

Environmental and Social Monitoring Report

Fourteenth Quarterly Report (April-June 2018)
August 2018

India: Jaipur Metro Rail Line 1-Phase B Project

Prepared by the Jaipur Metro Rail Corporation Limited for the Government of India and the Asian Development Bank

CURRENCY EQUIVALENTS

(As of 30 June 2018)

Currency unit	-	Indian Rupee (INR)
INR 1.00	=	\$ 0.0146
\$1.00	=	INR 68.5753

ABBREVIATIONS

ADB	-	Asian Development Bank
ADF	-	Asian Development Fund
CEC	-	Continental Engineering Corporation
CSC	-	Construction Supervision Consultant
ES	-	Environmental Specialist
DMRC	-	Delhi Metro Rail Corporation
EMP	-	Environmental Management Plan
EA	-	Execution Agency
EIA	-	Environmental impact Assessment
EARF	-	Environmental assessment and review framework
ESMS	-	Environmental and social management system
EMR	-	Environmental Monitoring Report
GPR	-	Ground penetrating radar
HSO	-	Health and Safety Officer
IEE	-	Initial environmental examination
IPP	-	Indigenous People Plan
JMRC	-	Jaipur Metro Rail Corporation
PAM	-	Project Administration Manual
PCAG	-	Public Consultation and Addressing of Grievances
RP	-	Resettlement Plan
SHE	-	Safety Health & Environment Management Plan
SPS	-	Safeguard Policy Statement
VMR	-	Vibration Monitoring Results

WEIGHTS AND MEASURES

km	-	Kilometer
m	-	Meter

NOTES

In this report, "\$" refers to US dollars

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EXECUTIVE SUMMARY

1. This report is the 14th quarterly report on environmental and social safeguards compliance of the Jaipur Metro Rail Line -1 Phase B Project. It covers the period from April 2018 to June 2018. Line 1 - Phase B of the project includes construction of 2.4 km underground portion from Chandpole to Badi Chaupar, with two stations. Line 1 – Phase B is being financed by ADB and expected to be completed by December 2018 at a cost of INR 1126 crore.

2. Jaipur Metro Rail Corporation (JMRC) is the Executing Agency for the Project. The sole civil works contract package under the project was awarded to Continental Engineering Corporation (CEC) in September 2013. The General Consultant overseeing the design and supervision of physical works is Delhi Metro Rail Corporation Limited (DMRC).

3. Status of construction works as of June, 2018 are: i) Tunnelling works have been completed. ii) At Chhoti Chaupar station, construction of top slab, roof slab, concourse slab, base slab and platform slab works have been completed. iii) At Badi Chaupar station, construction work of top slab, roof slab, concourse slab and base slab works have been completed and the road has been opened for movement of general traffic. As of June 2018 total physical and financial accomplishments are about 83 % and 77 % respectively.

4. No damage was reported during the tunnelling and excavation works. Extra precautions had been taken to ensure no mishap happens during the tunnelling process particularly on the Chandpole gate, a protected monument under the Rajasthan law which stands directly above the metro alignment. 12 prisms had been installed on both sides of Chandpole gate to keep a check on the vibrations with monitoring the reading every hour. Additionally, 10 crack meter and six strips of glass have also been put on the gate to receive any information if the cracks widen. Moreover, eight Multi Point Borehole Extensometer (MPBX) have been installed at the depth of 2.5 meters and 5 meters. The status of all the relevant structures have been regularly monitored. Sites are being regularly visited by JMRC Heritage/structural experts i.e., M/s Abha Narain Lambah Associates and M/s Shashank Mehendale & Associates. However, in the reporting period, instrumentation and vibration monitoring were not carried out since the tunnelling work has already been completed.

5. The project is running behind initially planned schedule. This is mainly due to design changes and discovery of two ancient tanks which were buried right in the path of the alignment. These tanks once brought water to the city centre from the surrounding Aravilli hills. To preserve the tanks, the Jaipur Metro Rail Corporation has altered the design. The tunnel has been lowered by about one meter and made incidental design changes to accommodate the tanks above the metro stations at Chhoti and Badi Chaupar. Another design change that resulted in delay is the decision to tunnel through Chhoti Chaupar station instead of retrieving and re-launching the TBMs at Chhoti Chaupar. This was done to avoid disturbance to general public and business community. Also at Badi Chaupar, the station was lowered to accommodate proposed subway and retrieving shaft location was changed to minimize the period of road blockage. In addition to above, in order to make better utilization of the space above reversal line between Badi Chaupar and Ramganj, which otherwise was to be filled with earth, now the same will be developed into property development and parking area.

6. The environmental and social safeguards of the project are being implemented in compliance with the loan covenants, project agreement and contractor is complying with the proposed mitigation measures described in the Environmental Management Plan (EMP); Safety, Health and Environment (SHE) Manual and the contract specifications. The implementations of

environmental and social safeguards are being monitored at Project Management and General Consultant (GC) level. With exception of a few issues, the project is being implemented in compliance with project requirements.

7. A baseline study was carried out on heritage structures located in the project area in 2014 before the start of work of Phase 1B. During this reporting period i.e. from April 2018 to June 2018, no major changes in the condition of structures have been reported in comparison with the baseline study.

8. The study identified a list of structures that needed repair and immediate actions. The list of structures requiring immediate action was submitted to Jaipur Nagar Nigam to ensure no damage during the tunneling work. Preventive measures like propping of the verandahs and repair of shops along the entire road that falls above the underground metro alignment have been taken up during the tunneling work and beyond.

9. For structures located around the Chaupars (station sites) where construction works are ongoing, proactive measures of providing propping support to unstable structures is already in place and are taken care by the contractor under instructions of the 'engineer' (General Consultants). In addition, regular monitoring of weak structures through installation of crack, tilt, vibration meters and building settlement markers is also being done on regular basis. Water proofing of the roof and strengthening of Chandpole gate has been done to improve the life of the structure as a voluntary and additional protection measure by JMRC.

10. The minor social and resettlement impacts such as the acquisition of a strip of private land (10 by 10 meters) outside Chandpole station and at the tunnel construction start point, as the shops (3 shopkeepers) on that strip are blocking traffic. JMRC has already rehabilitated the shop owners across the Chandpole Metro Station near Church land. 6 temples at Chhoti Chaupar, which were infringing the station box area have already been rehabilitated and given built up structures as per their satisfaction at Old Atish market land. Rozgareshwar Temple at Chhoti Chaupar will be relocated back to its original position after completion of station work at Chhoti Chaupar. 7 temples at Badi Chaupar have been identified which are infringing the station box area. Out of these 7, 5 temples have been shifted at the land behind Manak Chowk Thana and 2 temples at TanwarjiKaNauhra. For the approach road to Ancillary Building at Badi Chaupar to facilitate entry of equipment and machinery, one temple has been shifted/relocated on 06.05.2018 with the help of District Administration.

11. Civil Administration and JMRC has ensured round the clock availability of rescue team consisting of ambulance, civil defense, earth moving machines & crane, staff from Jaipur Discom and PHED. This is to ensure quick response to any problem which may arise during construction.

12. The heritage work of reinstating the old heritage water tank at Chhoti Chaupar is going on and is expected for completion in August 2018. In parallel, the construction of Art Gallery for displaying the artefacts and history of kund to the public at large is also going on and is expected to be completed by August 2018.

13. The construction works are proceeding in accordance with the provisions of the EMP such as review of monitoring reports, regulatory compliance action plan and approval by the GC. The environmental monitoring plan is successfully being implemented by the JMRC through an instrumentation company M/s AMIL engaged by executing agency with the approval of 'Engineer'.

14. JMRC and DMRC officials have regularly been meeting with the local people and business associations in the project area to inform them about the construction works. Measures have been taken to address concerns of the local businesses such as stopping of work and providing proper pathways for customers during festivals. All reports and information on the project is disclosed on the JMRC website. In addition, JMRC has a full-time Public Relation Officer dealing with media/press issues and also maintains a facebook page and twitter account for disclosing project information and responding to queries and concerns from the general public.

15. Various proactive measures are being taken to implement project in compliance with requirements, prevent damages to heritage structures, coordination with relevant agencies, communicate with the public and address grievances of the local public. Areas such as public communications, documentation and reporting need further enhancement.

16. There were no significant environmental impacts observed during the reporting period. All environments related observations are regularly recorded and monitored and in case of any shortcomings necessary corrective measures are taken up.

I. INTRODUCTION

A. Purpose of the Report

1. The objective of environmental monitoring is to allow ADB and the Jaipur Metro Rail Corporation (JMRC) gather information to: i) evaluate the environmental management plan (EMP) progress by establishing compliance status, ii) detect and correct non-conformances, iii) identify unanticipated impacts and implement necessary mitigation measures, and iv) provide evidence to support enforcement of penalty provisions of the civil works contract to deter non-compliance.

2. Environmental monitoring and disclosure of quarterly or semi-annual monitoring reports is an ADB requirement for environmental category-A projects like Jaipur Metro Rail Line-1 Phase B. Environmental monitoring is part of project implementation process to be complied by both ADB and JMRC. The preparation and submission of the quarterly or semi-annual monitoring reports is the responsibility of JMRC while supervision to provide guidance is the role of ADB.

3. As many sensitive heritage structures of the Pink City exist above the metro underground alignment, it was agreed during project preparation that quarterly environmental monitoring reports will be prepared and disclosed for this project. Since the significant physical construction works started in July 2015, the first environmental and social semi-annual monitoring report for the period July 2014 - December 2014 has been submitted to ADB and disclosed on ADB and JMRC websites. Thereafter quarterly monitoring reports are being regularly submitted to ADB and disclosed on ADB and JMRC websites. This is the Fourteenth quarterly environment and social monitoring report for reporting period April 2018 to June 2018.

B. Project Description

4. Jaipur, the capital of the Indian state of Rajasthan, is one of the fastest growing cities in India. The fast paced industrial and commercial development has resulted in a steep rise in travel demand, but the city's existing public transport infrastructure is inadequate in terms of capacity and service. With the growing economy, passengers are shifting to private modes of transport, as evident in the rise in vehicle ownership, aggravating congestion and pollution. The modal share for public transport was 19% in 2009—one of the lowest in cities with more than 3 million inhabitants in India¹.

5. In 2009, Jaipur Development Authority developed a comprehensive mobility plan, seeking to provide an overall transport plan, up to 2031, that emphasizes the pre-eminence of public transport for the movement of people, not just vehicles, and integrating land use with transport networks. The plan recommended, among others, the development of high capacity metro lines along the east–west corridor of 12 km from Mansarovar to Badi Chaupar, and the north–south corridor of 23 km (approx..) from Ambabadi to Sitapura. In January 2010, the government of Rajasthan established the Jaipur Metro Rail Corporation (JMRC) to implement the metro rail lines. Line 1- Phase A (9.6 km elevated portion from Mansarovar to Chandpole) and Line 1-Phase B (2.4 km underground portion from Chandpole to Badi Chaupar, with two stations).

6. Line 1 – Phase B is being financed by ADB and expected to be completed by December 2018 at a cost of INR 1126 Crore². Figure 1 show the system map of the project.

¹<http://www.adb.org/sites/default/files/project-document/79730/46417-001-rrp.pdf>

²<https://www.jaipurmetrorail.in/Present%20Status>

Figure 1. JMRC Project System Map

7. The Government of Rajasthan acting through the Urban Development and Housing Department and Jaipur Metro Rail Corporation (JMRC) is the executing agency of the Project.

JMRC has established an environment safeguard cell to look after implementation and monitoring of the safeguards measures associated with the Project. It constitutes six officials of JMRC. Organization structure of Safeguards Cell is shown in Figure 2.

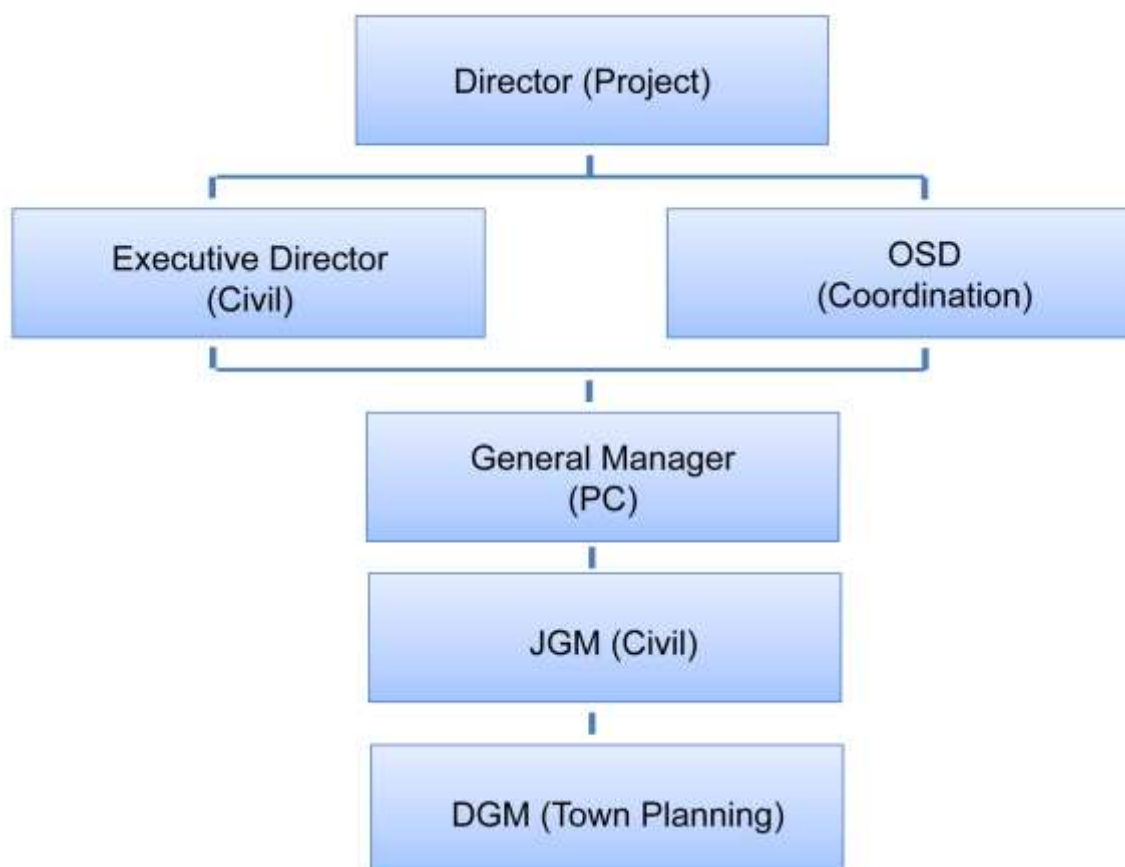
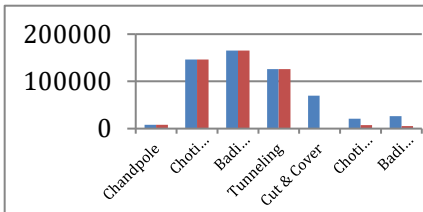


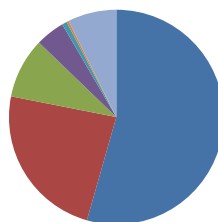
Figure 2: Organization Structure of Safeguards Cell of JMRC

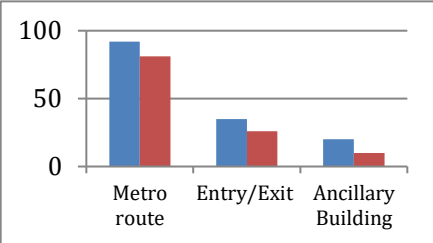
D. Project Implementation Progress

8. As of June 2018 total physical and financial accomplishments are about 83 % and 77%, respectively. The status of various construction activities is provided in Table 1. Photolog demonstrating the progress of works is provided in Appendix 1.

