentially cause soil contamination Wastewater from the camps shall be disposed off properly either into the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements Recover used oil and lubricants and reuse or remove from the site; Manage Solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost a compost pit for biodegradable / recyclable waste shall be collected and sold in the local market Remove all wreckage, rubbish, or temporary structures which are no longer required; and At ht At	Impact Mitigation Measures P11 P12 P13 P14 materials which can potentially cause soil contamination • Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements •	Impact Mitigation Measures with P11 P12 P13 P14 P15 materials which can potentially cause soil contamination • Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements •	ImpactMitigation MeasuresviseP11P12P13P14P15P16materials which can potentially cause soil contaminationP11P12P13P14P15P16Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangementsImage solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable coal marketImage solid waste, and non-biodegradable recyclable waste shall be coal marketImage solid waste, and non-biodegradable recyclamered and sold in the local marketImage solid waste, and non-biodegradable recyclable waste shall be coal marketImage solid waste, and non-biodegradable recyclable waste, and non-biodegradable recyclable waste, and non-biodegradable recyclable waste shall be coal marketImage solid waste, and non-biodegradable recyclable waste shall be coal marketImage solid waste, and non-biodegradable recyclable waste shall be coal marketImage solid waste, and non-biodegradableImage solid waste, and non-biodegradable waste, and non-biodegradableImage solid waste, and non-biodegradable waste, and non-biodegradableImage solid waste, and non-biodegradableImage solid waste, and non-biodegradableImage solid waste, and waste, and non-biodegradableImage solid waste, and waste, and waste, and waste, and waste, and waste, an	Impact Mitigation Measures wise P11 P12 P13 P14 P15 P16 P17 materials which can potentially cause soil Impact Impact P11 P12 P13 P14 P15 P16 P17 materials which can potentially cause soil Impact Impact Impact P11 P12 P13 P14 P15 P16 P17 Impact Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements Impact Impact	Impact Mitigation Measures vise P11 P12 P13 P14 P15 P16 P17 P18 materials materials which can potentially cause soil contamination Mastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements Image solid Image solid	Impact Mitigation Measures vise P11 P12 P13 P14 P15 P16 P17 P18 P19 materials which can potentially cause soil contamination Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements Image Image	P11 P12 P13 P14 P15 P16 P17 P18 P19 P20 materials which can potentially cause soil contamination Wastewater from the camps shall be disposed off properly either into the sewer system is not available, provide on-site sanitation with a septic tank and soak pit atrangements Image solid waste according to the following preference hierarchy: reuse, recyclaple waste shall be collected and sold in the local market Image solid waste according to the following preference hierarchy: reuse, recyclable waste, and non-biodegradable / recyclable waste shall be collected and sold in the local market Image solid waste in the biolowing preference hierarchy: reuse, recyclable waste shall be collected and sold in the local market Image solid waste in the biolowing preference hierarchy: reuse, rubbish, or temporary structures which are no longer required; and Image solid waste in the biolowing preference hierarchy: reuse, rubbish, or temporary structures which are no longer required; and Image solid waste in the biolowing preference hierarchy:

			Con	npliance	e rating	for imp	olement	ation o	f EMP	Measur	es- Pac	kage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
Post-	Damage due to	 be cleaned and restored to pre-project conditions, and submit a report to PIU; PIU to review and approve camp clearance and closure of worksite Remove all spoils 											
Post- construction clean-up	Damage due to debris, spoils, excess construction materials	 Remove all spons wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and All excavated roads shall be reinstated to the original condition. All disrupted utilities restored All affected structures rehabilitated/compensated The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top 	S	S	S	S	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	lement	ation of	f EMP	Measur	es-Pac	kage	
Field	Impact	Mitigation Measures					Wi	se					Remarks
			P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	
		 soiled and regressed using the guidelines set out in the re-vegetation specification that forms part of this document. The contractor must arrange the cancellation of all temporary services. Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work. 											

(c) Construction Stage Mitigation Measures: Compliance Status

			Cor	nplianc	e rating	g for im	plemen	tation of	EMP N	<i>Aeasure</i>	s- Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
	Irreversible	Project manager and all key											
EMP	impact to the	workers will be required to											
Implementatio	environment,	undergo training on EMP	S	S	S	S	S	S	S	S	S	S	
n Training	workers, and	implementation including											
	community	spoils/waste management,											

			Co	mplianc	e rating	g for im	-	tation of	EMP N	Aeasure	es- Pack	tage	
Field	Impact	Mitigation Measures	P21	P22	P23	P24	w P25	vise P26	P27	P28	P29	P30	Remarks
		Standardoperatingprocedures(SOP)forconstructionworks;occupational health and safety(OH and S), core labour laws,applicableenvironmentallaws, etc.											
Generation of silt/soil	Land and water pollution due to silt/disposal	 (v) Prepare and implement a Construction Waste (Spoils) Management Plan (vi) As far as possible utilize the debris, silt and excess soil in construction purpose, for example for raising the ground level or construction of access roads etc. (vii) Avoid stockpiling any excess spoils at the site for long time. Excess excavated soils should be disposed off to approved designated areas immediately (Kodungaiyur 	s	S	S	S	S	S	s	s	S	s	

1			Cor	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	tage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		dumpingyardandPerungudiDumpYardofGCCaretheidentifieddumpingareasfortheproject).(viii)Surplus soil may beusedasdailycoverintermediatecoveratdump siteMonitoringthequalitysediment/siltgeneratedfromdesiltingactivityforpresenceofhazardoussubstances,andfollowsuitablemethodasperthequality;hazardouswastedisposedhazardouswastedisposalfacilityapprovedby TNPCB											
Desilting	Environmental	(vi) Desilting process of surplus canals shall be											
works	pollution and occupation health and	conducted during the summer season for the storm water and surplus canals. no	S	S	S	S	S	S	S	S	S	S	

			Cor	nplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es- Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
	health and safety	flow season only (vii) Prior to desilting process, the drains shall be allowed dry so that there is no standing water on silt / sediment (viii) Do not conduct manual desilting process, use appropriate equipment / implements (ix) Desilting shall be conducted in small sections, accumulated water, if any shall not be pumped out, but pumped to adjoining section within the same drain (x) Desilting process shall be conducted in such a way that water content of the silt/sediment is low, so that contaminated water is not spilled during the loading, transport and unloading process. The excavated sludge shall be placed temporary in dry areas / desilted portion / banks of											

			Cor	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		the canal/ drain, which will allow the water content in the sludge to drain back to the canal; in no case contaminated water is allowed to flow outside the drain/canal (ii) This process shall generate sludge. The excavated sludge shall be stored temporary in dry areas near the banks of the canal/ drain, which will allow the water content in the sludge to drain back to the canal, then the sludge, will be packed in the gunny bags or cloth bags to prevent mixing and flowing into the drain. The desilting process shall be conducted mechanically by Robotic excavator and Amphibian Vehicle (manual desilting process shall be avoided). This also helps in	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		further dewatering of the sludge, which will reduce the											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	tage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		weight. The packed gunny bags are then transported to designated dumping locations. Currently some of the identified dumping grounds are Perungudi Dump Yard and Kodungaiyur Dump Yard. During the process, the Workers shall be provided with appropriate PPE's, masks with for safety. Oxygen cylinders and first aid kit shall be made available at the site, which shall be utilised during emergency.											
Air Quality	Dust, and emissions (carbon monoxide, sulphur oxides, particulate matter, nitrous oxides, and	 For all construction works Provide a dust screen around e construction sites of storm water pumping stations. Damp down the soil and any stockpiled material on-site by water sprinkling. Stabilize surface soils where loaders, support 	S	S	S	S	S	S	S	S	S	S	

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
	hydrocarbons.) from construction vehicles, equipment, and machinery used for drain construction	 equipment, and vehicles will operate by using water and maintain surface soils in a stabilized condition Apply water prior to levelling or any other earth- moving activity to keep the soil moist throughout the process Cover the soil stocked at the sites with tarpaulins Control access to the work area, prevent unnecessary movement of the vehicle, public trespassing into work areas; limiting soil disturbance will minimize dust generation Use tarpaulins to cover the loose material (soil, sand, aggregate, etc.,) when transported by open trucks; Control dust generation while unloading the loose material (particularly aggregate, sand, soil) at the site by sprinkling 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es-Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 water and unloading inside the barricaded area Clean wheels and undercarriage of haul trucks prior to leaving the construction site Ensure that all the construction equipment, machinery are fitted with pollution control devices, which are operating correctly, and have valid pollution under control (PUC) certificate For Drain works Barricade the construction area using hard barricades (of 2 m height) on both sides Initiate site clearance and excavation work only after barricading of the site is done Confine all the material, excavated soil, debris, equipment, machinery (excavators, cranes, etc.,), to the barricaded area 											
		• Limit the stocking of											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 excavated material at the site; remove the excess soil from the site immediately to the designated disposal area Undertake the work section-wise, a 500m section should be demarcated and barricaded; open up several such sections at a time, but care shall be taken to locate such sections in different zones Conduct work sequentially - excavation, drain construction, backfilling, testing section-wise (for a minimum length as possible) so that backfilling, stabilization of soil can be done. vii. Backfilled trench at any completed section after removal of barricading will be the 											

			Cor	nplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
Surface water	Mobilization	main source of dust pollution. The traffic, pedestrian movement, and wind will generate dust from the backfilled section.											
Surface water quality	Mobilization of settled silt Materials and chemical contamination from fuels and lubricants during construction can contaminate nearby surface water quality.	 All earthworks are conducted during the dry season to prevent the problem of soil/silt run-off during rains Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets; Prioritize the re-use of excess spoils and materials in the construction works. If spoils will be disposed off , only designated disposal areas shall be used; Install temporary silt traps or sedimentation basins along the drainage leading to the water 	S	S	S	S	S	S	S	S	S	S	

			Cor	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	tage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 bodies; Place storage areas for fuels and lubricants away from any drainage leading to water bodies; Store fuel, construction chemicals, etc., on an impervious floor, also avoid spillage by careful handling; provide spill collection sets for effective spill management Dispose of any wastes generated by construction activities in designated sites; Conduct surface quality inspection according to the Environmental Management Plan (EMP). 											
Surface and Groundwater	Water accumulation	 As far as possible control the entry of runoff from upper areas into the 	S	5	6	c.	c.	6	6	6	6	5	
quality	in trenches/pits	excavated pits, and work area by creation of temporary drains or bunds	3	S	S	S	S	S	S	S	S	S	

			Cor	nplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 around the periphery of the work area Pump out the water collected in the pits/excavations to a temporary sedimentation pond; dispose off only clarified water into drainage Canals/streams after sedimentation in the temporary ponds Consider safety aspects related to pit collapse due to accumulation of water 											
Noise Levels	Increase in noise level due to earth- moving and excavation equipment, and the transportation of equipment, materials and people	 Plan activities in consultation with PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in the least disturbance; Minimize the noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimise sound impact to surrounding sensitive receptor; and 	S	S	S	S	S	S	S	s	S	S	

			Co	mplianc	ce rating	g for im	plemen	tation of	EMP N	Aeasure	es- Pack	tage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s. Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity; Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals. 											
Landscape and aesthetics –	Impacts due to excess	• Prepare and implement a Construction Waste (spoils) Management Plan											
waste	excavated	(refer Appendix 3)As far as possible utilize	S	S	S	S	S	S	S	S	S	S	
generation	earth, excess	• As far as possible utilize the debris and excess soil											
	construction	in construction purpose,											
	materials and	for example for raising the ground level or											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es-Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
	solid waste such as removed 5 wood, 5 packaging 5	 construction of access roads, etc., Avoid stockpiling any excess spoils at the site for a long time. Excess excavated soils should be disposed off to approved designated areas immediately If the disposal is required, the site shall be selected preferably from barren, infertile lands; sites should locate away from residential areas, forests, water bodies and any other sensitive land uses Solid wastes should be properly segregated in biodegradable and non-biodegradable for collection and disposal to the designated solid waste disposal site; create a compost pit at designated sites for disposal of biodegradable waste shall be collected separately and disposed to approved designated areas. Residual and hazardous 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 wastes such as oils, fuels, and lubricants shall be disposed off in disposal sites approved by TNPCB. Prohibit burning of construction and/or domestic waste. Ensure that wastes are not haphazardly thrown in and around the project site; provide proper collection bins and create awareness to use the dustbins. Conduct site clearance and restoration to original condition after the completion of construction work. PIU to ensure that the site is properly restored prior to issuing of construction completion certificate 											
Management of flood and drainage during construction works	Impact on the construction site, materials and labours	 Contractor in coordination with GCC to plan and schedule the existing drains rehabilitation and surplus canal works duly considering the flood management aspect Plan existing drains rehabilitation and surplus canal works during dry 	S	S	S	S	S	S	S	S	S	S	

			Cor	nplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	age	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 season and ensure that works are complete before the onset of monsoon If the full works cannot be completed within one dry season (which is likely as the construction period is at least 2 years), works shall be conducted section-wise so that surplus canals and/or existing drains are put into operation prior to onset of monsoon; work sections shall be cleared of construction materials, debris and any obstructions creating for construction shall be removed To safeguard works and avoid flood/ water logging, the contractor will prepare a suitable site-specific temporary drainage management plan (including emergency response, clean-up kit and trained personnel, to assist with mitigating the damage) and will implement the same 											

			Cor	nplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es-Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
Biological environment	Adverse impacts on Creek and coastal /terrestrial due to construction works	 No works in the CRZ shall be until clearance under CRZ Notification, 2019 is obtained and complied with conditions, if any, stipulated therein. Implement all measures suggested to manage surface water runoff and quality during the construction works Where necessary, before the monsoon measures actions like, diversion ditches can be created in order to intercept and slow down the speed of runoff into the Creek; small, compacted soil berms can be created to intercept runoff and reduce erosion and sediment transport and can reduce the area of water displacement. Conduct monitoring of sediment and water quality in water bodies and creek as per EMP Do not use heavy equipment on the coastal zone; use machinery to the minimum possible extent, 	s	S	S	S	S	S	s	s	s	s	No works has been initiated in CRZ influence areas of Packages 27, 32, 34, 35, 36, 37, 38, 39, 40, 41 and 42.

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
Accessibility and traffic disruptions	Traffic problems and conflicts near project locations and haul road.	 and restrict the movement to drain/work area Do not place / store materials, waste or debris in the coastal zone Do not remove vegetation or trees Create awareness among the workers and staff on the coastal environment sensitivity, and ensure no damage/disturbance to flora and fauna Drain Construction Prepare a traffic management plan for drains works along the roadsPrepare a drain construction implementation plan in each zone separately and undertake the work accordingly; ensure that for each road where the work is being undertaken there is an alternative road for the traffic diversion; take up the work in a sequential way so that public inconvenience is 	S	S	S	S	S	S	s	s	s	S	
		minimal											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 Plan the drain construction in coordination with the traffic police; provide temporary diversions, where necessary and effectively communicate with the general public Avoid construction work in all roads in a colony at one go; it will render all roads unusable due to excavations at the same time, creating large scale inconvenience Undertake the work section wise, a 500 m section should be demarcated and barricaded; open up several such sections at a time, but care shall be taken to locate such sections in different zones Confine work areas in the road carriageway to the minimum possible extent; all the activities, including material and waste/surplus soil stocking should be 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 confined to this area. Proper barricading should be provided; avoid material/surplus soil stocking in congested areas – immediately removed from site/ or brought to the site as and when required Limit the width of trench excavation as much as possible by adopting best construction practices; adopt vertical cutting approach with proper shoring and bracing; this is especially to be practiced in narrow roads and wider/deeper drains; i deep trenches are excavated with slopes, the roads may render completely unusable during the construction period Leave spaces for access between mounds of soil to maintain access to the houses/properties; access to any house or property shall not be blocked 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 completely; alternative arrangements, at least to maintain pedestrian access at all times to be provided Provide pedestrian access in all the locations; provide wooden/metal planks over the open trenches at each house to maintain the access. Inform the local population 1-week in advance about the work schedule Plan and execute the work schedule Plan and execute the work in such a way that the period of disturbance/loss of access is minimum. Keep the site free from all unnecessary obstructions. Notify affected public by public information notices, providing signboards informing nature and duration of construction works and contact numbers for concerns/complaints. Provide information to to 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	tage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 the public through media newspapers and local cable television (TV) services At the worksite, public information/caution boards shall be provided including contact for public complaints Hauling (material, waste/debris, and equipment) activities Plan transportation routes so that heavy vehicles do not use narrow local roads, except near delivery sites Schedule transport and hauling activities during non- peak hours; Locate entry and exit points in areas where there is low potential for traffic congestion; Drive vehicles in a considerate manner Notify affected public by public information notices, providing signboards informing nature and duration of construction works and 											

	Impact	Mitigation Measures	Compliance rating for implementation of EMP Measures- Package wise										Remarks
Field													
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	1
		contact numbers for concerns/complaints.											
Socio- Economic Loss of access to houses and business	Loss of income	 Inform all businesses and residents about the nature and duration of any work well in advance so that they can make necessary preparations; Do not block any access; leave spaces for access between barricades/mounds of excavated soil and other stored materials and machinery, and providing footbridges so that people can crossover open trenches Barricade the construction area and regulate the movement of people and vehicles in the vicinity, and maintain the surroundings safely with proper direction boards, lighting and security personnel – people should feel safe to move around Control dust generation 	S	S	S	S	S	S	S	S	S	S	
			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	age	
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Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 restore the road surface; this will also avoid any business loss due to dust and access inconvenience of construction work. Employee best construction practices, speed up construction work with better equipment, increase the workforce, etc., in the areas with predominantly commercial, and with sensitive features like hospitals, and schools; Consult businesses and institutions regarding operating hours and factoring this in work schedules; and Provide signboards for pedestrians to inform the nature and duration of construction works and contact numbers for concerns/complaints. 											
Socio-	Generation	• Employ local labour force											
Economic -	of	as far as possibleComply with labour laws	S	S	S	S	S	S	S	S	S	S	
Employment	temporary												

			Co	mplianc	ce rating	g for im	plemen	tation of	EMPN	Measure	es-Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
	employment												
	and an												
	increase in												
	local revenue												
Occupational Health and Safety	Occupational hazards which can arise during work	 Follow all national, state and local labour laws (an indicative list is given in Appendix 2); Develop and implement site-specific occupational health and safety (OH and S) Plan which shall include measures such as (a) safe and documented construction procedures to be followed for all site activities; (b) ensuring all workers are provided with and use personal protective equipment; (c) OH and S, training for all site personnel, (d) excluding public from the work sites; and (e) documentation of work- related accidents; Follow International Standards such as the World Bank 	S	s	S	S	S	S	S	S	S	S	

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 Health, and Safety Guidelines. Ensure that qualified first-aid specialist is provided at all times in the project area. Equipped first-aid stations shall be easily accessible throughout the sites; Secure all installations from unauthorized intrusion and accident risks Provide OH and S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted; 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	tage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; Ensure moving equipment is outfitted with audible back-up alarms; Mark and provide signboards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be following international standards and be well known to, and easily understood by workers, visitors, and the public as appropriate; and Disallow worker exposure to noise level greater than 85 dBA for more than 8 hours per day without hearing protection. The use of 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 hearing protection shall be enforced actively. Provide supplies of potable drinking water. Provide clean eating areas where workers are not exposed to hazardous or noxious substances 											
COVID 19	Spread of	• Taking cognizance of											
response	infection	situation at time of mobilization, the											
	which causes	Contractor shall											
	serious	undertake a COVID risk assessment of project											
	symptoms like	area and prepare a											
	difficulty in	COVID Response and Management Plan (C-											
	breathing,	R&MP) and submit to											
	chest pain and	GCC and PSC for approval.	S	S	S	S	S	S	S	S	S	S	
	loss of speech	• The preparation of C-	3	3	3	3	3	5	3	3	3	3	
	or	R&MP shall consider guidance of Government											
	movement. If	of India, World Health											
	not treated it	Organization, International Labour											
	will lead to	Organization,											
	death	International Financial Corporation and World											
		Bank's interim guidance											
		note etc. The key points											
		on COVID Response and											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 Management measures is at Appendix 14. The contractor shall submit a weekly monitoring and progress report to GCC and PSC. 											
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and waste transportation	 Confine work areas; prevent public access to all areas where construction works are on-going through the use of barricading and security personnel Attach warning signs, blinkers to the barricading to caution the public about the hazards associated with the works, and presence of road side excavation Minimize the duration of time when the drain trench is left open through careful planning; plan the work properly from excavation to refilling Control dust pollution – implement dust control measures as suggested under air quality section 	S	S	S	S	S	S	s	S	S	S	

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 safe passage for pedestrians along with the worksites Provide road signs and flag persons to warn of on- going trenching activities. Restrict construction vehicle movements to defined access roads and demarcated working areas (unless in the event of an emergency) Enforce strict speed limit (20 kmph) for plying on unpaved roads, construction tracks Provide temporary traffic control (e.g. flagmen) and signs where necessary to improve safety and smooth traffic flow Where traffic is diverted around crossings, traffic control or careful selection of the exit from the working areas will be provided to ensure that vehicles join the road in a safe manner. At sensitive locations 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 particularly where there are schools and markets close to the road, awareness of safety issues will be raised through neighborhood awareness meetings All drivers and equipment operators will undergo safety training Maintain regularly the construction equipment and vehicles; use manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. 											
Safety Requirements for Deep Trench works	Accidents, and risk hazard	 Sides of excavation shall be inspected by PSC during excavation from time to time and after every rain, storm, or other hazard- increasing occurrence and protection against slides and cavings shall be increased, if necessary Complete information on the underground 	S	S	S	S	S	S	S	S	S	S	

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 structures (such as water pipelines, sewers, gas mains, electrical conduit system and other civic facilities) should be collected before doing the excavation work. Proper precautions shall be taken to prevent accident to the workmen engaged in excavation work and calamities for the public Where medical facilities (including hospitals) are not available nearby, firstaid kit should be available. This shall be kept at a conspicuous place in the charge of trained person(s). The kit shall be recouped periodically. Labors shall be instructed to use safety devices and appliances provided to them whenever it is necessary to do so Labors who are not aware of the hazards peculiar to the work shall not be permitted to proceed with the work without being 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Measure	es- Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 properly instructed. Safety helmets shall be worn by all persons entering trench where hazards from falling stones, timber or other materials exist Appropriate safety footwear (rubber boots, protective covers, etc.,) shall be worn by labours who are engaged in work requiring such protection All trenches in soil more than 1.5 m deep shall be securely shored and timbered. All trenches in friable or unstable rock exceeding 2 m in depth shall be securely shored and timbered Where the sides of trenches are sloped but not within 1.5 m of the bottom, the vertical sides shall be shored and the shoring shall extend at least 30 cm above the vertical sides. When open spaced sheathing is used, a toe board shall be 											

		Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	tage	
Impact	Mitigation Measures					W	vise					Remarks
		P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
	 provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls. Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences. Approved quality of sal wood shall be used for shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the purpose 											
· ·												
and noise	sheds, and construction											
-	plants;Select a campsite away											
	from residential areas (at	S	S	S	S	S	S	S	S	S	S	
-												
water	campsite within the											
pollution from	existing facilities of GCC											
-	Temporary air and noise pollution from machine operation, water	Provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.• Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences.• Approved quality of sal wood shall be used for shoring and timbering a trench. Any other structural material having 	ImpactMitigation MeasuresP21	ImpactMitigation MeasuresP21P22P21provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.P31P32Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences.P31P32Approved quality of sal wood shall be used for shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the purposeP31P32Temporary air and noiseConsult PIU before locating project offices, sheds, and construction plants;SSSSelect a campsite away from residential areas (at operation, waterSelect a campsite away from residential areas (at om sintained) or locate the campsite within the existing facilities of GCCSS	ImpactMitigation MeasuresP21P22P23P21P22P23provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.P21P22P23Shoring and finbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences.Image: Commence of the trench with vertical walls.Approved quality of sal wood shall be used for shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the purposeImage: Commence of the trench trench. Any other structural material having strength not less than that of sal wood may also be used for the purposeSSSTemporary air and noise pollution from machineConsult PIU before locating project offices, sheds, and construction plants;SSSSelect a campsite away from residential areas (at least 100 m buffer shall be maintained) or locate the campsite within the evisting facilities of GCCSS	ImpactMitigation MeasuresP21P22P23P24P21P22P23P24provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.Image: Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences.Image: Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences.Image: Shoring and timbering sheat shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the purposeImage: Shoring and timbering strength not less than that of sal wood may also be used for the purposeImage: Shoring sheat shoring the purposeTemporary air and noise pollution from machineConsult PIU before locating project offices, sheds, and construction plants;SSSSSelect a campsite away from residential areas (at campsite within the campsite within the existing facilities of GCCSSSS	ImpactMitigation MeasuresP21P22P23P24P25P21P22P23P24P25provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.Impact in the part of the trench with vertical walls.Impact in the part of the trench with vertical walls.Impact in the part of the trench with vertical walls.Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences.Impact in the part of the trench but wood shall be used for shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the purposeImpact in the pollution from plants;Impact in the pollution from plants;Impact in the pollution from plants;Impact in the pollution from plants;Impact in the pollution from machineImpact in the pollution fromImpact in the pollution from matinained) or locate the campsite within the pollution fromImpact in the pollution fromImpact in the pollution from matinained) or locate the campsite within the enantanie of GCCImpact in the pollution fromImpact in the pollution fromImpact in the pollution from matinained) or locate the campsite within theImpact in the pollution fromImpact in the pollution fr	ImpactMitigation MeasureswiseP21P22P23P24P25P26Provided to prevent material rolling down the slope and faling into the part of the trench with vertical walls.Impact Impact Impac	ImpactMitigation MeasuresviseP21P22P23P24P25P26P27P21P21P22P23P24P25P26P27P21P21P22P23P24P25P26P27P21P21P22P23P24P25P26P27P21P21P21P22P23P24P25P26P27P21P21P21P22P23P24P25P26P27P21P21P21P22P23P24P25P26P27P21P21P21P22P23P24P25P26P27P21P21P21P21P21P23P24P25P26P27P21P21P21P21P21P23P24P25P26P27P21<	ImpactMitigation MeasuresviseP21P22P23P24P25P26P27P28provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.Impact <t< td=""><td>ImpactMitigation MeasuresViscP21P22P23P24P25P26P27P28P29P21P21P22P23P24P25P26P27P28P29P21provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences.Shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the purposeSS<td< td=""><td>P21P22P23P24P25P26P27P28P29P30provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.state</td></td<></td></t<>	ImpactMitigation MeasuresViscP21P22P23P24P25P26P27P28P29P21P21P22P23P24P25P26P27P28P29P21provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences.Shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the purposeSS <td< td=""><td>P21P22P23P24P25P26P27P28P29P30provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.state</td></td<>	P21P22P23P24P25P26P27P28P29P30provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls.state

			Co	mplianc	e rating	g for im	plemen	tation of	EMP	Measure	es- Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
	storage and use of fuels,oils, solvents, and lubricants Unsanitary and poor living conditions for workers	 Avoid tree cutting for setting up camp facilities Provide a proper fencing/compound wall for campsites Campsite shall not be located near (100 m) water bodies, flood plains flood-prone/low lying areas, or any ecologically, socially, archeologically sensitive areas Separate the workers living areas and material storage areas clearly with a fencing and separate entry and exit Ensure conditions of livability at work camps are always maintained at the highest standards possible; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es- Pack	tage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 tarpaulins, etc., shall not be used as accommodation for workers Camps shall be provided with proper drainage, there shall not be any water accumulation Provide drinking water, water for other uses, and sanitation facilities for employees Prohibit labours from cutting of trees for firewood; The contractor should provide cooking fuel (cooking gas); use of firewood is not allowed Train employees in the storage and handling of materials which can potentially cause soil contamination Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements Recover used oil and 											

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	age	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		 lubricants and reuse or remove from the site; Manage solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in the local market Remove all wreckage, rubbish, or temporary structures which are no longer required; and At the completion of work, the camp area shall be cleaned and restored to pre-project conditions, and submit a report to PIU; PIU to review and approve camp clearance and closure of worksite 											
Post-	Damage due to	• Remove all spoils											
construction	debris, spoils,	wreckage, rubbish, or temporary structures	S	S	S	S	S	S	S	S	S	S	
clean-up	excess	(such as buildings, shelters, and latrines) which are no longer	5		3		3	6	5			3	

			Co	mplianc	e rating	g for im	plemen	tation of	EMP N	Aeasure	es-Pack	kage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
	construction materials	 required; and All excavated roads shall be reinstated to the original condition. All disrupted utilities restored All affected structures rehabilitated/compensated The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the re-vegetation specification that forms part of this document. The contractor must arrange the cancellation of all temporary services. Request PIU to report in writing that worksites and camps have been vacated and restored to 											

			Cor	nplianc	e rating	g for im	plemen	tation of	EMP N	leasure	s- Pack	tage	
Field	Impact	Mitigation Measures					W	vise					Remarks
			P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	
		pre-project conditions before acceptance of work.											

(d) Construction Stage Mitigation Measures: Compliance Status

			Com	oliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
EMP Implementati on Training	Irreversible impact to the environment, workers, and community	Project manager and all key workers will be required to undergo training on EMP implementation including spoils/waste management, Standard operating procedures (SOP) for construction works; occupational health and safety (OH and S), core labour laws, applicable environmental laws, etc.	S	S	S	S	S	S	S	S	S	S	
Generation of silt/soil	Land and water	(ix) Prepare and implement a Construction	S	S	S	S	S	S	S	S	S	S	

			Com	oliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
	pollution due to silt/disposal	Waste (Spoils) Management Plan (x) As far as possible utilize the debris, silt and excess soil in construction purpose, for example for raising the ground level or construction of access roads etc. (xi) Avoid stockpiling any excess spoils at the site for long time. Excess excavated soils should be disposed off to approved designated areas immediately (Kodungaiyur dumping yard and Perungudi Dump Yard of GCC are the identified dumping areas for the project). (xii) Surplus soil may be used as daily cover / intermediate cover at the dump site											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		Monitoring the quality sediment/silt generated from desilting activity for presence of hazardous substances, and follow the suitable method as per the quality; hazardous material should be disposed at hazardous waste disposal facility approved by TNPCB											
Desilting works	Environment al pollution and occupation health and health and safety	 (xi) Desilting process of surplus canals shall be conducted during the summer season for the storm water and surplus canals. no flow season only (xii) Prior to desilting process, the drains shall be allowed dry so that there is no standing water on silt / sediment (xii) Do not conduct 	S	S	S	S	S	S	S	S	S	S	

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					Wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 manual desilting process, use appropriate equipment / implements (xiv) Desilting shall be conducted in small sections, accumulated water, if any shall not be pumped out, but pumped to adjoining section within the same drain (xv) Desilting process shall be conducted in such a way that water content of the silt/sediment is low, so that contaminated water is not spilled during the loading, transport and unloading process. The excavated sludge shall be placed temporary in dry areas / desilted portion / banks of the canal/ drain, which will allow the water content in the sludge to drain back to the canal; in no case contaminated water is allowed to flow 											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		outside the drain/canal (iii) This process shall generate sludge. The excavated sludge shall be stored temporary in dry areas near the banks of the canal/ drain, which will allow the water content in the sludge to drain back to the canal, then the sludge, will be packed in the gunny bags or cloth bags to prevent mixing and flowing into the drain. The desilting process shall be conducted mechanically by Robotic excavator and Amphibian Vehicle (manual desilting process shall be avoided). This also helps in further dewatering of the sludge, which will reduce the weight. The packed gunny bags are then transported to designated dumping locations. Currently some of the											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					wi	se					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		identified dumping grounds are Perungudi Dump Yard and Kodungaiyur Dump Yard. During the process, the Workers shall be provided with appropriate PPE's, masks with for safety. Oxygen cylinders and first aid kit shall be made available at the site, which shall be utilised during emergency.											
Air Quality	Dust, and emissions (carbon monoxide, sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons	 For all construction works Provide a dust screen around e construction sites of storm water pumping stations. Damp down the soil and any stockpiled material on-site by water sprinkling. Stabilize surface soils where loaders, support equipment, and vehicles will operate by using water and 	S	S	S	S	S	S	S	S	S	S	

			Com	oliance	rating	for imp	lement	ation o	f EMP	Measu	ires- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
	.) from construction vehicles, equipment, and machinery used for drain construction	 maintain surface soils in a stabilized condition Apply water prior to levelling or any other earth- moving activity to keep the soil moist throughout the process Cover the soil stocked at the sites with tarpaulins Control access to the work area, prevent unnecessary movement of the vehicle, public trespassing into work areas; limiting soil disturbance will minimize dust generation Use tarpaulins to cover the loose material (soil, sand, aggregate, etc.,) when transported by open trucks; Control dust generation while unloading the loose material (particularly aggregate, sand, soil) at the site by sprinkling water and unloading inside the 											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 barricaded area Clean wheels and undercarriage of haul trucks prior to leaving the construction site Ensure that all the construction equipment, machinery are fitted with pollution control devices, which are operating correctly, and have valid pollution under control (PUC) certificate For Drain works Barricade the construction area using hard barricades (of 2 m height) on both sides Initiate site clearance and excavation work only after barricading of the site is done Confine all the material, excavated soil, debris, equipment, machinery (excavators, cranes, etc.,), to the barricaded 											

			Comp	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 Limit the stocking of excavated material at the site; remove the excess soil from the site immediately to the designated disposal area Undertake the work section-wise, a 500m section should be demarcated and barricaded; open up several such sections at a time, but care shall be taken to locate such sections in different zones Conduct work sequentially - excavation, drain construction, backfilling, testing section-wise (for a minimum length as possible) so that backfilling, stabilization of soil can be done. 											