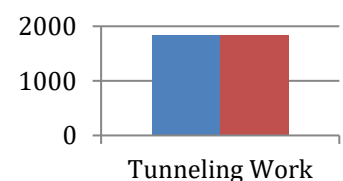
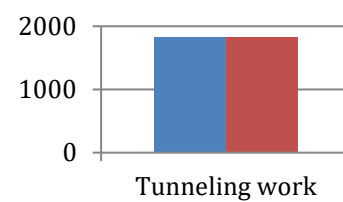
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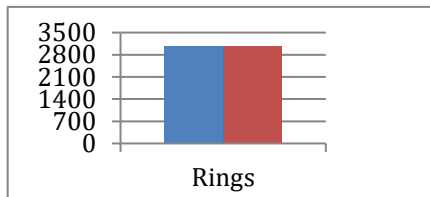
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S.N.	Activities	Location		Status																																
1	Earthworks: Earthwork is to be done for construction of Launching shaft at Chandpole, construction of underground stations at Chhoti Chaupar and Badi Chaupar by cut & cover method. During the tunneling earth will be excavated with Tunnel Boring Machine (TBM-I & II).	<table><tr><th>Location</th><th>Estimated quantity (in cum)</th></tr><tr><td>Chandpole</td><td>8000</td></tr><tr><td>Chhoti Chaupar</td><td>146000</td></tr><tr><td>Badi Chaupar</td><td>165000</td></tr><tr><td>Tunneling Work</td><td>125808</td></tr><tr><td>Cut & Cover Badi Chaupar</td><td>70000</td></tr><tr><td>Chhoti Chaupar (Entry-Exit)</td><td>20843</td></tr><tr><td>Badi Chaupar (Entry-Exit)</td><td>26437</td></tr></table>		Location	Estimated quantity (in cum)	Chandpole	8000	Chhoti Chaupar	146000	Badi Chaupar	165000	Tunneling Work	125808	Cut & Cover Badi Chaupar	70000	Chhoti Chaupar (Entry-Exit)	20843	Badi Chaupar (Entry-Exit)	26437	<table><tr><th>Location</th><th>% Completion</th></tr><tr><td>Chandpole</td><td>100 %</td></tr><tr><td>Chhoti Chaupar</td><td>100 %</td></tr><tr><td>Badi Chaupar</td><td>100 %</td></tr><tr><td>Tunneling Work</td><td>100 %</td></tr><tr><td>Cut & cover Badi Chaupar</td><td>0 %</td></tr><tr><td>Chhoti Chaupar (Entry-Exit)</td><td>34.0%</td></tr><tr><td>Badi Chaupar (Entry-Exit)</td><td>21.2%</td></tr></table> <div></div>	Location	% Completion	Chandpole	100 %	Chhoti Chaupar	100 %	Badi Chaupar	100 %	Tunneling Work	100 %	Cut & cover Badi Chaupar	0 %	Chhoti Chaupar (Entry-Exit)	34.0%	Badi Chaupar (Entry-Exit)	21.2%
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2	Soil Disposal: <table><tr><th>Location</th><th>Estimated quantity *(in cum)</th></tr><tr><td>Chandpole</td><td>8000</td></tr><tr><td>Chhoti Chaupar</td><td>146000</td></tr><tr><td>Badi Chaupar</td><td>165000</td></tr><tr><td>Tunneling Work</td><td>125808</td></tr><tr><td>Cut & cover Badi Chaupar</td><td>70000</td></tr><tr><td>Chhoti Chaupar (Entry-Exit)</td><td>20843</td></tr><tr><td>Badi Chaupar (Entry-Exit)</td><td>26437</td></tr></table> <p><i>*Estimated quantity of soil which will be disposed during complete project duration</i></p>	Location	Estimated quantity *(in cum)	Chandpole	8000	Chhoti Chaupar	146000	Badi Chaupar	165000	Tunneling Work	125808	Cut & cover Badi Chaupar	70000	Chhoti Chaupar (Entry-Exit)	20843	Badi Chaupar (Entry-Exit)	26437	Mathuradaspura Amer fire station 4 th Battalion, RPC, Chainpura Nahargarh biological park Rajasthan police academy JDA park, Hathigaon Police headquarter Jaipur Police line, Jaipur	Jaipur Development Authority has allotted following soil disposal sites vide letter dated 01.09.2014 Mathuradaspura Nahargarh biological park JDA Park, Hathigaon Jaipur Nagar Nigam has allotted following soil disposal sites vide letter dated 08.09.2014/ 18.04.17/31.03.17/24.04.17/17.05.17/20.04.17:- 4 th Battalion,Chainpura Amer Fire station Police line, Jaipur Rajasthan Police Academy Jaipur Development Authority has allotted for dumping C&D waste at Khasra No.-1, Area 41.08 Bigha situated at revenue village, Malpura Choud, Tehsil, Jaipur The above mentioned seven muck disposal sites are not exclusively given for metro project. These sites are also being used by other agencies for disposal of muck and in some cases even disposal of C&D waste. JMRC or its contractor is not responsible for																	
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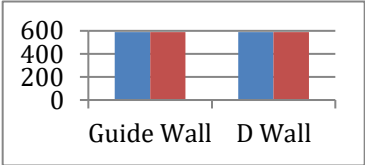
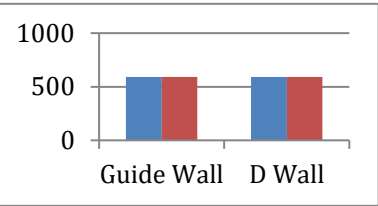
S.N.	Activities	Location	Status																
			<p>maintenance of these sites. However, adequate precaution has been taken by the contractor to avoid nuisance and air pollution during dumping process.</p> <p>Soil disposed at different disposal sites during the reporting period is as under:</p> <table><thead><tr><th>Location</th><th>Disposal quantity (in cum)</th></tr></thead><tbody><tr><td>Rajasthan Police Academy</td><td>6906.947</td></tr><tr><td>Policeline, Jaipur</td><td>3004.457</td></tr><tr><td>Mathuradaspora</td><td>1155.741</td></tr><tr><td>4th Battalion, RPC, Chainpura</td><td>557.410</td></tr><tr><td>JDA Park, Hathigaon</td><td>93.808</td></tr><tr><td>Govt. Primary school, Sumel</td><td>41.208</td></tr><tr><td>Station use (Levelling)</td><td>931.618</td></tr></tbody></table> <div><ul style="list-style-type: none">Police academyPolice line, JaipurMathuradaspora4th Ballalian, chainpuraJDA Park, HathigaonGovt. Primary school, sumelStation use (Levelling)</div> <p>On average, 141 cubic meter of muck was transported daily to the dumping ground or for station back filling. Muck is transported only during night time to avoid nuisance to general public. Wheels of every truck leaving the site with muck are washed/ cleaned before entering public carriage to avoid deposition and spillage. Also the truck is covered with tarpaulin sheet to avoid dust pollution enroute to dumping ground. The dumping ground will be compacted to avoid generation of dust. The route map and photographs of dumping site are annexed as Appendix 7.</p>	Location	Disposal quantity (in cum)	Rajasthan Police Academy	6906.947	Policeline, Jaipur	3004.457	Mathuradaspora	1155.741	4 th Battalion, RPC, Chainpura	557.410	JDA Park, Hathigaon	93.808	Govt. Primary school, Sumel	41.208	Station use (Levelling)	931.618
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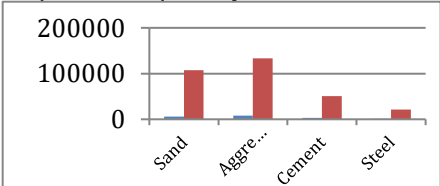
S.N.	Activities	Location	Status																												
3	<p>Vegetation and Plant Clearing:</p> <p>Some trees are coming in the metro route in launching shaft at Chandpole, station box and in entry exit at Chhoti Chaupar and Badi Chaupar. These trees are to be cut or relocated with the prior approval of District Collector.</p>	<p>Location of the trees as per survey which are to be cut or located as under:</p> <table><tr><th>Location</th><th>Trees</th></tr><tr><td>Metro route</td><td>92</td></tr><tr><td>Entry/Exit at Chhoti Chaupar & Badi Chaupar</td><td>35</td></tr><tr><td>Ancillary Building area at Chhoti Chaupar</td><td>20</td></tr></table> <p>The tree species include Gulmohar, Banyan tree & Pipal tree. The trees have been transplanted at Ghatki Ghuni, Sylvan Bio diversity forest Agra road Jaipur & Ram Niwas Bagh, JDA Jaipur.</p>	Location	Trees	Metro route	92	Entry/Exit at Chhoti Chaupar & Badi Chaupar	35	Ancillary Building area at Chhoti Chaupar	20	<p>Details of trees cut or transplanted is as under:</p> <table><tr><th>Location</th><th>Trees transplanted</th></tr><tr><td>Metro route</td><td>51</td></tr><tr><td>Entry/Exit at Chhoti Chaupar & Badi Chaupar</td><td>22</td></tr><tr><td>Ancillary Building area at Chhoti Chaupar</td><td>10</td></tr></table> <div><table><thead><tr><th>Description</th><th>No.</th><th>Survival rate</th></tr></thead><tbody><tr><td>Trees felled</td><td>6</td><td>NA</td></tr><tr><td>Trees transplanted</td><td>83</td><td>50%</td></tr><tr><td>Samplings planted</td><td>226</td><td>91%</td></tr></tbody></table><p>In total, 83 trees have been transplanted to three locations viz. Ghat Ki Ghuni, Ramniwas Garden and Sylvan Bio-diversity forest. The survival rate as of June 2018 is 50%. All efforts are being made for the survival of the transplanted trees.</p><p>In addition to transplantation, the contractor has carried out multiple tree plantation drive at Casting yard, Ram Niwas Bagh and Project office, PHQ. As of June, 2018, 246 saplings have been planted at aforementioned locations. Photographs and additional details on tree plantation are annexed as Appendix-8.</p><p>Also, 3000 no. of trees have been planted at Ghat Ki Guni and Nahargarh forest area through Forest Department.</p></div>	Location	Trees transplanted	Metro route	51	Entry/Exit at Chhoti Chaupar & Badi Chaupar	22	Ancillary Building area at Chhoti Chaupar	10	Description	No.	Survival rate	Trees felled	6	NA	Trees transplanted	83	50%	Samplings planted	226	91%
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4	<p>Utility Shifting:</p> <p>Utility shifting is an important activity for underground station work.</p> <p>Underground electric cables, water supply lines and telecom lines are to be realigned at Chandpole for launching shaft and underground station at Chhoti Chaupar and Badi Chaupar.</p>	<table><tr><td>Chandpole – Launching shaft</td></tr><tr><td>Electric cables</td></tr><tr><td>Water supply lines</td></tr><tr><td>Telecom lines</td></tr><tr><td>Chhoti Chaupar</td></tr><tr><td>Electric cables</td></tr><tr><td>Water supply lines</td></tr><tr><td>Telecom lines</td></tr><tr><td>Badi Chaupar</td></tr><tr><td>Electric cables</td></tr><tr><td>Water supply lines</td></tr><tr><td>Telecom lines</td></tr></table>	Chandpole – Launching shaft	Electric cables	Water supply lines	Telecom lines	Chhoti Chaupar	Electric cables	Water supply lines	Telecom lines	Badi Chaupar	Electric cables	Water supply lines	Telecom lines	<p>Status during reporting period is as under:</p> <table><tr><td colspan="2">Chandpole – Launching shaft</td></tr><tr><td>Electric cables</td><td>100%</td></tr><tr><td>Water supply lines</td><td>100%</td></tr><tr><td>Telecom lines</td><td>100%</td></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Electric cables</td><td>100%</td></tr><tr><td>Water supply lines</td><td>100%</td></tr><tr><td>Telecom lines</td><td>100%</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Electric cables</td><td>100%</td></tr><tr><td>Water supply lines</td><td>100%</td></tr><tr><td>Telecom lines</td><td>100%</td></tr></table>	Chandpole – Launching shaft		Electric cables	100%	Water supply lines	100%	Telecom lines	100%	Chhoti Chaupar		Electric cables	100%	Water supply lines	100%	Telecom lines	100%	Badi Chaupar		Electric cables	100%	Water supply lines	100%	Telecom lines	100%
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5	<p>Traffic Management and Diversion:</p> <p>For the construction of launching shaft at Chandpole, underground stations at Chhoti Chaupar and Badi Chaupar, traffic is to be diverted.</p> <p>Project specific traffic management plan has been developed and the same has been approved by Jaipur Traffic Authority.</p>	<p>Chandpole Launching Shaft</p> <p>Traffic from Station Road to Jhotwara Road has been diverted via Pareek College Road.</p> <ul style="list-style-type: none">Chhoti Chaupar <p>Direct access from Chandpole Bazar to Tripolia Bazar. Traffic is diverted via Nahargarh Road – Gangauri Bazar – Cheeni Ki Burj.</p> <ul style="list-style-type: none">Badi Chaupar <p>Traffic Diversion Plan has been submitted.</p>	<p>Chandpole Launching Shaft</p> <p>Traffic management & traffic is smooth without any diversion.</p> <ul style="list-style-type: none">Chhoti Chaupar <p>Road is open for traffic from all directions.</p> <ul style="list-style-type: none">Badi Chaupar <p>Road is open for traffic from all directions.</p>																																				
6	<p>Launching shaft:</p> <p>Launching shaft is to be constructed for tunnel boring machine. A launching shaft has diaphragm wall/concrete wall and it is built to be permanent. Once the access shaft is completed, Tunnel Boring Machine will be lowered to the bottom and excavation will start. Launching shaft is the main entrance & exit of the tunnel until project is complete. Launching shaft is rectangular in shape and constructed with reinforce cement concrete M50 grade. Walls of launching shaft are</p>	Chandpole	Launching shaft work has been completed.																																				