			Comp	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					Wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		• vii. Backfilled trench at any completed section after removal of barricading will be the main source of dust pollution. The traffic, pedestrian movement, and wind will generate dust from the backfilled section.											
Surface water quality	Mobilization of settled silt Materials and chemical contaminatio n from fuels and lubricants during construction can contaminate nearby	 All earthworks are conducted during the dry season to prevent the problem of soil/silt run-off during rains Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets; Prioritize the re-use of excess spoils and materials in the construction works. If spoils will be disposed off , only designated 	S	S	S	S	S	S	S	S	S	S	

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					Wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
	surface water quality.	 disposal areas shall be used; Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies; Place storage areas for fuels and lubricants away from any drainage leading to water bodies; Store fuel, construction chemicals, etc., on an impervious floor, also avoid spillage by careful handling; provide spill collection sets for effective spill management Dispose of any wastes generated by construction activities in designated sites; Conduct surface quality inspection according to the Environmental 											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		Management Plan (EMP).											
Surface and Groundwater quality	Water accumulation in trenches/pits	 As far as possible control the entry of runoff from upper areas into the excavated pits, and work area by creation of temporary drains or bunds around the periphery of the work area Pump out the water collected in the pits/excavations to a temporary sedimentation pond; dispose off only clarified water into drainage Canals/streams after sedimentation in the temporary ponds Consider safety aspects related to pit collapse due to accumulation of water 	S	S	S	S	S	S	S	S	S	S	
Noise Levels	Increase in noise level due to earth-	• Plan activities in consultation with PIU so that activities with the greatest potential to	S	S	S	S	S	S	S	S	S	S	

			Com	pliance	rating	for imp	lement	tation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
	moving and excavation equipment, and the transportation of equipment, materials and people	 generate noise are conducted during periods of the day which will result in the least disturbance; Minimize the noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimise sound impact to surrounding sensitive receptor; and Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s. Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity; Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's 											

			Comp	oliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 approach; Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals. 											
Landscape and aesthetics – waste generation	Impacts due to excess excavated earth, excess construction materials and solid waste such as removed concrete, wood, packaging	 Prepare and implement a Construction Waste (spoils) Management Plan (refer Appendix 3) As far as possible utilize the debris and excess soil in construction purpose, for example for raising the ground level or construction of access roads, etc., Avoid stockpiling any excess spoils at the site for a long time. Excess excavated soils should be disposed off to approved designated areas immediately If the disposal is required, the site shall be selected preferably from barren, infertile lands; sites should locate away 	S	S	S	S	S	S	S	S	S	S	

			Com	oliance	rating	for imp	lement	ation o	f EMP	Measu	ires- Pa	ckage	
Field	Impact	Mitigation Measures					wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 from residential areas, forests, water bodies and any other sensitive land uses Solid wastes should be properly segregated in biodegradable and non-biodegradable for collection and disposal to the designated solid waste disposal site; create a compost pit at designated sites for disposal of biodegradable waste; non-biodegradable waste; shall be collected separately and disposed to approved designated areas. Residual and hazardous wastes such as oils, fuels, and lubricants shall be disposal sites approved by TNPCB. Prohibit burning of construction and/or domestic waste. Ensure that wastes are not haphazardly thrown in and around the project 											

			Comp	oliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 site; provide proper collection bins and create awareness to use the dustbins. Conduct site clearance and restoration to original condition after the completion of construction work. PIU to ensure that the site is properly restored prior to issuing of construction completion certificate 											
Management	Impact on the	• Contractor in											
of flood and	construction	coordination with GCC to plan and schedule the											
drainage	site, materials	existing drains rehabilitation and surplus											
during	and labours	canal works duly											
construction works		 considering the flood management aspect Plan existing drains rehabilitation and surplus canal works during dry season and ensure that works are complete before the onset of monsoon If the full works cannot be completed within one dry season (which is 	S	S	S	S	S	S	S	S	S	S	

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 likely as the construction period is at least 2 years), works shall be conducted section-wise so that surplus canals and/or existing drains are put into operation prior to onset of monsoon; work sections shall be cleared of construction materials, debris and any obstructions creating for construction shall be removed To safeguard works and avoid flood/ water logging, the contractor will prepare a suitable site-specific temporary drainage management plan (including emergency response, clean-up kit and trained personnel, to assist with mitigating the damage) and will implement the same 											
Biological	Adverse	• No works in the CRZ shall be until clearance											No
environment	impacts on	under CRZ Notification,	S	S	S	S	S	S	S	S	S	S	works
	Creek and	2019 is obtained and complied with											has been

17: 11			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
	coastal /terrestrial ecosystems due to construction works	 conditions, if any, stipulated therein. Implement all measures suggested to manage surface water runoff and quality during the construction works Where necessary, before the monsoon measures actions like, diversion ditches can be created in order to intercept and slow down the speed of runoff into the Creek; small, compacted soil berms can be created to intercept runoff and reduce erosion and sediment transport and can reduce the area of water displacement. Conduct monitoring of sediment and water quality in water bodies and creek as per EMP Do not use heavy equipment on the coastal zone; use machinery to the minimum possible extent, and restrict the movement to drain/work 	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	initiated in CRZ influence areas of Packages 27, 32, 34, 35, 36, 37, 38, 39, 40, 41 and 42.

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 Do not place / store materials, waste or debris in the coastal zone Do not remove vegetation or trees Create awareness among the workers and staff on the coastal environment sensitivity, and ensure no damage/disturbance to flora and fauna 											
Accessibility	Traffic	Drain Construction											
Accessibility and traffic disruptions	Traffic problems and conflicts near project locations and haul road.	 Prepare a traffic management plan for drains works along the roadsPrepare a drain construction implementation plan in each zone separately and undertake the work accordingly; ensure that for each road where the work is being undertaken there is an alternative road for the traffic diversion; take up the work in a sequential way so that public inconvenience is minimal 	S	S	S	S	S	S	S	S	S	S	

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 construction in coordination with the traffic police; provide temporary diversions, where necessary and effectively communicate with the general public Avoid construction work in all roads in a colony at one go; it will render all roads unusable due to excavations at the same time, creating large scale inconvenience Undertake the work section wise, a 500 m section should be demarcated and barricaded; open up several such sections at a time, but care shall be taken to locate such sections in different zones Confine work areas in the road carriageway to the minimum possible extent; all the activities, including 											

			Compliance rating for implementation of EMP Measures- Package										Remarks
Field	Impact	Mitigation Measures	wise										
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	1
		 material and waste/surplus soil stocking should be confined to this area. Proper barricading should be provided; avoid material/surplus soil stocking in congested areas – immediately removed from site/ or brought to the site as and when required Limit the width of trench excavation as much as possible by adopting best construction practices; adopt vertical cutting approach with proper shoring and bracing; this is especially to be practiced in narrow roads and wider/deeper drains; i deep trenches are excavated with slopes, the roads may render completely unusable during the construction period Leave spaces for access between 											
			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
-------	--------	---	-----	---------	--------	---------	--------	---------	-------	-------	---------	-------	---------
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 mounds of soil to maintain access to the houses/properties; access to any house or property shall not be blocked completely; alternative arrangements, at least to maintain pedestrian access at all times to be provided Provide pedestrian access in all the locations; provide wooden/metal planks over the open trenches at each house to maintain the access. Inform the local population 1-week in advance about the work schedule Plan and execute the work in such a way that the period of disturbance/ loss of access is minimum. Keep the site free from all unnecessary obstructions. Notify affected public by public information 											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 notices, providing signboards informing nature and duration of construction works and contact numbers for concerns/complaints. Provide information to the public through media – newspapers and local cable television (TV) services At the worksite, public information/caution boards shall be provided including contact for public complaints Hauling (material, waste/debris, and equipment) activities Plan transportation routes so that heavy vehicles do not use narrow local roads, except near delivery sites Schedule transport and hauling activities during non-peak hours; Locate entry and exit points in areas where 											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 there is low potential for traffic congestion; Drive vehicles in a considerate manner Notify affected public by public information notices, providing signboards informing nature and duration of construction works and contact numbers for concerns/complaints. 											
Socio- Economic Loss of access to houses and business	Loss of income		S	S	S	S	S	S	S	S	S	S	

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 regulate the movement of people and vehicles in the vicinity, and maintain the surroundings safely with proper direction boards, lighting and security personnel – people should feel safe to move around Control dust generation Immediately consolidate the backfilled soil and restore the road surface; this will also avoid any business loss due to dust and access inconvenience of construction work. Employee best construction practices, speed up construction work with better equipment, increase the workforce, etc., in the areas with predominantly commercial, and with sensitive features like hospitals, and schools; Consult businesses and 											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 institutions regarding operating hours and factoring this in work schedules; and Provide signboards for pedestrians to inform the nature and duration of construction works and contact numbers for concerns/complaints. 											
Socio-	Generation	• Employ local labour force as far as possible											
Economic -	of	 Comply with labour 											
Employment	temporary	laws											
	employment		S	S	S	S	S	S	S	S	S	S	
	and an												
	increase in												
	local revenue												
Occupational	Occupational	• Follow all national,											
Health and	hazards	state and local labour laws (an indicative list											
Safety	which can	is given in Appendix											
	arise during	2).Develop and	S	S	S	S	S	S	S	S	S	S	
	work	implement site-specific occupational health and safety (OH and S) Plan which shall include measures such											

			Com	oliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 as (a) safe and documented construction procedures to be followed for all site activities; (b) ensuring all workers are provided with and use personal protective equipment; (c) OH and S, training for all site personnel, (d) excluding public from the work sites; and (e) documentation of work- related accidents; Follow International Standards such as the World Bank Group's Environment, Health, and Safety Guidelines. Ensure that qualified first-aid specialist is always provided in the project area. Equipped first-aid stations shall be easily accessible throughout the sites. Secure all installations from unauthorized intrusion and accident 											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 risks Provide OH and S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers. Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted. Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas. Ensure moving equipment is outfitted with audible back-up 											
		with audible back-up alarms.											

			Com	oliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					Wi	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 Mark and provide signboards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be following international standards and be well known to, and easily understood by workers, visitors, and the public as appropriate; and Disallow worker exposure to noise level greater than 85 dBA for more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. Provide supplies of potable drinking water. Provide clean eating areas where workers are not exposed to hazardous or noxious 											

			Com	pliance	rating	for imp			f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures			-	-	W	ise				-	Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		substances											
COVID 19	Spread of	• Taking cognizance of											
response	infection	situation at time of mobilization, the											
	which causes	Contractor shall											
	serious	undertake a COVID risk assessment of											
	symptoms	project area and											
	like difficulty	prepare a COVID Response and											
	in breathing,	Management Plan (C-											
	chest pain and	R&MP) and submit to GCC and PSC for											
	loss of speech												
	or movement.	• The preparation of C- R&MP shall consider	S	S	S	S	S	S	S	S	S	S	
	If not treated	guidance of	~	2	2			2	2	2	2	2	
	it will lead to	Government of India, World Health											
	death	 Organization, International Labour Organization, International Financial Corporation and World Bank's interim guidance note etc. The contractor shall submit a weekly monitoring and progress report to GCC and PSC. 											

			Com	pliance	rating	for imp	lement	tation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and waste transportation	 Confine work areas: prevent public access to all areas where construction works are on-going using barricading and security personnel Attach warning signs, blinkers to the barricading to caution the public about the hazards associated with the works, and presence of roadside excavation Minimize the duration of time when the drain trench is left open through careful planning; plan the work properly from excavation to refilling Control dust pollution implement dust control measures as suggested under air quality section Ensure appropriate and safe passage for pedestrians along with the worksites Provide road signs and 	s	S	S	S	S	S	S	S	s	S	

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 flag persons to warn of on- going trenching activities. Restrict construction vehicle movements to defined access roads and demarcated working areas (unless in the event of an emergency) Enforce strict speed limit (20 kmph) for plying on unpaved roads, construction tracks Provide temporary traffic control (e.g. flagmen) and signs where necessary to improve safety and smooth traffic flow Where traffic is diverted around crossings, traffic control or careful selection of the exit from the working areas will be provided to ensure that vehicles join the road in a safe manner. At sensitive locations 											

			Comp	oliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 particularly where there are schools and markets close to the road, awareness of safety issues will be raised through neighborhood awareness meetings All drivers and equipment operators will undergo safety training Maintain regularly the construction equipment and vehicles; use manufacturer- approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. 											
Safety	Accidents,	• Sides of excavation shall be inspected by											
Requirements	and risk	PSC during excavation											
for Deep	hazard	from time to time and after every rain, storm,	S	S	S	S	S	S	S	S	S	S	
Trench works		or other hazard-		_				_					
		increasing occurrence											
		and protection against slides and cavings shall											

P31 P32 P33 P34 P35 P36 P37 P38 P39 P40 be increased, if necessary . Complete information on the underground structures (such as water pipelines, sewers, gas mains, electrical conduit system and other civic facilities) should be collected before doing the excavation work. Proper precautions shall be taken to prevent accident to the workmen engaged in excavation work and calamities for the public .				Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
be increased, if necessary Complete information on the underground structures (such as water pipelines, sewers, gas mains, electrical conduit system and other civic facilities) should be collected before doing the excavation work. Proper precautions shall be taken to prevent accident to the workmen engaged in excavation work and calamities for the public Where medical facilities (including hospitals) are not available nearby, first-aid kit should be available. This shall be kept at a conspicuous	Field	Impact	Mitigation Measures					W	ise					Remarks
 Complete information on the underground structures (such as water pipelines, sewers, gas mains, electrical conduit system and other civic facilities) should be collected before doing the excavation work. Proper precautions shall be taken to prevent accident to the workmen engaged in excavation work and calamities for the public Where medical facilities (including hospitals) are not available enarby, first-aid kit should be available. This shall be kept at a conspicuous 				P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
 place in the charge of trained person(s). The kit shall be recouped periodically. Labours shall be instructed to use safety devices and appliances provided to them 			 necessary Complete information on the underground structures (such as water pipelines, sewers, gas mains, electrical conduit system and other civic facilities) should be collected before doing the excavation work. Proper precautions shall be taken to prevent accident to the workmen engaged in excavation work and calamities for the public Where medical facilities (including hospitals) are not available nearby, first-aid kit should be available. This shall be kept at a conspicuous place in the charge of trained person(s). The kit shall be recouped periodically. Labours shall be instructed to use safety devices and appliances 											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 whenever it is necessary to do so Labours who are not aware of the hazards peculiar to the work shall not be permitted to proceed with the work without being properly instructed. Safety helmets shall be worn by all persons entering trench where hazards from falling stones, timber or other materials exist Appropriate safety footwear (rubber boots, protective covers, etc) shall be worn by labours who are engaged in work requiring such protection All trenches in soil more than 1.5 m deep shall be securely shored and timbered. All trenches in friable or unstable rock exceeding 2 m in depth shall be securely shored and timbered 											
		• Where the sides of											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 trenches are sloped but not within 1.5 m of the bottom, the vertical sides shall be shored, and the shoring shall extend at least 30 cm above the vertical sides. When open spaced sheathing is used, a toe board shall be provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls. Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences. Approved quality of sal wood shall be used for shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the 											

			Com	pliance	rating	for imp	lement	ation o	of EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
Work Camps and worksites	Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants Unsanitary and poor living conditions for workers	 setting up camp facilities Provide a proper fencing/compound wall for campsites Campsite shall not be located near (100 m) water bodies, flood plains flood-prone/low lying areas, or any ecologically, socially, archeologically sensitive areas Separate the workers living areas and material storage areas 	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		clearly with a fencing and separate entry and exit											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 Ensure conditions of livability at work camps are always maintained at the highest standards possible; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be used as accommodation for workers Camps shall be provided with proper drainage, there shall not be any water accumulation Provide drinking water, water for other uses, and sanitation facilities for employees Prohibit labours from cutting of trees for firewood; The contractor should 											

FieldImpactMitigation MeasureswiseRefP31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P33P34P35P36P37P38P39P40P31P32P31P32P33P34P35P36P37P38P39P31P31P31P32P31P31P35P36P37P38P39P40P31P31P31P31P31P31P31P31P		ge -
provide cooking fuel (cooking gas); use of (cooking gas); use of firewood is not allowed Train employees in the storage and handling of materials which can potentially cause soil	Field	Remarks
 (cooking gas); use of firewood is not allowed Train employees in the storage and handling of materials which can potentially cause soil 		0
 Wastewater from the camps shall be disposed off properly either into the sewer system is not available, provide on-site sanitation with a septic tank and soak pit arrangements Recover used oil and lubricants and reuse or remove from the site. Manage solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in 		

			Com	oliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
Post- construction clean-up	Damage due to debris, spoils, excess construction materials	 the local market Remove all wreckage, rubbish, or temporary structures which are no longer required; and At the completion of work, the camp area shall be cleaned and restored to pre-project conditions, and submit a report to PIU; PIU to review and approve camp clearance and closure of worksite Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and All excavated roads shall be reinstated to the original condition. All affected structures rehabilitated/compensat ed The area that previously housed the 	S	S	S	S	S	S	S	S	S	S	
		construction camp is to											

			Com	pliance	rating	for imp	lement	ation o	f EMP	Measu	res- Pa	ckage	
Field	Impact	Mitigation Measures					W	ise					Remarks
			P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	
		 be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the re-vegetation specification that forms part of this document. The contractor must arrange the cancellation of all temporary services. Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work. 											

Field	Impact	Mitigation Measures		pliance f EMP I	U	•			Remarks
			P41	P42	P43	P44	P45	P46	
EMP Implementation Training	Irreversible impact to the environment, workers, and community	Project manager and all key workers will be required to undergo training on EMP implementation including spoils/waste management, Standard operating procedures (SOP) for construction works; occupational health and safety (OH and S), core labour laws, applicable environmental laws, etc.	s	S	S	S	S	S	
Generation of silt/soil	Land and water pollution due to silt/disposal	 Prepare and implement a Construction Waste (Spoils) Management Plan As far as possible utilize the debris, silt and excess soil in construction purpose, for example for raising the ground level or construction of access roads etc. Avoid stockpiling any excess spoils at the site for long time. Excess excavated soils should be disposed off to approved designated areas immediately (Kodungaiyur dumping yard and Perungudi Dump Yard of GCC are the identified dumping areas for the project). Surplus soil may be used as daily cover / intermediate cover at the dump site 	s	S	S	S	S	S	

(e) Construction Stage Mitigation Measures: Compliance Status

Field	Impact	Mitigation Measures		pliance f EMP I	e				Remarks
			P41	P42	P43	P44	P45	P46	
		• Monitoring the quality sediment/silt generated from desilting activity for presence of hazardous substances, and follow the suitable method as per the quality; hazardous material should be disposed at hazardous waste disposal facility approved by TNPCB							
Desilting works	Environmental pollution and occupation health and health and safety	 Desilting process of surplus canals shall be conducted during the summer season for the storm water and surplus canals. no flow season only Prior to desilting process, the drains shall be allowed dry so that there is no standing water on silt / sediment Do not conduct manual desilting process, use appropriate equipment / implements Desilting shall be conducted in small sections, accumulated water, if any shall not be pumped out, but pumped to adjoining section within the same drain Desilting process shall be conducted in such a way that water content of the silt/sediment is low, so that contaminated water is not spilled during the loading, transport and unloading process. The excavated sludge shall be placed temporary in dry areas / desilted portion / banks of the canal/ drain, which will allow the water content in the sludge to drain back to the canal; in no case 	S	S	S	S	S	S	

			Com	pliance	e rating	for imp	lement	ation	
Field	Impact	Mitigation Measures	of	f EMP l	Measure	es- Pacl	kage wi	se	Remarks
			P41	P42	P43	P44	P45	P46	
		 contaminated water is allowed to flow outside the drain/canal This process shall generate sludge. The excavated sludge shall be stored temporary in dry areas near the banks of the canal/ drain, which will allow the water content in the sludge to drain back to the canal, then the sludge, will be packed in the gunny bags or cloth bags to prevent mixing and flowing into the drain. The desilting process shall be conducted mechanically by Robotic excavator and Amphibian Vehicle (manual desilting process shall be avoided). This also helps in further dewatering of the sludge, which will reduce the weight. The packed gunny bags are then transported to designated dumping locations. Currently some of the identified dumping grounds are Perungudi Dump Yard and Kodungaiyur Dump Yard. During the process, the Workers shall be provided with appropriate PPE's, masks with for safety. Oxygen cylinders and first aid kit shall be made available at the site, which shall be utilised during emergency. 							
Air Quality	Dust, and emissions(carbon monoxide,sulphur oxides,	For all construction worksProvide a dust screen around e construction sites of storm water	S	S	S	S	S	S	

P42	P41			es- Pac	kage w	ise	Remarks
	I 41	P42	P43	P44	P45	P46	

D' 11	T .			npliance	-	_			Remarks
Field	Impact	Mitigation Measures	P41	f EMP	P43	P44	P45	P46	Remarks
		equipment, machinery is fitted with pollution control devices, which are operating correctly, and have valid pollution under control (PUC) certificate For Drain works							
		 Barricade the construction area using hard barricades (of 2 m height) on both sides Initiate site clearance and excavation work only after barricading of the site is done Confine all the material, excavated soil, debris, equipment, machinery (excavators, cranes, etc.,), to the barricaded area Limit the stocking of excavated material at the site; remove the excess soil from the site immediately to the designated disposal area Undertake the work section-wise, a 500m section should be demarcated and barricaded; open several such sections at a time, but care shall be taken to locate such sections in different zones Conduct work sequentially - excavation, drain construction, backfilling, testing section-wise (for a 							

Field	Impact	Mitigation Measures		npliance f EMP I	· ·	•			Remarks
			P41	P42	P43	P44	P45	P46	
		 minimum length as possible) so that backfilling, stabilization of soil can be done. vii. Backfilled trench at any completed section after removal of barricading will be the main source of dust pollution. The traffic, pedestrian movement, and wind will generate dust from the backfilled section. 							
Surface water quality	Mobilization of settled silt Materials and chemical contamination from fuels and lubricants during construction can contaminate nearby surface water quality.	 All earthworks are conducted during the dry season to prevent the problem of soil/silt run-off during rains Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets. Prioritize the re-use of excess spoils and materials in the construction works. If spoils will be disposed off, only designated disposal areas shall be used. Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. 	S	S	S	S	S	S	

			Con	npliance	e rating	for imp	lement	ation	
Field	Impact	Mitigation Measures	0	f EMP l	Measure	es- Pacl	kage wi	ise	Remarks
			P41	P42	P43	P44	P45	P46	
		 Store fuel, construction chemicals, etc., on an impervious floor, also avoid spillage by careful handling; provide spill collection sets for effective spill management Dispose of any wastes generated by construction activities in designated sites. Conduct surface quality inspection according to the Environmental Management Plan (EMP). 							
Groundwater quality	Water accumulation in trenches/pits	C	S	s	S	S	S	S	
Noise Levels	Increase in noise level due to earth- moving and excavation equipment, and the	• Plan activities in consultation with PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in the least	S	S	S	S	S	S	

Field	Impact	Mitigation Measures		npliance f EMP I		•			Remarks
T TOTA	Impact	initigation measures	P41 P42 P43 P44 P45 P46						Remarks
	transportation of equipment, materialsand people	 disturbance. Minimize the noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimise sound impact to surrounding sensitive receptor; and Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at 10 m or more from the vehicle/s. Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity. Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach. Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals. 							
Landscape and aesthetics – waste generation	Impacts due to excess excavated earth, excess construction materials and solid waste such as removed concrete, wood, packaging	 Prepare and implement a Construction Waste (spoils) Management Plan (refer Appendix 3) As far as possible utilize the debris and excess soil in construction purpose, for example for raising the ground level or construction of access roads, etc., Avoid stockpiling any excess spoils at the site for a long time. Excess 	S	S	S	S	S	S	

Field	Impact	Mitigation Measures		npliance f EMP l		•			Remarks
	L		P41	P42	P43	P44	P45	P46	
		 excavated soils should be disposed off to approved designated areas immediately If the disposal is required, the site shall be selected preferably from barren, infertile lands; sites should locate away from residential areas, forests, water bodies and any other sensitive land uses Solid wastes should be properly segregated in biodegradable and non-biodegradable for collection and disposal to the designated solid waste disposal site; create a compost pit at designated sites for disposal of biodegradable waste; non-biodegradable waste; non-biodegradable waste shall be collected separately and disposed to approved designated areas. Residual and hazardous wastes such as oils, fuels, and lubricants shall be disposed off in disposal sites approved by TNPCB. Prohibit burning of construction and/or domestic waste. Ensure that wastes are not haphazardly thrown in and around the project site; provide proper collection bins and create awareness to use the dustbins. Conduct site clearance and restoration to original condition after the completion of construction work. PIU to ensure that the site is properly 							

Field	Impact	Mitigation Measures		npliance f EMP I	e e	•			Remarks
			P41	P42	P43	P44	P45	P46	
Management of flood and drainage during construction works	Impact on the construction site, materials and labours	 restored prior to issuing of construction completion certificate Contractor in coordination with GCC to plan and schedule the existing drains rehabilitation and surplus canal works duly considering the flood management aspect Plan existing drains rehabilitation and surplus canal works during dry season and ensure that works are complete before the onset of monsoon If the full works cannot be completed within one dry season (which is likely as the construction period is at least 2 years), works shall be conducted section-wise so that surplus canals and/or existing drains are put into operation prior to onset of monsoon; work sections shall be cleared of construction materials, debris and any obstructions creating for construction shall be removed To safeguard works and avoid flood/water logging, the contractor will prepare a suitable site-specific temporary drainage management plan 		1					
		(including emergency response, clean- up kit and trained personnel, to assist with mitigating the damage) and will implement the same							

			Con	npliance	e rating	for imp	lement	ation	
Field	Impact	Mitigation Measures	0	f EMP l	Measur	es- Pac	kage wi	se	Remarks
			P41	P42	P43	P44	P45	P46	
Biological environment	Adverse impacts on Creek and coastal /terrestrial ecosystems due to construction works	 No works in the CRZ shall be until clearance under CRZ Notification, 2019 is obtained and complied with conditions, if any, stipulated therein. Implement all measures suggested to manage surface water runoff and quality during the construction works Where necessary, before the monsoon measures actions like, diversion ditches can be created in order to intercept and slow down the speed of runoff into the Creek; small, compacted soil berms can be created to intercept runoff and reduce erosion and sediment transport and can reduce the area of water displacement. Conduct monitoring of sediment and water quality in water bodies and creek as per EMP Do not use heavy equipment on the coastal zone; use machinery to the minimum possible extent, and restrict the movement to drain/work area Do not place / store materials, waste or debris in the coastal zone Do not remove vegetation or trees Create awareness among the workers and staff on the coastal environment sensitivity, and ensure no damage/disturbance to flora and fauna 	S	S	S	s	S	s	No works has been initiated in CRZ influence areas of Packages 27, 32, 34, 35, 36, 37, 38, 39, 40, 41 and 42.
Accessibility and traffic disruptions	Traffic problems and conflicts near project	 Drain Construction Prepare a traffic management plan for drains works along the roadsPrepare a 	S	s	S	s	S	s	

			Com	pliance	e rating	for imp	lement	ation	
Field	Impact	Mitigation Measures	of	FEMP I	Measure	es- Pacl	kage wi	se	Remarks
			P41	P42	P43	P44	P45	P46	
	locations and haul road.	 drain construction implementation plan in each zone separately and undertake the work accordingly; ensure that for each road where the work is being undertaken there is an alternative road for the traffic diversion; take up the work in a sequential way so that public inconvenience is minimal Plan the drain construction in coordination with the traffic police; provide temporary diversions, where necessary and effectively communicate with the general public Avoid construction work in all roads in a colony at one go; it will render all roads unusable due to excavations at the same time, creating large scale inconvenience Undertake the work section wise, a 500 m section should be demarcated and barricaded; open up several such sections at a time, but care shall be taken to locate such sections in different zones Confine work areas in the road carriageway to the minimum possible extent; all the activities, including material and waste/surplus soil stocking should be confined to this area. 							

			Con	npliance	e rating	for imp	lement	ation	
Field	Impact	Mitigation Measures	0	f EMP	Measur	es- Pacl	kage wi	se	Remarks
			P41	P42	P43	P44	P45	P46	
		 provided; avoid material/surplus soil stocking in congested areas – immediately removed from site/ or brought to the site as and when required Limit the width of trench excavation as much as possible by adopting best construction practices; adopt vertical cutting approach with proper shoring and bracing; this is especially to be practiced in narrow roads and wider/deeper drains; i deep trenches are excavated with slopes, the roads may render completely unusable during the construction period Leave spaces for access between mounds of soil to maintain access to the houses/properties; access to any house or property shall not be blocked completely; alternative arrangements, at least to always maintain pedestrian access to be provided Provide pedestrian access in all the locations; provide wooden/metal planks over the open trenches at each house to maintain the access. Inform the local population 1-week in advance about the work schedule Plan and execute the work in such a way that the period of disturbance/ loss of access is minimum. Keep the site free from all unnecessary 							
	1	• Keep the site free from an unnecessary							

Field	Impact	Mitigation Measures		npliance f EMP I	U				Remarks
			P41	P42	P43	P44	P45	P46	
		 obstructions. Notify affected public by public information notices, providing signboards informing nature and duration of construction works and contact numbers for concerns/complaints. Provide information to the public through media – newspapers and local cable television (TV) services At the worksite, public information/caution boards shall be provided including contact for public complaints Hauling (material, waste/debris, and equipment) activities Plan transportation routes so that heavy vehicles do not use narrow local roads, except near delivery sites Schedule transport and hauling activities during non-peak hours; Locate entry and exit points in areas where there is low potential for traffic congestion; Drive vehicles in a considerate manner Notify affected public by public information notices, providing signboards informing nature and duration of construction works and contact numbers for 							

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Field	Impact	Mitigation Measures	0 P41	f EMP 1 P42	Measure P43	es- Pacl	kage wi P45	se P46	Remarks
Socio- Economic Loss of access to houses and business	Loss of income	 Inform all businesses and residents about the nature and duration of any work well in advance so that they can make necessary preparations; Do not block any access; leave spaces for access between barricades/mounds of excavated soil and other stored materials and machinery, and providing footbridges so that people can crossover open trenches Barricade the construction area and regulate the movement of people and vehicles in the vicinity, and maintain the surroundings safely with proper direction boards, lighting and security personnel – people should feel safe to move around Control dust generation Immediately consolidate the backfilled soil and restore the road surface; this will also avoid any business loss due to dust and access inconvenience of construction work. Employee best construction practices, speed up construction work with better equipment, increase the workforce, etc., in the areas with predominantly commercial, and with sensitive features like hospitals, and schools; Consult businesses and institutions regarding operating hours and 	s	S	S	S	S	S	

Field	Impact	Mitigation Measures		npliance f EMP l	U	•			Remarks
	mpuet			P42	P43	P44	P45		
		 factoring this in work schedules; and Provide signboards for pedestrians to inform the nature and duration of construction works and contact numbers for concerns/complaints. 							
Socio- Economic - Employment	Generation of temporary employment and an increase in local revenue	 Employ local labor force as far as possible Comply with labor laws 	S	s	S	S	S	S	
Occupational Health and Safety	Occupational hazards which can arise during work	 Follow all national, state and local labour laws Develop and implement site-specific occupational health and safety (OH and S) Plan which shall include measures such as (a) safe and documented construction procedures to be followed for all site activities; (b) ensuring all workers are provided with and use personal protective equipment; (c) OH and S, training for all site personnel, (d) excluding public from the work sites; and (e) documentation of work- related accidents; Follow International Standards such as the World Bank Group's Environment, Health, and Safety Guidelines. Ensure that qualified first-aid specialist is always available in the project area. Equipped first-aid 	S	S	S	S	S	S	
	T .			npliance	•		Remarks		
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Field	Impact	Mitigation Measures	P41	f EMP 1 P42	Kennarks				
		 stations shall be easily accessible throughout the sites. Secure all installations from unauthorized intrusion and accident risks Provide OH and S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted; Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; Ensure moving equipment is outfitted with audible back-up alarms; Mark and provide signboards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be following international standards and be well known to, and easily understood by 							

Field	Impact	Mitigation Measures		pliance f EMP I		•			Remarks
				P42	P43	P44	P45	P46	
		 workers, visitors, and the public as appropriate; and Disallow worker exposure to noise level greater than 85 dBA for more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. Provide supplies of potable drinking water. Provide clean eating areas where workers are not exposed to hazardous or noxious substances 							
COVID 19 response	Spread of infection which causes serious symptoms like difficulty in breathing, chest pain and loss of speech or movement. If not treated, it will lead to death	 Taking cognizance of situation at time of mobilization, the Contractor shall undertake a COVID risk assessment of project area and prepare a COVID Response and Management Plan (C-R&MP) and submit to GCC and PSC for approval. The preparation of C-R&MP shall consider guidance of Government of India, World Health Organization, International Labour Organization, International Financial Corporation and World Bank's interim guidance note etc. The key points on COVID Response and Management measures is at Appendix 14. The contractor shall submit a weekly monitoring and progress report to GCC and PSC. 	S	S	S	S	s	S	

			Con	pliance	rating	for imp	lement	ation	
Field	Impact	Mitigation Measures	ot	f EMP l	Measur	es- Pacl	kage wi	ise	Remarks
			P41	P42	P43	P44	P45	P46	
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and waste transportation	 Confine work areas; prevent public access to all areas where construction works are on-going through the use of barricading and security personnel Attach warning signs, blinkers to the barricading to caution the public about the hazards associated with the works, and presence of road side excavation Minimize the duration of time when the drain trench is left open through careful planning; plan the work properly from excavation to refilling Control dust pollution – implement dust control measures as suggested under air quality section Ensure appropriate and safe passage for pedestrians along with the worksites Provide road signs and flag persons to warn of on- going trenching activities. Restrict construction vehicle movements to defined access roads and demarcated working areas (unless in the event of an emergency) Enforce strict speed limit (20 kmph) for plying on unpaved roads, construction tracks Provide temporary traffic control (e.g.flagmen) and signs where necessary to improve safety and smooth traffic flow Where traffic is diverted around 	S	S	S	S	S	s	

Field	Impact	Mitigation Measures		•	e rating Measur				Remarks
						P44 P45 P46			
		 crossings, traffic control or careful selection of the exit from the working areas will be provided to ensure that vehicles join the road in a safe manner. At sensitive locations particularly where there are schools and markets close to the road, awareness of safety issues will be raised through neighborhood awareness meetings All drivers and equipment operators will undergo safety training Maintain regularly the construction equipment and vehicles; use manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. 							
Safety Requirements for Deep Trench works	Accidents, and risk hazard	 Sides of excavation shall be inspected by PSC during excavation from time to time and after every rain, storm, or other hazard- increasing occurrence and protection against slides and cavings shall be increased, if necessary Complete information on the underground structures (such as water pipelines, sewers, gas mains, electrical conduit system and other civic facilities) should be collected before doing the excavation work. Proper precautions shall be taken to prevent accident to the workmen engaged in 	S	S	S	S	S	S	

			Con	npliance	rating	for imp	lement	ation	
Field	Impact	Mitigation Measures	o	f EMP l	Measure	es- Pacl	kage wi	se	Remarks
			P41	P42	P43	P44	P45	P46	
		 excavation work and calamities for the public Where medical facilities (including hospitals) are not available nearby, first-aid kit should be available. This shall be kept at a conspicuous place in the charge of trained person(s). The kit shall be recouped periodically. Labors shall be instructed to use safety devices and appliances provided to them whenever it is necessary to do so Labors who are not aware of the hazards peculiar to the work shall not be permitted to proceed with the work without being properly instructed. Safety helmets shall be worn by all persons entering trench where hazards from falling stones, timber or other materials exist Appropriate safety footwear (rubber boots, protective covers, etc.,) shall be worn by labours who are engaged in work requiring such protection All trenches in friable or unstable rock exceeding 2 m in depth shall be securely shored and timbered. Where the sides of trenches are sloped but not within 1.5 m of the bottom, the vertical sides shall be shored and the 							

				npliance	_	_			
Field	Impact	Mitigation Measures	0	f EMP I	Measur	es- Pacl	kage wi	se	Remarks
			P41	P42	P43	P44	P45	P46	
		 shoring shall extend at least 30 cm above the vertical sides. When open spaced sheathing is used, a toe board shall be provided to prevent material rolling down the slope and falling into the part of the trench with vertical walls. Shoring and timbering shall be carried along with the opening of a trench but when conditions permit, protection work, such as sheet piling may be done before the excavation commences. Approved quality of sal wood shall be used for shoring and timbering a trench. Any other structural material having strength not less than that of sal wood may also be used for the purpose 							
Work Camps and worksites	Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels,oils, solvents, and lubricants Unsanitary and poor living conditions for workers	 Consult PIU before locating project offices, sheds, and construction plants; Select a campsite away from residential areas (at least 100 m buffer shall be maintained) or locate the campsite within the existing facilities of GCC offices Avoid tree cutting for setting up camp facilities 	S	S	S	S	S	S	

				npliance	· ·	•			
Field	Impact	Mitigation Measures	ot	f EMP l	Measure	es- Pacl	kage wi	se	Remarks
			P41	P42	P43	P44	P45	P46	
		 sensitive areas Separate the workers living areas and material storage areas clearly with a fencing and separate entry and exit Ensure conditions of livability at work camps are always maintained at the highest standards possible; living quarters and construction camps shall be provided with standard materials (as far as possible to use portable ready to fit-in reusable cabins with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be used as accommodation for workers Camps shall be provided with proper drainage, there shall not be any water accumulation Provide drinking water, water for other uses, and sanitation facilities for employees Prohibit labours from cutting of trees for firewood; The contractor should provide cooking fuel (cooking gas); use of firewood is not allowed Train employees in the storage and handling of materials which can potentially cause soil contamination Wastewater from the camps shall be disposed off properly either into the sewer system; if the sewer system is 							
		not available, provide on-site							

Field	Impact	Mitigation Measures		pliance f EMP l		Remarks			
Tiola	Impuet	initigation violastics	of EMP Measures- Package wiseP41P42P43P44P45P46						
		 sanitation with a septic tank and soak pit arrangements Recover used oil and lubricants and reuse or remove from the site. Manage solid waste according to the following preference hierarchy: reuse, recycling, and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in the local market Remove all wreckage, rubbish, or temporary structures which are no longer required; and At the completion of work, the camp area shall be cleaned and restored to pre-project conditions, and submit a report to PIU; PIU to review and approve camp clearance and closure of worksite 							
Post- construction clean-up	Damage due to debris, spoils, excess construction materials	 Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and All excavated roads shall be reinstated to the original condition. All disrupted utilities restored All affected structures rehabilitated/compensated The area that previously housed the construction camp is to be checked for 	S	S	S	S	S	S	

			Con	pliance	rating	for imp	lement	ation	
Field	Impact	Mitigation Measures	of	f EMP I	Remarks				
			P41	P42	P43	P44	P45	P46	
		 spills of substances such as oil, paint, etc. and these shall be cleaned up. All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the re-vegetation specification that forms part of this document. The contractor must arrange the cancellation of all temporary services. Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work. 							

2.9 Findings on EMP Compliance

Based on the compliance status presented in the above table for all EMP/SEMP suggested measures, the following table 2.13 presents overall summary for each package, and main issues and improvements needed in each package

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 1	PS	Irregularity in submission of EMP compliance reports. EHS officers are requested to submit monitoring reports every month. However, the EMP implementations has been satisfactory. The contractor has also been instructed to follow regular monitoring of Environmental parameters which was missed during this reporting period.
Package 2	US	No deployment of EHS Officer and Irregularity in submission of EMP compliance reports. The contractor has been given instructions that a project manager or senior site supervisor be the responsible person for EMP compliance and implementation until the appointment of an EHS officer. Submission of EMP compliance reports has been prioritised. However, Onsite EMP implementation has been taken care by the site supervisors.
Package 3	S	EHS supervisor is deployed and periodical safeguards monitoring reports are compiled and submitted regularly. Onsite EMP implementations are also satisfactory. Interaction with public regarding the same has been satisfactory. Presence of trees along the alignment of drains were a main issue during the reporting period and due to unavoidable circumstances decision was made to cut the trees and compensatory plantation was suggested.

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 4	US	No deployment of EHS Officer and Irregularity in submission of EMP compliance reports. The contractor has been given instructions that a project manager or senior site supervisor be the responsible person for EMP compliance and implementation until the appointment of an EHS officer. Submission of EMP compliance reports has been prioritised. However, Onsite EMP implementation has been taken care by the site safety officer.
Package 5	S	Overall performance of the Package pertaining to EMP implementations and safeguards is satisfactory. Regular EMP compliance reports are submitted. Health and Safety plan is prepared and followed during the construction phase regularly. Instructions given to conduct regular monitoring of environmental parameters going forward.
Package 6	S	Overall performance of the package is satisfactory with proper implementation of the EMP and H&S plan. Monthly compliance reports to EMPs are submitted. However, improvement needed when it comes to capacity building at worksite and instructions given to EHS supervisors to educate labours on usage of PPEs going forward.
Package 7	S	Overall performance of the package is satisfactory with proper implementation of the EMP and H&S plan. Monthly compliance reports to EMPs are submitted. However, improvement needed when it comes to capacity building at worksite and instructions given to EHS supervisors to educate labours on usage of PPEs going forward.
Package 8	S	Overall performance of the Package pertaining to EMP implementations and safeguards is satisfactory. Regular EMP compliance reports are submitted. Health and Safety plan is prepared and followed during the construction phase regularly.

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 9	PS	Irregularity in submission of EMP compliance reports. EHS officers are requested to submit monitoring reports every month which has been prioritised. Instructions are also given to improve the labour facility provisions. Instruction given to conduct regular monitoring of environmental parameters going forward and the same shall be reported with photographic evidence.
Package 10	S	Overall performance of the package is satisfactory with proper implementation of the EMP and H&S plan. Monthly compliance reports to EMPs are submitted. However, improvement needed when it comes to capacity building at worksite and instructions given to EHS supervisors to educate labours on usage of PPEs going forward.
Package 11	PS	EHS supervisor recently hired and Irregularity in submission of EMP compliance reports. EHS officer has been requested to submit monitoring reports every month which has been prioritised. Trainings shall be provided to the EHS supervisor about the importance of EMP implementation as a capacity building activity going forward. Monitoring of Environmental parameters are also suggested and results to be furnished going forward with documentary evidence and photographs
Package 12	PS	Irregularity in submission of EMP compliance reports. EHS officer is requested to submit monitoring reports every month which has been prioritised. Instructions are also given to improve the labour facility provisions. Instruction given to conduct regular monitoring of environmental parameters going forward and the same shall be reported with photographic evidence.
Package 13	PS	Irregularity in submission of EMP compliance reports. EHS officer is requested to submit monitoring reports every month which has been prioritised. Instructions are also given to improve the labour facility provisions. Instruction given to conduct regular monitoring of environmental parameters going forward and the same shall be reported with photographic evidence.

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 14	S	EMP implementation and compliance to HS plan is satisfactory but can be improved with regularly monitoring the Environmental Parameters and providing capacity building activities.
Package 15	US	No deployment of EHS Officer and Irregularity in submission of EMP compliance reports. The contractor has been given instructions that a project manager or senior site supervisor be the responsible person for EMP compliance and implementation until the appointment of an EHS officer. Submission of EMP compliance reports has been prioritised. Labour Camps can be improved much more although provisions are satisfactory
Package 16 PS		Irregularity in submission of EMP compliance reports. EHS officers are requested to submit monitoring reports every month which has been prioritised. Regular Monitoring of Environmental Parameters will be an area which needs improvement and shall not be neglected going forward.
Package 17	S	
Package 18	US	No deployment of EHS Officer and Irregularity in submission of EMP compliance reports. The contractor has been given instructions that a project manager or senior site supervisor be the responsible person for EMP compliance and implementation until the appointment of an EHS officer. Submission of EMP compliance reports has been prioritised. Training on Safeguard compliance and HS plan shall be given to the contractor and necessary steps will be taken to improve the performance going forward.
Package 19	S	EMP implementation and compliance to HS plan is satisfactory but can be improved with regularly monitoring the Environmental Parameters and providing capacity building activities.

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 20	US	No deployment of EHS Officer and Irregularity in submission of EMP compliance reports. The contractor has been given instructions that a project manager or senior site supervisor be the responsible person for EMP compliance and implementation until the appointment of an EHS officer. Submission of EMP compliance reports has been prioritised. Training on Safeguard compliance and HS plan shall be given to the contractor and necessary steps will be taken to improve the performance going forward.
Package 21	S	EHS supervisor is deployed and periodical safeguards monitoring reports are compiled and submitted regularly. Onsite EMP implementations are also satisfactory. Interaction with public regarding the same has been satisfactory. Since the project area is a developing area not much issues related to utility components or resettlement is encountered. Suggestions given to conduct monitoring of environmental parameters to identify any impact on the environment due to the project going forward
Package 22	PS	Deployed EHS personnel relieved from duties and the contractor has been instructed to appoint new personnel to supervise EMP implementations at the wok site. Since the project area is a developing area not much issues related to utility components or resettlement is encountered. Suggestions given to conduct monitoring of environmental parameters to identify any impact on the environment due to the project going forward
Package 23	PS	EHS supervisor recently hired and Irregularity in submission of EMP compliance reports. EHS officer has been requested to submit monitoring reports every month which has been prioritised. Trainings shall be provided to the EHS supervisor about the importance of EMP implementation as a capacity building activity going forward. Monitoring of Environmental parameters are also suggested and results to be furnished going forward with documentary evidence and photographs

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 24	PS	No deployment of EHS supervisor and the contractor is instructed that the Project manager or senior site supervisor will be the responsible person for EMP implementations and compliance report submissions. Suggestions given to conduct monitoring of environmental parameters to identify any impact on the environment due to the project going forward and improve performance. Kitchen facilities can be improved in the labour camp.
Package 25	S	Overall performance of the package is satisfactory with proper implementation of the EMP and H&S plan. Monthly compliance reports to EMPs are submitted. However, improvement needed when it comes to capacity building at worksite and instructions given to EHS supervisors to educate labours on usage of PPEs going forward.
Package 26 S		Overall performance of the package is good when it comes to EMP implementations. Trees along the alignment have been saved by slightly detouring the alignment and maintaining aesthetics. Health and safety plan has been prepared and complied regularly at sites. Capacity building activities are done regularly at site and grievances properly redressed.
Package 27	S	Overall performance of the package is good when it comes to EMP implementations. Trees along the alignment have been saved by slightly detouring the alignment and maintaining aesthetics. Health and safety plan has been prepared and complied regularly at worksite. Trees saved along the alignment and regular monitoring of environmental parameters has been suggested to improve performance more.
Package 28	US	No deployment of EHS Officer and Irregularity in submission of EMP compliance reports. The contractor has been given instructions that a project manager or senior site supervisor be the responsible person for EMP compliance and implementation until the appointment of an EHS officer. Submission of EMP compliance reports has been prioritised.

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 29	S	EHS supervisor is deployed and periodical safeguards monitoring reports are compiled and submitted regularly. Onsite EMP implementations are also satisfactory. Interaction with public regarding the same has been satisfactory. Since the project area is a developing area not much issues related to utility components or resettlement is encountered. Suggestions given to conduct monitoring of environmental parameters to identify any impact on the environment due to the project going forward
Package 30	PS	EHS supervisor is deployed and periodical safeguards monitoring reports are compiled and submitted regularly. Onsite EMP implementations are also satisfactory. Interaction with public regarding the same has been satisfactory. Trees along the alignment have been saved by slightly detouring the drains. Safety trainings are delivered as part of the capacity building activity. Labour Camps require improvement especially when it comes to toilet facilities and kitchen provisions.
Package 31	PS	EHS supervisor recently hired and Irregularity in submission of EMP compliance reports. EHS officer has been requested to submit monitoring reports every month which has been prioritised. Trainings shall be provided to the EHS supervisor about the importance of EMP implementation as a capacity building activity going forward. Monitoring of Environmental parameters are also suggested and results to be furnished going forward with documentary evidence and photographs
Package 32	S	Overall performance of the Package pertaining to EMP implementations and safeguards is satisfactory. Regular EMP compliance reports are submitted. Health and Safety plan is prepared and followed during the construction phase regularly. Since the project area is in urban development phase not much issues related to utility components or resettlement is encountered.

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 33	PS	No deployment of EHS supervisor and the contractor is instructed that the Project manager or senior site supervisor will be the responsible person for EMP implementations and compliance report submissions. Monitoring of Environmental parameters needs to be done and improvement is needed going forward to improve the performance.
Package 34	US	No deployment of EHS Officer and Irregularity in submission of EMP compliance reports. The contractor has been given instructions that a project manager or senior site supervisor be the responsible person for EMP compliance and implementation until the appointment of an EHS officer. Submission of EMP compliance reports has been prioritised. Regular monitoring of Environmental Parameters is needed going forward and capacity building trainings are suggested.
Package 35	PS	EHS supervisor recently hired and Irregularity in submission of EMP compliance reports. EHS officer has been requested to submit monitoring reports every month which has been prioritised. Trainings shall be provided to the EHS supervisor about the importance of EMP implementation as a capacity building activity going forward. Monitoring of Environmental parameters are also suggested and results to be furnished going forward with documentary evidence and photographs
Package 36	S	Overall performance of the package is good when it comes to EMP implementations. Trees along the alignment have been saved by slightly detouring the alignment and maintaining aesthetics. Health and safety plan has been prepared and complied regularly at worksite. Trees saved along the alignment and regular monitoring of environmental parameters has been suggested to improve performance more.
Package 37	S	Overall performance of the package is good when it comes to EMP implementations. Trees along the alignment have been saved by slightly detouring the alignment and maintaining aesthetics. Health and safety plan has been prepared and complied regularly at sites. Capacity building activities are done regularly at site and grievances properly redressed.

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 38	US	No deployment of EHS Officer and Irregularity in submission of EMP compliance reports. The contractor has been given instructions that a project manager or senior site supervisor be the responsible person for EMP compliance and implementation until the appointment of an EHS officer. Submission of EMP compliance reports has been prioritised.
Package 39	S	Overall performance of the package is satisfactory with proper implementation of the EMP and H&S plan. Monthly compliance reports to EMPs are submitted. However, improvement needed when it comes to capacity building at worksite and instructions given to EHS supervisors to educate labours on usage of PPEs going forward.
Package 40	S	Overall performance of the package is satisfactory with proper implementation of the EMP and H&S plan. Monthly compliance reports to EMPs are submitted. However, improvement needed when it comes to capacity building and conducting Environmental monitoring f parameters going forward.
Package 41	S	Overall performance of the package is good when it comes to EMP implementations. Trees along the alignment have been saved by slightly detouring the alignment and maintaining aesthetics. Health and safety plan has been prepared and complied regularly at sites. Capacity building activities are done regularly at site and grievances properly redressed.
Package 42	S	Overall performance of the package is satisfactory with proper implementation of the EMP and H&S plan. Monthly compliance reports to EMPs are submitted. However, improvement needed when it comes to capacity building at worksite and instructions given to EHS supervisors to educate labours on usage of PPEs and regular monitoring of Environmental Parameters is requested going forward.

Package	Contractor's performance on overall EMP implementation in package (G) Good / (S) Satisfactory / (PS) Partially Satisfactory / (US) Unsatisfactory – Mitigation	Main issues and Improvements needed
Package 43	S	Overall performance of the package is good when it comes to EMP implementations. Multiple trees along the alignment have been saved by slightly detouring the alignment and maintaining aesthetics. Health and safety plan has been prepared and complied regularly at sites. Capacity building activities are done regularly at site and grievances properly redressed. Improvement needed to regularly conduct environmental parameters monitoring going forward.
Package 44	PS	Irregularity in submission of EMP compliance reports and the contractor is instructed to prioritise the monthly submission of compliance reports.
Package 45	PS	Deployed EHS personnel relieved from duties and the contractor has been instructed to appoint new personnel to supervise EMP implementations at the wok site The project area falls in an critically polluted area and hence health and safety of the labour is highly prioritised. Regular Safety training is suggested along with regular monitoring of Environmental Parameters.
Package 46	PS	Improper submission of EMP compliance reports. Provision of PPE to labours working in desilting activities shall be monitored regularly by PSC /PIU.

(G) Good – All mitigation measures implemented satisfactorily and effectively

(S) Satisfactory – Most mitigation measures implemented satisfactorily

(PS) Partially Satisfactory – Most mitigation measures implemented but requires improvements

(US) Unsatisfactory – Most mitigation measures not implemented / poorly implemented

2.10 Implementation of Health & Safety Covid-19 Plan

H&S COVID-19 Plan Preparation. Status of preparation and approval of Health and Safety COVID-19

Plan is provided in the following table 2.14.

Table 2-14Implementation of H&S COVID-19 Plan

H&S COVID- 19 Plan	Plan Prepared (Yes/No)	Plan Approved (Yes/No)	Plan being implemented (Yes / No)	Implementation of COVID-19 measures (satisfactory / partially Satisfactory / Unsatisfactory)	% Vaccination achieved – Staff &Workers
PMU	Yes	Yes	Yes	Satisfactory	99
PIU	Yes	Yes	Yes	Satisfactory	99
PSC	Yes	Yes	Yes	Satisfactory	99
Contractor P1	Yes	Yes	Yes	Partially satisfactory	91
Contractor P2	Yes	Yes	Yes	Partially Satisfactory	93
Contractor P3	Yes	Yes	Yes	Satisfactory	90
Contractor P4	Yes	Yes	Yes	Partially satisfactory	91
Contractor P5	Yes	Yes	Yes	Satisfactory	89
Contractor P6	Yes	Yes	Yes	Satisfactory	95
Contractor P7	Yes	Yes	Yes	Satisfactory	96
Contractor P8	Yes	Yes	Yes	Satisfactory	97
Contractor P9	Yes	Yes	Yes	Partially satisfactory	90
Contractor P10	Yes	Yes	Yes	Satisfactory	94
Contractor P11	Yes	Yes	Yes	Partially satisfactory	88
Contractor P12	Yes	Yes	Yes	Partially satisfactory	83
Contractor P13	Yes	Yes	Yes	Partially satisfactory	94
Contractor P14	Yes	Yes	Yes	Satisfactory	95
Contractor P15	Yes	Yes	Yes	Partially satisfactory	94
Contractor P16	Yes	Yes	Yes	Partially satisfactory	95
Contractor P17	Yes	Yes	Yes	Satisfactory	95
Contractor P18	Yes	Yes	Yes	Partially Satisfactory	90
Contractor P19	Yes	Yes	Yes	Satisfactory	94
Contractor P20	Yes	Yes	Yes	Partially satisfactory	95
Contractor P21	Yes	Yes	Yes	Partially Satisfactory	90
Contractor P22	Yes	Yes	Yes	Satisfactory	92
Contractor P23	Yes	Yes	Yes	Partially satisfactory	94
Contractor P24	Yes	Yes	Yes	Partially Satisfactory	91
Contractor P25	Yes	Yes	Yes	Satisfactory	93
Contractor P26	Yes	Yes	Yes	Satisfactory	98
Contractor P27	Yes	Yes	Yes	Satisfactory	94
Contractor P28	Yes	Yes	Yes	Partially Satisfactory	95
Contractor P29	Yes	Yes	Yes	Partially Satisfactory	93
Contractor P30	Yes	Yes	Yes	Satisfactory	91
Contractor P31	Yes	Yes	Yes	Partially Satisfactory	92
Contractor P32	Yes	Yes	Yes	Satisfactory	96
Contractor P33	Yes	Yes	Yes	Partially Satisfactory	91
Contractor P34	Yes	Yes	Yes	Partially Satisfactory	90
Contractor P35	Yes	Yes	Yes	Partially Satisfactory	92

H&S COVID- 19 Plan	Plan Prepared (Yes/No)	Plan Approved (Yes/No)	Plan being implemented (Yes / No)	Implementation of COVID-19 measures (satisfactory / partially Satisfactory / Unsatisfactory)	% Vaccination achieved – Staff &Workers
Contractor P36	Yes	Yes	Yes	Satisfactory	94
Contractor P37	Yes	Yes	Yes	Satisfactory	90
Contractor P38	Yes	Yes	Yes	Partially Satisfactory	88
Contractor P39	Yes	Yes	Yes	Satisfactory	94
Contractor P40	Yes	Yes	Yes	Partially satisfactory	95
Contractor P41	Yes	Yes	Yes	Satisfactory	96
Contractor P42	Yes	Yes	Yes	Satisfactory	95
Contractor P43	Yes	Yes	Yes	Satisfactory	91
Contractor P44	Yes	Yes	Yes	Partially satisfactory	96
Contractor P45	Yes	Yes	Yes	Satisfactory	94
Contractor P46	Yes	Yes	Yes	Partially satisfactory	89



Figure 2-3 Best practices / environment improvement activities

Trees saved along the alignment of proposed SWD saved at Package No 42



Trees saved along the alignment of proposed SWD saved at Package No 39



Continuous Barrication at work site with project information notice and reflectors





3 Environmental Monitoring

3.1 Environmental Quality Monitoring

IEE and EMP require conduct of ambient environmental quality monitoring throughout implementation. These include monitoring ambient air, water, noise, silt/soil etc., in and around project sites to assess the quality and changes with respect to baseline conditions. Per the EMP and contract, Contractors are responsible to conduct the monitoring and the details are discussed in the following section.

Table 3-1Status Environmental Monitoring of Awarded Packages

Monitoring conducted for (air, noise, water, etc.,)	Monitoring date/month
Air (5 Locations)	22 nd and 23 rd April 2019 for 24 hours
Noise (5 Locations)	10 th June 2019
Ground Water (5 locations)	January 2019
Surface Water (10 Locations)	January 2019

3.1.1 Monitoring (Sampling & Analysis) Methodology.

Sampling and analysis have been carried out by the contractors via the recognized / approved / accredited laboratories, which adopted acceptable and standard methods for sampling, analysis, and results. Sampling and adopted are presented in **Table 3.2.**

Parameter	Sampling Methods	Testing method
		PM ₁₀ -Gravimetric Method
		PM _{2.5} – Gravimetric Method
Ampient air	Requisite locations in the Project influence Area	EPA Modified West and Gaeke method
		Arsenite modified Jakob and Hocheiser method
		Gas Analyzer (NDIR)
A	Requisite locations in the Project	Instrument- Sound level Meter
Ambient noise	influence Area	IS:4954 1968
Surface water	Set of grab samples as per requisite location in project influence area	

 Table 3-2Sampling and Analysis Methods

Parameter	Sampling Methods	Testing method
f fround water	Set of grab samples as per requisite location in project influence area	Samples for water quality collected and analysed as per IS 2488 (Part 1-5) methods for sampling and testing of Industrial effluents.
Soil	Collected as per BIS Specification	

3.2 Monitoring Results

3.2.1 Ambient air quality

Ambient air quality monitoring results are presented in the following **Table 3.3**. Following parameters particulate matter (PM10 and PM2.5), oxides of sulphur and nitrogen (SO2 and NO2), and carbon monoxide (CO) are measured.

The respective pollutant load levels were found to be within the NAAQ/CPCB standards as reported below.

- ✓ PM10 -NAAQ standards of 100 µg/m3
- ✓ PM2.5 –NAAQ standards of 60 µg/m3
- ✓ SO2 –NAAQ standards of 80 µg/m3
- ✓ NOX NAAQ standards of 80 µg/m3
- ✓ CO NAAQ standards of 4 mg/m3

Laboratory reports are attached in Appendix 5.