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	800 mm thick. Dimension of launching shaft at Chandpole is 24m X 20m and a depth of 14m.																																		
7	<p>Tunnel Boring Machine</p> <p>Tunnel boring machine will be used in excavating and advancing tunnels through any type of ground strata for the complete tunnelling work.</p> <p>The underlying principle of the EPB method is that the excavated soil or muck itself is used to provide continuous support to the tunnel face by balancing earth pressure against the forward pressure of the machine.</p> <p>As the shield advances at the face, the cutter head on the TBM rotates through the earth. The excavated soil is then mixed together with a special foam material that actually alters its viscosity or thickness and transforms it into flowing material. The use of a foaming agent to break down muck into a liquefied form provides some obvious benefits. The muck is then stored and controlled in a pressurized chamber located inside the cutter head, and is used to apply support and balance pressure to the tunnel face during the excavation process. The foam acts as a lubricant that conditions the soil to a suitable fluidity, in effect reducing the risk of clogging in the pressurized storage chamber head or muck storage area.</p> <p>A screw conveyor then removes excess fluidized muck in controlled volumes from behind the cutter head and in front of the "Pressure bulkhead", synchronizing the screw conveyor with the</p>	<p>The main activities of these TBMs are as under:</p> <table><tr><td colspan="2">TBM 1</td></tr><tr><td>Refurbishment</td><td></td></tr><tr><td>Lowering in launching shaft</td><td></td></tr><tr><td>Tunneling work</td><td>1875 meters</td></tr><tr><td colspan="2">TBM 2</td></tr><tr><td>Refurbishment</td><td></td></tr><tr><td>Lowering in launching shaft</td><td></td></tr><tr><td>Tunneling work</td><td>1875 meters</td></tr></table>	TBM 1		Refurbishment		Lowering in launching shaft		Tunneling work	1875 meters	TBM 2		Refurbishment		Lowering in launching shaft		Tunneling work	1875 meters	<table><tr><td colspan="2">TBM 1</td></tr><tr><td>Refurbishment</td><td>100 %</td></tr><tr><td>Lowering in launching shaft</td><td>100 %</td></tr><tr><td>Tunneling work</td><td>100% (1875 m) tunneling completed.</td></tr><tr><td colspan="2">TBM 2</td></tr><tr><td>Refurbishment</td><td>100%</td></tr><tr><td>Lowering in launching shaft</td><td>100%</td></tr><tr><td>Tunneling work</td><td>100 % (1875M) Tunneling completed.</td></tr></table> <p><u>TBM-1</u></p>  <p><u>TBM-2</u></p> 	TBM 1		Refurbishment	100 %	Lowering in launching shaft	100 %	Tunneling work	100% (1875 m) tunneling completed.	TBM 2		Refurbishment	100%	Lowering in launching shaft	100%	Tunneling work	100 % (1875M) Tunneling completed.
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	<p>actual speed of the tunnel boring machine, and equalizing the actual volume of soil travelling into and out of the machine and establishes earth pressure balance during excavation, thereby also reducing the risk of surface or ground settlement. The performance of the EPBV machine, however, largely depends on the actual properties of the excavated muck. The soil may be coarse sands, gravel or stiff clays.</p> <p>The EPB TBM also has the unique capability of placing a continuous ring of segment liners from within the tail shield of the machine inside the tunnel as it advances. These concrete segments provide critical additional reinforcement and support and accomplish all tunnel construction in one pass.</p> <p>Tunneling works from Chandpole to Badi Chaupar will be done by the two TBMs.</p> <p>Diameter of the cutting head of TBM is 6.55 meter. The tunnel size is of 5.60 meter internal diameter.</p>						
8	<p>Segment casting:</p> <p>Internal lining of the tunnel will be done by precast reinforced cement concrete segments. The segments are to be constructed with M 50 concrete having outer diameter of 6.35 meter. One ring comprises 6 segments.</p>	<p>Segment casting will be done at casting yard in Bhankarota.</p> <table><tr><td>Rings</td><td>3,062 (18,132 segments)</td></tr></table>	Rings	3,062 (18,132 segments)	<p>Rings casted are as under:</p> <table><tr><td>Rings</td><td>100 % (3,062)</td></tr></table> <div><p>Rings</p></div>	Rings	100 % (3,062)
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9	<p>Guide wall and D wall at Chhoti Chaupar & Badi Chaupar stations:</p> <p>For the construction of D-Wall initially guide walls are constructed so as to keep the D-Wall in proper alignment.</p> <p>Guide walls are constructed with reinforce cement concrete of M20 grade. The thickness of guide wall is about 600 mm and depth is 1.5 m.</p> <p>Diaphragms walls are constructed with reinforce cement concrete of M35 grade. The thickness of diaphragms wall is about 800 mm and depth is about 26 m.</p>	<table><tr><th>Location</th><th>Length (m)</th></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Guide Wall</td><td>590</td></tr><tr><td>D-Wall</td><td>590</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Guide Wall</td><td>590</td></tr><tr><td>D-Wall</td><td>590</td></tr></table>	Location	Length (m)	Chhoti Chaupar		Guide Wall	590	D-Wall	590	Badi Chaupar		Guide Wall	590	D-Wall	590	<table><tr><th>Location</th><th>% Completion</th></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Guide Wall</td><td>100% (590)</td></tr><tr><td>D-Wall</td><td>100% (590)</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Guide Wall</td><td>100% (590)</td></tr><tr><td>D-Wall</td><td>100% (590)</td></tr></table> <p><u>Chhoti Chaupar</u></p>  <p><u>Badi Chaupar:</u></p> 	Location	% Completion	Chhoti Chaupar		Guide Wall	100% (590)	D-Wall	100% (590)	Badi Chaupar		Guide Wall	100% (590)	D-Wall	100% (590)																
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10	<p>Roof Slabs at Chhoti Chaupar & Badi Chaupar Station</p> <p>Stations are to be constructed with top down method. Top slab, roof slab, concourse slab & base slab are to be constructed.</p>	<table><tr><th>Location</th><th>Area (sqm)</th></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Top slab</td><td>7000</td></tr><tr><td>Roof slab</td><td>7000</td></tr><tr><td>Concourse</td><td>7000</td></tr><tr><td>Base slab</td><td>7000</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Top slab</td><td>7000</td></tr><tr><td>Roof slab</td><td>7000</td></tr><tr><td>Concourse</td><td>7000</td></tr><tr><td>Base slab</td><td>7000</td></tr></table>	Location	Area (sqm)	Chhoti Chaupar		Top slab	7000	Roof slab	7000	Concourse	7000	Base slab	7000	Badi Chaupar		Top slab	7000	Roof slab	7000	Concourse	7000	Base slab	7000	<table><tr><th>Location</th><th>Area (sqm)</th></tr><tr><td colspan="2">Chhoti Chaupar</td></tr><tr><td>Top slab</td><td>7000</td></tr><tr><td>Roof slab</td><td>7000</td></tr><tr><td>Concourse</td><td>7000</td></tr><tr><td>Base slab</td><td>7000</td></tr><tr><td colspan="2">Badi Chaupar</td></tr><tr><td>Top slab</td><td>7000</td></tr><tr><td>Roof slab</td><td>7000</td></tr><tr><td>Concourse</td><td>7000</td></tr><tr><td>Base slab</td><td>7000</td></tr></table> <p>At Chhoti Chaupar, top slab, roof slab, concourse slab and base slab and platform slab works have been completed.</p> <p>At Badi Chaupar, top slab, roof slab, concourse slab and base slab have been completed and platform slab works have been completed.</p>	Location	Area (sqm)	Chhoti Chaupar		Top slab	7000	Roof slab	7000	Concourse	7000	Base slab	7000	Badi Chaupar		Top slab	7000	Roof slab	7000	Concourse	7000	Base slab	7000
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12	<p>Other Facilities:</p> <p>Batching Plant Laboratory RO Plant Chiller Plant Diesel Generating Set Briquette Boiler</p>	<p>Following facilities are provided at casting Yard, Bhankrota:</p> <table><tr><td>Item</td><td>Capacity</td></tr><tr><td>Batching Plant</td><td>(i) 30 cum/hr (ii) 60 cum/hr</td></tr><tr><td>Quality Control Laboratory</td><td>Installed</td></tr><tr><td>RO Plant</td><td>2 kl/hr</td></tr><tr><td>Chiller Plant</td><td>100 TR</td></tr><tr><td>Diesel Generating Set</td><td>500 KVA</td></tr><tr><td>Briquette Boiler</td><td>2 TPH</td></tr></table>	Item	Capacity	Batching Plant	(i) 30 cum/hr (ii) 60 cum/hr	Quality Control Laboratory	Installed	RO Plant	2 kl/hr	Chiller Plant	100 TR	Diesel Generating Set	500 KVA	Briquette Boiler	2 TPH	Completed.																										
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13	<p>Establishment and operation of quarry/ borrow area:</p> <p>For the construction work following material is sourced:</p> <p>Sand Aggregate Cement Steel</p>	<p>Quarry area and borrow area of construction material is as under:</p> <table><tr><td>Material</td><td>Quarry / borrow area</td></tr><tr><td>Sand</td><td>Banas</td></tr><tr><td>Aggregate</td><td>Shakun, Lakher</td></tr><tr><td>Cement</td><td>Lafarge</td></tr><tr><td>Steel</td><td>SAIL, VIZAG, TATA</td></tr></table>	Material	Quarry / borrow area	Sand	Banas	Aggregate	Shakun, Lakher	Cement	Lafarge	Steel	SAIL, VIZAG, TATA	<p>Volume of the material extracted is as under:</p> <table><tr><td>Material</td><td>Quantity (MT)</td></tr><tr><td>Sand</td><td>6006.611 107609.531</td></tr><tr><td>Aggregate</td><td>7967.843 133461.047</td></tr><tr><td>Cement</td><td>3244.050 50807.150</td></tr><tr><td>Steel</td><td>995.70 21285.041</td></tr></table> <p>* Up to date quantity</p> 	Material	Quantity (MT)	Sand	6006.611 107609.531	Aggregate	7967.843 133461.047	Cement	3244.050 50807.150	Steel	995.70 21285.041																				
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II. COMPLIANCE TO SAFEGUARDS PROVISIONS IN AGREEMENTS UNDER THE PROJECT

A. Compliance to Loan Agreement

9. The environmental and social safeguard requirements are explicit provided in the Loan Agreement 3062-IND between ADB and State of Rajasthan through the Urban Development and Housing Department (UDH) and Jaipur Metro Rail Corporation (JMRC). These loan agreement provisions and compliance status are provided in Table 2.

Table 2: Status of Compliance to Environmental Provisions of the Loan Agreement

S.N.	Environmental Provision	Compliance Status
1	<p>Schedule 4. Item 7(a):</p> <p><u>Conditions for awards of contracts, commencement of Works:</u></p> <p>7. As condition for award of any contract under the project the EA shall ensure the following:</p> <p>a. JMRC shall not award any Works contract which involves environmental impacts until JMRC incorporated the relevant provisions from the EMP and SHE into the Works contract,</p>	<p>Complied.</p> <p>SHE (Safety, Health and Environment) Manual and Environmental Management Plan (EMP) is a part of bidding document. Section 6 of Contract Agreement includes condition of contract on SHE and EMP, requiring the Contractor to implement the EMP and comply with requirements of SHE.</p>
2	<p>Schedule 4. Item 8:</p> <p><u>Conditions for award of contracts; commencement of Works:</u></p> <p>8. "As a condition for commencement of Works contract under the Project which involves environmental impacts and if it requires environmental clearances, the State thorough the JMRC shall ensure that the final approval of environmental clearances including the EIA, SHE, from appropriate <i>authority</i> has been obtained."</p>	<p>Complied.</p> <p>The project did not require environmental clearance, as railways including metro projects in India are not included in the EIA Notification 2006 of Gol.</p>
3	<p>Schedule 5. Item 3:</p> <p><u>Environment</u></p> <p>3. "The Borrower shall ensure or cause the State through JMRC to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project facilities comply with (i) all applicable laws and regulations of the Borrower and State relating to environment, health, and safety including SHE; (ii) the Environmental Safeguards; and (iii) all measures and requirements set forth in the EIA and the EMP, and any corrective or</p>	<p>Being complied.</p> <ul style="list-style-type: none"> ➤ Requirements on permits and clearance are being followed. ➤ SHE is strictly being complied with. ➤ Requirements of EIA and EMP are being implemented.

	preventative actions set forth in a Safeguards Monitoring Report.”	
4	<p>Schedule 5. Item 4(a):</p> <p><u>Land Acquisition and Involuntary Resettlement</u></p> <p>4 (a) Where the need arises, the Borrower shall ensure or cause the State through JMRC to ensure that all land and all rights-of-way required for the Project, and all Project facilities are made available to the Works contractor in accordance with the schedule agreed under the related Works contract and all land acquisition and resettlement activities are implemented in compliance with (i) all applicable laws and regulations of the Borrower and State relating to land acquisition and involuntary resettlement; (ii) the Involuntary Resettlement Safeguards; and (c) all measures and requirements set forth in the respective RP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.</p>	<p>Being complied.</p> <p>All land acquisition and resettlement activities are implemented as per provisions of Indian Law and ADB's SPS.</p>
5	<p>Schedule 5. Item 4 (b)</p> <p><u>Land Acquisition and Involuntary Resettlement</u></p> <p>4 (b) Without limiting the application of the Involuntary Resettlement Safeguards, or the RP, the Borrower shall ensure or cause the State through JMRC to ensure that no physical or economic displacement takes place in connection with the Project until: (a) compensation and other entitlements have been provided to affected people in accordance with the RP; and (b) a comprehensive income and livelihood restoration program has been established in accordance with the RP.</p>	<p>Being complied.</p> <p>Compensation and other entitlements have been provided to affected people in accordance with applicable laws by JMRC.</p>
6	<p>Schedule 5. Item 5</p> <p><u>Indigenous Peoples</u></p> <p>5. Where the need arises, the Borrower shall ensure or cause the State through JMRC to ensure that the preparation, design, construction, implementation and operation of the Project, and all Project facilities comply with (a) all applicable laws and regulations of the Borrower and the State relating to indigenous peoples; (b) the Indigenous Peoples Safeguards; and (c) all measures and requirements set forth in the respective IPP,</p>	<p>Not applicable.</p> <p>No issues on Indigenous peoples have arisen during the reporting period.</p>

	and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	
7	<p>Schedule 5. Item 6(a) & 6(b)</p> <p><u>Human and Financial Resources to Implement Safeguards Requirements</u></p> <p>6 (a) "The Borrower shall ensure or cause the State through JMRC to ensure that all necessary budgetary and human resources to fully implement the EMP, and the RP and the IPP as required"</p> <p>6 (b) "The Borrower shall ensure or cause the State through JMRC to ensure that at least one expert each is designated to supervise implementation of the EMP, and the RP and the IPP as required"</p>	<p>Being complied.</p> <p>Safeguards cell comprising of 06 officers has been established in JMRC since 2013.</p> <p>A JV of M/s Abha Narain Lambah Associates and M/s Shashank Mehendale & Associates has been engaged as Heritage Consultant through ICB.</p> <ul style="list-style-type: none"> ➤ The Heritage Consultant is to monitor the heritage structures lying along the metro route of Phase 1B. ➤ JMRC has also engaged 3 senior Archaeological Consultants to supervise the excavation of Chhoti Chaupar and Badi Chaupar. ➤ Safeguards experts are part of the PMC (DMRC) team and civil works contractor team. ➤ Adequate budget allocation has been made for implementation of safeguards activities.
8	<p>Schedule 5. Item 7(a)</p> <p><u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u></p> <p>7 (a) "comply with the measures and requirements relevant to the contractor set forth in the EIA, the EMP, SHE, the RP and the IPP as applicable (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set out in a Safeguards Monitoring Report.</p>	<p>Being complied.</p> <p>Safeguards experts are part of the PMC (DMRC) and civil works contractor teams are implementing safeguard measures. Adequate budget allocation is being made for implementation of safeguards activities.</p>
9	<p>Schedule 5. Item 7(b)</p> <p><u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u></p> <p>7 (b) "make available a budget for all such environmental and social measures"</p>	<p>Being complied.</p>
10	<p>Schedule 5. Item 7(c)</p> <p><u>Safeguards-Related Provisions in Bidding Documents and Works Contract.</u></p>	

	7 (c) “provide the JMRC with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks if any, or impacts that arise during construction, implementation or operation of the Project that were not considered in the EIA, the EMP, and the RP and the IPP if any;”	Being complied. Appropriate measures are being and will be taken to address these issues, as they arise.
11	Schedule 5. Item 8(a) <u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u> 8 (a) submit quarterly Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission”	Being complied. Quarterly Environmental and Social Monitoring Reports are being timely submitted by JMRC to ADB. The reports are also being disclosed on ADB and JMRC websites.
12	Schedule 5. Item 8(b) <u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u> 8 (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 EIA, the EMP, SHE, and RP and IPP as applicable, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan.	Being complied. 2 ancient water tanks and old canals were discovered during excavation works in Badi Chaupar and Chhoti Chaupar. Project design and schedule has been revised to protect and recreate, preserve and showcase the water tanks, art gallery and canals. The work of restoration of kund at Choti Chaupar and construction of Art Gallery is going on.
13	Schedule 5. Item 8(c) <u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u> 8 (c) Report any breach of compliance with the measures and requirements set forth in the EMP, SHE and the RP or the IPP if any, promptly after becoming aware of the breach.	Being complied.
14	Schedule 5. Item 9 9. The Borrower shall ensure or cause the State through JMRC to ensure that no proceeds of the Loan under the Project are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of ADB’s Safeguard Policy Statement (2009).	Being complied
15	Schedule 5. Item 10	Complied.

	<p><u>Other Social Measures</u></p> <p>10. The EA shall ensure that civil works contracts under the Project follow all applicable labor laws of the Borrower and State and that these further include provisions to the effect that contractors; (i) 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 (ii) follow and implement all statutory provisions on labor (including not employing or using children as labor, 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.</p>	<ul style="list-style-type: none"> ➤ Various awareness programs have been conducted during the reporting period. ➤ World Environment Day celebration/awareness campaign conducted on 5th June, 2018. ➤ HIV/AIDS awareness programs are conducted on regular basis. ➤ Health & Hygiene awareness program conducted at project sites. ➤ Fire prevention and awareness training cum mockdrill conducted on 13th April, 2018. ➤ Mass Tool Box Talk conducted every month for awareness of all workers, prizes and incentives. ➤ Monthly environmental training, physical training and general housekeeping training are conducted. ➤ Details of Awareness Programs and Meetings are provided in Appendix 2
16	<p>Schedule 5. Item 11</p> <p>11. The EA shall ensure the safety and status of the heritage sites and structures involved in the Project site at its own cost and in this regard ensure all appropriate steps included as detailed in the PAM.</p>	<p>Being complied.</p> <ul style="list-style-type: none"> ➤ In the bidding document, provision was made to conduct Baseline Building condition survey, wherein the structural stability of structures lying on 30 m on either side of the route alignment of Phase 1B was recorded so as to help monitor any changes which may occur during construction. ➤ JMRC through CEC (AIMIL) got the Building Condition Survey before commencement of work at site. ➤ For the purpose of monitoring heritage structures along with the metro route alignment of Phase 1B, JMRC has engaged Heritage Consultant M/s Abha Narain Lambah Associates and M/s Shashank Mehendale & Associates (JV). ➤ Mitigation and preventive measures are being taken up by M/s CEC in order to avoid any damage.

17	Schedule 5. Item 12 <u>Gender</u> 12. The EA shall ensure that the Project is undertaken in conformity with the stakeholder communication strategy as agreed between ADB, the Borrower, State, and JMRC and referred in the PAM.	Being complied.
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B. Compliance to Project Administration Manual

10. The Project Administration Manual³ (PAM), describes how the JMRC will implement the project and deliver the results on time, with quality, within budget, and in accordance with government and Asian Development Bank (ADB) policies and procedures. The PAM is mandatory and serves as the main document describing implementation details. The status of implementing the safeguards requirements set out in PAM are provided in Table 3.

Table 3: Compliance to PAM

SN	Details	Compliance Status
1.	Section VII. Safeguards 40. Implementation of SHE and EIA. The safeguards cell within JMRC will coordinate and ensure that all environment safeguard requirements under the project are met. The SHE and EIA report including site specific EMP will be included in the contract documents. The contractors must include in their bid adequate budget for implementation of all items in the SHE and EIA. The safeguards cell through the project management consultant (Delhi Metro Rail Corporation) will monitor and report on the environmental compliance of contractors with the SHE and EIA and ensure proper implementation of the grievance and redress mechanism. Key implementation activities for each stage of the project are as follows:	Being complied. Sample monthly monitoring report is provided in Appendix 3.
2.	(i) Pre-construction: All contractors will complete the following activities no later than 30 days from the issuance of Notice to Proceed: 1. Submit appointment letter and resume of the Contractor's Health and Safety Officer (HSO) who will be the on-site focal person for environment safeguards;	Complied.
	2. HSO will engage CSC-Environment Specialist, and JMRC safeguards cell to a meeting to discuss in detail the SHE and EIA seek clarification and recommend corresponding revisions if necessary;	SHE and EIA have been discussed in detail by HSO with CSC-Environment Specialist, and JMRC safeguards cell.

³<http://www.adb.org/sites/default/files/project-document/79731/46417-001-pam.pdf>

SN	Details	Compliance Status
	3. HSO will request CSC-ES copy of monthly monitoring formats and establish deadlines for submission;	Formats for Monthly Monitoring Reports have been finalized with CSC-Environment Specialist. Monitoring report is being sent on monthly basis in prescribed format.
	4. HSO will submit for CSC-ES approval an action plan to secure all permits and approvals needed during construction stage such as for operation of crushers and hot mix plants, transport and storage of hazardous materials, waste disposal sites, use of ground water etc.	HSO has submitted plan and action is being taken accordingly.
	5. HSO will submit for approval of CSC-ES the construction camp layout before its establishment where camps are required, and	Camp has been constructed as per approved layout diagram.
	6. Before start of construction, the contractor will post signs in and around the construction site with information on the names, positions, contact numbers, and addresses of key people for receiving grievances	Adequate relevant signage has been displayed. Photolog is in Appendix 1 .
3.	<p>(ii) Construction:</p> <p>The JMRC safeguards cell through the PMC will monitor the Contractor's compliance to the SHE and EIA. In case of non-conformances, the safeguards cell will recommend corrective measures and ensure their timely implementation. If any unanticipated impacts become apparent, the safeguards cell will inform ADB. If required the EIA report will be updated, and mitigation measures and resources to address the new impacts will be identified</p>	Being complied.
4.	<p>(iii) Post-construction:</p> <p>The safeguards cell through the PMC will certify works completed in accordance with SHE and EIA and ensure all construction sites are satisfactorily rehabilitated and restored or otherwise recommend withholding of payments</p>	<p>Not yet due.</p> <p>Will be done in accordance with SHE & EIA.</p>
5.	<p>41. PMC Environmental Specialist:</p> <p>JMRC will ensure PMC (Delhi Metro Rail Corporation) to provide an Environmental Specialist who will, full time during construction, to monitor compliance by the contractor to the SHE and EIA in support of JMRC safeguard cell. The key qualification and experience consist of (a) minimum of a Master's Degree in Environmental Impact Assessment (EIA) or Environmental Engineering correlated subjects; and (b) experience of minimum of 5 years of working experience in conducting Environmental Assessments, implementing and/or supervising environment management activities in infrastructure projects. The objective is to ensure contractor's compliance to the Safety Health and Environment (SHE) Guidelines and EIA in accordance with the requirements of the ADB Safeguard Policy Statement (SPS) 2009 as well as</p>	<p>Complied.</p> <p>Mr. S.A. Verma, GM/DMRC Delhi is designated by PMC as its Environmental specialist to monitor compliance by the Contractor for SHE and EIA. His assistants are doing full time monitoring in Jaipur.</p>

SN	Details	Compliance Status
	relevant policies of the Government of India. The main output is the Quarterly monitoring report during the construction period. The responsibilities include:	
6.	<ul style="list-style-type: none"> Review EIA report including site specific EMP and SHE guidelines to understand the environmental issues in the project area and mitigation and monitoring requirements of the project. 	<p>Complied.</p> <p>EIA, EMP and SHE guidelines have been reviewed.</p>
	<ul style="list-style-type: none"> Update the site specific EMP if there are any significant changes in the project scope or environmental conditions to incorporate all new environmental issues and mitigation measures 	<p>Being complied.</p> <p>EMP will be updated as per requirements.</p>
	<ul style="list-style-type: none"> Prepare monitoring checklists/ templates for daily or weekly monitoring on implementation of the SHE and site specific EMP by the contractor. 	<p>Complied.</p> <p>Site specific monitoring checklists/ templates for daily or weekly monitoring on implementation of the SHE and EMP has been prepared.</p>
	<ul style="list-style-type: none"> Organize a consultation meeting with JMRC safeguards cell, contractors Health and Safety Officers (HSO), Site Engineer and Heritage Expert before the start of physical works to clarify roles and responsibilities of each party. After start of physical works organize a coordination meeting at least every quarter to provide updates, clarify and follow up on pending issues etc. 	<p>Being complied.</p> <p>A consultation meeting between JMRC's Safeguard Cell, Contractor, Health and Safety Officers (HSO), Site Engineer and Heritage Expert held before the start of physical work to clarify roles and responsibilities of each party.</p> <p>Coordination meetings in between JMRC's Safeguard Cell, Contractors, Health and Safety Officers (HSO), Site Engineer and Heritage Expert are being held regularly.</p>
	<ul style="list-style-type: none"> Where necessary organize technical training programs to enhance the field level staff's understanding on environmental issues such as health impacts of dust and noise, waste/debris disposal and management, safety issues etc. 	<p>Being complied.</p> <p>Environmental training programs are conducted on regular basis. The training is conducted by contractor's HSO. If required additional training will be provided by third party agencies on environmental issues. Details of training sessions are provided in Appendix 2.</p>
	<ul style="list-style-type: none"> Monitor implementation of the SHE and site specific EMP by the contractor on a daily or weekly basis. In doing so complete the daily or weekly monitoring checklists. 	<p>Being complied.</p> <p>Monitoring of implementation of SHE and site specific EMP are being done by Contractor's HSO on regular basis. SHE meeting is held with participation from JMRC, DMRC and Contractor and sub-contractors to ensure compliance and implementation of SHE requirements and EMP.</p>
	<ul style="list-style-type: none"> Provide site based technical advice to the contractors where necessary during construction activities 	<p>Site based technical advice to the contractors is being given by DMRC experts.</p>
	<ul style="list-style-type: none"> Co-ordinate with the contractor's site engineers on monitoring and data collection on noise and vibration generated during tunnelling works and operation of heavy machinery 	<p>PMC's environment team is coordinating with contractor's site engineers on monitoring and data collection on noise and vibration generated during operation of heavy machinery. It will also be monitored during tunneling works.</p>

SN	Details	Compliance Status
	<ul style="list-style-type: none"> Coordinate with the Heritage Expert on getting data on monitoring and status of heritage structures above ground. 	PMC's environment team is coordinating with the Heritage Expert on getting data on monitoring and status of heritage structures above ground.
	<ul style="list-style-type: none"> Facilitate the functioning of the Grievance Redress Mechanism and maintain proper records of all environment related grievances and details on how they were addressed. 	A system is in place to facilitate the functioning of the Grievance Redress Mechanism and maintain proper records of all environment related grievances and details on how they are addressed.
	<ul style="list-style-type: none"> Prepare quarterly Environmental Monitoring reports based on monitoring site visits, completed checklists and quarterly meetings for submission to JMRC safeguards cell and ADB. Amongst other environment safeguard issues, the monitoring report must cover: <ul style="list-style-type: none"> ➤ compliance to the SHE and site specific EMP by the contractor ➤ vibration monitoring activities conducted by contractor's engineers ➤ grievances redress mechanism ➤ monitoring and status of heritage sites above ground 	Being complied. <ul style="list-style-type: none"> ➤ For compliance of the SHE and site specific EMP by the contractor regular visit is being done by the Environmental team of CSC. ➤ For monitoring of the vibration during the construction instrumentation has been done by M/s CEC as per approval given by CSC. The monitoring was carried out by a third party agency i.e. M/s. AIMIL. ➤ Grievances redress mechanism is in place. ➤ For monitoring the status of heritage site above the ground a Heritage Consultant i.e. M/s Abha Narain Lambah Associates and M/s Shashank Mehendale and Associates (JV) has been appointed by JMRC. During the tunneling the team of heritage consultant will be at site to monitor the status of buildings and heritage structures along the metro route.
7.	42. Monitoring of Heritage Structures <p>JMRC through DMRC will retain at its own cost the current Heritage architect as the Heritage site expert during construction of the underground metro section. The expert will be responsible for conducting a baseline survey of heritage sites above the metro alignment and conducting regular monitoring of the status of the heritage sites throughout the construction period. The expert will be responsible for coordinating necessary procedures if any historical/traditional artefacts are found during tunneling works. He/she will also provide advice on technical measures during construction to prevent damages to the heritage structures. In the event of any damage to a heritage structure he/she will immediately alert JMRC and recommend appropriate mitigation or restoration measures. Key outputs are: (a) Monthly monitoring report; (b) No damage on heritage structures; and (c) in the event of damage, implementation of immediate restoration and mitigation measures. The main responsibilities are:</p>	Being complied. <ul style="list-style-type: none"> ➤ JMRC through competitive bidding has engaged heritage consultant M/s Abha Narain Lambah Associates and M/s Shashank Mehendale & Associates (JV) to monitor the heritage structures lying along the metro route of Phase 1B. ➤ JMRC has also engaged 3 senior Archaeology Consultants to supervise the excavation of Chhoti Chaupar and Badi Chaupar. ➤ Heritage Consultant conducted baseline survey for existing building's condition along the metro route and has submitted Building Inventory report. ➤ Structural survey of buildings along the metro route has also conducted and submitted report, wherein they categorized buildings under 3 categories <ol style="list-style-type: none"> 1. Unstable structures requiring preventive propping and immediate demolition/evacuation.

SN	Details	Compliance Status
		<p>2. Part of structure unstable requiring propping & partial replacement /demolition.</p> <p>3. No major instability.</p> <p>These reports have been shared with ADB and concerned local agency who will be further taking necessary action.</p> <p>A reevaluation for the structural condition of the shops along Chandpole launching site (from Chandpole gate to Chhoti Chaupar) was conducted by the Joint team of JMRC, DMRC and M/s CEC engineers. Preventive measures like propping of the verandahs and the shops along the above length have been taken by contractor. The consolidated list of unstable structures requiring immediate attention will be further shared with local agency (Jaipur Municipal Corporation) for further course of action. In order to give back the lost historical layer back to people of Jaipur, JMRC is reinstating the discovered heritage tank back to their original location at Chhoti and Badi Chaupar.</p>
8.	<ul style="list-style-type: none"> At least one month before the start of construction activities, conduct a baseline survey of all heritage structures above the metro alignment and record detailed information including, but not limited to: list of heritage structures with details on location and distance from the metro alignment, exact height of structures above ground, existence of cracks/damages prior to start of construction, detailed photographs etc. Monitor the condition of the heritage structures on a monthly basis throughout the construction period and compare the status with the baseline status to ensure that there are no changes from the baseline condition. Coordinating necessary procedures if any historical/traditional artifacts are found during tunnelling works. Provide advice on technical measures during construction to prevent damages to the heritage structures. In the event of observation in any damage to any heritage structure/s immediately alert JMRC and recommend appropriate mitigation or restoration measures. Provide technical advice on and supervise the mitigation or restoration activity. 	<p>Complied.</p> <ul style="list-style-type: none"> ➤ Before the start of construction activity, Building Condition Survey of all structure along the metro route with photograph of existing cracks and damages was conducted by CEC through AIMIL. ➤ Before the start of construction activity, Baseline Survey of all the structure along the metro route with detailed photographs was conducted by Heritage Consultant i.e. M/s Abha Narain Lambah Associates and M/s Shashank Mehandale and Associates (JV). ➤ Based on literature review of the historical background of the city, during the excavation for station work at Chhoti Chaupar and Badi Chaupar, two ancient water tanks were discovered below Chhoti Chaupar and Badi Chaupar. Under the guidance of the Archaeology Department, the ancient water tanks were manually removed and preserved and will be used to recreate the water tank in Chhoti Chaupar and Badi Chaupar in its original location ➤ Based on the reports and survey submitted by Heritage consultant, CEC is regularly

SN	Details	Compliance Status
	<ul style="list-style-type: none"> • Prepare a monitoring report on a monthly basis to record activities implemented and monitoring findings and submit to JMRC safeguards cell as well the Environmental Specialist. Findings of the report will be included in the quarterly environmental monitoring report that will be prepared by the environmental specialist. 	<p>monitoring status of buildings and the status is reported through daily and weekly reports.</p> <ul style="list-style-type: none"> ➤ Heritage Consultant entrusted to advice on measures during construction to prevent damages to the heritage structures. ➤ Heritage Consultant is submitting monitoring report on monthly basis to record activities implemented and monitoring findings to JMRC.
9.	<p>Section VII- Safeguards</p> <p>b) Social – Involuntary resettlement.</p> <p>44. If any changes or additional land requirements or involuntary resettlement impacts are identified, a resettlement plan will be prepared in accordance with the <i>ADB Safeguard Policy Statement (2009)</i> and the same is further approved by ADB before award of related civil works contract and implemented before commencement of the relevant section of the civil works contract as applicable.</p>	<p>Being complied.</p> <p>Previously the shops from Sanjay Circle were shifted across the road near Church land and compensated for the loss of business during the shifting period. The shops are routinely into business now.</p> <p>6 Temples at Chhoti Chaupar, which were infringing the station box area have all been rehabilitated and shifted to a newly constructed Temple complex at Old Atish market land as per the satisfaction of Temple Trusts.</p> <p>Government is continuously in touch with the stakeholders and is in process of ensuring that sentiments of people at large are not hurt. Rozgareshwar Temple at Chhoti Chaupar will be relocated back to its original position after completion of Station work at Chhoti Chaupar.</p> <p>7 temples at Badi Chaupar have been identified which are infringing the station box area. 5 temples have been shifted to Manak Chowk Thana and 2 temples at TanwarjiKaNauhra.</p> <p>For the approach road to Ancillary Building at Badi Chaupar to facilitate entry of equipment and machinery, one temple has been shifted/relocated on 06.05.2018 with the help of District Administration.</p>
10	<p>Section VII - Safeguards</p> <p>c) Social – Indigenous people</p> <p>45. In case of any adverse impacts if identified during implementation on indigenous people, the JMRC will ensure that the Indigenous Peoples Plan (IPP) is prepared in accordance with the <i>ADB Safeguard Policy Statement (2009)</i> and the same is further approved by ADB before award of related civil works contract and implemented before commencement of the relevant section of the civil works contract as applicable.</p>	<p>Not Applicable.</p>