Table 3-3Air Monitoring Results

Package / Monitoring Site	Monitoring date	Туре	PM ₁₀ μg/m ³	PM _{2.5} μg/m ³	SO ₂ µg/m ³	NO ₂ μg/m ³	CO mg/m ³			
CPCB Norms	-	-	100	60	80	80	4			
AAQ Standard (24 hours)										
Package 2 – M/s P & C- RPP (JV)										
Nagammal street		Р	42	14	4.1	10	BDL			
Periyar road]	Р	31	15	5.2	12.2	BDL			
Anbunayagan Street	13.02.2022	Р	41	12	4.2	10	BDL			
Murugappareddy street		Р	41	12	4.2	10	BDL			
Anna salai		Р	38	14	5.2	12.2	BDL			
Inference: The Analytical fine	dings show that the	values w	vere well	within the	e stipulate	ed standa	rds.			
Package 4 – M/s RKN Construction										
Bank Colony	23.04.2022	Р	45	18	5.6	12	BDL			

Package / Monitoring Site	Monitoring date	Туре	PM ₁₀ μg/m ³	PM _{2.5} μg/m ³	SO ₂ µg/m ³	NO ₂ μg/m ³	CO mg/m ³
CPCB Norms			100	60	80	80	4
S.V.Koil Street	23.04.2022	Р	40	16	5.2	10.9	BDL
Indira nagar Street	23.04.2022	Р	42	17	5.5	11	BDL
Ellai Amman Street	23.04.2022	Р	52	20	5.8	9.5	BDL
Inference: The Analytical fir	ndings show that the	values w	vere well	within th	e stipulate	ed standa	rds.
Package 6- M/s Annai Infra	Developers Pvt., L	td.,					
Srinivasa nagar	13.06.2022	Р	68	46	4.8	21	BDL
Sathiyamoorthynagar	13.06.2022	Р	73	38	4.2	16	BDL
Temple nagar	13.06.2022	Р	56	32	3.6	19	BDL
Inference: The Analytical fir	ndings show that the	values w	vere well	within th	e stipulate	ed standa	rds.
Package 7- M/s Annai Infra	Developers Pvt., L	td.,					
MGR Nagar 1st main road	14.06.2022	Р	63	38	3.1	18	BDL
East Balaji Street	14.06.2022	Р	58	47	3.9	15	BDL
Grace Nagar main ROAD	14.06.2022	Р	52	36	3.7	17	BDL
Inference: The Analytical fir	ndings show that the	values w	vere well	within th	e stipulate	ed standa	rds.
Package 8- M/s Gurumurth	y Engineering Ente	erprises					
Vaagai Nagar	17.06.2022	Р	51	23	5.9	12.7	BDL
Kaviya Nagar	17.06.2022	Р	46	18	5.3	13.4	BDL
EB Road	17.06.2022	Р	55	22	6.0	14.3	BDL
Pattaravakkam Main Road	17.06.2022	Р	50	22	6.4	15.0	BDL
Agathiyar street	17.06.2022	Р	43	17	4.4	11.3	BDL
Inference: The Analytical fir	ndings show that the	values w	vere well	within th	e stipulate	ed standa	rds.
Package 10 - M/s Annai Inf	ra Developers Pvt.,	Ltd.,					
Akbar street	15.06.2022	Р	69	42	5.2	18	BDL
Kanchi nagar	15.06.2022	Р	27	39	4.7	16	BDL
Sudha nagar	15.06.2022	Р	18	45	4.1	19	BDL
Inference: The Analytical fir	ndings show that the	values w	vere well	within th	e stipulate	ed standa	rds.
Package 25 - M/s Annai Inf	ra Developers Pvt.,	Ltd.,					
CPCL nagar	15.06.2022	Р	58	37	4.5	19	BDL
Masilamani road	15.06.2022	Р	62	46	4.9	17	BDL

Package / Monitoring Site	Monitoring date	Туре	PM ₁₀ μg/m ³	PM _{2.5} μg/m ³	SO ₂ µg/m ³	NO ₂ μg/m ³	CO mg/m ³				
CPCB Norms			100	60	80	80	4				
Apollo Armstrong nagar	15.06.2022	Р	52	39	3.9	21	BDL				
Inference: The Analytical find	lings show that the	values w	vere well	within the	e stipulat	ed standa	rds.				
Package – 26 M/s CMK Proj	ect Private Limite	d									
CPCL Main Road	14.03.2022	Р	57	26	6.4	14.8	BDL				
Thiruvalluvar Street	14.03.2022	Р	41	22	5.5	12.3	BDL				
Bharathiyar Street	14.03.2022	Р	47	19	5.3	11.9	BDL				
Inference: The Analytical findings show that the values were well within the stipulated standards.											
Package 32 M/s - Deivanai C	onstruction – Rocl	and A	rch (JV)								
Burm a Nagar Service		Р	100	60	80	80	04				
Road			100	00	80	80					
Inference: The Analytical findings show that the values were well within the stipulated standards.											
Package – 37 M/s CMK Proj	ect Private Limite	d (JV)									
Sakthi Ganapathy 1st	17.03.2022	Р	46	18	5.4	12.1	BDL				
street	17.05.2022	1	10	10	5.4	12.1	DDL				
Sakthi Ganapathy 3rd	17.03.2022	Р	40	15	5.1	13.7	BDL				
street	17.03.2022	1	10	15	5.1	15.7	DDL				
Shanmugapuram 8th street	17.03.2022	Р	53	21	5.8	13.0	BDL				
Inference: The Analytical find	lings show that the	values w	vere well	within the	e stipulate	ed standa	rds.				
Package 39 – M/s Gurumur	thy Engineering E	nterpris	ses- Tho	mas Iyad	lurai Inf	rastructu	ıre Pvt.,				
Ltd.,											
Near Royal Enfield	12.03.2022	Р	56	24	7.3	16.8	BDL				
Near BSNL Office	12.03.2022	Р	51	19	6.7	15.0	BDL				
Near Metro Railway Station	12.03.2022	Р	46	17	5.3	13.9	BDL				
Inference: The Analytical find	lings show that the	values w	vere well	within the	e stipulate	ed standa	rds.				

As the ambient air quality in the near vicinity of the work sites is within the NAAQ/CPCB standards, there will not be any health-related impact and issues. Moreover, plantation of trees is also insisted to contractors.

3.2.2 Ambient noise quality

Ambient noise quality monitoring results are presented in the following **table 3.4.** Laboratory reports are presented in **Appendix 6**.

Package / Town / Monitoring	Monitoring			Ν	Noise Level LAeq						
Location	Туре	date	Land use	(dB (A))							
Location		uate		Day time		Night time					
National Ambient Noise			Industrial		5		<u>′0</u>				
Standard			Commercial Residential		5 5	55 45					
	1			Min	Max	Min	Max				
Package 2 – M/s P & C- RPP (JV)											
Batching plant	Р		Commercial	58.3	63.9	40.2	42.1				
Periyar road	Р		Commercial	50.6	57.8	39.7	43.8				
Anbunayagan Street	Р	13.02.2022	Commercial	51.0	28.3	40.6	46.0				
Murugappareddy street	Р		Commercial	51.5	58.7	38.1	44.3				
Anna salai	Р		Commercial	50.1	56.5	37.0	43.7				
Inference: The Analytical findings show that the values were well within the stipulated standards.											
Package 4 – M/s RKN Constru	ction										
Bank Colony	Р		Residential	59	67.6	48	57.5				
S.V.Koil Street	Р	22.04.2022	Residential	57.4	66.3	46.7	55.8				
Indira nagar Street	Р	22.04.2022	Residential	54.6	63	42.1	53.6				
Ellai Amman Street	Р		Residential	58.7	65.8	45.5	54.9				
Inference: The Analytical find	ings sho	w a slight increa	se in Ambient I	Nosie le	evels sin	ce the	region				
is densely populated mixed resi	dential	area with high ve	hicular movem	ent. No	advers	se impa	ct due				
to the SWD Construction.											
Packag	ge 6- M/	s Annai Infra De	velopers Pvt., I	.td.							
Srinivasa nagar	Р		Commercial	62	2.8	52	2.4				
Sathiyamoorthynagar	Р	08.06.2022	Commercial	60).7	53	3.6				
Temple nagar	Р		Commercial	61.5		50.2					
Inference: The Analytical findi	ngs sho	w that the values	were well with	in the s	stipulat	ed stan	dards.				

Table 3-4Noise Monitoring Results

Package / Town / Monitoring	Monitoring			N	oise Le	vel LA	eq			
Location	Туре	date	Land use		(dB	(A))				
Location		uate		Day	time	Night time				
National Ambient Noise			Industrial Commercial		75 55	70				
Standard			Residential	-	5 5	55 45				
				Min	Max	Min	Max			
Packag	ge 7- M/s	s Annai Infra Dev	velopers Pvt., I	.td.,						
MGR Nagar 1st main road			Commercial	63	3.3	54	4.1			
East Balaji Street	Р	14.06.2022	Commercial	61	1.8	50).9			
Grace Nagar main ROAD			Commercial	62	2.6	53	3.7			
Inference: The Analytical findings show that the values were well within the stipulated standards.										
Package 8- M/s Gurumurthy Engineering Enterprises										
Vaagai Nagar			Commercial	50.6	57.3	37.4	44.1			
Kaviya Nagar			Commercial	48.5	55.7	37.6	44.0			
EB Road	Р	17.06.2022	Commercial	54.7	64.8	39.3	46.5			
Pattaravakkam Main Road			Commercial	56.0	67.2	44.5	52.7			
Agathiyar street			Commercial	49.3	54.9	38.1	44.8			
Inference: The Analytical findi	ings sho	w that the values	were well with	in the s	stipulat	ed stan	dards.			
Package	e 10 - M	/s Annai Infra De	evelopers Pvt.,	Ltd.,						
Akbar street			Commercial	ial 61.3		50.4				
Kanchi nagar	Р	15.06.2022	Commercial	60).9	52.8				
Sudha nagar			Commercial	62	2.7	53	3.6			
Inference: The Analytical findi	ings sho	w that the values	were well with	in the s	stipulat	ed stan	dards.			
Package	e 25 - M	/s Annai Infra De	evelopers Pvt.,	Ltd.,						
CPCL nagar			Commercial	60).7	53	3.9			
Masilamani road	Р	15.06.2022	Commercial	63	3.8	51	1.7			
Apollo Armstrong nagar			Commercial	62	2.3	52	2.6			
Inference: The Analytical findi	ings sho	w that the values	were well with	in the s	stipulat	ed stan	dards.			
Packa	ge – 26	M/s CMK Proje	ct Private Limi	ted						
CPCL Main Road	Р	14.03.2022	Commercial	55.4	67.2	43.3	52.7			
Thiruvalluvar Street		17.03.2022	Commercial	50.8	58.6	37.9	46.1			

Package / Town / Monitoring	Type Monitoring		Land use	N	oise Le [.] (dB	vel LA (A))	eq			
Location		date		Day	time	ne Night tim				
National Ambient Noise Standard			Industrial Commercial Residential	75 65 55		5	70 55 15			
			1	Min	Max	Min	Max			
Bharathiyar Street			Commercial	55.4	67.2	43.3	52.7			
Inference: The Analytical findings show that the values were well within the stipulated standards.										
Package 32-M/s - Deivanai Construction – Rock and Arch (JV)										
Ramana Salai Street			Commercial	50.5	59.7	39.2	46.4			
Burm a nagar service road	Р	11.04.2022	Commercial	53.8	63.1	40.6	49.0			
Burm a nagar cement road			Commercial	52.4	61.0	39.8	48.5			
Inference: The Analytical findi	ngs sho	w that the values	were well with	in the s	stipulat	ed stan	dards.			
Package	– 37 M/	/s CMK Project I	Private Limited	(JV)						
Sakthi Ganapathy 1st street				49.1	58.2	36.9	47.0			
Sakthi Ganapathy 3rd street	Р	17.03.2022	Residential	47.7	56.9	35.4	44.6			
Shanmugapuram 8th street				48.5	57.4	37.6	46.1			
Inference: The Analytical finding	gs show	that the values we	ere well within t	he stipu	lated sta	andards				
Package 39 – M/s Gurumurth	y Engin	eering Enterpris	es- Thomas Iya	adurai	Infrastr	ucture	Pvt.,			
		Ltd.,								
Near Royal Enfield	Р	12.03.2022	Commercial	53.8	64.8	42.8	52.4			
Near BSNL Office	Р	12.03.2022	Commercial	51.6	62.8	40.3	48.9			
Near Metro Railway Station	Р	12.03.2022	Commercial	57.4	66.3	47	54.8			
Inference: The Analytical findi	ngs sho	w that the values	were well with	in the s	stipulate	ed stan	dards.			

3.2.3 Surface water quality

Surface water quality monitoring is conducted by the contractors as required by the EMP during the reporting period. Monitoring reports are included in Appendix 5, and the results and inferences are discussed in the below in comparison with baseline values or standards as applicable. At some locations, high values of turbidity and total hardness is observed which is due to the presence of excessive calcium ions, mud or algae and not due to the project activities.

	Water body and monitoring Location	Monitoring date	Туре	Inferences on water quality results in comparison with baseline / applicable standards					
Package Information				Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source		
				pН		8.55	6.5-8.5		
	Puzhal Lake- Near Metro Pump House		P	Turbidity	NTU	13.1	5		
				Total Hardness as CaCO ₃	mg/L	125	600		
				pН		8.66	6.5-8.5		
				Turbidity	NTU	12.7	5		
Package 2 - M/s P & C- RPP (JV)	Puzhal Lake- Near Mettur 5th street	21.03.2022		Total Hardness as CaCO ₃	mg/L	121	600		
				pН		8.45	6.5-8.5		
				Turbidity	NTU	27.2	5		
	Lake Water Chennai Bypass		Р	Total Hardness as CaCO ₃	mg/L	239	600		
	Pond Water Kanagar Pond Water	23.02.2022	Р	рН		8.42	6.5-8.5		

Table 3-5 Surface Water Monitoring Results

					on with		ty results in / applicable
Package Information	Water body and monitoring Location			Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source
				Turbidity	NTU	11.6	5
				Total Hardness as CaCO ₃	mg/L	116	600
				рН		8.31	6.5-8.5
	Pond Water Kolathur Metro Water Distribution Centre		Р	Turbidity	NTU	22.1	5
				Total Hardness as CaCO ₃	mg/L	214	600
Inference: high	er turbidity is due to the	presence of mu	d and al	gae in the Wa	ter	•	
				рН		7.92	6.5-8.5
	Bank Colony	23.04.2022	Р	Turbidity Total Hardness as CaCO ₃	NTU mg/L	9.8 64	5 600
Package 4 –				pH		7.93	6.5-8.5
M/s RKN Construction				Turbidity	NTU	9.5	5
	S.V.Koil Street	23.04.2022	Р	Total Hardness as CaCO ₃	mg/L	108	600
	Indira nagar Street	23.04.2022	Р	рН		7.89	6.5-8.5
		23.07.2022	1	Turbidity	NTU	2.1	5

					on with		ty results in / applicable
Package Information	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source
				Total Hardness as CaCO ₃	mg/L	116	600
				pН		7.84	6.5-8.5
				Turbidity	NTU	15.2	5
	Ellai Amman Street 23.04.2	23.04.2022	Р	Total Hardness as CaCO ₃	mg/L	394	600
Inference: high	her turbidity is due to the	presence of mu	d and al	gae in the Wa	ter.		
				pН		6.76	6.5-8.5
	Srinivasa nagar main road	13.06.2022		Turbidity	NTU	10.6	5
				Total Hardness as CaCO ₃	mg/L	396	600
				pН		6.32	6.5-8.5
Package 6-				Turbidity	NTU	5.7	5
M/s Annai Infra Developers Pvt., Ltd.,	Sathyamoorthynagar	13.06.2022	Р	Total Hardness as CaCO ₃	mg/L	1750	600
				pН		6.89	6.5-8.5
				Turbidity	NTU	10.9	5
	Temple nagar	13.06.2022		Total Hardness as CaCO ₃	mg/L	630	600
	er turbidity is due to the j e of Calcium Ions in the						
						0.00	(5 0 5
Package 8-			Р	pН		8.08	6.5-8.5

					on with	-	ty results in / applicable
Package Information	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source
Gurumurthy Engineering Enterprises	pond Water Agraharam perumalkovil			Total Hardness as CaCO ₃	mg/L	194	600
				pН		7.51	6.5-8.5
	Near Ellaiamman			Turbidity	NTU	13.5	5
	temple korattur ERI			Total Hardness as CaCO ₃	mg/L	269	600
				pН		8.72	6.5-8.5
	Near CasagrandeASTA			Turbidity	NTU	24.1	5
	korattur ERI			Total Hardness as CaCO ₃	mg/L	250	600
				pН		12.3	6.5-8.5
	THIRUNEERMALAI			Turbidity	NTU	26	5
	PLANT			Total Hardness as CaCO ₃	mg/L	380	600
Inference: highe	er turbidity is due to the p	presence of muc	l, silt, aı	nd algae in the	Water.		
				рН		7.25	6.5-8.5
				Turbidity	NTU	3.9	5
Package 10- M/s AnnaiInfra Developers Pvt., Ltd.,	akbar street	15.06.2022	Р	Total Hardness as CaCO ₃	mg/L	510	600
Inference: The	Analytical findings show	that the values	were w	ell within the	stipulate	d standar	ds.

	Water body and monitoring Location				on with		ty results in / applicable	
Package Information		Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source	
				pН		7.88	6.5-8.5	
				Turbidity	NTU	1.6	5	
Package 25 -	CPCL Nagar	15.06.2022	Р	Total Hardness as CaCO ₃	mg/L	170	600	
		15.06.2022		pН		6.91	6.5-8.5	
				Turbidity	NTU	11.3	5	
M/s Annai Infra Developers Pvt., Ltd.,	Masilamani road			Total Hardness as CaCO ₃	mg/L	375	600	
		15.06.2022		pН		9.16	6.5-8.5	
				Turbidity	NTU	24.2	5	
	Apollo Armstrong nagar			Total Hardness as CaCO ₃	mg/L	40	600	
Inference: The	Analytical findings show	that the values	were w	ell within the	stipulate	d standar	ds.	
				pН		7.42	6.5-8.5	
	D 1 			Turbidity	NTU	30.3	5	
Package 26 M/s CMK	Pond Water Varatharasanar Street			Total Hardness as CaCO ₃	mg/L	307	600	
Project		14.03.2022	Р	pН		7.57	6.5-8.5	
Private	Pond Water Manali			Turbidity	NTU	7.0	5	
Limited	Pond Water Manali Park			Total Hardness as CaCO ₃	mg/L	141	600	
				pН		7.86	6.5-8.5	
				Turbidity	NTU	5.1	5	
					on with	-	ty results in / applicable	
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	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source	
	Pond Water Madhavaram Milk Colony			Total Hardness as CaCO ₃	mg/L	166	600	
Inference: The	Analytical findings show	that the values	were w	ell within the	stipulate	d standar	ds.	
Package – 32	· •			pН		8.27	6.5-8.5	
M/s - Deivanai	Pond Water Burm a			Turbidity	NTU	28.4	5	
Construction – Rock and Arch (JV)	nagar service road	11.04.2022	Р	Total Hardness as CaCO ₃	mg/L	1380	600	
		·	he presence of Calcium Ions in the water. Higher turbidity					
to the presence o	f silt and mud in the wate	er.					6505	
				pН		7.78	6.5-8.5	
	Da Amilia Ilana Maran	12.00.0000		Turbidity	NTU	5.8	5	
Package – 37 M/s CMK Project	Dr.Ambedkar Nagar Main Road		Р	Total Hardness as CaCO ₃	mg/L	212	600	
Private		17.03.2022	1	рН		3.04	6.5-8.5	
Limited (JV)	River water			Turbidity	NTU	3.6	5	
	Kosasthalaiyar River near Burm a Nagar			Total Hardness as CaCO ₃	mg/L	323	600	
Inference: The	Analytical findings show	that the values	were w	ell within the	stipulate	d standar	ds.	
package 39 – M/s	Pond Water			рН		7.51	6.5-8.5	
	Polid water Pillaiyarkovil Street		Р	Turbidity	NTU	10.7	5	
Engineering Enterprises- Thomas	Pillaiyarkovil Street Pond	12.03.2022		Total Hardness as CaCO ₃	mg/L	366	600	
Iyadurai				pН		3.08	6.5-8.5	

				Inferences on water quality results in comparison with baseline / applicable standards					
Package Information	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source		
Infrastructure Pvt., Ltd.,	River Water			Turbidity		4.9	5		
1 vi., Diu.,	Kosathalai River Near Burm a Nagar			Total Hardness as CaCO ₃		303	600		
				рН		7.69	6.5-8.5		
				Turbidity		2.4	5		
	Lake Water Gandhi Nagar Lake			Total Hardness as CaCO ₃		206	600		
Inference: The	Analytical findings show	that the values	were w	ell within the s	stipulate	d standard	ds		

3.2.4 Groundwater quality

Groundwater quality monitoring is conducted as required by the EMP during the reporting period. Monitoring reports are included in **Appendix 5**, and the results and inferences are discussed in the below in comparison with baseline values or standards as applicable. The high level of Total Hardness is evident from the baseline results presented in Initial Environmental Examination showing high concentration of TDS levels in the groundwater samples.

				Inferences on water quality results in comparison with baseline / applicable standards				
Package Information	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source	
				рН		7.55	6.5-8.5	
	Bore Water- Pari Nagar			Turbidity	NTU	1.2	5	
			Р	Total Hardness as CaCO3	mg/L	1052	600	
				рН		7.55	6.5-8.5	
Package 2 - M/s	Bore Water-			Turbidity	NTU	1.7	5	
P & C- RPP (JV)	Anbunayagam Street	23.02.2022	Р	Total Hardness as CaCO ₃	mg/L	1092	600	
				pН		7.26	6.5-8.5	
				Turbidity	NTU	1.2	5	
	Bore Water-kk main road			Total Hardness as CaCO ₃	mg/L	1052	600	

Table 3-6Groundwater Monitoring Results

							lity results in pplicable standards
Package Information	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source
				рН		6.48	6.5-8.5
	Bore Water- Batching plant			Turbidity	NTU	2.4	5
				Total Hardness as CaCO ₃	mg/L	425	600
				рН		7.12	6.5-8.5
	Bore Water- AnnaiSalai Street			Turbidity	NTU	4.1	5
				Total Hardness as CaCO ₃	mg/L	547	600
Inference: The ha	rdness may be due to	excessive pres	ence of l	ime in water			
				pН		7.53	6.5-8.5
	Bank Colony	23.04.2022	Р	Turbidity	NTU	BDL	5
Package 4 – M/s RKN Construction		23.04.2022	1	Total Hardness as CaCO ₃	mg/L	560	600
	S.V.Koil Street	23.04.2022	Р	pН		7.83	6.5-8.5
			-	Turbidity	NTU	0.5	5

							lity results in oplicable standards
Package Information	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source
				Total Hardness as CaCO ₃	mg/L	440	600
				pН		7.89	6.5-8.5
	T I' Or r	00.04.0000	D	Turbidity	NTU	4.7	5
	Indira nagar Street	23.04.2022	Р	Total Hardness as CaCO ₃	mg/L	680	600
				рН		8.24	6.5-8.5
	Ellai Amman	23.04.2022		Turbidity	NTU	0.6	5
	Street		Р	Total Hardness as CaCO ₃	mg/L	220	600
Inference: The Ar	nalytical findings sho	ws that the valu	les were	within the stip	oulated s	tandards.	
				pН		7.09	6.5-8.5
				Turbidity	NTU	19.1	5
Package 6- M/s Annai Infra	Srinivasa nagar main road	13.06.2022	Ρ	Total Hardness as CaCO ₃	mg/L	480	600
Developers Pvt.,			1	pН		7.26	6.5-8.5
Ltd.,	~ .			Turbidity	NTU	8.3	5
	Sathyamoorthyna gar	13.06.2022		Total Hardness as CaCO ₃	mg/L	1900	600
	Tampla pager	12.06.2022		pН		7.32	6.5-8.5
	Temple nagar	13.06.2022		Turbidity	NTU	12.1	5

							ality results in oplicable standards		
Package Information			Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source		
				Total Hardness as CaCO ₃	mg/L	955	600		
U	turbidity may be due t nce of lime in water	to the presence	of silt ar	nd clay in the v	vater san	nple. The l	hardness may be due		
F	MGR nagar main road			pН		6.83	6.5-8.5		
		14.06.2022		Turbidity	NTU	1.9	5		
				Total Hardness as CaCO3	mg/L	540	600		
						рН		7.15	6.5-8.5
Package 7- M/s Annai Infra Developers Pvt.,	East Blajinagar	14.06.2022	Р	Turbidity	NTU	1.6	5		
Ltd.,				Total Hardness as CaCO ₃	mg/L	106	600		
				pН		6.92	6.5-8.5		
				Turbidity	NTU	4.2	5		
	Grace nagar main road	14.06.2022		Total Hardness as CaCO ₃	mg/L	126	600		
Inference: Slightl	y Higher turbidity is a	due to the prese	ence of n	nud, silt, and a	lgae in tl	he Water.			
Package 8-M/s	Well water		Р	pН		7.79	6.5-8.5		
GurumurthyEn	annainagar	17.03.2022	-	Turbidity	NTU	4.7	5		

							lity results in oplicable standards
Package Information	Package Information Water body and monitoring Location		Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source
gineering Enterprises				Total Hardness as CaCO ₃	mg/L	316	600
				pН		7.40	6.5-8.5
	Bore water			Turbidity	NTU	1.1	5
	Kaviyanagar			Total Hardness as CaCO ₃	mg/L	796	600
				pН		7.50	6.5-8.5
	Bore water EB			Turbidity	NTU	1.6	5
	Road			Total Hardness as CaCO ₃	mg/L	2550	600
				pН		7.78	6.5-8.5
	Bore water			Turbidity	NTU	1.0	5
	Pattaravakkam main road			Total Hardness as CaCO ₃	mg/L	598	600
				pН		7.62	6.5-8.5
	Bore water			Turbidity	NTU	3.8	5
	Agathiyar street			Total Hardness as CaCO ₃	mg/L	551	600
Inference: The Ar	nalytical findings sho	w that the value	es were v	within the stipu	ulated sta	1	
				pН		7.08	6.5-8.5
Package 10-				Turbidity	NTU	1.5	5
M/s Annai Infra Developers Pvt., Ltd.,	akbar street	15.06.2022	Р	Total Hardness as CaCO ₃	mg/L	465	600
	Kanchi nagar	15.06.2022		pН		6.87	6.5-8.5

				Inferences on water quality results in comparison with baseline / applicable standards					
Package Information	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source		
				Turbidity	NTU	47.4	5		
				Total Hardness as CaCO ₃	mg/L	955	600		
				pН		7.08	6.5-8.5		
				Turbidity	NTU	1.1	5		
Sudha nagar	15.06.2022		Total Hardness as CaCO ₃	mg/L	495	600			

Inference: The higher total Hardness may be caused due the presence of Calcium Ions in the water. Higher turbidity is due to the presence of silt and mud in the water. The turbidity may be caused due to the presence of very minute inorganic or organic matter.

	CPCL Nagar			pН		7.53	6.5-8.5
				Turbidity	NTU	2.4	5
Package 25-		15.06.2022		Total Hardness as CaCO ₃	mg/L	240	600
M/s AnnaiInfra Developers Pvt.,	Masilamani road 15.06.2022		Р	pН		7.08	6.5-8.5
Ltd.,				Turbidity	NTU	13.6	5
-)22	Total Hardness as CaCO ₃	mg/L	410	600	
	Apollo Armstrong	15.06.2022		pН		8.43	6.5-8.5
	nagar	15.06.2022		Turbidity	NTU	19.8	5

				Infere comparison	nces on with ba	water qua seline / ap	lity results in oplicable standards					
Package Information			Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source					
				Total Hardness as CaCO ₃	mg/L	110	600					
Inference: The An	nalytical findings sho	w that the value	es were v	-	ilated sta							
				pH Trach i ditea		8.25	6.5-8.5 5					
	Bore Water CPCLIMain road			Turbidity Total Hardness as CaCO ₃	NTU mg/L	BDL 232	600					
Deskage 26 M/s								1		pН		7.13
Package 26 M/s CMK Project	Bore Water	14.02.2022	P	Turbidity	NTU	BDL	5					
Private Limited	thiruvalluvar Street	14.03.2022	Р	Total Hardness as CaCO ₃	dness mg/L 757 6	600						
				рН		7.39	6.5-8.5					
	Bore Water			Turbidity	NTU	BDL	5					
	Bharathiyar street			Total Hardness as CaCO ₃	mg/L	1030	600					
Inference: The high	gher total Hardness m	ay be caused d	ue to exe	cessive present	ce of lim	e in water						
Package – 32				рН		7.45	6.5-8.5					
M/s - Deivanai	Pond Water Burm	11.04.2022	P	Turbidity	NTU	4.6	5					
Construction – Rock and Arch (JV)	Rock and Arch road	11.04.2022	Р	Total Hardness as CaCO ₃	mg/L	960	600					
Inference: The Au	nalytical findings sho	ws that the valu	ies were		ulated s	tandards						

							ality results in oplicable standards
Package Information	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source
	Sakthi Ganapathy 1st street			рН		7.56	6.5-8.5
				Turbidity	NTU	3.8	5
.				Total Hardness as CaCO ₃	mg/L	444	600
		17.03.2022	Р	рН		7.71	6.5-8.5
Package – 37 M/s CMK	Sakthi Ganapathy 3rd street			Turbidity	NTU	4.8	5
Project Private Limited (JV)				Total Hardness as CaCO3	mg/L	424	600
				рН		7.63	6.5-8.5
				Turbidity	NTU	0.7	5
	Shanmugapuram 8th street			Total Hardness as CaCO ₃	mg/L	667	600
Inference:. The hi	gher total Hardness r	nay be caused	due to ex	cessive presen	ice of lir	ne in wate	r
				рН		7.99	6.5-8.5
Package 39 –	Bore Water BSNL Office			Turbidity	NTU	4.5	5
M/s Gurumurthy Engineering Enterprises	Tiruvottiyur	12.03.2022	Р	Total Hardness as CaCO ₃	mg/L	327	600
Infrastructure		12.03.2022	r	pН		7.01	6.5-8.5
	Bore Water Thiruvottiyur			Turbidity	NTU	0.6	5
	Metro Railway Station			Total Hardness as CaCO ₃	mg/L	545	600

				Inferences on water quality results in comparison with baseline / applicable standar					
Package Information	Water body and monitoring Location	Monitoring date	Туре	Parameter	Unit	Result	Permissible limit as per IS:10500- 1991 R2012 in the absence of alternate source		
				pН		8.03	6.5-8.5		
	Bore Water Royal Enfield			Turbidity	NTU	0.8	5		
	Thiruvottiyur			Total Hardness as CaCO ₃	mg/L	414	600		
Inference: The Ar	nalytical findings sho	ws that the valu	ues were	within the stip	oulated s	tandards			

3.2.5 Soil Quality

Soil quality monitoring conducted as required by the EMP during reporting period. Monitoring reports are included in **Appendix 5**, and the results and inferences are discussed in the below in comparison with baseline values or standards as applicable.

Table 3-7Soil Monitoring Resu	lts
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Package Information	Monitoring Location	Monitoring date	Туре	Inferences on water quality results in comparison with baseline / applicable standards			
				Parameter	Unit	Result	
				pН		8.35	
	kk main road	23.02.2022	Р	Electrical Conductivity	μS/cm	294	
Package 2 - M/s P & C-				Moisture	%	85	
RPP (JV)	Vijayalakshmi Puram Main Road			pН		8.55	
		26.02.2022	Р	Electrical Conductivity	μS/cm	594	
				Moisture	%	85	
				pН		8.01	
	Bank Colony			Electrical Conductivity	μS/cm	1452	
				Moisture	%	6.8	
				pН		8.24	
	S.V.Koil Street			Electrical Conductivity	μS/cm	1439	
Package 4 – M/s RKN Construction		23.04.2022	Р	Moisture	%	7.6	
				pН		8.84	
	Indira nagar Street			Electrical Conductivity	μS/cm	3360	
				Moisture	%	8.3	
				рН		8.91	
	Ellai Amman Street			Electrical Conductivity	μS/cm	554	

Package Information	Monitoring Monitoring Location date		Туре	Inferences on water quality results in comparison with baseline / applicable standards			
				Parameter	Unit	Result	
				Moisture	%	46.4	
				pН		7.08	
	Srinivasa nagar main road	13.06.2022		Electrical Conductivity	μS/cm	197	
				Moisture	%	3.8	
			1	pН		7.18	
Package 6- M/s Annai Infra Developers Pvt., Ltd.,	Sathyamoorthyna gar	13.06.2022	Р	Electrical Conductivity	μS/cm	120	
				Moisture	%	3.0	
		13.06.2022		рН		7.31	
	Temple nagar			Electrical Conductivity	μS/cm	136	
				Moisture	%	4.1	
				pН		7.62	
	MGR nagar main road	14.06.2022		Electrical Conductivity	μS/cm	120	
Package 7- M/s Annai				Moisture	%	4.7	
Infra Developers Pvt.,			Р	pН		7.29	
Ltd.,	East Blajinagar	14.06.2022		Electrical Conductivity	μS/cm	178	
				Moisture	%	6.7	
		14.06.2022	1	рН		7.57	

Package Information	Monitoring Monitoring Location date T		Туре	Inferences on water quality results in comparison with baseline / applicable standards			
				Parameter	Unit	Result	
	Grace nagar main road			Electrical Conductivity	μS/cm	139	
				Moisture	%	4.9	
				pН		8.33	
	Vaagai Nagar			Electrical Conductivity	μS/cm	612	
				Moisture	%	8.6	
				pН		8.53	
	Kaviya Nagar	17.03.2022	Р	Electrical Conductivity	μS/cm	422	
				Moisture	%	10.7	
Package 8-M/s	EB Road			pH		7.97	
Gurumurthy Engineering Enterprises				Electrical Conductivity	μS/cm	5080	
				Moisture	%	12.3	
				pH		8.12	
	Pattaravakkam Main Road			Electrical Conductivity	μS/cm	600	
				Moisture	%	9.3	
				pH		8.36	
	Agasthiayar Street			Electrical Conductivity	μS/cm	817	
				Moisture	%	12.9	
				pН		7.31	
Package 10- M/s Annai	akbar street	15.06.2022		Electrical Conductivity	μS/cm	184	
Infra Developers Pvt.,			Р	Moisture	%	0.36	
Ltd.,				pН		7.30	
	Kanchi nagar 15.06.202			Electrical Conductivity	μS/cm	139	

Package Information	Monitoring Monitoring Location date T		Туре	Inferences on water quality results in comparison with baseline / applicable standards			
				Parameter	Unit	Result	
				Moisture	%	0.63	
				рН		7.25	
	Sudha nagar	15.06.2022		Electrical Conductivity	μS/cm	62	
				Moisture	%	0.40	
				pН		7.41	
	CPCL Nagar	15.06.2022		Electrical Conductivity	μS/cm	130	
			Р	Moisture	%	6.0	
		15.06.2022		pН		7.45	
Package 25- M/s Annai Infra Developers Pvt., Ltd.,	Masillamani road			Electrical Conductivity	μS/cm	237	
				Moisture	%	0.51	
				pН		8.30	
	Apollo Armstongnagar	15.06.2022		Electrical Conductivity	μS/cm	84	
				Moisture	%	0.29	
				pН		8.84	
	CPCL Main Road			Electrical Conductivity	μS/cm	1231	
				Moisture	%	10.4	
Package 26 M/s CMK		14.02.2022	D	pН		8.30	
Project Private Limited	thiruvalluvar street	14.03.2022	Р	Electrical Conductivity	μS/cm	4060	
				Moisture	%	7.6	
				pН		8.83	
	Bharathiyar Street			Electrical Conductivity	μS/cm	5440	

Package Information	Monitoring Location	Monitoring date	Туре	Inferences on water quality results in comparison with baseline / applicable standards			
				Parameter	Unit	Result	
				Moisture	%	8.6	
Package 32-Deivanai				рН		8.50	
Construction – Rock and Arch (JV)	Burm a nagar cement road	11.04.2022	Р	Electrical Conductivity	μS/cm	352	
				Moisture	%	6.8	
				рН		8.74	
	CPCL Nagar			Electrical Conductivity	μS/cm	685	
				Moisture	%	4.8	
	Thiruvalluvar Street			рН		9.09	
Package – 37 M/s CMK Project Private Limited (JV)		17.03.2022	Р	Electrical Conductivity	μS/cm	2620	
				Moisture	%	5.2	
				pН		8.01	
	Bharathiyar Street			Electrical Conductivity	μS/cm	2020	
				Moisture	%	6.4	
				pН		9.06	
	Thiruvottiyur Metro Railway Station		Р	Electrical Conductivity	μS/cm	1412	
Package 39 – M/s Gurumurthy				Moisture	%	6.8	
Engineering Enterprises-		12.03.2022		pН		9.02	
Thomas Iyadurai Infrastructure Pvt., Ltd.,	Royal Enfield Thiruvottiyur		Р	Electrical Conductivity	μS/cm	1231	
				Moisture	%	3.4	
	BSNL Office			pН		8.83	
	Thiruvottiyur		Р	Electrical Conductivity	μS/cm	1742	

Package Information	Monitoring Location	Monitoring date	Туре	Inferences on water quality results in comparison with baseline / applicable standards		
				Parameter	Unit	Result
				Moisture	%	4.9





4 TRAINING AND CAPACITY BUILDING ACTIVITIES

Training and capacity building programs (workshops, seminars, on/off-site trainings, awareness etc.,) related to environmental safeguards, implementation of EMPs, health and safety etc., conducted during the report period of presented in the **Table 4.1** below.

Package No.	Date	Training activity	Venue & durationTrainer	Target Group	Number of participant (M / F)
1-46		Program to contractor Safeguard Personnels	5	on, Mr. Paari, Contractor Safeguard Officers and oli, Dr. G.Safety Officers .Mythili, Mr.	HM-20 F- 1
1-46	& 28 [*] March 2022	program on Storm Water Drain Construction execution procedures, Design & Development, Ethics & Safety, Quality Control, Utility services, ADB Environmental & Social Safeguards	a public hall in ^{Mr.} Vasanth Kur Thiru Vi Ka ^{Meenakshi Sundai Nagar on 22^{"Thamizoli, Mr. C. S} March 2022 & at GCC Amma}	Manoj Kumar, GCC Zonal Authorities (AE, AEE nar, Mr. N.EE) and Project Suppor ram, Dr. P.Consultants (Resident Engineer Singaravelan Assistant Resident Engineers Quality Control Engineers Quantity Surveyors, Environmenta & Social Safeguard Officers.	t ,F- 23 ,

Table 4-1Training / Capacity Building Activities Conducted



Figure 4-1 Training/workshop/awareness photographs

North & Central Regional Division Commissioners and GCC Zonal Officials involved in the project at Amma Arangam a public hall in Thiru Vi Ka Nagar on 22^{ad} March 2022 & at GCC Amma Maligai on 28th March 2022

5 PUBLIC CONSULTATION

Public consultation activities continued during the reporting period, and details are provided in the below **Table 5.1**. All the consultations are documented, and details are included in **Appendix 6**.

Package No.	Date	Date Venue Target grou		•	Number particip		Details (purpose, and main feedback/outcome)	
					М	F		
Package 02	23.04.2022	Orgadam,Ambattur	Residents Orgadam	of	10	04	Local Communities were against the tree cuttingfor construction of SWD. Adverting to unavoidable circumstances to realign the drain due to presence of invisible utilities it was proposed to the local public the importance of removing the trees to complete the drain work. A discussion was made and concluded with acceptance to remove two trees and save two trees by slightly detouring the SWD alignment. Compensatory plantation will be implemented for the trees to be cut.	
Package 03	28.06.2022	Karukku,Kallikupp am	Residents Sathyavani nagar.	of Muthu	-	0	Local Communities were against the tree cutting for construction of SWD. Due to no possibility to realign the drain since the presence of underground metro water pipeline, it was proposed to the local public the importance of removing the trees to complete the drain work before the upcoming monsoon season. Thus, tree cutting was unavoidable and compensatory tree planting in the ratio of 1: 10 is being considered.	

Table 5-1Public Consultation Activities



Public Consultation -Local Communities were grouped into 2 with each standing for and against tree cutting

6 GRIEVANCE REDRESS

6.1 Grievance Redress Mechanism

A Project-specific grievance redress mechanism (GRM) is established in to provide a time bound and transparent mechanism to voice and resolve social and environmental concerns linked with the project. GRM is in place. Project GRM is presented in the following Figure. Accordingly, responsibilities are allocated to project agencies, consultants and contractors, and grievance redress committee(s) established at subproject/town level or project level. Status of establishment of GRCs is presented in **Table 6.1**.



Figure 6-1Project GRM

6.2 Complaints Received during Reporting Period

A total of 190 complaints were received and reported during this period during construction/implementation. There were 4 types of Grievances (Total of 9 Nos) pending/unresolved complaints at the end of this reporting period. Pending grievances from the previous reporting period are resolved Summary of complaints received and resolved are presented **Table 6-1**, and details are provided in **Appendix 8**. Details of unresolved / pending complaints as on end of reporting period is provided in **Table 6.2** along with the reasons and proposed actions.

S.NO	Types of Grievance	Received/ Carried from previous reporting period	Resolved	Pending	Time Taken for resolution (days)/steps taken for resolution
1	Complete the SWD works as soon as possible to avoid unsafe access/parking	17	17		Contractors are instructed to speed up the work and limit the usage of pedestrian access.
2	To postpone the work for a short time due to some genuine reason (Medical Emergency prevailing the residence)	01	01		Genuine requests are being considered to plan activities assisting the public to avoid discomfort to the public.
3	Remove the stagnant water/sewage collected in the trench	7	7		Dewatering will be done immediately after the rain to remove the stagnated water in the trenches.
4	Provide Temporary approach	56	56		Proper temporary approach platforms were provided for safe access of residences and shops
5	Inadequately barricaded excavation trench	4	4		Adequate barricades were provided within 4 hours.
6	Excavate without damaging minor structures/Utility services/others	5	5		Maximum care was taken to avoid damaging minor structures/Utility services.
7	Rectify the minor structures damaged	19	14	5	Swift actions have been taken to repair the damaged minor structure

Table 6-1Details of Complaints Resolved

					in coordination with the Social Safeguards Personnel of PIU/ PSC.
8	Rectification of disrupted utility services	35	34	1	Swift actions have been taken to repair the damaged major utility services in coordination with the Utility Expert of PMSC. Minor damages will be rectified within 6 hours.
9	To support the mobile shop owners to relocate /find a suitable place and to shift	0	0		Request was accepted
10	Livelihood Compensation for street vendors/ mobile hawkers/ shop owners	4	2	2	Requests were accepted
11	Poor Backfilling	10	9	1	Proper backfilling was completed within 24 hours.
12	Close the Pre-cast slab gaps and Manholes of SWD	03	03		Action was taken to safely close the openings within 6 hours.
13	Remove excess soil/construction debris/Spoil Management	2	2		Request accepted. post construction clean up and desilting was done.
14	Cut protruding excess rods	0	0		Immediate action taken within an hour to cut the protruding rods.
15	House Tree/plant transplantation	0	0		Request was accepted
16	Request for a new SWD alignment	7(6 from previous reporting period)	7		Request was accepted.
17	Unrelated to SWD Construction	0	0		Guided the public submit the grievance to competent authority.
18	Use the same excavated soil for backfilling	1	1		Request was accepted
19	No awareness and intimation provided before starting SWD works	1	1		Contractor was informed to distribute public information notice

20	-	l to delete the SWD drain	1(1previou s reporting period)	1		Request was accepted
21	Desilting the Existing SWD drain or provide alternative solution		1(1previou s reporting period)	1		Request was accepted
22	Save the trees in the SWD alignment		20	20		Request to save the trees was accepted and a small detour in alignment has been proposed. The trees have been pruned to reduce loading on the SWD.
Т	Jan 21 – DecTotal21		8	8	0	
		Jan 22- Jun 22	190	181	9	

Package No.	Date of complaint	Description of grievance	Resolution pending with	Reasons for non- resolution	Proposed Actions
06	16/04/2022	Rectify the minor structures damaged	Contractor	The Resident has rebuilt the affected minor structure on their own due to emergency	Reimbursement is under process
25	24/05/2022	Rectify the minor structures damaged	Contractor	The Resident has rebuilt the affected minor structure on their own due to emergency	Reimbursement is under process
32	06/06/2022	Rectification of disrupted utility services	Contractor	Due to pending TNEB department permission	Requestedtheconcerneddepartmenttoprocessthepermissionatearliestanduntilthen the EB cable issecured.
21	12/04/2022	Poor Backfilling	Contractor	Due to the new metro water pipeline laying proposal the backfilling is pending in few areas	Until the metro water pipe laying works safe access is ensured at worksite by covering the potholes.
06	16/04/2022	Rectify the minor structures damaged	Contractor	The Resident has rebuilt the affected minor structure on their own due to emergency	Reimbursement is under process

 Table 6-2Details of Complaints Pending / Unresolved Complaints (Environment)

Package	Date of	Description of	Resolution	Reasons for	Proposed Actions
No.	complaint	grievance	pending with	non-	
				resolution	
				The Resident	
				has rebuilt the	
25	24/05/2022	Rectify the minor	Contractor	affected minor	Reimbursement is
23	24/03/2022	structures damaged	Contractor	structure on	under process
				their own due	
				to emergency	
				The Resident	
				has rebuilt the	
25	12/05/2022	Rectify the minor	Contractor	affected minor	Reimbursement is
23	12/03/2022	structures damaged	Contractor	structure on	under process
				their own due	
				to emergency	

6.3 GRC Meetings

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GRC has been formed and no meeting was scheduled during this reporting period i.e., January 2022 to June 2022. Details of GRC formulation given in Table 6.3.

Table 6-3GRC Formulation Details	
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Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
1	M/s Adithya Infrastructure Pvt Ltd - Gurunanak Engineering Services (JV)	GCC Staff	Dinesh Kannan	Mr. Sathish +91 9790539575	Mr. Rajendran +91 7358215431	Door no: 23 Loganathan Street, Krishnnapuram west, Ambattur, Chennai-53	Ms. Thilagavathi +91 9445092504	Door no:01, Nainiammal street, Krishnnapuram, Ambattur, Chennai- 53
2	M/s P & C – RPP (JV)	Staff Incharg e	Vincent	Mr. Krishnamoorthy +91 6369271709	Mr. Sundharraman +91 9840434284	96/54, Mrugappa Reddy Street, Venkatapuram, Ambattur, Chennai- 53	Ms. AmbigaSathyanarayan an +91 7299924485	No. 9/58, Manasa Madam Street, Venkatapuram, Ambattur, Chennai - 53
3	M/s. KCP Engineers Pvt Ltd -M/s. Rock & Arch Constructions (I) Pvt Ltd (JV)	Staff Incharg e	Kumaran	Mr. G. Masanam +91 6374306195	Mr. Srinivasan. P +91 7299101060	8/1, 2nd Main Road Muthamizh Nagar, Kallikuppam, Ambattur, Chennai - 53	Ms. Saraswathi.P +91 9087337569	No. 19, Muthamizh Nagar Main Road, Madanangkuppam, Chennai - 53
4	M/s RKN Constructions	Staff Incharg e	Rajavel	Mr. P. Balamurugan +91 8778460024	Mr. Anandarajan +91 9941246568	No:16B, Indira Gandhi Street, Yerikkarai Road Extension,	Ms. Nandhini +91 9360173020	No:10, Pachaiamman Street, Venkateshwara

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
						Ambattur, Chennai - 600053		Nagar, Ambattur, Chennai - 600053
5	M/s. Gurumurthy Engineering Enterprises – M/s. Thomas Iyadurai Infrastructure Pvt Ltd (JV)	Staff Incharg e	Aravindan. R	Mr. Arpudha Royal Doss +91 9092097353	Mr. Velavan +91 9444804584	Valarmathi street, Ambattur, Chennai	Ms. Ashwini +91 9940503119	No. 175, 26th Avenue Banu nagar, Ambattur, Chennai
6	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu	Staff Incharg e	Sagaya Antony	Mr. R. Manickam	Mr. Chinnadurai +91 9994302666	Paul Residency, Flat no-3 First floor, Annai Nagar 2nd Street, Kallikuppam, Chennai-99	Ms. Priya +91 9344541166	506/1, 8th Street, Sivaprakash Nagar, Madhanakuppam main road, Surapet, Chennai-66
7	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu	Staff Incharg e	Bhaskar	Mr. K. Janakiraman +91 8056177545	Mr. T. Rangarajan +91 6369591882	No.1, Kandigai Street, North Korattur, Chennai - 76	Ms. R. Selvi +91 9940041078	No. 9B, Sri Devi Karumari Amman Street, Korattur, Chennai - 76

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
8	M/s. Gurumurthy Engineering Enterprises, Tamil Nadu	Staff Incharg e	Vinoba	Mr. G. Vijayakumar +91 9444395007	Mr. Loganathan +91 984094160	Subulakshmi Nagar, Korattur, Chennai - 76	Ms. Kumari +91 9444390080	Subulakshmi Nagar, Korattur, Chennai - 76
9	Th. R. Rama Rao	Staff Incharg e	Desiyan	Mr. R. Devisri +91 96000 97211	Mr. Thomas +91 9499975240	Door No. 16, Velmurugan Nagar 1st Street, Lakshmipuram, Chennai	Ms. Muni Pushpam +91 9884306906	Door No. 14, Velmurugan Nagar 1st Street, Lakshmipuram, Chennai
10	M/s. Annai Infra Developers Limited	Staff Incharg e	Sivakumar. N	Mr. R. Dineshraj +91 9360728427	Mr. Seshadri, P. R. +91 994025130	Plot No.30, North Sri Venkateshwara Nagar 2nd street, Puthagaram, Ch:600099	Mrs. S. Tamilselvi +91 9840049330	Plot No.30, North Sri Venkateshwara Nagar 2nd street, Puthagaram, Ch:600099
11	Th. K. Subramani	Staff Incharg e	Saravana Kumar	Mr. Shanmugam +91 9962422259	Mr. D. Balaji +91 8007442242	No. 17, Royal City, Britannia Nagar, Chennai	Ms. B. Kalvi +91 9566180299	No. 17, Royal City, Britannia Nagar, Chennai
12	M/s.RKSD – JV	Staff Incharg e	Sudhakar	Mr. Stephan. M. S +91 7338886722	Mr. Selvam +91 909417799	Door no: 9/4 varasakthi Nagar, Teacher's colony 5th main road, 3rd	Ms. Vadivuvapal +91 6381938649	Door no:65, Sai Ram street, Kolathur, Chennai

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
						layout, Kolathur, Chennai		
13	M/s. Landmark Corporation Pvt Ltd	Staff Incharg e	Sri Balamurugan	Mr. Anish Shajo. B +91 9597962340	Mr. Dinakaran +91 8939506819	Iyyapan and Associates, Kolathur, Chennai	Ms. Sathiya +91 9790824789	Baba Nagar Association, Kolathur, Chennai
14	M/s Sree Saravana Engineering Bhavani (P) Ltd.,	Staff Incharg e	Gokul	Mr. Mukilan +91 9080510082	Mr. Duraivel +91 980292289	No. 29, SV Kovil Street, Madhavaram, Chennai - 60	Ms. Rukmani +91 9952026813	No. 26, SV Kovil Street, Madhavaram, Chennai - 60
15	M/s RPP - Sathyamoorthy (JV)	Staff Incharg e	Saran Raj	Mr. Udhayakumar +91 9791014785	Mr. Salim 8072580134	No. 6, 6th Cross street, Thirumalai Nagar Ext., Kolathur, PonniAmmanmedu Post, Chennai	Ms. Chithra 7894470271	No. 6, 6th Cross street, Thirumalai Nagar Ext., Kolathur, PonniAmmanmedu Post, Chennai
16	M/s. Mars Construction	Staff Incharg e	Sivakumar. V	Mr. JaserYacoob +91 95972 04881	Mr. G. Anthony +91 9962122804	D. N: 23, K. S. Nagar 10th Street, Kavangarai, Puzhal, Chennai - 600066	Ms. K. Bhuvaneswari +91 9445403838	D. N: 16, K. S. Nagar 12th Street, Kavangarai, Puzhal, Chennai - 600066

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
17	M/s. M. Kavitha - M/s. Velan Builders (JV)	Staff Incharg e	Chitrarasan	Mr. Gokul +91 8667080544	Mr. N. Santharaj +91 9840062779	No.16, Lal Bahadur Sasthri Street, Periyathoppu, Manali, Chennai - 600068	Ms. K. Santhamahalakshmi 044-40055475, +91 9150991636	No. 40, Nathiya Nagar, Chinnamathur, Manali, Chennai 600068
18	M/s. Thirumalagiri Infra Project Ltd – M/s. Shanmugavel Construction JV	Staff Incharg e	Maruthi	Mr. Gopinath +91 9677452121	Mr. Sangunadhan 9094217081 +91 9361869365	SR Aavin Parlour, Assisi Idaima Nagar, Venkat Nagar, Mathur, Chennai	Ms. Veera Nagammal +91 9841892079	Grocery Shop, No.72 ChinnaSamy Nagar, Mathur, Chennai
19	M/s Sree Saravana Engineering Bhavani (P) Ltd.,	Staff Incharg e	Jayabharathi	Dr.JegadeeshChandi ra Boss. U +91 8903241796	Mr. M. Ravi +91 9444012094	Mathur, Chennai	Ms.Thirumalar +91 9940549123	Mathur, Chennai
20	Th. V. Narayanan	Staff Incharg e	Sathish	Mr. K. Balachandar 9840801554	Mr. Krishnan +91 9841170760	Indian Oil Petrol Bunk, Sathangadu, Manali, Chennai - 600068	Mr. Selvam 9710593907	Manager, HP Petrol Bunk, Sathangadu, Manali High Road, Chennai - 600068

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
21	M/s. KCP Engineers Pvt Ltd	Staff Incharg e	Suriya Prakash	Mr. Dhanush +91 8778217421	Mr. K. Uvaraj +91 7299090171	No. 45, Mahalakshmi Nagar, Puzhal, Chennai - 66	Ms. S. Devi +91 7010091644	No.7, Jeeva 2nd Street, Puzhal, Chennai - 66
22	M/s. CR Construction – M/s. Rock & Arch Construction India Pvt Ltd (JV)	Staff Incharg e	Hari Krishna	Mr. M. Saroj Kannan	Mr. Shiva Kumar +91 9940571123	Plot No: 22, Shiva Vishnu Nagar, Puzhal, Chennai	Mrs. Rekha Russel Raja +91 9444185774	Plot No: 56/57 Balaji Nagar III Part, Puzhal, Chennai
23	Th.K.Subramani , M/s.Balaji Enterprises & M/s.Thirumalagi ri Infra Projects (Pvt) Ltd (JV)	Staff Incharg e	Jayaseelan	Mr. Gowri Shankar. S +91 9677690272	Mr. Veeraragavan +91 9940104267	Plot No.5, Kumari Nagar street, Sri Balaji Nagar, Puzhal, Chennai	Ms. D. V. Banumathi +91 9444100739	Plot No: 5, Kumari Nagar, Puzhal, Chennai
24	M/s.Kumar Builders - AnnaiInfra Developers Limited (JV)	Staff Incharg e	Vignesh	Mr. M. Madhusudhanan 7904401236	Mr. Thanikachalam 9940626398	Vel stores, Seethapathi street, Madhavaram, Chennai	Ms. Rajammal. M 8072913316	Vel stores, Seethapathi street, Madhavaram, Chennai

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
25	M/s. Annai Infra Developers Ltd, Erode, Tamil Nadu	Staff Incharg e	Karthikeyan	Mr. S. Vivek +91 8778511551	Mr. Selvaraj +91 9962075358	Door No. 3, Assisi Nagar West Street, Chennai - 600060	Mrs. Belinda +91 9003254344	No. 77, 3rd Street, Assisi Nagar, Chennai - 600060
26	M/s.CMK Projects Private Ltd (JV)	Staff Incharg e	Hari Kumar	Mr. Eshwaran +91 720007521	Mr. Balaraman +91 7305472341	Plot 400, CPCL 12th cross st, Manali, Chennai.	Ms. Anandhi +91 9710746433	No.1, Gramma street 1st Lane, Manali, Chennai.
27	M/s RPP Infra Projects Ltd	Staff Incharg e	Vinoth.M	Mr. Arun J +91 9600587199	Mr. Yettappan +91 9940143205	No. 33, Irular Colony, Sadayangkuppam, Chennai	Ms. Meenakshi. A +91 9884558519	No. 1/239, Dwaraka Nagar, Manali New Town, Chennai - 103
28	M/s P&C Projects (P) Ltd	Staff Incharg e	Ashok	Mr. Jayakumar +91 9444580616	Mr. Prabhu +91 9840260046	57/18, Block No. 57, Manali New Town, Chennai	Ms. Sudha Ranganathan +91 9840318469	55/23, Block No. 55, Manali New Town, Chennai
29	M/s. KCP Engineers Pvt Ltd	Staff Incharg e	Sri Balaji	Mr. Mathan +91 63696 57548	Mr. Louise Fernandus +91 9094228761	No. 34, Manali New Town old Police station road, near KanniKovilMadu, Chennai - 600103		
Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
-----------------	---	-----------------------	-----------------------	---	--	---	--	--
30	M/s. Sri Sivaram& Co	Staff Incharg e	Siva Gurunathan	Ms. Thamizharasi 7395878356	Mr. Prakaash +91 9940200589	No.2/57, Perumal Kovil Street, Vadaperumpakkam, Chennai - 600060	Ms. Mariam Malathi +91 8122265067	Parvathipuram, Vadaperumpakkam, Chennai - 600060
31	M/s.Sakthi Engineers - Vijay Gowtham (JV)	Staff Incharg e	Saravanan	Mr. Vignesh +91 90294020388	Mr. K. Karna +91 7871671973	No. 27, KanniammanpetKo vil Street, Manali, Chennai - 600103	Ms. K. Shanmugavalli +91 7338931881	No. 27, KanniammanpetKo vil Street, Manali, Chennai - 600103
32	M/s. Deivanai Construction JV Rock & Arch Construction	Staff Incharg e	Surendar	Ms. Karthiyayini. C +91 8220846893	Mr. S. Saravanan +91 9710590059	325/90, 2nd Street, Burm a Nagar, Sadayankuppam, Manali New Town, Thiruvallur, Tamil Nadu 600103	Ms. R. Vijayalakshmi +91 9940102403	69/289, 3rd Street, Burm a Nagar, Sadayankuppam, Manali New Town, Thiruvallur, Tamil Nadu - 600 103
33	M/s KCP Engineers Pvt. Ltd	Staff Incharg e	Sathish Chezian	Mr. Prakash +91 9361826408	Mr. S. Ramanandam +91 9840486053	No: 12, Sadananthan Street, Periyaserkkadu MMC, Chennai - 600051	Ms. V. Sarala +91 9962628380	No: 12, Raja Nagar 2nd Street, Periyaserkkadu, Chennai - 600051

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
34	M/s. SreeVenkateswa ra Road Constructions (P) Ltd	Staff Incharg e	Vineeth Kannan	Mr. A. Vinoth Kumar +91 8056083014	Mr. M. Nachimuthu +91 9282143794	66A, Ramaswamy Mudaliyar Street, Thiruvottriyur, Chenna - 600019	Ms. N. Ramathal +91 9282143794	66A, Ramaswamy Mudaliyar Street, Thiruvottriyur, Chenna - 600019
35	M/s. SreeVenkateswa ra Constructions - SreeVenkateswa ra Road Construction Pvt.Ltd (JV)	Staff Incharg e	Siva Kumar	Mr. Saravanan +91 9095820490	Mr. PJR. Stephan +91 9444065126	No. 88/68, Village Street, Sathangadu, Kaladipet, Chennai - 19	Ms. Kumari +91 9171698455	No. 83/10, Village Street, Kaladipet, Chennai 19
36	M/s.Sowmya Construction - Rock and Arch Constructions (I) Pvt. Ltd (JV)	Staff Incharg e	Arun Shankar	Mr. Sureshkannan T	Mr. J. R. Mohan +91 8056079996	No 15, 4th Street, Kamaraj Nagar, Ennoor, Chennai - 57	Ms. V. Deivanayagi +91 6369692357	
37	M/s.CMK Projects Private Ltd (JV)	Staff Incharg e	Ranjith	Mr. R.Sathishkumar	Mr. Kannan +91 9840049492	No 123, Saraswathi Nagar 7th street,	Ms. A. Rajamani +91 7824003900	No.45, Nehru street, Rajajai Nagar, Tiruvottiyur, Chennai

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
						Saraswathi Nagar, Thriuvottriyur, Chennai		
38	M/s Sakthi Constructions	Staff Incharg e	Suresh Kannah	Mr. Arun +91 9865215597	Mr. K. Mohandas +91 9884565858	No. 4/18, Jothi Nagar 6th Street, Thiruvottriyur, Chennai	A. G. Roja +91 9840933103	No. 5/2, Jothi Nagar 6th Street, Thiruvottriyur, Chennai
39	M/s. Gurumurthy Engineering Enterprises – Thomas Iyyadurai Infrastructure Pvt Ltd (JV)	Staff Incharg e	Rajchandar	Mr. Selvakumar +91 7401555598	Mr. Satheesh +91 729949108	405/9, Opp. Royal Enfield, Thiruvottryur Highway, Thiruvottrur, Chennai - 19	Mr. Sathya Kumar 7871241223	No. 25, Anjugam Nagar, Thiruvottriyur, Chennai.
40	M/s Vijay Gowtham Engineering works	Staff Incharg e	Vignesh. S	Mr. T. R. Ashwin christo	Mr. Ranganathan +91 7299016121	No. 7/19, Anna Street, Jaihind Nagar, Ernavoor, Chennai - 57	Ms. Kavitha +91 8072943361	No. 3/21, Gandhi Street, Jaihind Nagar, Ernavoor, Chennai - 57
41	M/s. R K & Sons	Staff Incharg e	Raja. G	Mr. S. Jeyapragash	Mr. M. Soundharapandiy an	No.99 Beach Road, Chinnakkuppam, Chennai- 600 057.	Mrs. M. Vijaya +91 9003080590	No.98 Beach Road, Chinnakkuppam, Chennai - 600 057.