SN	Details	Compliance Status
11	<p>Section VIII - Gender and Social Dimensions</p> <p>47 Gender consultation and participation</p> <p>Meaningful consultations that are gender inclusive and responsive will be carried out as early as in the project preparation stage and will be carried out on an ongoing basis throughout the project cycle.</p> <p>JMRC shall ensure that the bidding documents provide clauses to ensure that all civil works contractors comply with labor laws by not employing child labor; encouraging the employment of the poor, particularly women; and not offering different wages to men and women on work of equal value.</p>	<p>Being Complied.</p> <p>This provision is a part of the bidding document.</p>
12	<p>Section VIII - Gender and Social Dimensions</p> <p>49. HIV and AIDS</p> <p>JMRC will ensure that all civil works contractors (i) carry out awareness programs for labor on the risks of sexually transmitted diseases/AIDS and human trafficking; and (ii) disseminate information at worksites on the risks of sexually transmitted diseases and HIV/AIDS as part of health and safety measures for those employed during construction. Contracts for the project will include specific clauses on these undertakings, and compliance will be strictly monitored by JMRC.</p>	<p>Complied.</p> <p>Periodically, awareness about HIV/AIDS is discussed in morning tool box talk and apart from this the medical officer visits the labour camp and explains the risk of sexually transmitted disease on periodic basis.</p>
13	<p>Section VIII - Gender and Social Dimensions</p> <p>50. Health.</p> <p>JMRC shall ensure that contractors provide adequately for the health and safety of construction workers and further ensure that bidding documents include measures on how contractors will address this, including an information and awareness raising campaign for construction workers on sexually transmitted diseases, HIV/AIDS, and human trafficking.</p>	<p>Complied.</p> <p>Various type of awareness programme has been conducted during this period. Apart from this monthly environmental training, physical training and general housekeeping training are conducted in line with India Government's Swatch Bharat Abhiyan.</p>
14	<p>Section VIII - Gender and Social Dimensions</p> <p>51. Labor</p> <p>JMRC shall ensure that:</p> <ul style="list-style-type: none"> i. civil works contractors comply with all applicable labor laws and regulations, do not employ child labor for construction and maintenance activities, 	<p>Complied.</p> <ul style="list-style-type: none"> ➤ Civil work contractor is complying with all applicable labour laws and regulations. ➤ No child labour is employed.

SN	Details	Compliance Status
	<p>and provide appropriate facilities for women and children in construction campsites;</p> <p>ii. people directly affected by the projects are given priority to be employed by the contractor;</p> <p>iii. contractors do not differentiate wages between men and women for work of equal value; and</p> <p>iv. specific clauses ensuring these will be included in bidding documents. The construction supervision consultants monitor the provisions.</p>	<ul style="list-style-type: none"> ➤ Preference is being given to people directly affected by the project. ➤ Complying with Equal Remuneration Act. ➤ Specific clause for ensuring labour law etc. has been included in the bidding document.
15	<p>Section IX - Performance Monitoring, Evaluation, Reporting and Communication</p> <p>B. Monitoring.</p> <p>Disclosure of Environmental Assessments and Monitoring Reports</p> <p>ADB and JMRC will disclose on their respective websites the EIA Report. The quarterly monitoring reports will also be disclosed on the ADB website.</p>	<p>Being complied.</p> <p>EIA report has been disclosed on ADB and JMRC websites.</p> <p>Also 1st Semi Annual and subsequent Quarterly Environmental and Social Monitoring Reports are also disclosed on ADB and JMRC websites (www.adb.org and www.jaipurmetrorail.in)</p> <p>This is the 14th quarterly report (April 2018 –June 2018) on environmental and social safeguards compliance.</p>
16	<p>Section IX - Performance Monitoring, Evaluation, Reporting and Communication</p> <p>B. Monitoring</p> <p>55. Safeguards monitoring - Resettlement</p> <p>If impact is identified during project implementation, a monitoring system will be established based on the ADB <i>Safeguard Policy Statement (2009)</i> and Government of India regulations.</p>	<p>Being complied.</p> <p>All resettlement and relocation issues have been settled on mutually agreed terms between JMRC and affected parties.</p>
17	<p>Section IX - Performance Monitoring, Evaluation, Reporting and Communication</p> <p>B. Monitoring</p> <p>56. Indigenous People</p> <p>If impact is identified during project implementation, a monitoring system will be established based on the ADB <i>Safeguard Policy Statement (2009)</i> and Government of India regulations.</p>	<p>No impact is identified.</p>
18	<p>Section IX - Performance Monitoring, Evaluation, Reporting and Communication</p> <p>B. Monitoring</p>	<p>Being complied</p>

SN	Details	Compliance Status
	<p>58. Grievance Redress Mechanism</p> <p>Grievances related to the implementation of the project, particularly regarding the land acquisition and R&R will be acknowledged, evaluated, and responded to the complainant with corrective actions. Any grievance regarding the land acquisition and R&R is received by OSD (Land), JMRC and is addressed through the decision of the "Negotiation Committee".</p>	<p>JMRC regularly conducts meetings with project affected people and maintains proper documentation to track their redressal. The details are at Table 12 in this report.</p>

C. Compliance to the Civil Works Contract Agreement

11. The contractor is liable to comply with the safeguards clauses included in the contract agreement. Table 4 below provides an update on the status of safeguards compliance by the civil works contractor.

Table 4: Compliance to the safeguards Clauses of the Civil Work Contract

S.N.	Description	Compliance Status
1	<p>GCC Sub Clause 4.8</p> <p>Safety Procedures</p> <p>The Contractor shall:</p> <ul style="list-style-type: none"> a) comply with all applicable safety regulations, b) take care for safety of all persons entitled to be on the Site, c) use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons, d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Employer's Taking Over], and e) Provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and the owners and occupiers of adjacent land. 	<p>Being complied.</p> <p>Contractor is taking adequate measures to comply with regulations on safety of workers.</p>
2	<p>GCC Sub-Clause 6.7</p> <p>Health and Safety</p> <p>The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.</p>	<p>Being complied.</p> <p>Contractor is taking measures as per the provision of SHE, which is also a part of bidding document.</p> <p>A medical room has been established at site with all basic facilities. Around the clock ambulance facility is also available at site.</p>

S.N.	Description	Compliance Status
	<p>The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to Issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.</p> <p>The Contractor shall send, to the Engineer, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.</p>	<p>The contractor has tie-up with five hospitals viz, Rawal Hospital& Metro Mass Hospital, Bhankrota near casting yard, Asian Hospital, near tunnel site, Amar jain Hospital and SMS Hospital for any emergencies. Emergency mock drill is conducted on monthly basis each site to check the efficacy of the system.</p> <p>HSO is also working as accident prevention officer.</p> <p>Being complied.</p>
	<p>PCC Sub-Clause 4.8 and 6.7</p> <p>Safety Procedures and Health & Safety "The Contractor shall throughout the execution of the Works including the carrying out of any testing, commissioning (including Integrated Testing and Commissioning), or remedying of any defects:</p> <ul style="list-style-type: none"> (a) take full responsibility for the adequacy, stability, safety and security of the Works, Plant, Rolling Stock, Contractor's Equipment, Temporary Works, operations on Site and methods of manufacture, installation, construction and transportation; (b) have full regard for the safety of all persons on or in the vicinity of the Site (including without limitation persons to whom access to the Site has been allowed by the Contractor), comply with all relevant safety regulations, including provision of safety gear, and insofar as the Contractor is in occupation or otherwise is using areas of the Site, keep the Site and the Works (so far as the same are not completed and occupied by the Employer) in an orderly state appropriate to the avoidance of injury to all persons and shall keep the Employer indemnified against all injuries to such persons; (c) provide and maintain all lights, guards, fences and warning signs and watchmen when and where necessary or required by the Engineer or by laws or by any relevant authority for the protection of the Works and for the safety and convenience of the public and all persons on or in the vicinity of the Site; and (d) where any work would otherwise be carried out in darkness, ensure that all parts of the Site where work is being carried out are so lighted as to ensure the safety of all persons on or in the vicinity of the Site and of such work. 	<p>Being complied.</p> <p>Adequate health and safety measures are being implemented as per the provision of SHE, which is also a part of bidding document.</p>

S.N.	Description	Compliance Status
	<p>Contractor is required to take note of all the necessary provisions in Employer's Safety, Health and Environment Manual (SHE Manual) and the Contractor's price shall be inclusive of all the necessary costs to meet the prescribed safety standards.</p> <p>Precaution shall be taken by the Contractor to ensure the health and safety of his staff and labour. The Contractor shall, in collaboration with and to the requirements of the local health authorities, ensure that medical staff, first aid facilities, sick bay and ambulance service are available at the accommodation and on the Site at all times, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as per the Engineer's requirement and will ensure complete compliance with relevant clauses of Employer's Health, Safety and Environment Manual (SHE Manual).</p> <p>The Contractor's Site Safety Plan shall be developed from his Outline Safety Plan as per Employer's Requirements and SHE Manual of the Employer. The Contractor shall appoint a member of his staff at the Site to be responsible for maintaining the safety, and protection against accidents, of personnel on the Site. This person shall be qualified for his work and shall have the authority to issue instructions and take protective measures to prevent accidents.</p>	
	<p>Safety Precautions</p> <p>Within 8 weeks of the date of Notice to Proceed, the Contractor shall submit a detailed and comprehensive contract-specific Site Safety Plan based on the Employer's Safety, Health and Environmental Manual (SHE Manual). The Contractor is required to make himself aware of all the requirements of the Employer's Safety, Health and Environmental Manual in this regard and comply with them. The Site Safety Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with Sub-Clauses 4.8 and 6.7 of the General Conditions of Contract.</p>	<p>Being complied.</p> <p>Contractor has submitted site specific Safety plan and the same have been approved by CSC.</p>
	<p>GCC Sub-Clause 4.18</p> <p>Protection of the Environment</p> <p>The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and</p>	<p>Being complied.</p>

S.N.	Description	Compliance Status
	<p>to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.</p> <p>The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values indicated in the Employer's Requirements, and shall not exceed the values prescribed by applicable laws.</p>	
	<p>PCC Sub-Clause 4.18</p> <p>Protection of the Environment</p> <p>The Contractor shall be responsible and liable for any stoppage, closure or suspension of the works due to any contravention of statutory requirements relating to the protection of the environment and shall indemnify and keep indemnified the Employer in this regard.</p> <p>The Contractor's Site Environmental Plan shall be developed from his Employer's Safety, Health and Environmental Manual (SHE Manual), as per the Employer's Requirements and Special Conditions of Contract. Nothing extra shall be payable to the Contractor on this account and his Bid price shall be inclusive of expenditure required to be incurred for working as per SHE Manual.</p> <p>Outline Environmental Plan means the environmental plan forming part of the Tender, setting out, in summary form, the Contractor's proposed means of complying with his obligations in relation to environmental quality. Site Environmental Plan means the site environmental plan including all supplements thereto, or any amended or varied version thereof, as submitted by the Contractor in accordance with Employer's Safety, Health and Environmental Manual (SHE Manual), this Clause and which has received the Engineer's consent. The Site Environmental Plan shall include detailed policies, procedures and regulations which, when implemented, will ensure compliance with this Clause. The Contractor is required to make himself aware of all the requirements of the Employer's SHE Manual in this regard and comply with them.</p> <p>Within 8 weeks of the date of the Notice to Proceed, the Contractor shall submit a detailed and comprehensive Site Environmental Plan based on the Employer's Safety, Health and Environmental Manual (SHE Manual), and shall include such further material, which the Contractor considers necessary and relevant.</p>	<p>Being complied.</p>

S.N.	Description	Compliance Status
	<p>Upon the Engineer notifying his consent to the Site Environmental Plan, or any supplemental part thereof, the Contractor shall adhere to the principles and procedures contained in such document save to the extent that the Engineer may give his consent to any amended or varied version thereof.</p> <p>The Contractor shall provide all necessary access, assistance and facilities to enable the Engineer and the Employer to monitor and conduct tests to verify that the Site Environmental Plan is being properly and fully implemented.”</p>	

III. COMPLIANCE TO THE ENVIRONMENTAL MANAGEMENT PLAN

12. The environmental management plan (EMP) for the project was provided in Annexure 4 of the EIA report and also attached to the contract documents. As per EMP, five (05) environmental management activities were required to be implemented during the pre-construction stage (PC 1 – PC5); ten (10) activities are required to be implemented during the construction stage (C1.0 – C1.4, C.1.4.1 and C2 – C6); and three (03) activities are required to be implemented during the operation stage (O1 – O3). Table 5 lists out the status of activities during the pre-construction and construction stage as of June 2018.

Table 5: Status of Compliance to the EMP

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
PRE-CONSTRUCTION STAGE					
PC1	Contractor Preparatory Works (Upon issuance of Notice to Proceed)	The Contractor will complete the following activities no later than 30 days upon issuance of Notice to Proceed			
		1) Submit appointment letter and resume of the Contractor's Health and Safety Officer (HSO) and environmental focal person to CSC.	Yes. Mr. Raj Kishor Pandey has been appointed as Contractor's HSO after the approval of CSC and he is working full time on site.		
		2) HSO will engage CSC-Environment Specialist to a meeting to discuss in detail the EMP, seek clarification and recommend corresponding revisions if necessary	Yes. EMP and SHE have been discussed with CSC-Environment Specialist.		
		3) HSO will request CSC-ES copy of monthly monitoring formats and establish deadlines for submission.	Yes. Formats and schedule of monthly monitoring reports has been finalized. Sample attached in Appendix 3 & 4.		
		4) HSO will submit for CSC-ES approval an action plan to secure all permits and approvals needed to be secured during construction stage which include but not limited to-	Yes.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		i). operation of crushers and hot mix plants,	Yes. No crushers and hot mix plant have been established by contractor.	Consent to Operate (CTO) batching plant has been obtained from Rajasthan State Pollution Control Board on 09.01.2017 Appendix 6.	
		ii) transport and storage of hazardous materials (e.g. fuel, lubricants, explosives),	Yes	Application for securing authorization for storage and handling of hazardous waste at site is under process	
		iii) waste disposal sites and disposal management plan,	➤ Yes complied	<p>➤ Jaipur Development Authority has allotted following soil disposal sites vide letter dated 01.09.2014</p> <ol style="list-style-type: none"> 1. Mathuradaspora 2. Nahargarh Biological park 3. JDA park, Hathigaon <p>➤ Jaipur Nagar Nigam has allotted following soil disposal sites vide letter dated 08.09.2014/ 18.04.17/31.03.17/24.04.17/17.05.17/20.04.17</p> <ol style="list-style-type: none"> 4. Amer Fire station 5. 4thBattalion, Chainpura 6. Rajasthan Police Academy 7. Policeline, Sanganer <p>Jaipur Development Authority has allotted for dumping C&D waste at Khasra No.-1, Area 41.08</p>	