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
					+91 9884837666			
42	M/s. Gurumurthy Engineering Enterprises – Thomas Iyyadurai Infrastructure Pvt Ltd (JV)	Staff Incharg e	Rajchandar	Mr. Mano. A	Mr. Kamal +91 6383567907	Kanakkar street, Thiruvottriyur, Chennai	Ms. Shakthi +91 9361261002	Ellaiamman Street, Thiruvottriyur
43	M/s Sri Sivaram& Co.	Staff Incharg e	Mohandas	Mr. Karthik	Mr. Purushothama Naidu +91 9840701760	No. 9/1376, 6th Street, I Block, Off 18th Main Road, Anna Nagar West, Chennai - 600040	Mrs. T. Jothi Latha +91 9600143323	Thendral Nagar Association, Anna Nagar West, Chennai - 600040
44	M/s Annai Infra Developers Limited	Staff Incharg e	Gopalakrishna n. S	Mr. S. Udhayakumar	Mr. Pravin Kumar +91 9360774400	26/17, Sivantham Nagar, Teachers Colony, Ambattur, Chennai - 53	Mrs. Hartinjeeva +91 8667735893	55/7, Neru Street, Teachers Colony, Ambattur, Chennai 53

Packag e No.	Name of the Contractor	GCC	PSC Field Engineer	Social Safeguard Specialist/ Environmental Safeguard Officer/ Safety Engineer/ Site Supervisor	Local Public (Man)	Address	Local Public (woman)	Address
45	M/s. CR Construction – M/s. Rock & Arch Construction India Pvt Ltd (JV)	Staff Incharg e	Balaji K	Mr. R. Sudhakar	Mr. Suresh +91 7338975561	2/60, Ariyaloor Perumal kovil Street, Aandarkuppam post, Chennai -103	Mrs. Santhi +91 8508313713	32, Ariyaloor Perumal kovil Street, Aandarkuppam post, Chennai -103
46	M/s. Aditya Infrastructure Pvt Ltd - D. Shanmugavel JV	Staff Incharg e	S.A. Mohammed Ali	Ms. Elakkiya +91 9566561670	Mr. Gandhi +91 8438242128	Reddy Street, Ambattur, Chennai- 600053	Ms. Jeeva. D +91 9543623696	7/36, Puratchi Kavi Bharathidhasan Street, Manali, Chennai-600068

7 FINDINGS, KEY ISSUES & REMEDIAL MEASURES

7.1 Findings

This Semi-Annual Environmental Monitoring Report (SEMR) for the period of 01/2022-06//2022is prepared as per the ADB SPS requirements. This SEMR described progress with the implementation of the subproject-wise EMPs, and compliance status. This is the 2nd SEMR prepared for this Integrated Urban Flood Management for Chennai – Kosasthalaiyar Basin Project. Project includes 46 subprojects/contract packages. At the end of this report period all packages are awarded and in construction phase. Findings of this SEMR are presented in the following **table 7.1** along with key issues and remedial measures.

Monitoring aspect	Findings & Key issues	Remedial measures
Availability safeguards personnel (PMU, PIU, Consultants and contractors)	PMU, PIU and PMSC. Deployment of Environmental Personnel pending in several packages.	Deployment must be completed at the earliest. In the interim period the Project Manager or a senior site supervisor must take up the responsibility of EMP implementations at the site
	CRZ clearance and consents to operate of few RMC plants are completed. However, no project activity has been initiated in CRZ influence area.	CRZ clearance application is under scrutiny of MoEF& CC. Awaiting clearance at the earliest. Renewal of Consents for RMC plants of contractors has been mandated and repeated follow ups to procure the orders is being done by PIU/PMSC.
Compliance with ADB loan covenants Compliance with preparation, approval, disclosure of draft IEEs	-	Draft Initial Environmental Examination has been disclosed on ADB and Project/PMU websites (<u>https://www.adb.org/projects/d</u> ocuments/ind-49107-009-iee)
Compliance with preparation, approval, disclosure of updated/final IEEs		Due to changes in Design and Alignment the final Flood Modelling is under process. The IEE will be updated post approval.

Table 7-1Findings and Key Issues

Monitoring aspect	Findings & Key issues	Remedial measures
Contractor compliance with preconstruction requirements	complied	
EMP implementation, monitoring, reporting	prepared and submitted by several	Repeated Instructions are being given to the contractors of those packages to regularly submit EMP s
-	followed regularly.	Strict instructions have been given to contractors to implement Covid 19 protocols at work site and abide by the site-specific Health and Safety Plan.
Training and capacity building activities		Conducted orientation program for PMU, PIU, Contractors and PMSC staff.
Public consultation	Necessary steps are being taken to have genuine involvement of public in the project.	2 informal public consultations were conducted.
operationalization, and complaint resolution	*	-
_	to the alignment of drain or canal.	Maximum efforts are taken to save the tree. Transplantation activities are entertained and followed wherever possible. In case of unavoidable situation tree cutting will be done with compensatory afforestation.
Labour Camps	labour camps especially with provisions of Kitchen and toilet facilities	Immediate efforts to be taken to provide proper kitchen and toilet facilities. Contractor to provide details in the EMP Compliance reports with documentary evidence and photographs.

7.2 Corrective Action Plan

Issues related to (i) Submission/Approval of SEMP's, (ii) GRC formulation, (iii) Labor licenses, insurances and vehicle/equipment certifications and Third-Party Clearance for construction materials and (iv) site verifications by PSC were identified during the first SEMR period which were resolved as per the CAP. The Following action plan is developed to address the issues of concerns raised in this report for the monitoring period of January 2022 to June 2022,

Issue of Concern	Proposed Remedial Measures	Responsibility of Implementation	Target Date	Remarks
Deployment of EHS Officer / Environmental Safeguard Officer not completed	Deployment must be completed at the earliest. In the interim period the Project Manager must take up the responsibility of EMP implementations at the site.	Contractors	Immediate	Designated Environmental Safeguard Officers and Safety Officers are to be deployed immediately.
Irregular Monitoring of Environmental Parameters	Regular Monitoring of Environmental Parameters is suggested as per the contractual agreement and exceptions given only during monsoon period.	Contractor	Continuous Compliance	Contractors are instructed to conduct Environmental monitoring at their respective packages once every 3 months. PSC to monitor and provide updates to PIU and exceptions given only during monsoon period.
Non-Submission of monthly Site Specific EMP compliance reports by some contractors	Timely Submission of monthly EMP compliance with documentary evidence of implementations are mandated and to be submitted regularly.	Contractor	Continuous Compliance	Contractors are instructed to submit Site Specific EMP's for their respective packages every month. PSC to support the contractors
Pending consents Expired RMC Batching Plant CTOs	Contractors to follow up CTO renewal of batching plants	Contractor	Immediately	

Table 7-2	Corrective	Action Plan
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Issue of Concern	Proposed Remedial Measures	Responsibility of Implementation	Target Date	Remarks
	Stoppage of work until regulatory compliances are ensured.			
Partially Satisfactory H&S COVID 19 Measures	Contractors are instructed to abide by a Covid Response and Management plan to minimise the risk towards the spread of COVID 19.	Contractor	Continuous Compliance	Contractors are to strictly follow all the COVID 19 protocols and abide by the health and safety plan going forward with proper documentary evidence and photographs in the EMP compliance reports to the PSC/PIU.
Contractor capacity building, use of PPE, and labour camp facilities need to be improved	Formulate regular training plan (including daily toolbox talks) on environment, health and safety for contractors Provide adequate PPE to workers Provide kitchen and toilet facilities in labour camps Regular site inspections to be conducted by designated/interim EHS officer	Contractor s with support of PSC	Immediately and continuous compliance	
Several complaints from community were received- concerns were related to structural damages, utilities disruption, poor backfilling, public discomfort, stagnant water in trenches, inadequate barricading, safe access, hazards, spoils management	Improve overall implementation of EMP measures to avoid or minimize community impacts	Contractors	Continuous compliance	

APPENDIX 1 COPIES OF REGULATORY CLEARANCES / APPROVALS

Package- 9

	Category of the Industry :
	GREEN
CONFERENCE OFFICE AND	GREEN
	: 18/06/2021.
PROCEEDINGS NO.F.1618SPR/GS/DEE/TNP	CB/SPR/A/2021 DATED: 18/06/2021
	DATED, 1a/00/2021
SUB: Tamil Nadu Pollution Control Board - RENEW, LTD , S.F.No. 186,188, KULANKACHERI y	AL OF CONSENT -M/s. CONCRETE OFM PV /
District - Renewal of Conserve for the	AL OF CONSENTM/s. CONCRETE OEM PV1 Illage, Sriperumbudur Taluk and Kancheepuram a of the plant and discharge of emissions under Pollution) Act, 1981 as amended in 1987 (Central
REF: 1. Board Proc. vide BB No. 6 detect on on service	
REF: 1.Roard Proc.vide BP No. 6 dated 02.08.2016 and 2.Rooc.No. F.1618SPR/GS/DEE/TNPCB/SPR/W. 3.Sinii's applications for RCO vide application no 4.R.No : F.1618SPR/GS/AE/SPR/2021 dated 17/	&A /2019 DATED: 10/05/2019
addition 1110183PR/05/AL/SPI02021 dated 17/	06/2021.
RENEWAL OF CONSENT is hereby granted under Pollution) Act, 1981 as amended in 1987 (Central Act, 14 of	Section 21 of the Air (Provention and Course) a
Pollution) Act, 1981 as amended in 1987 (Central Act 14 of rules and orders made there under to	1981) (hereinafter suferred to as "The Act") and the
sense and croces made more under to	
The Director	
M/s.CONCRETE OEM PVT 1.1D. S.F.No. 186,188,	
KULANKACHERI village,	
Sriperumbudur Thluk,	
Kancheepuram District.	
Authorizing the organize to second at the	
Authorizing the occupier to operate the industrial plant i Government and to make discharge of emission from the stack	
this is subject to the provisions of the Act the rules and	allow work in the second se
conditions incorporated under the Special and General conditi and subject to the special conditions annexed,	ons stipulated in the Consent Order issued earlier
, contraction and a contraction	
This RENEWAL OF CONSENT is valid for the porio	d ending March 31, 2025
	PARDINANAM Disks (parts, foreits) RAVCI-AMIDIAN Disks (Sector 2012)
	District Environmental Fasimon
	Tamil Nadu Pollution Control Board, SRIPERUMBUDUR
1	

the second se
Jert Constant Latries (An United Street Street y
to the set of the
AANA
TAMILNADU POLLUTION CONTROL BOARD
CONSENT ORBER NO. 1705111677072 DATED: 29/12/2017.
PROCEEDINGS NO.F.1784AMB/GS/DEE/TNPCB/AMB/W/2017 DATED: 29/12/2017
T NOA EEDITIGS (NO.F.1/84AMB/GS/DEE/TNPCB/AMB/W/2017 DATED: 29/12/2017
SUB: Famil Nadu Pollution Control Board CONSENT TO OPERATE DERECT M/s ANIRITH READY MX , S.F.No. 29/1, SADAYANKUPPAM villageThirucothyur Taluk and Tiroyallur District - Consent for the operation of the plant and discharge of sewage and/or trade efficient under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as innended in 1988 (Central Act 6 of 1974) - Issued- Reg.
Ref: 1. Your Application dated 28, 12:2017
2.IK.No.: F.1784AMB/GS/DEE/AME/2017 dated 20112/2017
3. Minutes of the 121st DLCCC Meeting held on 29.12.2017. (Item No: 121-16)
CONSENT TO OPERATE is been associated as the based on the second second
CONSENT TO OPERATE is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act, 6 of 1974) themingfus referred to a NTP
amended in 1988 (Central Act, 6 of 1974) (hereinafter referred to as "The Act") and the rules and orders made there under to
The Proprietrix,
M6 . ANIRUTH READY MX
\$.I/ No.29/1,
SADAYANKUPPAM village,
Thirusottiyur Yaluk,
Tinavallur District,
Authorising the second to make disabases of a
Authorising the occupier to make discharge of sewage and for trade effluent.
This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated
under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.
"This CONSENT is valid for the period ending March 31, 2027
D. VASUDEVAN States States
District Environmental Engineer, Tamid Nada Polletion Control Board,
To
The Proprietrix,
M%.ANIRUTH READY MX.
583 - 600, Sadayankuppan Main road, Sadayankuppan, Manali New Town, Chennai,
Pin: 600103
Copy to:
1.The Commissioner, CHENNAI CORPORATION-Corporation, Thiruvottiyor Taluk, Tiruvallur District .
Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennal for favour of kind information.

APPENDIX 2 DETAILS OF SITE VISITS CONDUCTED BY PSC, PIU & PMU IN THE

Reporting Period

Package No	(Indicated dates visit	PSC env. support staff (Indicated dates visit during reporting period)	PMU Env. officer (Indicated dates)	PIU Env. officer (Indicated dates visit during reporting period)
Contractor P1				
Contractor P2	-			
Contractor P3	_	Thrice every week		Once a Week
Contractor P4	_			
Contractor P5	-			
Contractor P6	-			
Contractor P7	-			
Contractor P8	Twice every weak	Thrice every week	Every fortnight	Once a Week
Contractor P9	-			
Contractor P10	-			
Contractor P11	_			
Contractor P12	_			
Contractor P13	_	Thrice every week		Once a Week
Contractor P14	_			
Contractor P15	_			
Contractor P16				
Contractor P17	_			
Contractor P18	_	Thrice every week		Once a Week
Contractor P19				
Contractor P20	Twice Every Week		Every fortnight	
Contractor P21	-		-	
Contractor P22	-	Thrice every week		Once a Week
Contractor P23	-			

Package No	(Indicated datas visit	PSC env. support staff (Indicated dates visit during reporting period)	PMU Env. officer (Indicated dates)	PIU Env. officer (Indicated dates visit during reporting period)
Contractor P24				
Contractor P25	-			
Contractor P26	-			
Contractor P27	-			
Contractor P28	-	Thrice every week		Once a Week
Contractor P29	-			
Contractor P30	-			
Contractor P31				
Contractor P32	_			
Contractor P33	_	Thrice every week		Once a Week
Contractor P34	_			
Contractor P35	-			
Contractor P36	-			
Contractor P37	-			
Contractor P38	 Travier error	Thrice every week	Essent fortainht	Once a Week
Contractor P39	Twice every weak		Every fortnight	
Contractor P40	-			
Contractor P41	-			
Contractor P42	-			
Contractor P43	-	Theiros are service at		Once a West
Contractor P44	-	Thrice every week		Once a Week
Contractor P45	-			
Contractor P46	-			

APPENDIX 3- CONTRACTOR MONTHLY EMP IMPLEMENTATION REPORT & PSC SITE VISIT REPORT

Site Visit Report - 1

Name of the Project	Integrated Urban Flood Management for Chennai - Kosasthalaiyar Basin Project
Field Visit date	14/06/2022
Inspection Team	Mrs. K. Vijayalakshmi – Environmental Expert Mr. C. Singaravelan - Environmental Safeguard Officer Mr. S. Manojie – Environmental Safeguard Officer. S. Robinson, Field Engineer- Utility Rectification
Package No	39, 42
Name of the Contractor	M/s Gurumurthy Engineering Enterprises – M/s Thomas Iyyadurai Infrastructure Pvt., Ltd.,
Sites/Locations Visited	Construction Site and Proposed Outfall Locations

Observations:

- The Environment Team of the PSC visited the work site of M/s Gurumurthy Engineering Enterprises – M/s Thomas Iyyadurai Infrastructure Pvt., Ltd, and had a discussion with Mr. Vignesh, Project Manager, Mr. Selvaraj, Safety Engineer and Mr. Mano, Safety Engineer of the contractor regarding the EMP implementations at work sites of package 39 and 42.
- The ESU discussed the necessary documents to be attached in the SEMP like the public participation report, grievance report and reconstruction & compensation report and explained in detail how the information needed to be filled in the documents.
- Mr. Vignesh showed us around the package wherever the work is under progress.
- The labours at site were given sufficient PPE kits for their occupational safety.
- The Contractor Safety Engineers gave Daily Toolbox talk in the presence of ESU team and clear instruction were given to practice good and safe construction activities at site.
- ESU team also monitored that no dumping or activities are being done in the Coastal Regulation Zone influence area.

• The ESU team also visited the stretch along the proposed drain where trees are present along the existing drain. Instructions were given to properly support the trees to the nearby houses during construction activity to avoid uprooting or sliding.





Site Visit Report - 2

Name of the Project	Integrated Urban Flood Management for Chennai - Kosasthalaiyar Basin Project
Field Visit date	09/06/2022
Inspection Team	Dr. P Thamizoli – Social, Gender and Resettlement Expert Mrs. K. Vijayalakshmi – Environmental Expert Mr. C. Singaravelan - Environmental Safeguard Officer Ms. K.S. Mythili – Social Safeguard Officer
Package No	30, 43
Name of the Contractor	M/s Sri Sivaram and Co
Sites/Locations Visited	Site Office and Labour Camp

Observations:

Site Office and Labour Camp of Package 30 and 43.

- The Environment & Social Utility Unit visited the site office and Labour Camp of Package 30 and 43 at Kosapur with the contractor's Safety Officer and Social Safeguard Specialist regarding EMP implementations and Resettlement Plans.
- Mr. Selvam, the Project Manager along with the Resettlement Expert and Environmental Expert had a briefing on the current EMP implementations at the site.
- The Contractor has provided sufficient space for bedding arrangements for the labour.
- Separate kitchen space was provided for labours.
- The Labour camp was present in the same campus as the RMC Batching plant and hence the contractor was instructed by the Environmental Expert of PSC to carry out regular dust suppression measures.
- The ESU team also visited the Parvathipuram work site in Package 30 and spoke with Mr. Raman, Owner of tea shop along the alignment of the SWD whose shop sheet roofing was dismantled for the purpose of construction activity. The Compensation procedure for the reconstructed sheet roof was initiated with the approval of the Social, Gender and Resettlement Expert.





Photographs taken during the Site Visits of PSC Environmental and Social Team



APPENDIX 4 IMPLEMENTATION OF COVID-19 HEALTH & SAFETY MEASURES





COVID protocol training at Package 26

APPENDIX 5 MONITORING REPORTS (AIR, NOISE, WATER TESTING LAB REPORTS) -

PACKAGE-WISE

	Website:www	v.greenche	emsolutions	uin -	lab@greenchemsolutions.ir	n		
				Test Re	port			
teport	No	GCS/W/15	60 /2021-2022	2	Report Date	19.03.2022		
	sony Name & Address	NO.26, M.V 2 nd Steer, C Shenoy Na Chennal - 6	00030	-				
Samole	Description		26 – Surface w sanar Street	ater - Pond water	Sample Received on	14.03.2022		
	e Collected by	GCSPL	and the set was		Test Commenced on	14.03.2022		
	e Collected Date	14.03.2027	2		Test Completied on	19.03.2022		
S.No	PARAMETER	1	UNITS	RESULTS	REFORENCE METHOD	15 2296:1992 Class 'C' Umits		
1	Color		Hazen	25	ts 3025 Part 4 : 1983 (Reaff. 2017)	300		
2	Odour		1.4.	Unobjectionable	15 3025 Part 5 : 2018			
3	Turbidity		N.T.U	30.3	15 3025 Part 10: 1984 (Reaff.2017)	6.0-8.0		
4	pit @ 25*C			7,42	15 3025 Part 11: 1983 (Reatf.2017) 15 3025 Part 14:2013 (Reatf.2017)	0.0 0.0		
5	Electrical Conductivity	@ 25°C	µS/cm	768	5 3025 Part 15 : 1984 (Reaff.2017)	1500		
6	Total Dissolved Solids	(inorganic)	mg/L	\$26	15 3025 Part 17 : 1984 (Reaff.2017)			
7	Total Suspended Solid		Ngm	42	(15 3025 Purt 21: 1983 (Reaff 2019)			
8	Total Hardness as CaC		- mg/L	360	15 3025 Part 23 : 1986 (Reaff.2019)	-		
9	Total Alkalinity as CaO	03	mg/L	0.41	-15 3075 Part 53: 2003 (Reaff 2019)	0.5		
10	tron as Fe Chloride as Cl		mg/L	98	(5 3025 Part 32 : 1988 (Reaff. 2019)	600		
12	Total Residual Chlorin	0	mg/L	BOL (DL : 0.1)	15 3025 Part 26 : 1986 (Reaff 2019)			
13	Magnesium as Mg	-	mg/L	9.7	s 3025 Part 46 : 1994 (Restff 2019)			
14	Calcium as Ca	-	mg/L	107	IS 3025 Part 40 : 3991 (Rebff. 2019)			
15	Subshate as SO,		mg/L	2.8	(5 3025 Part 24 : 1986(Reaff 2019)	400		
16	Nitrate as No ₃		mg/L	13	15 3025 Part 34 : 1968 (Reaff 2019)	50		
17	Fluoride as F	and the second se		0.40	15 3025 Part 60 : 2008 (Reaff.2019) APHA 23 rd Edition. 4500 B/B			
18	Boron as B	B		0.12	IS 3025 Part 44 - 1993 (Reaff. 2019)	3.0		
19	BOD 3 days @ 27°C	00 3 days @ 27°C		BOD 3 days @ 27°C		4.1	IS 3025 Part 44 - 1989 (Reaff. 2019)	
20	Dissolved Oxygen		mg/L	5.9	For Green C	Laboratory Division		
				*End of Report ***	Page No. 1 of			

	Tel : +91-44-4 Website: www	2612103		dicate Bank Colony s.in	ory Division y, Anna Nagar West Extension, Che E-Mail :info@greenche greenchemsolu lab@greenche	emsolutions.in tions@gmail.c
				Test Repo	<u>rt</u> .	
Report	t No.	GCS/W/ 15	59 /2021-20	022	Report Date	19.03.2022
Com	sony Name & Address	Shenoy Nag Chennai - 6	Complex, Indianumal 1 par, 00030	Rowei,		
Sample	e Description	Package – 2 Manali Park		water - Pond water	Sample Received on	14.03.2022
Sample	e Collected by	GCSPL			Test Commenced on	• 14.03.2022
Sample	e Collected Date	\$4.03.2022	022		Test Completed on	19.01.2022
S.No	PARAMETER		. UNITS	RESULTS	REFERENCE METHOD	IS 2296:1992 Class 'C' Limits
1	Color		Hazen	10	IS 3025 Part 4: 1983 (Reaff. 2017)	300
2	Odour	Odour		Unobjectionable	IS 38/5 Part 5 : 2018	-
3	Turbidity		N.T.U	- 7.0	- IS 3025 Part 10: 1984 (Reaff. 2017)	
4	pH @ 25°C Electrical Conductive	tu # 25*C	µ5/cm	7.57	IS 3025 Part 11: (983 (Reaff.2017) IS 3025 Part 14: 2013 (Reaff.2017)	6.0-8.0
5	Total Dissolved Solid			212	and the second se	-
7	Total Suspended Sol	And Report and Report and Report	mg/L mg/l	4.8	15 3025 Part 15 : 1984 (Reaff.2017) IS 3025 Part 17 : 1984 (Reaff.2017)	1500
8	Total Hardness as Ca		mg/L	141 .	15 3025 Part 21: 1983 (Reaff.2019)	-
9	Total Alkalinity as Ca	no,	mg/l	101	R 9025 Part 73 : 1986 (8ep# 3010)	-
10	iron as Fe	-	mg/L	0.19	6 8 3025 Part 53: 2003(Reaff 2019)	0.5
11	Chloride as Cl		mg/L	24	5:3025 Part 32: 1988 (Reaff. 2019)	600
12	Total Residual Chlori	ine	mg/L	BDL (DL : 0.1)	5 3025 Part 36 : 1986 (Reaff 2019)	-
13	Magnesium as Mg		mg/L	5.8	5 3025 Part 46 : 1994 (Reaff.2019)	
14	Calcium as Ca	Calcium as Ca		47	IS 3025 Part 40 = 1991 (Reaff. 2019)	-
15	Sulphate as SO4		mg/L	67	15 3025 Rart 24: 1986(Reaff.2019)	400
16	Nitrate as No ₃		mg/L	4.4	IS 3025 Pert 34 1988 (Reaff 2019)	50
17	Fluoride as F		mg/L	0.67	IS 3025 Part 50: 2008 (Realf. 2019)	-
18	Boron as 8		mg/L	0.18	APHA 23 rd Edition.4500 B/B	-
19	800 3 days @ 27°C		mg/L	4.1	IS 3025 Part 44 - 1993 (Reaff. 2019)	, 3.0
20	Dissolved Oxygen		ing/L	6.0	15 3025 Part 44 - 1969 (Roulf, 2019)	4.0
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	H.			(ISO 14001 Laborat	: 2015 (ory D , Anna Na	ivision agar West Extension, Ch	hennai - 600 101.
contre	Tel : +91-44-42		nsolution	s.in			nemsolutions.in lutions@gmail.com emsolutions.in
				Test Repo	rt		
Report	t No.	GCS/W/15	58 /2021-2	022		Report Date	19.03.2022
	pany Name & Address	NO.26, M.					-
Samol	le Description	Package -	26 - Surface	water - Pond water	Sample Re	eceived on	14.03.2022
0.000	le Collected by	GCSPL GCSPL	n Milk Color	ny	Test Com	menced on	14.03.2022
Sample Collected Date 14.03.2022			1		Test Comp	pleted on	19.03.2022
5.No	PARAMETE	R	UNITS	RESULTS	RE	FERENCE METHOD	IS 2296:1992 Class 'C' Limits
1	Color		Hazen	10	15 3025 Part 4 : 1983 (Reaff.2017)		300
2	Odour			Unobjectionable		3025 Part 5 : 2018	-
3	Turbidity		N.T.U	5.1	IS 3025 Part 10: 1984 (Reaff.2017) IS 3025 Part 11 : 1983 (Reaff.2017)		6.0-8.0
4	pH @ 25*C Electrical Conductivity	@ 25*C	µ5/cm	1106	15 3025 Part 14:2013 (Reaff.2017)		-
5	Total Dissolved Solids		mg/L	714		Part 16 : 1984 (Reaff.2017)	1500
7	Total Suspended Solid		mg/l	7.8	and the second se	Part 17 : 1984 (Reaff.2017)	-
8	Total Hardness as Cal	Co ₂	mg/L	166		Part 21: 1983 (Reaff.2019)	-
9	Total Alkalinity as Cal	to _y	mg/L	137		Part 23 : 1985 (Reaff.2019)	
10	tron as Fe		mg/L	0.37	-	Part 53: 2003(Realf. 2019) Part 32 : 1988 (Realf. 2019)	0.5
11	Chloride as Cl		mg/L	323 BDL (DL : 0.1)	and the second sec	Part 26 : 1986 (Reaff. 2019)	-
12	Total Residual Chlorin	10	mg/L	14	and the second second	Part 46 : 1994 (Reaff.2019)	
13	Magnesium as Mg Calcium as Ca		mg/L mg/L	44		Part 40 : 1991 (Reaff. 2019)	-
14	Sulphate as 50 ₅		me/L	68	and the second se	Part 24 : 1986(Reaff.2019)	400
16	Nitrate as No ₃		mg/L	5.5	15 3025	Part 34 : 1988 (Reaff.2019)	50
17	Fluoride as F		mg/L	0.71	and the second second	Part 60 : 2008 (Reaff.2019)	-
18	Boron as 8		mg/L	0.67		A 23 rd Edition.4500 B/B	•
19	BOD 3 days @ 27*C		mg/L	5.4		Part 44 - 1993 (Reaff. 2019)	3.0
20	Dissolved Oxygen		mg/L	5.6	15 3025	Part 44 - 1989 (Reaff. 2019)	Min 4.0 Cham Solutions Put 110
						For Gran	(Laboratory Devision)
_				***End of Report *	**	Page No. 1	
				***End of Report *	••	Page No. 1	Authorized Signatory Lof 1



Note The results relate only to the samples tested. This test report shall not be reproduced without approval of the laboratory. The exemples will not retained for more than one Month from the date of issue of test report.



None - The results relate only to the samples tested. This test report shall not be reproduced without approval of the taboratory. The samples will not retained for more than one Month from the date of issue of test report.



The rescale only to the samples tested. This test report shall not be reproduced without approval of the lat The samples will not retained for more than one Month from the date of issue of test report.



millimole/L

kg/ha

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

%

mg/kg

MER

mg/kg

mg/kg

mg/kg

9

10

11

12

13

14

15

15

17

18

19

20

21

Sodium Adsorption Ratio

Available Nitrogen

Available Phosphorous

Available Potassium

Available Sodium

Copper

iron

Zinc

Lead

Nickel

Manganese

Cadmium

Chromium

0.15

201

70

166

BDL(D.L.L.)

52

1.32

BDL(D.1.1.0)

ODUDLED

73

80L(D.1:1.0)

BDL(D.1:1.0)

640

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IS 11524-1985 R.2009

IS:14684:1999 R.2008

IS:10158:1982 R.2003

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Page No. 2 of 2

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End of Report

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- 200		v.greenchems	olutions.in		@greenchemsolutions		
				Test Report			
						E THE	
Report No	9	GCS/5/ 103 /2			Report Date	19.03.2022	
Customer	Name & Address	M/s. CMK Pro NO.26, M.V. 2 nd Floor, Che Shenoy Naga Chennai - 600	Complex, ellammal Stre r,				
Sample D	escription	Package - 26 :	Soll-CPCL M	lain Road	Sample Received on	14.03.2022	
Sample Collected by		GCSPL		and the	- Test Commenced on	14.03.2022	
Sample Co	pliected Date	14.03.2022			Test Completed on	st Completed on 19.03.2022	
5.nó	Param	eters	Unit	Result	REFERENCE ME	THOD	
1	pH at 25°C		-	8.84	IS-2720 part 25 R.2007		
2	Eleictrical Condu	Eleistricei Conductivity at 25"C		1251	5:14767:2000	IS:14767:2000 R.2010	
	1000	1	14	Clay	1.		
3 Texture Classific		ation	-	SH 1.22.5 %	15-2720 Part 4 : 1985(IS(Reaff .2006)	
		1.1.2		Sand : 29,6%		1	
				Clay : 47,9.%			
					and the second second	States	
			1	Page No. 1 of 2	Aut	Contd.	
					20	3	
				1.5			
					613		

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			Test	Report	ξ	•
Report No		GCS/5/ 102	/2021-2022		Report Date	19.03.2022
	Name & Address	M/s. CMK Pr NO.26, M.V.	rojects Pvt Ltd Complex, ellammal Street, ar,			
Sample De	escription	Package - 20	5 : Soil - Thiruvall	war Street	Sample Received on	14.03.2022
-	elected by	GCSPL		avai sureet	Test Commenced on	14.03.2022
	sliected Data	14.05.2022			Test Completed on	
5.no	Param	1	1.0.0	Result	100	19.03.2022
4	Moisture	evers	Unit,	7.6	REFERENCE MI	
5	Maximum Dry D	ensity	g/cm ^a	1.985	15:2720 part 08	
6	optimum moiste	and the second se	×	18	IS:2720 part 08	and the second se
7	Wyber Huiding C	appending .	A \$	30	15.14765-1	000
8	Cation Exchange Capacity		'men/100g	10.8	15 : 2720 (Part 24) - 19	76 (Reaff 2010)
9	Sodium Adsorption Ratio		willimole/L	0.34	15 11624-1986	R.2009
10	Available Nitro	Available Nitrogen		198	5:14684:1999 R.2008	
11	Available Phosp	horous	mg/kg	54	IS:10158:1982 R.2003	
12	Available Potass		.mg/kg	178	EPA 3050 B	
13	Available Sodium		mg/kg	122.7	EPA 3050	
14	Copper		mg/kg	BDL(D.L.1.0)	EPA 3050 B	
15	Manganese		mg/kg	78	1.5.4.1.1	
16	Iron			1.20	EPA 3050 8 EPA 3050 8	
17	Zinc		mg/kg	8DU(D.1:1.0)	EPA 3050 B	
18	Cadmium		mg/kg	80L(D.L:10)	EPA 3050 B	
19	Chromium		malka	17	EPA 3050	
20	Lead		mg/kg	BDL(D.L:E0)	EPA 3050	8
21	Nickel	-	mg/kg	* BDL(D.1:1.0)	EPA 3050	8
			-			olutions PVT LTC oratory Division horised Signator
-			***End of Re	port***	Pa	ge No. 2 of 2
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Customer Name & Address M/s. CMK Projects Pvt Ltd NO.25, M.V. Complex, 2 nd Floor, Cheliammal Street, Shenoy Nagar, Chennai - 600030 Sample Description Package - 25 : Soll - Bharathlyar Street Sample Received on 1 Sample Collected by GCSPL Test Completed on 1 Sample Collected Date 14.03.2022 Test Completed on 1	19.03.2022	
Report No GCS/5/101/2021-2022 Report Date Customer Name & Address M/s. CMK Projects Pvt Ltd NO.25, M.V. Complex, 2 nd Floor, Chelianmal Street, Shenoy Nagar, Chennai - 600030 Sample Description Sample Description Package – 25 : Soll – Bharathlyar Street Sample Received on 15 Sample Collected by Sample Collected Date Sample Collected Date 14.03.2022 Test Completed on 1		
Customer Name & Address M/s. CMK Projects Pvt Ltd NO.25, M.V. Complex, 2 nd Floor, Chellammal Street, Shenoy Nagar, Chennal - 600030 Report Date Sample Description Psckage - 26 : Soll - Bharathiyar Street Sample Received on 1 Sample Collected by GCSPL Test Completed on 1 Sample Collected Date 14.03.2022 Test Completed on 1		
Customer Name & Address M/s. CMK Projects Pvt Ltd NO.25, M.V. Complex, 2 ^M Floor, Cholianmal Street, Shenoy Nagar, Chennai - 600030 Sample Description Package - 25 : Soll - Bharathlyar Street Sample Received on 1 Sample Collected by GCSPL Test Completed on 1 Sample Collected Date 14.03.2022 Test Completed on 1		
Sample Collected by GCSPL Test Commanced on Sample Collected Date 14.03.2022 Test Completed on 1		
Sample Collected Date 14.03.2022 Test Completed on 1	14.03.2022	
ies completie on	14.03 2022	
	19.03.2022	
S.no Parameters Unit Besult REFERENCE METHO	OD	
1 pH at 25 ⁰ C - \$483 IS:2720 part 26 R.20	IS:2720 part 26 R.2007	
2 Electrical Conductivity at 25°C µ5/cm 5440 IS:14767:2000 8.20	IS:14767:2000 R.2010	
Saindy Clay toom	7.911	
3 Texture Classification	ff .2006)	
Sand HOSEX	5 87	
Clary : 201 % For Green Chem Soluti	toos PAT I TO	
(Laborat Authors	ory Division)	
	Conto	
i.		







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Test Report

Report	No. G	CS/AAQ/	1134 /20	21-2022	- R	Report Date 19.03.2022				
Custom Addres	er Name &		NO.26, N 2 nd Floor Shenoy I	K Projects P A.V. Comple , Chellamm Nagar, - 600030	IN.	1				
Survey	Description	n	Ambient	Air Quality	Monitoring		Sample	Received on		15.03.2022
Locatio	n		Package	- 26 - CPEL	Main Road	45	Test Co	mmenced on		15.03.2022
Survey	conducted	by	GCSPL	12-6	14 - 14	Care 2	Test Co	mpleted on		16.03.2022
Survey conducted on 14.03.20			22.to 15.03.	2022	il su	Samplin	ng Duration	24 Hrs		
5.No	PARAMETERS -		UNITS	RESULTS	R	REFERENCE METHODS		NAAQ Standards[Industrial, Residential & Rural Area		
1	PM ₁₀ - Particulate Matter (Size less than 10µm)		µg/m³	57	-15	15 5187 : Part 23 - 2006		100		
2	PM _{2.5} – Particulate Matter (Size less than 2.5µm)		.µg/m²	26	15	15 5182 : Pert 24 - 2018		60		
3	Oxides of Sulphur as SO ₂		µg/m ³	6.4	15	15 5182 : Part 2 - 2001		80		
4	Oxides of Nitrogen as NO ₂		µg/m³	14.8	- 1	IS 5182 : Part 6 - 2006		1	60	
5	Carbon m	onoxide at	co -	mg/mª	BDL (DL:1.0		5182 : Part	10-1999	1	4
6	Lead as Pl		1.2	ug/m ³	BDL (DL:0.5	0 15	5182 : Part	22-2004	1	

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***End of Report ***

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		÷.,		Test Re	port		
			8.4	100	1	196	1.1
Report	No. GCS/AAO	/ 1132 /202	/ 1132 /2021-2022 Repo			S	19.03.2022
Addres		2 nd Floor, Shenoy M Chennal	- 600030	ıl Street,	-	Sample Received on	15.03.202
Survey Description		Ambient Air Quality Monitoring			Sec. 1	Test Commenced on	- Literation
Location -		Package - 26 - Bharathiyar Street				Test Completed on	16.03.202
Survey conducted by Survey conducted on		GCSPL 14.03.2022 to 15.03.2022			- 4/1 m	Sampling Duration	24 Hrs
S.No	PARAMETERS		UNITS	RESULTS	REFERENCE METHODS		NAAQ Standards(Indust Residential & Rural
1	PM ₁₀ - Particulate Matter (Size less than 10µm)		µg/m³	47	15 5182 : Part 23 - 2006		100
2	PM _{2.5} - Particulate Matter (Size less than 2.5µm)		µg/m³	19	IS 5182 : Part 24 - 2018		60 .
3	Oxides of Sulphur as 502		ug/m³	5.3	+ 15 5182 : Part 2 - 2001		80
4	Oxides of Nitrogen as NO ₂		µg/m³	.11.9	15.5182 : Part 6 - 2006		80
5	Carbon monoxide as CO		mg/m ¹	BDL (DLI.O)	IS 5182 : Part 10 - 1999		4
6	Lead as Pb		µg/m ³	BDL (01:0.5)	IS 5182 : Part 22 - 2004		1
BDL: B	selow Detection Lin	mit D.L: Dete	ection Limit			the art and	
						For G	reen Chern Solutions (Laboratory D

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Test Report

M/s. CMK Proj NO.26, M.V. C 2 nd Floor, Chel Shenoy Nagar, Chennai - 6000 Package - 37 : S GCSPL 15.03.2022 ers	omplex, Iammal Stree , 030	t, anapathy 1 st Street Result	Sample Received on Test Commenced on Test Completed on REFERENCE ME	15.03.2022 15.03.2022 19.03.2022
GCSPL 15.03.2022	1.24 3		Test Commenced on Test Completed on	15.03.2022
15.03.2022	Unit	Result	Test Completed on	
	Unit	Result		19.03.2022
ars	Unit	Result	REFERENCE MI	
-		A PEOPleTE Y A	interenting mit	THOD
	-	8.74	IS:2720 part 26	R.2007
ivity at 25° C	µS/cm	685	15:14767:2000	R.2010
		Sandy Clay losm		
		Silt : 25.7 %	IS 2720 Part 4 : 1985	(Reaff .2005)
ion	-	Sand : 48.3 %	16 CF	
	5	Clay : 26.0 %	-12	1.1
-				Solutions PVT LTD boratory Division
54	38	26	Silt : 25.7 % Sand : 48.3 %	201 Silt : 25.7 % Sand : 48.3 % Clay : 26.0 % For Green Chem : {Lat Aut

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Test Report

Report No	eport No GCS/5/104/2		2021-2022		Report Date	19.03.2022
Customer	Name & Address	NO.25, M.V	MC 1 7 7			
Sample D	escription	Package - 3	7 : Soil – Sakthi Gan	apathy 1 st Street	Sample Received on	15.03.2022
Sample Co	ollected by	GCSPL -			Test Commenced on	15.03.2022
Sample Co	ollected Date	15.03.2022			Test Completed on	19.03.2022
5.no	Param	eters	Unit	Result	REFERENCE ME	THOD
4	Moisture		96	4.8	IS:2720 part 02	R.2010
5 -	Maximum Dry Density		g/cm ³	1.986	IS:2720 part 08	R.2006
6	optimum moisture content		*	16	IS:2720 part 08	R.2005
7	Water Holding Capacity		%	25	15:14765-2	000
8	Cation Exchange Capacity		meq/100g	9.61	IS : 2720 (Part 24) - 19	76 (Reaff 2010
9	Sodium Adsorpt	Sodium Adsorption Ratio		1.72	15 11624-1986	2.2009
10	Available Nitro	gen	kg/ha	119	15:14684:1999	R.2008
11	Available Phosp	horous	mg/kg	73	IS:10158:1982	R.2003
12	Available Potas	sium	mg/kg	164	EPA 3050	в
15	Available Sodiu	m	mg/kg	519	EPA 3050	в
14	Copper		mg/kg	BDL(D.L:1.0)	EPA 3050	в
15	Manganese	10 N.S	mg/kg	45	EPA 3050	8
16	Iron		56	1.17	EPA 3050	8
17	Zinc		mg/kg	BDL(D.L:1.0)	EPA 3050	B
18	Cadmium	1.4	mg/kg	BDL(D.L:1.0)	EPA 3050	B
19	Chromium		mg/kg	39	EPA 3050	8
20	Lead		mg/kg	BDL(D.L:1.0)	EPA 3050	8
21	Nickel		mg/kg	BDL(D.1:1.0)	EPA 3050	8

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Page No. 2 of 2

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****End of Report***

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Test Report

Report No	0	GC5/5/105 /20	21-2022		Report Date	19.03.2022		
Customer	Name & Address	M/s. CMK Pro NO.26, M.V. O 2 nd Floor, Che Shenoy Nagar Chennai - 600	Complex, Ilammal Stree r,	et,				
Sample D	escription	Package - 37 : 5	Soil – Sakthi G	anapathy 3 rd Street	Sample Received on	15.03.2022		
Sample Co	ollected by	GCSPL .	10.8	Test Commenced on				
iample Collected Date 15.03.2022			- 10 M	all and the States	Test Completed on	19.03.2022		
5.170	Param	eters	Unit	Result	REFERENCE ME	тнор		
1	pH at 25° C		-	9.09	15:2720 part 26	R.2007		
2	Electrical Condu	ctivity at 25 ⁰ C	µ5/cm	2620	15:14757:2000	2.2010		
	10		al al	Sandy Clay loam	1.200	1.1		
	Texture Classific	ation		Silt : 12.5 %	IS 2720 Part 4 : 1985(THOD R.2007 L2010 Reaff .2006)		
1.1	Fortune Caspine			Sand : 60.7 %				
			1.157.1	Clay : 26.8%	Ha Part State			
					4	olutions PVT LT pratory Division pariset Signator		
			1.	Page No. 1 of 2		Contd		

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16

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20

21

Copper

Iron

Zinc

Lead

Nickel

Cadmium

Chromium

Manganese

Available Phosphorous

Available Potassium

Available Sodium

GREEN CHEM SOLUTIONS PVT LTD

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E-Mail : info@greenchemsolutions.in greenchemsolutions@gmail.com lab@greenchemsolutions.in

		Tes	t Report	1	
0	GCS/5/ 10	5/2021-2022		Report Date	19.03.2022
Name & Address	NO.26, M			report party	19.03.2022
scription	Package ~ 3	Sample Received on	15.03.2022		
flected by	GCSPL	Test Commenced on			
lected Date	15.03.2022	22-21-2 Content of the second	15.03.2022		
1				Test Completed on	19.03.2022
Paran	neters	Unit	Result	REFERENCE ME	THOD
Moisture		%	5.2	IS:2720 part 02	0 3048
Maximum Dry	Density	g/cm ¹	1.954	IS:2720 part 02	
optimum moist	ture content	*	16	15:2720 part 08	A1 00 00 0
Water Holding	Water Holding Capacity %		27	15:14765-2	
Cation Exchang	Cation Exchange Capacity meg/100g			IS : 2720 (Part 24) - 197	
Sodium Adsorp	tion Ratio	√millimole/L	6.87	IS 11624-1986 R	
Available Nitro	gen	kg/ha	69		
			0.7	IS:14684:1999 R	2008

82

107

111

BDL(D.L.1.0)

53

1.20

8DL(D.1.1.0)

BDL(D.1:1.0)

26

BDL(D.L:1.0)

BDL(D.1:1.0)

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Page No. 2 of 2

IS:10158:1982 R.2003

EPA 3050 B

End of Report

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

%

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

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Test Report

Name & Address scription locted by	M/s. CMK Pr NO.26, M.V. 2 nd Floor, Ch Shenoy Naga Chennai - 60 Package - 37 :	Complex, ellammal Stre r, 0030		Report Date	19.03.2022	
locted by	Package - 37 :	C				
		soil - Shanmi	ugapuram 8 th Street	Sample Received on	15.03.2022	
	GCSPL		A CORDUNATION	Test Commenced on	15.03.2022	
Sample Collected Date 15.03.2022			10-10-10-10-	Test Completed on 19.03.2		
Parameters		Unit	Result	REFERENCE ME	A.1	
pH at 25 ⁰ C		1.4.5	8.01	IS:2720 part 26 I		
Electrical Conduc	tivity at 25° C	µS/cm	2020	I5:14767:2000 R.2010		
			Loam			
Texture Classificat	tion	18	Silt : 32.4 %	K 2720 Dart & shorte		
A	1	1	Sand : 43.5 %	or even hart 4 : 1992(k	eam .2006)	
			Clay : 24.1 %	81		
		14			atory Division)	
	Electrical Conduc	pH at 25° C Electrical Conductivity at 25° C	Electrical Conductivity at 25 [°] C μ5/cm	Electrical Conductivity at 25° C μ5/cm 2020 Fexture Classification Silt : 32.4 % Sand : 43.5 %	- 8.01 IS2720 part 26 f Electrical Conductivity at 25° C μ5/cm 2020 IS:14767:2000 R Electrical Conductivity at 25° C μ5/cm 2020 IS:14767:2000 R Fexture Classification - - - IS:14767:2000 R Silt : 32.4 % - - - IS:14767:2000 R Clay : 32.4 % - - - - For Green Chem Sol - - - -	

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Test Report

Report	40	GCS/5/10	6/2021-2022		Report Date	19.03.2022	
NO.26, N			K Projects Pvt Ltd I.V. Complex, Chellammal Stree agar, 600030				
Somplie (escription	Enmals Developed	1				
sample 0	ollected by	GCSPL		apuram 8 th Street	Sample Received on	15.03.2022	
iample (ollected Date	15.03.2022			Test Commenced on	15.03.2022	
\$.00	Parame				Test Completed on	19.03.2022	
4	Moisture		Unit	Result	REFERENCE ME	THOD	
5	Maximum Dry Density		% g/cm ¹	6.4	15:2720 part 02 1	R.2010	
б	optimum moisture content		TOTAL STREET	2.03	15:2720 part 08 1	1.2006	
7	Water Holding Capacity		%	18	IS:2720 part 08 9	1.2006	
8	Cation Exchange Capacity		7e meg/100g	30	15:14765-20		
9	Sodium Adsorption Ratio		vimillimole/L	27.2	15:2720 (Part 24)-197	6 (Reaff 2010)	
10	Available Nitroge		kg/ha	1.12	IS 11624-1986 R.		
11	Available Phosphe			379	IS:14684:1999 R.2008		
12	the second se		mg/kg	70	15:10158:1982 R.2003		
13	Available Potassiu	Am	mg/kg	303	EPA 3050 B		
	Available Sodium	10.00	mg/kg	624	EPA 3050 B		
14	Copper		mg/kg	BDL(D.1.:1.0)	EPA 3050 B		
15	Manganese		mg/kg	63	EPA 3050 B		
16	Iron		*	1.25	EPA 3050 B		
17	Zinc		mg/kg	BDL(D.L:1.0)	EPA 3050 B		
18	Cadmium	_	mg/kg	BDL(D.L:1.0)	EPA 3050 B		
19	Chromium		mg/kg	41	EPA 3050 B		
20	Lead		mg/kg	BDL(D.1-1.0)	EPA 3050 8		
21	l Nickel		mg/kg	BDL(D.L-1.0)	EPA 3050 B		

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Test Report

	NC + L AGO	GCS/W	// 1561 /202	1-2022		Report Date	
G	ompany Name & Address	NO.26, 2 nd Floo Shenoy	MK Projects M.V. Complex, Chellamm Nagar, il - 600030	and the second se		Nepar Date	19.03.2022
-	ple fulccted by	Jekini	e – 37 – Grou Ganapathy :	nd water – Bore wate	er Sample Rec	colved on	15.03.2022
	The second	GCSPL			Test Comm	annead an	
Sang	ple Collected Date	15.03.20	022	1			15.03.2022
					Test Comple	eted on	19.03.2022
1.No	PARAMETER		UNITS.	RESULTS	REFE	RENCE METHOD	Permissible limit as per IS: 10500-1991 R.2012 a the absence of alternate
-	Criler Orlou+		Hazen	5	15 3025 Part	t 4 : 1983 (Reaff.2017)	source
1	Turbidity			Unobjectionable		25 Part 5 : 2018	15
	ri ⊕ 25°C		N.T.U	3.8	15 3025 000	10: 1984 (Reaff. 2017)	Unobjectionable
-	First field Conductivity @	-	-	7.56	15 3025 Part	10: 1984 (Reaff.2017) 11: 1983 (Reaff.2017)	5
			µ5/cm	2167	15 3025 Part	14:2013 (Reaff.2017)	6.5~8.5
7	Total Elissolved Solids (In Total Suspended Solids	organic)	mg/L	1432		16:1984 (Reaff.2017)	-
	Total Hardness as CaCos		mg/l	BDL(DL :1.0)	15 3025 Part	17:1984 (Reaff.2017)	2000
9		_	mg/L	444	IS 3025 Part	21: 1983 (Reaff. 2019)	
-	Total Alkalinity as CaCo	_	mg/L	563	15 2025 Part	va. 1965 (Neart. 2019)	600
0	Iron as Fe		mg/L	0.25	in sole in the	23 -: 1986 (Reaff. 2019)	600
1	Chloride as Ci		mg/L	489	15 3025 Part 5	53: 2003(Reaff.2019)	0.3
2	Tistal Residual Chlorine		. mg/L	BOL (DL: 0.1)	15 3025 Part 3	2 : 1988 (Reaff. 2019)	1000
3	Magnesium Hardness as C	aCo,	mg/L	141	IS 3025 Part 2	6 : 1986 (ReaH.2019)	1.0
9	Calcium Hardness as CaCo		mg/L	303	15 3025 Part 4	6 : 1994 (Reaff. 2019)	
5	Magnesium as Mg		mg/L	305	25 3025 Part 40	0 : 1991 (Reviff. 2019)	-
	Calcium as Ca		mg/L		15 3025 Part 4	6 : 1994 (Reaff-2019)	100
1	Sulphate as SO ₄		mg/L	121	IS 3025 Part 40): 1991 (Reaff. 2019)	200
1	Nitrate as Nos		mg/L	187	15.3025 Part 24	4:1986(Reaff.2019)	400
	Huter'de as F			1.79	15 3025 Part 34	: 1988 (Reaff.2019)	45
_	Bar uu uu B		mg/L	0.42		: 2008 (Reaff.2019)	
-	CALIFICATION OF THE OWNER OWNER OF THE OWNER OWNE		mg/L	0.86	APHA 33H	fdition.4500 8/B	1.5

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Test Report

	Sitt Na.		/ 1562 /202			Report Date	19.03.2022	
420	M/s. CMK Projects Pvt Ltd No.26, M.V. Complex, Liceniparty Name & Address 2 ^{eff} Floor, Chellammal Street, Shenoy Nagar, Chennai - 600030 Sumple Description Package - 37 - Ground water Bore water							
1.0	ple Description		-					
sim	oils Collected by	GCSPL	Sanapathy S	3 rd Street	Sample Rec		15.03,2022	
	ple Collected Date	15.03.20	22		Test Comme	enced cin.	15.03.2022	
	T	13.03.20		Free States	Test Comple	ted on	19.03.2022	
5.No	PARAMETER		UNITS	RESULTS	REFE	RENCE METHOD	Permissible limit as per IS: 10500-1991 R.2012 in the absence	
1	Color		Hazen	10	- IS 3025 Dave	4.400010 0000	of alternate source	
2	Odour			Unobjectionable		14:1983 (Reaff.2017)	15	
3	Turbidity		N.T.U	4.8		25 Part 5 : 2018	Unobjectionable	
-	pH @ 25*C			7.71	IS 3025 Part 10: 1984 (Reaff 2017) IS 3025 Part 11: 1983 (Reaff 2017)		5	
-	Electrical Conductivity @ 25%C		µS/cm	2227	IS 3025 Part	14:2013 (Reaff.2017)	6.5-8.5	
2	Total Dissolved Solids (Inorganic)		mg/L	1468		16 : 1984 (Reaff.2017)	1 1 1 1 1	
	Total Suspended Solids		mg/l	11	15.3025 Part	17:1984 (Reaff.2017)	2000	
1	Initial Hardness as CaCo ₂		mg/L	424	15 3025 Part	21: 1983 (Reaff.2019)		
-	Tetal Alkalinity as CaCo _a		mg/L	487		23:1986 (Reaff.2019)	600	
10	from as Fe		mg/L	0.24			600	
1	Chloride as Cl		mg/L	518	IS 3025 Part 5	53: 2003(Reaff.2019)	0.3	
2	Total Residual Chlorine		mg/L	BDL (DL : 0.1)	IS 3025 Part 3	2:1988 (Realf. 2019)	1000	
3	Magnesium Hardness as (CaCo ₃	- mg/L	202	13 3025 Part 2	6 : 1986 (Reaff.2019)	1.0	
4	Colcium Hardness as CaCo	23	mg/L	222		6.: 1994 (Reaff. 2019)	-	
5	Magnesium as Mg		mg/L	49	45-3025 Part 40	0 : 1991 (Reaff. 2019)		
6	Colcium as Ca		mg/L	89	IS 3025 Part 4	6 : 1994 (Reaff 2019)	100	
7	Sulphate as SO4		mg/L	141	15 3025 Part 40):-1991 (Reaff. 2019)	200	
8	hitrate as No ₃	-	mg/L		15 3025 Part 2	4 : 1986(Reaff.2019)	400	
3	Fluoride as F	-	mg/L	2.35		1: 1988 (Reaff.2019)	45	
1	Boron as B	-		0.58		: 2008 (Reaff. 2019)	1.5	
	ALL		mg/L	0.71	APHA 23"	Edition.4500 B/B	1.0	

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TC-6410

Test Report

neth	ort No.		1563 /2021		Report Date	19.03.2022
Con	nçiariy Name & Address	NO.26, 1 2 nd Floor Shenoy Chennai	Nagar, - 600030	lex, nal Street,		
	ile Description	Package - Shanmug	- 37 – Groun Japuram 8 ¹	d water – Bore water ^B Street	Sample Received on	15.03.2022
5. m _g	le Collected by	GCSPL			Test Commenced on	15.03.2022
Samp	Imple Collected Date 15.03.2022			100 Barris		
5.161	PARAMETER		UNITS.	RESULTS	Test Completed on REFERENCE METHOD	19.03.2022 Permissible limit as per I5: 10500-1991 R.2012 in the absenc of alternate source
1	Colar		Hazen	BDt(DL :1.0)	IS 3025 Part 4 : 1983 (Reaff.2017)	15
3	Odour			Unobjectionable	IS 3025 Part 5 : 2018	Unobjectionable
1	Turbidity trif @ 25°C		N.T.U	0.7	IS 3025 Part 10: 1984 (Reaff.2017)	5
1	Sectrical Conductivity @ 25°C		μS/cm	7.63	15 3025 Part 11 : 1983 (Resff. 2017)	6.5-8.5
4	Total Dissolved Solids (Inorganic)		-	2985	IS 3025 Part 14:2013 (Reaff.2017)	
2	Total Suspended Solids		mg/L	1918	IS 3025 Part 16 : 1984 (Reaff.2017)	2000
3	Total Hardness as CaCo		mg/l	BDL(DL :1.0)	IS 3025 Part 17 : 1984 (Reaff.2017)	1 n -
0	Total Alkalinity as CaCo ₂		mg/L	667	IS 3025 Part 21: 1983 (Reaff.2019)	600
10	Iton as Fe		mg/L	421	IS 3025 Part 23 : 1986 (Reaff.2019)	600
11	Coloride as Cl		mg/L	0.20	IS 3025 Part 53: 2003(Reaff.2019)	0.3
12	Total Residual Chlorine		mg/L	812	15 3025 Part 32 : 1988 (Reaff. 2019)	1000
13	Nagnesium Hardness as	0.0	_ mg/L	BDL (DL : 0.1)	IS 3025 Part 26 : 1986 (Reaff. 2019)	1.0
14	the second se	And the second se	mg/L	384	IS 3025 Part 46 : 1994 (Reaff.2019)	
15	Calcium Hardness as Cal Magnesium as Mg	.0,	mg/L	283	IS 3025 Part 40 : 1991 (Reaff. 2019)	
15	salicium as Ca		mg/L	93	IS 3025 Part 46 : 1994 (Reaff.2019)	100
17	Sulphate as \$0,		mg/L	113	IS 3025 Part 40 : 1991 (Reaff, 2019)	200
18	Hitrate as No.		mg/L	152	IS 3025 Part 24 : 1986(Reaff, 2019)	400
Eg T	Fluoride as F		mg/L	3.05	IS 3025 Part 34 : 1988 (Reaff.2019)	45
0 1			mg/L	0.47	IS 3025 Part 60 : 2008 (Reaff.2019)	1.5
0	Beton as B		mg/L	0.59	APHA 23rd Edition.4500 B/8	1.0
				***End of Report ***	For Green O	Authorized Signatory

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Test Report

nepe	vt No.	GCS/W/	1564 /2021-	2022		Report Date	19.03.2022
Cor	npany Name & Address	NO.26, 1 2 nd Floor Shenoy	IK Projects M.V. Comp r, Chellamn Nagar, - 600030	lex.			19.03.2022
ample Description Package - 37 - Surface water - Pond water Dr.Ambedkar Nagar Main Road Sample 5						ceived on	15.03.2022
Samp	Per Collected by	GCSPL			Test Comm	enced on	15.03.2022
Samo	in Collected Date	15.03.202	2		Test Compl		
s Na	PARAMETER		UNITS	RESULTS	1000	ERENCE METHOD	19.03.2022 IS 2296:1992 Class 'C Limits
1	Color		Hazen	10	15 3025 Pa	rt 4 : 1983 (Reaff.2017)	Contrast.
2.	Odour		1. 19. 1.	Unobjectionable		025 Part 5 : 2018	300
÷.,	Tarbidiry		N.T.U	5.8	The second se	t 10: 1984 (Reaff.2017)	
4	₽H @ 25°C		-	7.78		t 11 : 1983 (Reaff 2017)	6.0-8.0
<u>\$</u> .,	Ellictrical Conductivity @ 25°C		µS/cm	1454	15 3025 Par	t 14:2013 (Reaff.2017)	0.0-8.0
ŧr.	Total Dissolved Solids (Inorganic)		mg/L	960		t 16 : 1984 (Reaff.2017)	1500
1.	Total Suspended Solids		mg/l	9.6	IS 3025 Par	t 17 : 1984 (Reaff.2017)	1500
8	Tutai Hardness as CaCo		mg/L	212		t 21: 1983 (Reaff.2019)	
1	Total Alkalinity as CaCo		mg/L	355		23 : 1986 (Reaff. 2019)	
10	Iron as Fe		mg/L	0.43		53: 2003(Reaff.2019)	
11	Chloride as Cl		mg/L	181		32 : 1988 (Reaff. 2019)	0,5
12	Total Residual Chlorine		mg/L	BDL (DL : 0.1)		26 : 1986 (Reaff. 2019)	600
13	Magnesium as Mg		mg/L	15	and the second se	45 * 1994 (Reaff.2019)	
14	Cilicium as Ca		mg/L	60		40:1991 (Reaff. 2019)	<u>fm</u>
15	Sulphate as SO4		mg/L	71		24 : 1986(Reaff.2019)	400
16	Nitrute as No ₃		mg/L	8.33		34 : 1988 (Reaff. 2019)	400
17	Fluoride as F		mg/L	0.69		60 : 2008 (Reaff. 2019)	50
lă.	Boron as B		mg/L	BDL (DL : 0.1)		st Edition.4500 B/B	
19	NGD 3 days @ 27°C		mg/L	6.0		44 - 1993 (Reaff. 2019)	-
0	Dissolved Oxygen		mg/L	5.4		44 - 1989 (Reaff, 2019)	3.0 Min 4.0

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Test Report

20.80	r# 240.	GCS/W/	1565 /2021	2022		Report Date	19.03.2022
Cor	anny Name & Address	NO.26, M		κ,			
5. ma	le D-scription	Package - Kosathala	37 – Surfac i River Near	e water – River water Burma Nagar	Sample 8e	ceived on	15.03.2022
Erring	ole Collected by	GCSPL			Test Comm	enced on	15.03.2022
Sacap	de Cellected Date	15.03.202	2			and the second sec	19.03.2022
S.Nc	PARAMETE	in.	UNITS	RESULTS	RESULTS REFERENCE METHOD		IS 2296:1992 Class 'C Limits
1	Color		Hazen	20	IS 3025 Pa	rt 4 : 1983 (Reaff 2017)	300
2	Odour		1.4.2	Unobjectionable	and the second second	025 Part 5 : 2018	
3	Turbidity		N.T.U	3.6	15 3025 Part 5 ; 2018 15 3025 Part 10: 1984 (Reaff-2017)		
1	pH @ 25℃			3.04	IS 3025 Part 11: 1983 (Reaff.2017)		6.0-8.0
3	the set of the set of the second s	Flactrical Conductivity @ 25°C µS/		3805		rt 14:2013 (Reaff.2017)	
<u>.u</u>	Total Dissolved Solids (Inorganic)		mg/L	2588	15.3025 Par	t 16 : 1984 (Reaff.2017)	1500
-	Total Suspended Solids		mg/l	4.2	15 3025 Par	t 17 : 1984 (Reaff.2017)	
1	Total Handness as CaCo ₂		mg/L	323	45 3025 Par	t 21: 1983 (Reaff. 2019)	
and a	Total Alkalinity as CaO	03	mg/L	BDL (DL : 1.0)	15.3025 Par	t 23 : 1986 (Reaff. 2019)	
10	NOT AL PE		mg/L	2.61	15.3025 Par	t 53: 2003(Reaff. 2019)	0.5
11	Chicride as Cl		mg/L	1428	and the second se	1 32 : 1988 (Reaff. 2019)	600
12	Tptsi Residual Chlorine	2	mg/L	8DL (DL : 0.1)		t 26 : 1986 (Reaff. 2019)	-
13	Magnesium as Mg		mg/L	34	IS 3025 Par	t 46 : 1994 (Reaff.2019)	
4	Colcium as Ca		. mg/L	73		40 : 1991 (Reaff. 2019)	
15	Suiphate as 50 ₄		mg/L	146	and the second se	t 24 : 1986(Reaff. 2019)	400
16	Nitrate as No ₃	1	mg/L	29		1 34 : 1988 (Reaff. 2019)	50
37	Flooride as F		mg/L	0.83		1 60 : 2008 (Reaff. 2019)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
18	boron as B		mg/L	0.72		8 rd Edition, 4500 B/B	
19	BOD 3 days @ 27°C		mg/L	5.1		44 - 1993 (Reaff, 2019)	3.0
20	Dissolved Oxygen		mg/L	5.0	the second s	44 - 1989 (Reaff. 2019)	4.0
					21	and the second se	hem Solutions PVT (TD (Laboratory Dision) Authorized Signatory

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Date	Place	No of Participants	Nature of participants	Points Discussed	Issue Raised/ Feedback / Remarks
Package 02	Anna Street, Oragadam	14	Local residents		Two groups request for and against tree cutting in the same area.
Package 03	Karukkur	10	Local residents	Consultation	Informal Conultation with the local public and Member of Corporation regarding request for tree cutting

APPENDIX 6 DETAILS OF CONSULTATIONS CONDUCTED

Public consultation Report- Package 02

Public Consultation Report

Name of the Project	Integrated Urban Flood Management for Chennai - Kosasthalaiyar
	Basin Project
Field Visit date	23/04/2022
Inspection Team	Mr. B. Vignesh, Environment Safeguard Officer
	Mr. C. Singaravelan, Environment Safeguard Officer
	Mr. Manojie S – Environmental Safeguard Officer
Package No	02
Name of the Contractor	M/s. P & C – RPP (JV)
Name of the PSC FE	Mr. Vincent
Venue	Ambattur Vijayalakshmipuram Residents Welfare Association (AVRWA)
	Anna Street, Oragadam, Ambattur

Contractor staff interacted during the visit:

• Mr. Nagarajan, Site Supervisor Package 02

Public Consultation:

- Mrs. C. Kumar, Ex. MC
- Mr. K. Lakshminarayanan, President, AVRWA
- Mr. P.S Rajan, AVRWA
- Mr. S. Balaji
- Mr. G. Sundarrajan

* Anna Street, Vijayalakshmipuram, Ambattur

The Project Support Consultant (PSC) for the Integrated Urban Flood Management- Chennai Kosasthalaiyar Basin Project would like to bring to your notice the following site visit observations pertaining to the trees located along the alignment in **Street Name: Anna Salai, Node No:4620-4359, Chainage: 127-164** dated 21st April 2022.