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
				Bigha situated at revenue village, Malpura Choud, Tehsil, Jaipur	
		iv) temporary storage locations,	Yes		
		v) water use, and	Permission has been obtained from state authority for extraction of ground water for drinking purpose at Chhoti Chaupar.	Application for extraction of ground water for construction purpose has been submitted to authority. Currently, water demand is met from extraction of ground water and also through water tankers supplied by private agencies.	
		vi) emission compliance of all vehicles. Arrangements to link with government health programs on hygiene, sanitation, and prevention of communicable diseases will also be included in the action plan.	Yes.		
		5) HSO will submit for approval of CSC-ES the construction camp layout before its establishment.	Yes, Construction camp has been established as per approved layout plan.		
PC2	Coordinate with the Jaipur Development Authority on Traffic Management Plan to avoid	The Contractors will discuss and coordinate the implementation of the traffic re-routing scheme particularly in Chhoti Chaupar and Badi Chaupar when it starts	Yes. The traffic diversion/management plan is in place in coordination with government agencies (Traffic department etc) for necessary permission as and when required.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
	nuisance from traffic congestion	<p>the cut and cover activities and the hauling and disposal of excavated materials to the Ambabari village.</p> <p>At the minimum, the traffic management plan will have the following components: construction traffic, ensuring access to properties, accommodating pedestrians, parking, access by construction vehicles, faulty traffic lights and problem interchanges, use of public roads, parking provision during construction, use of residential streets and traffic diversion due to temporary road closures, and construction and use of temporary access roads.</p>			
PC3	Community Liaison to avoid complaints and/or address complaints if any	<p>To ensure that ongoing feedback is provided on the progress of the JMRP together with feedback on the environmental management performance of the project.</p> <p>Contractor will provide a minimum of two (2) weeks notification to directly affected</p>	Yes. Details in Table no. 12		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		residents, businesses and other relevant groups of the intended construction commencement date. In providing a mechanism for communication between the contractor and the community and informing the public of construction details (timing, expected impacts), the concessionaire will undertake consultation and information activities.			
PC4	Ground staking to address chance find of artifacts	At least 30 days before the start of tunneling, the Contractor with supervision from the Archeology Department will employ a ground penetrating radar (GPR), detect the presence of buried artifacts along the tunnel alignment. The Contractor, in behalf of the JMRC, will coordinate with the Archeology Department to designate an on-site representative during the entire duration of the project.	Yes. GPR survey was conducted in April 2015 and the report was submitted and uploaded on JMRC website https://www.jaipurmetrorail.in/pdf/2015.04.16%20GPR%20Recieved%20from%20CEC.pdf JMRC is coordinating with Archeology Department for excavation work.		
PC5	Briefing on working near heritage resource to avoid damages to heritage	All workers will undergo a briefing with the Archeology Department to ensure safeguarding of heritage resource and	Yes. Briefing has been carried out by the Archaeological Consultant namely Mr. R.D. Singh, Dr. S.K. Sharma and Mr. P.K. Jain engaged by JMRC on regular basis.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
	resources and avoid cultural conflicts	cultural/religious practices. A proof of compliance to this requirement to include the name of participants and date and location of briefing will form part of the monthly report to the CSC.			
		CONSTRUCTION STAGE			
C1.0	Avoid damage to the following heritage resources during tunnel boring namely Chandpole Gate, IsarLat, Jantar Mantar, Hawa Mahal, Chhoti Chaupar, and Badi Chaupar.	No heritage resources are inadvertently damaged during construction.	Yes. No heritage resources have been damaged at all during construction.	Complying through instrumentation & online monitoring of structures of historic importance.	
C1.1	To avoid ground settlement under the Chandpole Gate during tunnel boring	The contractor will ensure that no inadvertent damage is incurred to the Chandpole gate. Estimated settlement under the Chandpole gate is less than 5mm. The contractor will ensure that the design value is not exceed and the trigger value = 4 mm and Alarm value = 5 millimeters are implemented.	Yes. Complied ➤ Under passing scheme prepared by M/s Omikron Kappa, of Greece, structural consultant of M/s CEC has been proof checked by M/s Ayesa of Spain. ➤ Structural consultant of Heritage consultant has also given his comments on the underpassing scheme of M/s CEC. ➤ Under passing scheme of Chandpole gate has also been proof checked by IIT Delhi. ➤ Work has been done as per approved method statement & GCC ➤ Settlement at Chandpole gate was found to be -3mm, which is less than 3.5mm		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		<p>Tilt meters will be installed at key positions on the gate to ensure the 2/1000 design value is observed with trigger and allowable values of 1.4/1000 and 1.7/1000, respectively</p> <p>Crack meters will be installed at key positions to ensure design value of 3.0mm is not exceeded with 3 mm trigger value and 5 mm alarm value</p> <p>The contractor will immediately cease all operation if any of the trigger values are breached. The CSC will advise the contractor mitigation measures and practices to control settlement, tilt, and cracks to include but not limited to structural reinforcement and operation parameters of the TBM.</p> <p>The contractor will ensure that no structural damage is incurred and cosmetic damages are repaired under the supervision and control of the Jaipur Archeology Department.</p>	Monitoring Results for all Geotechnical instruments installed during the passing of TBMs under Chandpole gate were within the design limits. The maximum observed settlements under Chandpole gate was -3 mm.		
C1.2	To avoid cosmetic and structural damages to the	Expected vibration at the Chandpole Gate during tunneling is 0.682 mm/s which is lower than	Complied.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
	structures along the underground metro alignment along Chandpole Bazar and Tripola Bazar due to vibration from the tunnel boring machine	internationally accepted 5mm/s. However, to be on the safe side and as practice in DMRC, the Contractor is to ensure that vibration levels at the Chandpole Gate foundation will not exceed.	The observed vibration levels at the Chandpole Gate foundation during the passing of TBMs were within the trigger limit.		
C1.3	To minimize surface noise from excavating equipment in Chhoti and Badi Chaupar and avoid disturbance to patients in the Pink City Hospital near Chandpole, Chaudhary Hospital, Maharaja School at the corner of ChhotiChaupar . To avoid damage and nuisance to JantarMantar, and HawaMahal.	The contractor will ensure that noise from construction activities does not result to exceedances of relevant limits prescribed in the Indian Ambient Air Quality Standards for Commercial Area and Silence Zone. Mitigation measures to be implemented by the Contractors are: 1) liaise with local residents on how to best minimize construction noise along the Chhoti and BadiChaupars. 2) local residents and shop owners should be informed of the nature and duration of intended activities prior to commencement and kept updated as to changes in the	Yes, Only newly manufactured equipment & regular servicing of equipment is being used in construction. Noise monitoring is being done and necessary mitigation measures are taken as required.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		<p>management and mitigation plan</p> <p>3) equipment compounds will be located off-site</p> <p>4) noise barriers will be installed at critical work areas particularly around the Chaupars</p> <p>5) enclose especially noisy activities if above the noise limits</p> <p>6) employ transportable noise screens between noise sources and identified noise sensitive areas for the duration of noisy construction activities</p> <p>7) maximize the possibility of scheduling noisy activities at the same time to minimize the duration of exposure</p> <p>Noise from vehicles particularly for hauling of excavated materials to the dump site will be controlled through strict adherence to operating and maintenance instructions, routing of heavy vehicles away from noise sensitive areas whenever possible,</p>			

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		conform with speed limits, and construction vehicles will only use routes specified in the traffic management plan.			
C1.4	To ensure careful demolition and proper restoration of Chhoti and Badi Chaupars	The project calls for the demolition of the Chhoti and Badi Chaupar and its restoration to its original condition as a requirement from Jaipur Development Authority. The demolition and restoration will be under the supervision and control of these agencies.	Yes, ➤ JMRC through competitive bidding has engaged heritage consultant M/s Abha Narain Lambah Associates and M/s Shashank Mehendale & Associates (JV) to monitor the heritage structures lying along the metro route of Phase 1B. ➤ JMRC has also engaged 3 senior Archaeology Consultants to supervise the excavation of Chhoti Chaupar and Badi Chaupar. ➤ The work will be done as per approved method statement. Also the work will be done under the supervision of said agencies.		
C1.4.1	To address Chance heritage finds during the cut and fill operations	Please refer to FIDIC Sec. 4.24 Fossils. Recording (including chain of custody) will be made by the contractor to be validated by the CSC, and expert verification will be made by the Jaipur Archeology Department. Temporary work stoppage in the immediate area of the chance find for up to 72 hours to allow for the on-site representative of Archeology Department to visit the site to make an assessment and provide instructions. Work in the areas adjacent to the chance find will continue as	Yes During the excavation of Chhoti Chaupar and Badi Chaupar, ancient water tanks and Gomukhs were discovered. These were extracted and handed over to Archeological & Museum Dept., Government of Rajasthan. The Project station design was adjusted to accommodate the re-instatement of the water tank in Choti Chaupar. The project scope and timeline as a whole was adjusted to allow careful dismantling and protection of the ancient tanks and accommodate the additional works in relation to reinstating the tanks and gomukh.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		provided in the detailed design.			
C2	To avoid the following issues from spoil disposal activities: generation of sediment laden runoff from the work site during monsoon; Contamination of disposal sites from construction debris; Community hazard of uncollected and improperly disposed materials.	<p>A spoil management plan will be implemented that details the location of spoil disposal sites, transporting soil, and disposing of soil. The Contractor will perform the following:</p> <ol style="list-style-type: none"> 1) disposed spoils on permitted sites as instructed by the JMRC 2) ensure the adequacy of the disposal site to handle the volume of spoils the will be generated 3) Prepare, submit and seek approval from the CSC a spoil dump plan that provides the: i) dump size, layout, and form, ii) means of controlling water and wind erosion, iii) measures to prevent spoil dump contamination, vehicular, and public access. 4) Explore the possibility of using spoil materials to rehabilitate borrow pits to 	<p>Yes,</p> <p>Are being disposed in the approved area only.</p> <p>All other conditions are also being fulfilled.</p>		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		5) All hauling vehicles should be maintained at an acceptable working order and serviced regularly 6) Haul vehicles should be routed away from noise sensitive areas 7) Speed limit in built up areas is 40 km/h 8) All haul vehicles should be covered or soil sprayed with water before leaving the site specially during windy condition 9) Spoil dumps shall have slopes no steeper than 1V:2.5H 10) Final shaping, topsoiling, and immediate revegetation 11) No vehicles are to be allowed to enter in revegetated spoils dump			
C3	To avoid depletion of groundwater and competition with existing groundwater users due groundwater	The Contactor shall secure permission for groundwater extraction from CGWA pertinent groundwater authorities before establishing borewells. Water conservation and recycling will be observed in all aspects of	Partial.	Application for extraction of ground water for construction purpose has been submitted to authority on 01.12.2016. Currently, water demand is met from extraction of ground water and also through water tankers supplied by private agencies. JMRC has	

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
	Extraction for the construction works	constructions to include water main breaks, watering roads for dust control, spraying concrete, equipment cleaning and site clean-up.		approached in request civil administration for granting required permission.	
C4	To avoid nuisance from temporary damage or shifting in utilities particularly buried water pipes and electrical lines and disruption of essential services	<p>The Contractor will ensure that the public will be minimally affected when constructing in close proximity to essential services through:</p> <ol style="list-style-type: none"> 1) coordinate and secure necessary permits for utility shifting with the Jaipur Development Authority and other service utility agencies to locate all services prior to construction in any particular area 2) inform residents of planned interruptions through local media, fliers, and public address system 3) all planned interruptions schedules will be submitted to the safeguards cell JMRC no later than 10 working days before the interruption 	<p>Yes,</p> <p>Care is taken to avoid inconvenience by shifting as per instruction of concerned authorities.</p>		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		<p>4) all affected landowners, tenants, institutions, and businesses to be notified in writing prior to commencement and kept updated in changes of schedule</p> <p>5) in the event of unforeseen disruptions, the contractor will take all reasonable actions to have the service promptly restored</p> <p>6) relevant utility agencies will be informed of the construction proximity to essential service line and be kept on standby in the event of unforeseen disruption</p> <p>All unplanned interruption will be immediately reported to the safeguards cell within 24 hour through an incident report.</p>			
C5	To address occupational health and safety issues of the construction	The contractor will comply with the occupational health and safety requirements as provided in SHE.	Yes		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
	workers and local community				
C6	Implementation of Cleanup Operations and Restoration and Rehabilitation	Contractor shall prepare site restoration plans, which shall be subject for review and approval by the CSC, JMRC Safeguard Cell, Jaipur Development Authority and the Archeology Department to ensure consistency with zoning and town plans. The clean-up and restoration operations are to be implemented by the Contractor prior to demobilization. All spaces excavated and not occupied by the foundation or other permanent works shall be refilled with earth up to surface of surrounding ground.	Not yet due.		

IV. ACTIVITIES UNDERTAKEN FOR PROTECTION AND MONITORING OF HERITAGE STRUCTURES

A. Findings in Badi Chaupar and Chhoti Chaupar:

13. Under Jaipur Metro Rail Project Phase 1B, an underground Metro line is under construction from Chandpole to Badi Chaupar. While Metro tunnel will be constructed using Tunnel Boring Machines, the two underground Metro Stations at Chhoti Chaupar and Badi Chaupar will be constructed by cut and cover method, requiring excavation from top to bottom.

14. To enable construction of underground stations at Chhoti Chaupar and Badi Chaupar, the dismantling of existing Chaupars and excavation underneath was necessary. In this regard, historical background of Chaupars was studied, both the Chaupars were well documented. The two layers of water tank at both the Chaupars with tunnels on all four cardinal directions were encountered. Under the guidance of heritage consultant M/s Abha Narain Lambah Associates and JMRC archaeology consultants the excavation of the tanks were taken up. Documentation including detailed drawings, photography and videography of the all the layers of old water tanks of Chaupars have been prepared. Gaumukhs of both the Chaupars have been handed over to Albert Museum for safe keeping. Appendix-5



15. Both the water tanks at Chhoti Chaupar and Badi Chaupar will be restored at their present site after construction of underground stations. JMRC has ensured and approved designs, wherein the waters tanks have been incorporated over the station design. Designs have been approved by heritage consultant of JMRC.

B. D-Wall Construction

16. The D-walls (Diaphragm Walls) act as a structural member for the station box. Prior to the commencement of the D-walls, the utilities are diverted. The construction of D-walls is executed through grabbing machines after completion of the guide wall which act as the guide for the excavation. During the operations the grabbing machines removes the soil, the soil is stabilized using Polymer to avoid the collapse of soil. After reaching the desired level, the grabbing

operations are stopped and the reinforcement cage is lowered into the excavated area and concrete is poured through tremie.

17. To monitor the impact of the operations we have provided tilt meters, crack meter and settlement meters to measure the impact and report any abnormality in the reading. Apart from the above, to protect the existing verandahs, we have done the propping and jacking and also in the shops identified as critical.

C. Chandpole Gate Tunnel Underpass Scheme/ Isarlat Side Pass Scheme

Chandpole Gate Tunnel Underpass Scheme



18. Chandpole Gate is coming right in the center of alignment, attracting maximum settlement, but original drawings relating to its foundation were not available. Therefore, the foundation of Chandpole Gate has been physically examined by a team of engineers, by making several trial pits around the gate.

19. For the determination of the structure's foundation, special survey was carried out by CEC and nine trial pits were executed in certain locations near the gate. The foundation of Chandpole Gate has been found to be in a sound condition which can sustain the impact of tunnel-making underneath. To assess the ground settlement due to tunneling by TBM & its effect on structural safety of Chandpole Gate, a detailed 3D analysis has been carried out by M/s Omikron Kappa – Indus Consultant JV and a detailed report submitted.

20. As per this report, considering that Chandpole gate is in category "Slight" according to the pre-condition survey, "negligible" damage is expected for settlements $<6.7\text{mm}$ and angular distortion $<1/750$. As already derived from the 3D analysis, the maximum calculated settlements and angular distortion are 5mm and $1/1200$ respectively, values which are related with "negligible" damage even in the case of "High" vulnerable structures.

21. Considering all the above, the contractor conducted its own surveys and studies and based on the site condition, alarm and trigger values were identified and further monitored. Values were established for the displacement and deflection of the Chandpole Gate, as presented in the following table.