• In the above-mentioned stretch 4 trees are present along the alignment of the proposed Storm Water Drain (SWD).

Scientific Name	Local Name	Estimated Age
Bauhinia recemosa	Athi Maram (அத்திமரம்)	15-20 years
Pongamia pinnata	PungaiMaram (புங்கை)	8-10 years
Terminalia catappa	NaatuBaadam (நாட்டுபாதாம்மரம்)	3-5 years
Azadirachta indica	Neem (வேப்பமரம்)	3-5 years

- The trees are planted and maintained by the local public in the area.
- The total road width at the stretch is approximately 20 feet with free flow of traffic.
- Local Public is separated into 2 groups each one standing for and against tree felling.
- Group against tree cutting have requested to divert the SWD alignment around the trees vide a formal letter to the Zonal Officer of Zone -7, GCC dated 19th April 2022.
- Group standing for tree cutting has sent a formal request vide letter AVRWA/2022-23 dated 22nd April 2022 to the Assistant Commissioner, GCC, Zone 7 to maintain the 25 feet road width throughout the Anna Salai Road to remove the tree and maintain uniformity before completion of SWD construction.
- A formal consultation with both the parties was conducted on 23rd April 2022 and a public opinion was documented.

de la const Enserie - 1 "Ijayalahshnil; u. am Residents Welfare Association (Regn. No. 207(2008) No. 2019, Jagathambal Birest, Vijayalakshmipuram, Ambattur, Chennari 600 653. 444.65 ის : X. ლომკაქვეულალის გიიიი კი ტქაქეულნაშა თააიიი : 8.9. მეი ი კ. 56442 85615 33403 82506 ხას 2 არეს 2 არ 19.64.2020 C. Alangente base ningerseb) 1. pell \$4447 63505 gebeen thraccostil : P.S. progolit 54541 52182 158, galaxe exam, digani.calipsi, anluggal, Geoluma 000 013 Geol. - 9677096775 Ref. : AVR.ue | tests >>> Date 22.04.2022 for, CAnna Salal-Drainage work-Hamoval of trees-Bag. tradigist 0 2734 # US APR 202 diguncalipi paine maa nij Orgjukai The Aneistant Commissioner. 541 4/81% Greater Chosnai Corporation, Zone 7, C.T.H. Rosd, Ambeitur, Channal - 600 653. Logal. State of Super- 2 P maintin B.K.grigidi and na EE Sant and Bir, most and general We are the residents of Vijayalakahusipuram area under Ward 80 of your Zever and members of this Association since long. We wiss his inference you that the Comparison has taken on the barine of the disease from water taken latter math, Anti-17 uninglight, Orelines Durgant ungening Corporation has taken up the loying of the drainage/rain water storm loying salan di പ്രതിവുടെ. മി. 2010ൽ വർവാൽഗ്രഹാനം ചെട്ടിച്ചോ മട്ടാർ തീളാണ്. കില്ലാം പ്രതിയെ അലപ്പെടിച്ച് പ്രാം മർഹി മാൻ, മിലോ പ്രതിപ്പെടും പ്രതിവെട്ടും പ്രതിവെട്ടും പ്രതിപ്പെടും പ്രതിപ്പെടും പാന്തര കൂടിന്ന ഇപ്പോക്കാന് (ഗ്രട്ടിനാളം ഇർഷിലൽ ലോണ്) പറ്റിയും എട്ടിവ സംപംബ്, നളിയും തീള തലം, ക്ലെ പ്രതിപ്പ പ്രതിപ്പെട്ടും പ്രതിപ്പെടും പ്രതിപ്പെടിച്ചും. മറ്റോം പ്രതിപ്പ പോലോ കുടിപ്പോം പ്രതവം പ്രതിപ്പ work in the sens. It has been noted that the suid work on Anna Balai of our Vier area is causing Bardship to the public due to delayed work. North Further we wish to inform you that the road (Arous Salad) which is supposed ingenetativity urgania aggs. app opticalist flyelst animer remedie time repi urtani digi tani firig geneticy ordana a.mag to be 25+ list, in actual is only around 20 list. Through this Petition we wish in inform you that the read may be measured in total from Kannish Chetty Browt junction to the other end i.e., Red Hills Main Road for maintaining the Courfidance -25+ fast throughout lative the completion of the drailage work. Any தற்போது கட்டப்பட்டு வரும் மரைத்தி கலைவாம் பணியில் தேற்படி மரங்களை வெட்டக் கூடாது: hindrance like tress, unauthorised occupation for shops/houses etc., stay be A+15" compared to above uniformity of the much far future development. p^{a-1} where the readenics and members of the Association are ready and willing to compare with we will be instances. A+15" изчатия арр нескор கால்வாயை கட்டித் தருவாறு operate with you Sir, in this regard. artistel atlasmer Cambud Carlyd GarddOgah AR. وانعج Hope suitable action will be taken at the earliest. the second. Grant Ord and in. Sincerely yours, for AMVEW RESearcher 6. C. Auganth 15.56 967108775 Thanking yes, ÷ Pa lyn 99/2804940 S.prema. SB (PI BROW) COTY IS : BACKLING UP LONG I STTUINED S G. Suren Barry 3. neoutil 9884570135 4. G.S. Jarrigen 9790846660 -An 5 ben 9710308983 Scenned with Caindourned

Request by the AVRWA to maintain the Request by the group standing against tree cutting. total road length in



116-Saugain astyles_ 7 Quipin M. Chesninger 72940000 Granger satisfier Continue -99628+4740 5. prima லில்களாக்களை, விருவாலியிரும் 05 இவுக் scongen annami Hand Manconugai BASKONAN. 3 Ja monanty anyor . or 3, was and (4) 9035898373 has then anni Bertiman. Hogingi , Ballougue . 10 , 1. mm T. Junt 729929625 Manarow, However, sille driphages อิลเนิม 1993 กาสส มารถัญ บารณีสาสิ. สิริก เการ์และห เวิบาลาเลือก (เลิ ญาณาเมิม ปกุมการ์ม 11. V. Vargater and 8775557696 A Dera'spar 10-3 9283598270 12 Alpy somy fi delicher , wy forg w Anona 13. K. Selvi 8754454057. K. Selvi 14 . J.F. Howman 7840665332. (n) Badyne. Bigg anona as sty anno . Offi to show anona want but and the sty 5 Hughin Barry in Linger Endering Herebyin லத்த கூதி படுதாகத் பறைய காச்வான எடுத்த பது காச்வான அள்கதியில் பக்கங் வணைடுக் BALLER ADARON Balanger. P.An 1. C. SIVARUMAR. 9677098775" frenchur 2. S. Bal aji 6381834551 3. G. Sunderson 9790846660 4. A. SELEANS E. E. Jeon 73584-02235 Sl. 8681991190 Opinion by the local public requesting not to cut the trees

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
1	07/02/2022	6	Provide Temporary approach		Resolved	Provided the Temporary approach
2	10/02/2022	6	Rectification of disrupted utility services	Rectify the damaged Metro pipeline	Resolved	Restored the damaged Metro pipeline
3	14/02/2022	6	Rectification of disrupted utility services	Rectify the damaged Metro pipeline	Resolved	Restored the damaged Metro pipeline
4	18/02/2022	6	Requested to close/barricade the open trenches for safe public access	Inadequate barricading at the SWD worksite	Resolved	Provided the Continuous barricading at the site
5	21/02/2022	6	Rectification of disrupted utility services	 Rectify the damaged Metro pipeline Repair the Street light pole 	Resolved	Rectified the damaged Metro pipeline
6	26/02/2022	6	Noise disturbance during SWD Works	There is noise during the working of SWD Project	Resolved	SWD project was completed faster in that location
7	02/02/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach
8	02/02/2022	7	Rectification of disrupted utility services	Rectify the damaged Metro pipeline	Resolved	Rectified the damaged Metro pipeline approach.
9	04/02/2022	7	Rectification of disrupted utility services	Rectify the damaged Metro pipeline	Resolved	Rectified the damaged Metro pipeline
10	12/02/2022	7	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Rectified the damaged Metro pipeline
11	16/02/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach

APPENDIX 7 PUBLIC COMPLAINTS RECEIVED DURING REPORTING PERIOD AND PENDING IN PREVIOUS REPORTS

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
12	18/02/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach
13	04/02/2022	10	Poor Backfilling	Requested to fill the sides of the SWD excavation	Resolved	Backfilled after completion of SWD Works
14	10/02/2022	10	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Damaged pipeline was restored
15	11/02/2022	10	Poor Backfilling	Requested to fill the sides of the SWD excavation	Resolved	Backfilled after completion of SWD Works
16	13/02/2022	10	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Damaged pipeline was restored
17	08/02/2022	10	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Damaged pipeline was restored
18	13/02/2022	10	Provide Temporary approach		Resolved	Provided the Temporary approach
19	04/02/2022	10	Provide Temporary approach		Resolved	Provided the Temporary approach
20	25/02/2022	10	Poor Backfilling	Requested to fill the sides of the SWD excavation	Resolved	Backfilled after completion of SWD Works
21	08/02/2022	22	Rectification of disrupted utility services	 Rectify the damaged Sewage pipeline Provide an extended temporary approach 	Resolved	Rectified the damaged Metro pipeline
22	13/02/2022	22	Provide Temporary approach		Resolved	Provided the Temporary approach
23	03/02/2022	25	Complete the SWD works as soon as possible to avoid unsafe access/parking	As the region is an industrial area the works were asked to complete fast	Resolved	The area is given priority to and completed the work soon

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
24	19/02/2022	25	Rectification of disrupted utility services	Rectify the damaged Metro pipeline	Resolved	Damaged pipeline was restored
25	19/02/2022	25	Rectify the minor structures damaged	Ramp of household	Resolved	Rebuilt the minor structures
26	18/02/2022	25	Provide temporary approach		Resolved	Provided the Temporary approach
27	11/02/2022	25	Rectify the minor structures damaged	Ramp of household	Resolved	Rebuilt the minor structures
28	16/02/2022	25	Rectify the minor structures damaged	Ramp of household	Resolved	Rebuilt the minor structures
29	13/03/2022	6	Provide Temporary approach		Resolved	Provided the Temporary approach
30	08/03/2022	6	Rectification of disrupted utility services	 Rectify the damaged Sewage pipeline Rectify the damaged Metro pipeline 	Resolved	Damaged pipeline was restored
31	04/03/2022	6	Rectification of disrupted utility services	EB Cable line damaged	Resolved	EB cable line was rectified
32	22/03/2022	6	Rectification of disrupted utility services	 Provide an extended temporary approach Rectify the damaged Sewage pipeline 	Resolved	sewage line was rectified
33	19/03/2022	6	Rectification of disrupted utility services	Rectify the damaged Metro pipeline	Resolved	Damaged pipeline was restored
34	12/03/2022	6	Requested to close/barricade the open trenches for safe public access	Inadequately barricaded excavation trench	Resolved	Increased the number of barricades at worksite

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
35	07/03/2022	7	ProvideTemporary approach		Resolved	Provided the Temporary approach
36	08/03/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach
37	11/03/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach
38	14/03/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach
39	17/03/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach
40	21/03/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach
41	17/03/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach
42	18/03/2022	7	Provide Temporary approach		Resolved	Provided the Temporary approach
43	14/03/2022	10	Poor Backfilling	Requested to fill the sides of the SWD excavation	Resolved	Backfilled after completion of SWD Works
44	02/03/2022	10	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Damaged pipeline was restored
45	03/03/2022	10	Provide Temporary approach		Resolved	Provided the Temporary approach
46	04/03/2022	10	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Damaged pipeline was restored
47	04/03/2022	10	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Damaged pipeline was restored

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
48	14/03/2022	10	Poor Backfilling	Requested to fill the sides of the SWD excavation	Resolved	Backfilled after completion of SWD Works
49	04/03/2022	22	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Damaged pipeline was restored
50	28/03/2022	22	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Damaged pipeline was restored
51	11/03/2022	22	Provide Temporary approach		Resolved	Provided the Temporary approach
52	07/03/2022	22	Provide Temporary approach		Resolved	Provided the Temporary approach
53	12/03/2022	22	Provide Temporary approach		Resolved	Provided the Temporary approach
54	18/03/2022	25	Rectify the minor structures damaged	Ramp of household	Resolved	New ramp was rebuilt
55	20./03/2022	25	Rectification of disrupted utility services	street light pole is dislocated during the SWD Construction	Resolved	Street light pole is again erected back and informed to residents
56	19/03/2022	25	Rectification of disrupted utility services	street light pole is dislocated during the SWD Construction	Resolved	Street light pole is again erected back and informed to residents
57	23/03/2022	25	Noise disturbance during SWD Works	Loud noise during SWD work hours	Resolved	SWD project was completed faster in that location
58	27/04/2022	5	Poor Backfilling	Requested to fill the sides of the SWD excavation	Resolved	Backfilled after completion of SWD Works
59	27/04/2022	5	Poor Backfilling	Requested to fill the sides of the SWD excavation	Resolved	Backfilled after completion of SWD Works

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
60	03/04/2022	5	Rectify the minor structures damaged	Compound wall fell during SWD excavation works	Resolved	New compound wall was rebuilt
61	16/04/2022	5	Poor Backfilling	Requested to fill the sides of the SWD excavation	Resolved	Backfilled after completion of SWD Works
62	10/04/2022	5	Complete the SWD works as soon as possible to avoid unsafe access/parking	Incomplete SWD work in front of house	Resolved	Works completed
63	18/03/2022	5	Rectify the minor structures damaged	Requested to reconstruct the damaged steps	Resolved	Works completed
64	27/03/2022	5	Rectify the minor structures damaged	Ramp damaged in front of house while SWD excavation, hence requested to reconstruct it	Resolved	Works completed
65	29/03/2022	5	Rectify the minor structures damaged	Requested to reconstruct the damaged ramp	Resolved	Works completed
66	03/03/2022	5	Rectify the minor structures damaged	Requested to reconstruct the damaged steps	Resolved	Works completed
67	26/03/2022	5	Rectification of disrupted utility services	EB Cable line damaged	Resolved	EB cable line was rectified
68	14/03/2022	5	Poor Backfilling	Requested to fill the sides of the SWD excavation	Resolved	Backfilled after completion of SWD Works
69	12/03/2022	5	Reimbursement for the minor structures reconstructed by house owner	Requested reimbursement for reconstructed ramp	Resolved	Works completed

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
70	06/03/2022	5	Reimbursement for the minor structures reconstructed by house owner	Requested reimbursement for reconstructed steps	Resolved	Works completed
71	16/05/2022	7	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided and family member felt happy
72	19/05/2022	7	Complete the SWD works as soon as possible to avoid unsafe access/parking	Requested to complete road crossing work of SWD as it is difficult to access the road frequently	Resolved	Gave priority and completed the work on time
73	08/05/2022	7	Remove the stagnant water/sewage collected in the trench	Mosquite problem prevails due to SWD and requested to dewater	Resolved	Dewatering done via motor pump
74	10/05/2022	7	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
75	10/05/2022	7	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
76	14/05/2022	7	Remove the stagnant water/sewage collected in the trench	Mosquite problem prevails due to SWD and requested to dewater	Resolved	Dewatering done via motor pump
77	17/05/2022	7	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
78	06/05/2022	7	Provide Temporary approach	Unable to access the road to go to market due to SWD drain work trench	Resolved	Temporary approach provided
79	10/05/2022	7	Provide Temporary approach	Unable to access the road to go to school and other activities due to SWD drain work trench	Resolved	Temporary approach provided
80	04/04/2022	8	Complete the SWD works as soon as possible to avoid unsafe access/parking	Requested to complete road crossing work of SWD as it is difficult to access the road frequently	Resolved	Gave priority and completed the work on time
81	08/04/2022	8	Complete the SWD works as soon as possible to avoid unsafe access/parking	Requested to complete road crossing work of SWD as it is difficult to access the road frequently	Resolved	Gave priority and completed the work on time
82	13/04/2022	8	Complete the SWD works as soon as possible to avoid unsafe access/parking	Requested to complete road crossing work of SWD as it is difficult to access the road frequently	Resolved	Gave priority and completed the work on time
83	16/04/2022	8	Excavate without damaging minor structures/Utility services/others	Do SWD work without damaging the household utility services	Resolved	Necessary safety measures taken during SWD works
84	20/04/2022	8	Excavate without damaging minor	Do SWD work without damaging the household utility services	Resolved	Necessary safety measures taken during SWD works

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
			structures/Utility services/others			
85	03/05/2022	8	Excavate without damaging minor structures/Utility services/others	Do SWD work without damaging the household structures	Resolved	Necessary safety measures taken during SWD works
86	07/05/2022	8	Complete the SWD works as soon as possible to avoid unsafe access/parking	Requested to complete road crossing work of SWD as it is difficult to access the road frequently	Resolved	Gave priority and completed the work on time
87	07/05/2022	8	Excavate without damaging minor structures/Utility services/others	Do SWD work without damaging the household utility services	Resolved	Necessary safety measures taken during SWD works
88	11/05/2022	8	Excavate without damaging minor structures/Utility services/others	Do SWD work without damaging the household utility services	Resolved	Necessary safety measures taken during SWD works
89	03/05/2022	8	Complete the SWD works as soon as possible to avoid unsafe access/parking	Requested to complete road crossing work of SWD as it is difficult to access the road frequently	Resolved	Gave priority and completed the work on time
90	18/05/2022	6	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
91	11/05/2022	6	Complete the SWD works as soon as possible to avoid unsafe access/parking	Requested to complete road crossing work of SWD as it is difficult to access the road frequently	Resolved	Traffic management plan was explained and diverted the public in alternative road until project completion
92	05/05/2022	6	Remove the stagnant water/sewage collected in the trench	Mosquite problem prevails due to SWD and requested to dewater	Resolved	Dewatering done via motor pump
93	16/05/2022	6	Provide Temporary approach		Resolved	Provided the Temporary approach
94	07/05/2022	6	Remove the stagnant water/sewage collected in the trench	Mosquite problem prevails due to SWD and requested to dewater	Resolved	Dewatering done via motor pump
95	10/05/2022	6	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
96	11/05/2022	6	Remove the stagnant water/sewage collected in the trench	Mosquite problem prevails due to SWD and requested to dewater	Resolved	Dewatering done via motor pump
97	12/05/2022	6	Remove excess soil/construction debris/Spoil Management	Unsafe street access due to SWD construction debris left without cleaning	Resolved	Cleaned the street and completed backfilling
98	10/05/2022	6	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
99	27/05/2022	6	Request to Postpone the work due to some medical	Kindly postpone your earthwork for one month	Resolved	The works were postponed and the details were informed to the

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
			emergency prevailing in the residence	as my pregnant wife is in ANC condition		respective GCC and PSC officials
100	19/05/2022	6	Complete the SWD works as soon as possible to avoid unsafe access/parking	Requested to complete road crossing work of SWD as it is difficult to access the road frequently	Resolved	Requested the Residential Flats members to access near by road as suggested in the project Traffic management plan and diverted the public in alternative road until project completion
101	19/05/2022	6		Requested to complete road crossing work of SWD as it is difficult to access the road frequently	Resolved	Requested the Residential Flats members to access near by road as suggested in the project Traffic management plan and diverted the public in alternative road until project completion
102	04/05/2022	37	Complete the SWD works as soon as possible to avoid unsafe access/parking	Incomplete drain in Kakkan street. Please immediately connect before monsoon	Resolved	Necessary permissions acquired and completed the pending SWD at Kakkan street
103	10/05/2022	37	Remove the stagnant water/sewage collected in the trench	Remove the stagnant water in the SWD	Resolved	Stagnant water fully removed and completed the SWD construction
104	11/05/2022	37	Remove the stagnant water/sewage collected in the trench	Remove the stagnant water in the SWD	Resolved	Stagnant water fully removed
105	25/05/2022	37	Complete the SWD works as soon as possible to avoid unsafe access/parking	Storm water drain is not connected and partly	Resolved	Drain was fully completed and connected

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
				opened creating unsafe access		
106	21/05/2022	37	Close the Pre-cast slab gaps and Manholes of SWD	Manhole door was not closed in our street	Resolved	Manhole door were provided
107	30/05/2022	37	Rectification of disrupted utility services	The EB line cable of household is above the drain, please burry it safely	Resolved	EB line was safely burried at 0.5meter depth
108	31/05/2022	37	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
109	11/05/2022	37	Complete the SWD works as soon as possible to avoid unsafe access/parking	Mosquite problem prevails due to incomplete SWD works and requested to dewater	Resolved	Discussed with Zonal division officers for completing the SWD and dewatered to stop the mosquito menance
110	11/05/2022	37	Complete the SWD works as soon as possible to avoid unsafe access/parking	Mosquite problem prevails due to incomplete SWD works and requested to dewater	Resolved	Discussed with Zonal division officers for completing the SWD and dewatered to stop the mosquito menance
111	14/05/2022	37	Rectify the minor structures damaged	Compound wall collapsed during SWD works. Please reconstruct the compound wall of the house	Resolved	Compound wall reconstructed
112	20/05/2022	37	Close the Pre-cast slab gaps and Manholes of SWD	Manhole door was not closed in our street	Resolved	Manhole door were provided
113	05/05/2022	10	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
114	10/05/2022	10	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
115	15/05/2022	10	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
116	20/05/2022	10	Rectify the minor structures damaged	The ramp of the house is damaged during SWD works. Please reconstruct	Resolved	Ramp reconstructed
117	25/05/2022	10	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
118	30/05/2022	10	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
119	30/05/2022	10	Rectify the minor structures damaged	The cement flooring of the house is damaged during SWD works.	Resolved	Ramp reconstructed
120	02/05/2022	25	Complete the SWD works as soon as possible to avoid unsafe access/parking	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
121	02/05/2022	25	Soil Sliding due to SWD Excavation works	Soil Sliding in front of my house due to SWD Excavation works	Resolved	Necessary Safety measures were taken to prevent soil sliding
122	12/05/2022	25	Rectify the minor structures damaged	The cement flooring and ramp of the house is damaged during SWD works. Please reconstruct	Pending	

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				and provide temporary access		
123	17/05/2022	25	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
124	24/05/2022	25	Rectify the minor structures damaged	The cement flooring and ramp of the house is damaged during SWD works. Please reconstruct and provide temporary access	Pending	
125	03/05/2022	25	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
126	05/05/2022	25	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
127	02/05/2022	25	Rectify the minor structures damaged	The cement flooring and ramp of the house are damaged during SWD works.	Resolved	After completion of SWD works minor structures reconstruction will be done
128	09/05/2022	25	Rectify the minor structures damaged	The ramp of the house is damaged during SWD works. Please reconstruct and provide temporary access with handrails	Pending	
129	24/05/2022	25	Rectify the minor structures damaged	The ramp of the house was damaged a little during SWD works.	Resolved	After completion of SWD works minor structures reconstruction will be done

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130	27/05/2022	25	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
131	04/05/2022	25	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
132	13/05/2022	25	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
133	14/05/2022	25	Rectification of disrupted utility services	EB Cable line damaged	Resolved	EB cable line was rectified within 1 hour
134	16/05/2022	25	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
135	17/05/2022	25	Rectification of disrupted utility services	Metro water line was damaged	Resolved	Metro pipeline damage was rectified on the same day
136	28/052022	25	Rectification of disrupted utility services	Rectify the damaged Metro water pipeline	Resolved	Metro pipeline damage was rectified on the same day
137	02/04/2022	6	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
138	11/04/2022	6	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
139	11/04/2022	6	Rectification of disrupted utility services	Rectify the damaged Metro water pipeline	Resolved	Metro pipeline damage was rectified on the same day

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140	18/04/2022	6	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
141	22/04/2022	6	Requested to close/barricade the open trenches for safe public access	Inadequately barricaded excavation trench	Resolved	Increased the number of barricades at worksite
142	29/04/2022	6	Requested to close/barricade the open trenches for safe public access	Inadequately barricaded excavation trench	Resolved	Increased the number of barricades at worksite
143	02/04/2022	7	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	sewage line was rectified
144	04/04/2022	7	Rectification of disrupted utility services	Rectify the damaged Sewage pipeline	Resolved	Sewage pipeline damage was rectified on the same day
145	04/04/2022	7	Rectification of disrupted utility services	Rectify the damaged metro water pipeline	Resolved	Metro water pipeline was rectified
146	23/04/2022	7	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
147	01/06/2022	13	Livelihood Compensation for street vendors/ mobile hawkers/ shop owners	Arrange the Livelihood Compensation for street vendors/ mobile hawkers/ shop owners	Pending	
148	01/06/2022	13	Livelihood Compensation for street vendors/ mobile hawkers/ shop owners	Arrange the Livelihood Compensation for street vendors/ mobile hawkers/ shop owners	Pending	

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149	15/04/2022	10	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
150	12/04/2022	22	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
151	16/04/2022	06	Rectify the minor structures damaged	The cement flooring and ramp of the house is damaged during SWD works. Please reconstruct and provide temporary access	Pending	
152	19/04/2022	06	Rectify the minor structures damaged	The cement flooring and ramp of the house is damaged during SWD works. Please reconstruct and provide temporary access	Pending	
153	21/04/2022	22	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
154	25/04/2022	22	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
155	28/04/2022	22	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided

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156	18/04/2022	25	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
157	19/04/2022	25	Rectification of disrupted utility services	Rectify the damaged water pipeline	Resolved	Metro pipeline damage was rectified on the same day
158	30/03/2022	2	Use the same excavated soil for backfilling		Resolved	Excavated soil is dumped in a nearby location and the same will be used for backfilled purposes after SWD construction works
159	30/03/2022	2	Provide Temporary approach	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
160	30/03/2022	2	Complete the SWD works as soon as possible to avoid unsafe access/parking	Unable to access the road due to earth excavation of SWD drain works	Resolved	Temporary approach provided
161	30/03/2022	2	Provide Temporary approach	Provide Safe temporary approach in front of my shop to accommodate the customers	Resolved	Temporary approach provided
162	08/03/2022	9	Rectification of disrupted utility services	The EB line cable of household is above the drain, please burry it safely	Resolved	EB line was safely burried at 0.5meter depth
163	13/04/2022	9	Remove excess soil/construction debris/Spoil Management	Unsafe street access due to SWD construction debris left without cleaning	Resolved	completed backfilling

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164	12/04/2022	21	Poor Backfilling	Due to SWD construction works the soil under the toilet and kitchen structures slided. So, it is requested to fill the sides of the SWD excavation	Pending	
165	12/04/2022	21	Close the Pre-cast slab gaps and Manholes of SWD	Due to open pre-cast slab gaps and open Manholes, it is unsafe for the children to access in the area	Resolved	All the open trenches were temporarily closed and safely barricaded to avoid incidents.
166	06/06/2022	32	Rectification of disrupted utility services	Damaged Metro water line was restored by the owner and requested for reimbursement	Pending	
167	07/02/2022	38	Rectification of disrupted utility services	Rectify the damaged sewage pipeline	Resolved	sewage pipeline damage was rectified on the same day
168	11/02/2022	43	Request for a new SWD alignment	The Thendral Colony residents requested a new SWD alignment near Otteri Nallah canal	Resolved	A discussion with the concerned authorities (GCC/PSC) and the area residents were organized and a proposal was prepared for new alignment.
169	02/06/2022	4	No awareness and intimation provided before starting SWD works	No public information board is provided at worksite and public are not well informed prior to SWD Works	Resolved	Public information board is placed at worksite and public were made aware of the project

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170	02/06/2022	4	Rectify the minor structures damaged	Gate of the residence is damaged due to SWD Works and kindly rectify the damaged structure	Resolved	After completion of SWD works the damages will be rectified
171	17/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
172	18/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
173	19/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
174	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
175	14/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
176	14/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD

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177	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
178	14/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
179	14/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
180	14/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
181	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
182	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
183	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD

S. No.	Date of Complaint	Package No.	Type of Complaint	Grievance details	Status	Number of days for resolution / Remarks
184	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
185	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
186	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
187	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
188	13/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
189	17/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD
190	17/05/2022	2	Save the trees in the SWD alignment	Requested to do the SWD construction works without removing the trees in the alignment	Resolved	Discussed with Zonal division officers and PSC Officials for completing the SWD

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191	14/12/2021	12	Individual	Request to add new SWD alignment in the area	Resolved	Discussed with Zonal division officers and PSC Officials for adding new SWD alignment in the area
192	15/12/2021	39	Individual	Request to add new SWD alignment in the area	Resolved	Discussed with Zonal division officers and PSC Officials for adding new SWD alignment in the area
193	28/12/2021	27	Individual	Request to add new SWD alignment in the area	Resolved	Discussed with Zonal division officers and PSC Officials for adding new SWD alignment in the area
194	15/11/2021	41	Individual	Requested to desilt the existing SWD drain or provide alternative solution	Resolved	Discussed with Zonal division officers and PSC Officials for adding new SWD alignment in the area
195	22/11/2021	43	Individual	Requested to delete the proposed SWD drain as there are many trees on both sides of the road and no water stagnation during rainy season	Resolved	Discussed with Zonal division officers and PSC Officials for adding new SWD alignment in the area
196	15/12/2021	15	Individual	Request to add new SWD alignment in the area	Resolved	Discussed with Zonal division officers and PSC Officials for adding new SWD alignment in the area
197	22/11/2021	27	Individual	Request to add new SWD alignment in the area	Resolved	Discussed with Zonal division officers and PSC Officials for

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						adding new SWD alignment in the area
198	26/10/2021	5	Individual	Request to add new SWD alignment in the area	Resolved	Discussed with Zonal division officers and PSC Officials for adding new SWD alignment in the area

***Type of complainant:** individual / group of individuals / community / community-based organization/ NGO / private organization etc.,

Status: resolved/in process with xxx/ complainant not satisfied / not in project scope etc.,