Measurement	Trigger Level	Alarm Level	Limit values
Settlements	4mm	5mm	6mm
Angular Distortion	1/1400	1/1200	1/1000

22. On the advice of Archaeology & Museums Department, the work of further examination/proof check of underpassing scheme of Chandpole Gate was assigned to Indian Institute of Technology (IIT) Delhi. After conducting the proof check of underpassing scheme of Chandpole Gate, IIT Delhi has reported that analysis and other details given in the report are in order. The scheme of Chandpole Gate underpassing by Tunnel Boring Machines is considered safe as it will have no impact on the stability of existing Chandpole Gate.

23. Archaeology & Museums Department, GoR, vide its letter dated 19.06.2015 has issued license under Rule 20 of the Rajasthan Monuments, Archaeological sites and Antiquities Rules, 1968 for construction of twin metro tunnels under Chandpole Gate. The license validity was extended time to time and finally for 2 months i.e. up to 18.02.2016 by the Archaeology & Museums Department, GoR vide its letter dated 15.12.2015.

24. Now both TBMs have crossed underneath Chandpole Gate, the gate sustained no damage during the tunneling process. Monitoring Results for all Geotechnical instruments installed during the passing of TBMs under Chandpole gate were within the design limits. The maximum observed settlements under Chandpole Gate was -3 mm.

25. As a part of precautionary measure and to ensure that the strength of the Chandpole gate is not compromised, JMRC has got done repairing of pre-existing defects in the gate using plaster, lime kada etc. Along with improving the strength of the Gate, the work will also enhance the aesthetics of the historic Gate.



Isarlat Side Pass Scheme



26. As per report of structural expert of Heritage Consultants, Abha Narain Lambah Associates & Shashank Mehendale & Associates (JV), physical condition of Isarlat is found to be

generally sound and it is located at safe distance from the tunnel axis. There will be no adverse impact on the Isarlat during tunnel construction.

27. However, as advised by the structural expert of heritage consultants, a detailed study of Isarlat was taken up through Omikron Kappa, on the lines of the detailed study already carried out for Chandpole Gate. Proof check of the structure/report will be done by IIT Delhi.

28. Now both TBMs have crossed underneath Isarlat, the structure sustained no damage during the tunneling process.

D. Results of the Ground Penetrating Radar

1. Introduction

29. Ground penetrating radar survey is a non-destructive geophysical method that produces a continuous cross-sectional profile or record of subsurface features, without drilling, probing, or digging. Ground penetrating radar (GPR) profiles are used for evaluating the location and depth of buried objects and to investigate the presence and continuity of natural subsurface conditions and features. It is a high-resolution geophysical method, which is based on the propagation of high frequency electromagnetic waves. The GPR method images structures in the ground that are related to changes in dielectric properties. In sediments, the water content primarily causes the changes in dielectric properties.

2. Study Area

30. In order to prioritize the scanning work, the entire stretch between Chandpole & Badi Chaupar had been subdivided into following sectors:

- Sector-1: Along the tunnel alignment for the stretch between Chandpole Metro station to Chhoti Chaupar.
- Sector-2: Chhoti Chaupar Metro station.
- Sector-3: Along the tunnel alignment for the stretch between Chhoti Chaupar to Badi Chaupar.

3. Conclusion

31. The GPR survey was conducted in March 2015 using Ground Penetration Radar with 100 MHz paired antenna has provided scanning down to a depth of 22m.

32. The interpretation of all these scans show that two distinct layers exists up to the scanned depth for the entire stretch between Chandpole and Badi Chaupar. This is depicted in the scans provided at Figure 10 to 27 of the report. The 3-dimensional model (surface and block) provides variation in terms of depth for the two layers. The drill hole core too in the area indicates presence of two layers of silty sand/sandy silt as defined by grain size analysis of the soil as per geotechnical report. A small portion in the entire stretch indicates more reflective zone which could be on account of anomalous material such as presence of metallic substance, high moisture content or an object.

33. A part of the entire stretch was also taken up for utility survey. This indicates the importance of GPR survey for locating utilities before excavating the area. This helps in planning the excavation work without damaging the existing utilities.

34. The summary report of the GPR done for the project is available online at JMRC web portal.

V. SUMMARY OF ENVIRONMENTAL MONITORING

A. Summary of Inspection Activities:

35. A total of 12 SHE Walk inspections were conducted by the CSC-ES during the reporting period. Further details on the inspections carried out and key findings are provided in Table 6.

Table 6: Field Inspections carried out during reporting period

Date of Inspection	Location	Participants	Key Findings
05/04/2018	Badi Chaupar	19	Safety & Environment
12/04/2018	Casting Yard	13	Safety & Environment
19/04/2018	Chhoti Chaupar	16	Safety & Environment
29/04/2018	Badi Chaupar	19	Safety & Environment
02/05/2018	Casting Yard	12	Safety & Environment
09/05/2018	Chhoti Chaupar station	21	Safety & Environment
16/05/2018	Badi Chaupar	12	Safety & Environment
23/05/2018	Casting Yard	13	Safety & Environment
09/06/2018	Chhoti Chaupar	17	Safety & Environment
16/06/2018	Badi Chaupar	22	Safety & Environment
23/06/2018	Casting Yard	12	Safety & Environment
30/06/2018	Chhoti Chaupar	13	Safety & Environment

Note: Sample copy of SHE Walk attached with Appendix 2.

B. Monitoring of Cracks, Settlements of Structures

36. The entire area where the stations as well as the tunnels underpasses fall under heritage structures. In order to observe the conditions and behaviors of the structures during the operations, monitoring is being done through instrumentations. Since there was no tunneling during the reporting period instrumentation monitoring was not carried out.

C. Vibration Monitoring

37. **Need for Vibration Monitoring:** The construction of underground rail and road infrastructures in metropolitan and cosmopolitan cities are mostly through developed area under challenging soil conditions. The alignment of structure is passing through densely inhabited areas with many heritage structures falling in the zone of influence of construction activities.

38. Construction vibration sources generate elastic waves in soil and have a wide range of energy, displacement, velocity and acceleration transmitted on the ground. These may be harmful to adjacent and remote structures, sensitive instruments and people. Their effects range from serious disturbance of working conditions for sensitive devices and people, to visible structural damage.

39. It is important to assess the dynamic effect before the beginning of construction activities and at the time of construction. Therefore monitoring of construction vibrations have to be started prior to the beginning of construction works at a site and be continued during construction to provide the safety and serviceability of sound and vulnerable structures.

40. It is required to carry out baseline monitoring to determine the Pear Particle Velocity and their respective frequency band that are persisting even before carrying out any construction activities. The recorded values shall form the base line and shall be compared to the corresponding values recorded during construction activities and the influence of construction may be determined accordingly.

41. Since there was no tunneling during the reporting period vibration monitoring was not carried out.

D. Noise Monitoring

42. Noise level survey was conducted by Third party M/s. IDMA Laboratories Ltd. at all project sites for day & night shifts viz Bhankrota, Chandpole launching shaft area, Pink City Hospital, Chhoti Chaupar, Maharaja school, Chaudhry Hospital, Krishna temple, Hawa Mahal, and Jantar Mantar for Day & Night shifts.

43. It has been observed from the results that noise level exceedance was recorded with respect to national standard at all sites except casting yard and Chandpole for both daytime and night. Except Chandpole and Bhankarota (casting yard) all other areas are classified as silence zone. However, these locations are located very near to road with heavy moving traffic both during day time and night time, the results are summarized in Table 8 and 9 and graphical representation of results is also given below. Sample monitoring report is provided in Appendix 4.

Table 7: Noise Monitoring Results (Day time)

Location	Distance from nearest metro construction site	Category of Area/Zone	National Standard (Day time)Leq dB(A)	Baseline value (Day time)Leq dB(A)	Noise levels (Day time) Leq dB(A)		
					Apr	May	Jun
Casting Yard (Bhankarota)	0	Industrial	75	NA	54.2	61.3	62.1
Chandpole	0	Commercial	65	74.2 [#]	64.6	61.3	62.5
Maharaja School	Approx 50 m	Silence	50	NA	60.8	61.4	61.4
Chaudhry Hospital	Approx 400m	Silence	50	NA	61.4	61.5	66.3
Pink City Hospital	Approx 250 m	Silence	50	NA	57.8	61.2	62.2
Krishna Temple	Approx 300 m	Silence	50	NA	61.4	61.2	62.7
Jantar Mantar	Approx 300 m	Silence	50	NA	59.8	61.0	62.1
Hawa Mahal	Approx 100 m	Silence	50	NA	62.6	61.3	64.2

NA – Not Available

- As per baseline line data given in the EIA

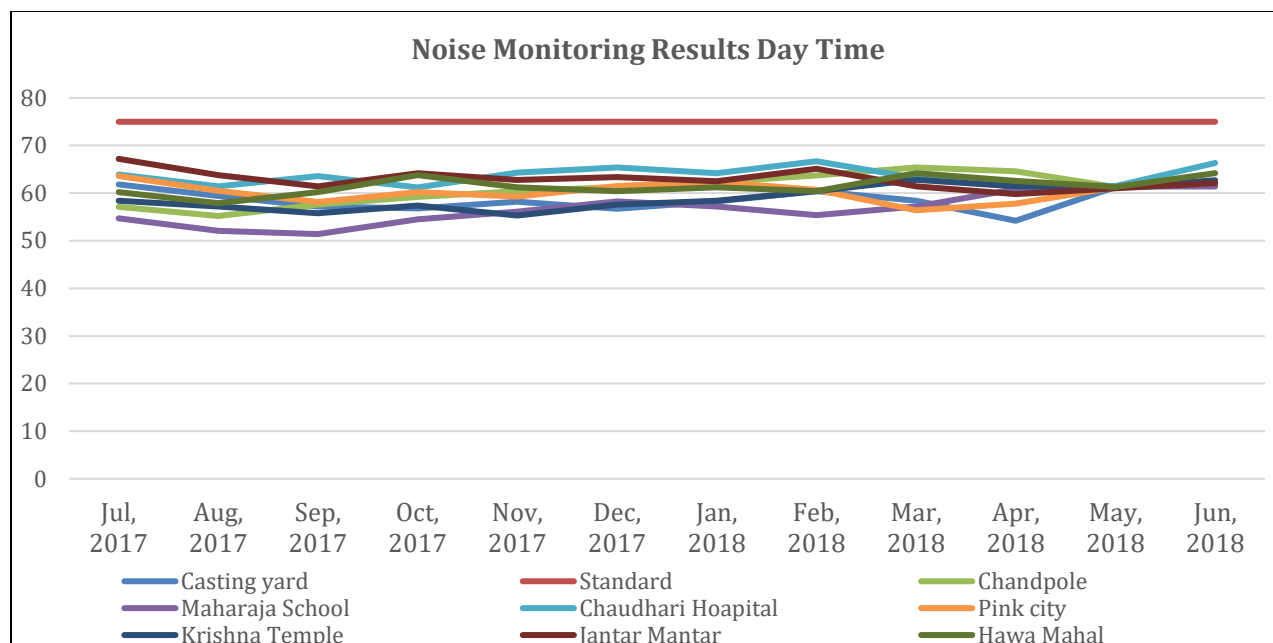
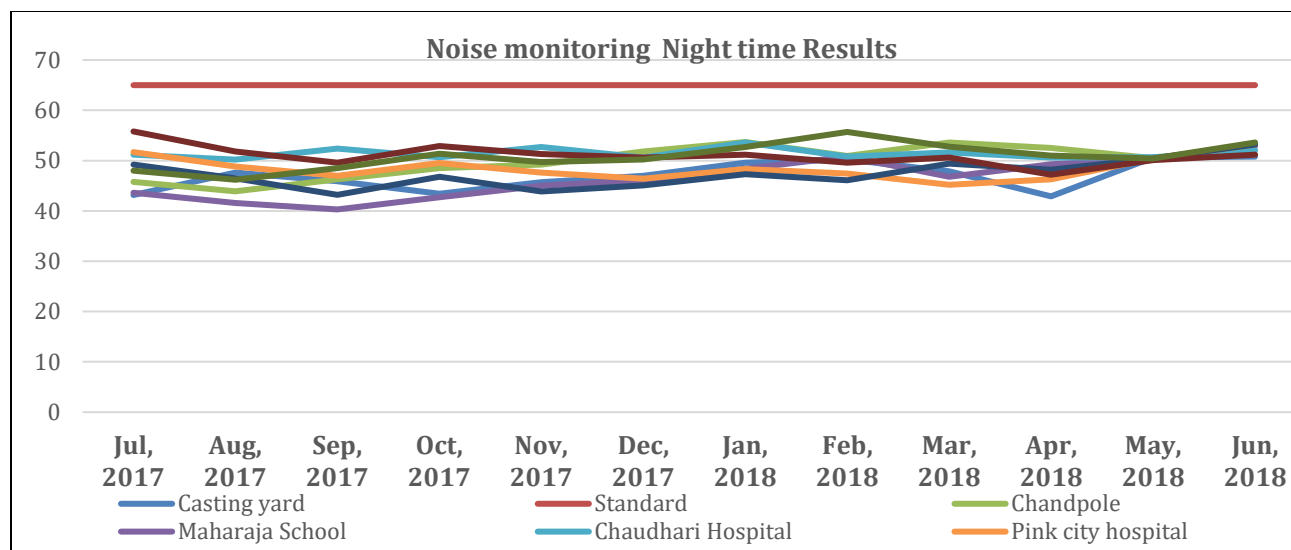


Table 8: Noise Monitoring Results (Night time)

Location	Distance from nearest metro construction site	Category of Area/Zone	National Standard (Night time) Leq dB(A)	Baseline value (Night time) Leq dB(A)	Noise levels (Night time) Leq dB(A)		
					Apr	May	Jun
Casting Yard (Bhankarota)	0	Industrial	70	NA	42.9	50.6	50.8
Chandpole	0	Commercial	55	66 [#]	52.5	50.5	51.2
Maharaja School	Approx 50 m	Silence	40	NA	49.3	50.5	52.9
Chaudhry Hospital	Approx 400m	Silence	40	NA	50.6	50.7	52.1
Pink City Hospital	Approx 250 m	Silence	40	NA	46.3	50.4	53.2
Krishna Temple	Approx 300 m	Silence	40	NA	48.2	50.4	53.2
Jantar Mantar	Approx 300 m	Silence	40	NA	47.2	50.1	51.2
Hawa Mahal	Approx 100 m	Silence	40	NA	51.0	50.4	53.6

NA – Not Available

- As per baseline line data given in the EIA



E. Air Quality

44. The ambient status of five major air pollutants PM₁₀, sulphur dioxide (SO₂), oxides of nitrogen (NO_x) and carbon monoxide (CO) representing the quality of pollution level have been assessed by monitoring air quality at four locations viz. Casting Yard, Chandpole launching shaft, Chhoti Chaupar & Badi Chaupar. The air quality monitoring results indicate that PM₁₀ concentration exceeds the limits specified by CPCB for all sites.

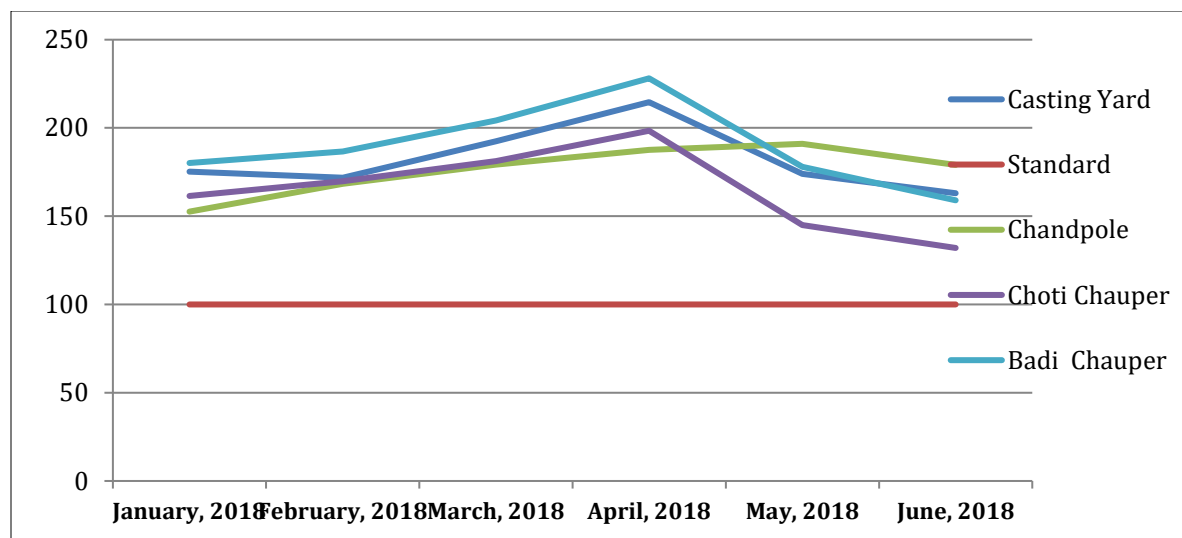
45. Air monitoring was carried out from April 2018 to June, 2018. Test results are summarized in Table 10. Sample monitoring reports are given in **Appendix 4**.

Table 9: Air Quality Monitoring Results

Location	NAAQS PM ₁₀ (µg/m ³)	Baseline data PM ₁₀ (µg/m ³)	PM ₁₀ Monitoring results(Unit µg/m ³)		
			Apr	May	Jun
Casting Yard	100	Not available [#]	214.6	174	163
Chandpole	100	180*	187.6	191	179
Chhoti Chaupar	100		198.4	145	132
Badi Chaupar	100		228.1	178	159

*As per Rajasthan Pollution Control Board (RSPCB) 2012 air quality monitoring data reported in the EIA for Chandpole. The same has been considered as baseline data for Chhoti Chaupar and Badi Chaupar since both locations are within the air shed area of Chandpole.

[#] Baseline data for Casting Yard (Bhankarota) is not available



46. **Air Pollution Control:** The mitigation measures, which have adopted to reduce the air pollution, are: all transportation of construction materials should be covered. To minimize dust emission due to handling of aggregate and cement at site, sprinkling of water on internal roads was implemented. Vehicle speed restriction of 5-10 km/hrs have been followed at site, tyre washing facility have been provided for cleaning of vehicles/tyres at Chandpole exit gate.

F. Water Quality

47. Water samples were collected from nearby bore wells during May, 2018 to check the quality of the water. Quarterly water analysis results are compared with IS 10500:2012 and found within permissible limited. Results are summarized in Table 11 and monitoring reports are provided in **Appendix 4**.

Table 10: Water Quality Monitoring Results

Sr. No	Parameters	Units	Results
Sample Identification			Chhoti Chaupar
1.	pH(at 25 °C)	-	7.2
2.	Turbidity	NTU	<1.0
3.	Conductivity	µs/cm	1014
4.	Total Dissolved Solids	mg/L	641
5.	Total Suspended Solids	mg/L	<5.0
6.	Oil and Grease	mg/L	< 1.0
7.	Dissolve Oxygen	mg/L	6.7
8.	E. Coli	Per 100 ml	Absent

VI. SOCIAL AND RESETTLEMENT IMPACTS

A. Impacts on Structures

1. Shifting of Temples

48. When the work of Phase 1B started it was found that 6 temples fell within the station box area of Chhoti Chaupar and Badi Chaupar where digging is necessary for construction of stations, required immediate relocation. Three of these temples were at Chhoti Chaupar & another three at Badi Chaupar, as under:

- Hanuman Mandir (Chhoti Chaupar)
- Shiv Mandir (Chhoti Chaupar)
- Rojgareshwar Mandir (Chhoti Chaupar)
- Shiv Mandir (Badi Chaupar)
- Ganesh Mandir (Badi Chaupar)
- Hanuman Mandir (Badi Chaupar)

49. As per the decision taken by High Power Committee chaired by Chief Secretary GoR, an office order was issued on 16.10.2014, that GAD land at Tripolia Bazar i.e. TanwarJiKaNauhra (around 200 meters from Chhoti Chaupar) which has two courtyards and measuring 542 square meters and 645 square meters, respectively be handed over to Jaipur Metro Rail Corporation for relocation of 6 temples and development of Two Wheeler Parking, respectively.

50. The possession of the land was taken over by JMRC from Public Works Department on 17.11.2014.



Figure 3: Location of TanwarJiKaNauhra (Land identified for temple relocation)

51. As the planning and designing of station at Chhoti Chaupar and Badi Chaupar progressed, 7 additional temples were identified which either infringed the entry exit structure or came in mid of the traffic diversion scheme. The detail of the additional temples is as below:

- Barah ling Mahadev (Chhoti Chaupar)
- Rameshwar Mahadev (Chhoti Chaupar)
- Bajrangbali Mandir (Chhoti Chaupar)
- Peepleshwar Mahadev (Badi Chaupar)
- Mahadev Ji/Mataji/Hanuman Mandir (Badi Chaupar)
- Mahadev Mandir (Badi Chaupar)
- Mahadev/Hanuman Mandir (Badi Chaupar)

52. Proper documentation and measurement were taken and recorded for all the temples.

53. Necessary measures have been taken for relocation of identified temples and 6 Temples of Chhoti Chaupar have already been relocated at Old Atish market.

54. On 11.05.2015/12.05.2015, six temples of Chhoti Chaupar were shifted to Old Atish Market and MurtiSthapna was done along with proper ritual ceremony.



55. As per earlier directions, following was the status of the matter related to shifting of 7 temples at Badi Chaupar is as below:

Temple No.	Temple Name	Owner Name	Existing Area (sqmt)	Proposed Shifting to	Area Allocated at new site
1	Shiv Mandir, ShGaurishankarji, On Median towards Chhoti Chaupar	Sh. JeetendraVyas	2.747	TanwarJiKaNauhra	6.25 sqmt (2.5 x 2.5 mt)
2	DhruvMukhiMahaveer Hanuman Mandir, NW Khanda	Sh. Abhishek Sharma	3.781	RamnagariyaYojana	45 sqmt (Plot No. A363)
3	Ganesh ji Shivalay Mandir, SE Khanda	Sh. Vishnu Kr Sharma	3.132	RajarampuraAwasiyaYojana	45 sqmt (Plot No. 229)
4	Peepleshwar Mahadev, Hanumanji, Ganesh mandir- SW Khanda	Sh. RajnarayanVyas	8.02	TanwarJiKaNauhra	8.00 sqmt (3.2 x 2.5 mt)
5	Mahdev ji, Mataji, Hanuman Mandir- SE Khanda	Sh. PurushotamBharti	39.97	TanwarJiKaNauhra	40.0 sqmt(6.325 x 6.325 mt)
6	Mahadev Mandir, Outside Police thana- NE Khanda (ShriJamneshwar Mahadev Trust)	Sh. Dinesh Vyas	5.096	RamnagariyaYojana	Combined Plot (Plot A434) 90 sqmt
7	Mahadev/Hanuman Mandir, Outside Police thana- NE Khanda (ShriAmneshwar Mahadev Trust)		4.899	RamnagariyaYojana	



56. All matters related to compensation and relocation of temples at Chhoti & Badi Chaupar are being dealt with at the level of Collector, Jaipur.

57. Government is continuously in touch with the stakeholders and is in process of ensuring that sentiments of people at large are not hurt. Rozgareshwar Temple at Chhoti Chaupar will be relocated back to its original position after completion of Station work at Chhoti Chaupar.

58. The current status of shifting of temples of Chhoti Chaupar and Badi Chaupar is as under:

Chhoti Chaupar Temple Shifting Status				
Temple No.	Temple Name	Existing Area	Earlier Decision over shifting	Present Decision
1	Kashta Haran Mahadev, Towards Kishanpole Bazar	4.389 sqmt	Shifted to Old Atish Market/ 6.25 sqmt (2.5 x 2.5 mt) on 11.06.15	4 temples out of remaining 5 temples to be shifted back to Choti Chaupar Khanda after completion of Chhoti Chaupar Station work. Provision made in plan (Size 1.8 m x 1.8 mt)
2	Kanwal Sahab Hanuman Mandir, near Chhoti Chaupar	4.246 sqmt	Shifted to Old Atish Market/ 6.25 sqmt (2.5 x 2.5 mt) on 19.06.15	
3	Rojgareshwar Mandir, On median towards Tripolia Side	32.448 sqmt	Old Atish Market 32.448 sqmt (4.16 x 7.8 mt), shifted on 11.06.2015	To be shifted over platform measuring 2.6 m x 7 mt at Chhoti Chaupar after completion of civil work (Oct 17-Mar 18)
4	Barah Ling Mahadev (Gulabi Rang), NE Khanda	9.415 sqmt	Shifted to Old Atish Market/ 6.25 sqmt (2.5 x 2.5 mt) on 19.05.15	4 temples out of remaining 5 temples to be shifted back to Chhoti Chaupar Khanda after completion of Chhoti Chaupar Station work. Provision made in plan (Size 1.8 m x 1.8 mt)
5	Rameshwar Mahadev (White marble), NE Khanda	7.076 sqmt	Shifted to Old Atish Market/ 6.25 sqmt (2.5 x 2.5 mt) on 19.05.15	
6	Bajrangbali Mandir (Pyayu), NW Khanda	23.277 sqmt	Old Atish Market/ 23.277 sqmt (6.1 x 3.82 mt), shifted on 19.05.2015	

Badi Chaupar Temple Shifting status				
Temple	Temple Name	Existing Area	Present decision	As per earlier decision
1	Shiv Mandir, ShGaurishankarji, On Median towards Chhoti Chaupar	2.747	Temporary shifted to Land behind Manak Chowk Thana on 09.06.16 Permanently to median at Badi Chaupar	6.25 sqmt (2.5 x 2.5 mt) at TanwarjiKa Nauhra
2	Dhruvmukhi Mahaveer Hanuman Mandir, NW Khanda	3.781	Shifted to temple behind Manak Chowk on 29 th /30 th June 2017	45 sqmt (Plot No. A363) at Ramnagariya
3	Ganesh ji Shivalay Mandir, SE Khanda	3.132	Temporary shifted to Land behind Manak Chowk Thana	45 sqmt (Plot No. 229) At Rajarampura

Badi Chaupar Temple Shifting status				
Temple	Temple Name	Existing Area	Present decision	As per earlier decision
			on 15 th /16 th Feb 2017. Permanently to Khanda at Badi Chaupar khanda (1.8 x 1.8 mt)	
4	Peepleshwar Mahadev, Hanumanji, Ganesh mandir- SW Khanda	8.02	Shifted to TanwarJiKaNauhra 14.07.2016	8.00 sqmt (3.2 x 2.5 mt) at TanwarJiKaNauhra
5	Mahdev ji, Mataji, Hanuman Mandir- SE Khanda	39.97	Shifted to TanwarJiKaNauhra on 15 th /16 th Feb 2017	40.0 sqmt (6.325 x 6.325 mt) at TanwarJiKaNauhra
6	Mahadev Mandir, Outside Police thana- NE Khanda (ShriJamneshwar Mahadev Trust)	5.096	shifted to temple behind Manak Chowk on 29 th /30 th June 2017	Combined Plot (Plot A434) Qmt At RamnagariyaYojana
7	Mahadev/Hanuman Mandir, Outside Police thana- NE Khanda (ShriAmneshwar Mahadev Trust)	4.899		

B. Land Acquisition and Resettlement

59. For the purpose of easing the traffic diversion near Sanjay Circle, Chandpole, JMRC has processed for acquisition of 3 shops located at Sansar Chand Road. Details are given below:

SN	Shop Detail	Name of Shop Owner	Name of Shopkeeper	Area (sq.m)
1	Shekhawat Rajput Dhaba (Part of Shop No. 12)	Mohd. Salim, S/o Yaseen Khan	MukutBihari, Satynarayan, S/o	7.49
2	Bharat Cold Drink (Part of Shop No. 12)		BanshilalMehra	3.90
3	Shiv Pan Bhandar (Part of Shop No. 12)		BihariLal NandlalSaini S/o	1.30
4	DCB ATM	Smt. MamtaKanwar W/o Sohan Singh Shekhawat	DCB Bank	5.46



60. Considering the time required for land acquisition process as per new Land Acquisition Act of GOI, it was agreed and decided by JMRC (in consultation and discussion with shop owners) to undergo a mutual agreement with shop and land owners and tenants to provide land for land and rebuild the shops in the land owned by JMRC on the other side of the road near Chandpole

station (near Church land). Besides resettling shops, JMRC also agreed to provide assistance in building the civil structure.

51. The new shops were built by JMRC on its land near the church on the other side of the Chandpole station. The shops are currently functioning in routine basis. The details are as under: owners have given their consent to the proposal. JMRC is in the process of getting written consents from shop owners and shifting will be done in consultations with shop owners before start of work near these shops.

S. NO.	Name of Shops	Owner/Interested Person	Name of the Tenant	Area of the Land to be Acquired in sqm.	Land Allotted in lieu of Land at Chandpole Metro Station in sqm.	
					Name of Owner	Area sqm.
1	ShekhawatRajpootDhaba Part of Shop No. 12 (Agreement on 16.06.15)/ (Compensation paid INR 71581/- in total of shops till Sno. 3)	Mohammad Saleem S/o Yaseen Khan Plot No. 206, Near Badi Masjid, Jalupura, Jaipur	MukutBehari, Satyanarayan S/o BanshilalMehra, 105-A, RanaPratap Nagar, Jhotwada, Jaipur	7.49	Mohammad. Saleem S/o Yaseen Khan	11.39
2	Bharat Cold Drinks Part of Shop No. 12 (Agreement on 16.06.15)	Mo. Saleem S/o Yaseen Khan Plot No. 206, Near Badi Masjid, Jalupura, Jaipur	MukutBehari, Satyanarayan S/o BanshilalMehra, 105-A, RanaPratap Nagar, Jhotwada, Jaipur	3.90		
3	Shiv Pan Bhandar Part of Shop No. 12 (Agreement on 16.06.15)	Mo. Saleem S/o Yaseen Khan Plot No. 206, Near Badi Masjid, Jalupura, Jaipur	Beharilal S/o NandlalSaini, 1468, Bagruwalonka Rasta, Chandpole, Jaipur	1.30	Mohammad. Saleem S/o Yaseen Khan	1.30
4	DCB ATM Part of Shop No. 12 (Agreement on 23.06.15)/ (Compensation paid NIL As per Court Order ADJ no. 8)	Smt. MamtaKanwar W/o Sohan Singh &Sohan Singh S/o Mal Singh Shekhawat, 1-A129, Shiv Shakti Colony, Shastri Nagar, Jaipur	DCB Bank ATM on rent	5.46	Smt. MamtaKanwar W/o Sohan Singh &Sohan Singh S/o Mal Singh Shekhawat	5.46
Total				18.15		18.15



C. COMPENSATION FOR DAMAGES

62. Due to exceptionally loose soil underneath, two verandah pillars got settled and verandah roof got tilted in front of shop no. 370-371 of Tripolia Bazar on 07.02.2015, when a trench was being dug adjacent to the verandahs for shifting a PHED pipeline. No one got hurt and there was no damage to any shops. All protective measures were taken to contain any further damage to the verandahs. The two affected verandahs had to be dismantled and were reconstructed by JMRC under supervision of Jaipur Municipal Corporation. To avoid recurrence of such incidence in future, following action were taken:

- Plan of shifting the PHED pipelines was reviewed and revised. Accordingly, instead of putting these pipelines underground at the edge of Verandah, these pipelines were put at the road level during construction period and will later on be shifted to utility duct which will be constructed as part of station building.
- Additional support in the form of steel props were provided in front of all the 100 shops in front of which construction work was to be done at Chhoti Chaupar.
- The construction company and the General Consultants were directed to ensure presence of a senior manager at the work site at all times.

63. Regarding the compensation for the shopkeepers impacted by the damaged verandah, compensation was paid to the shopkeepers. Since, the shops remained closed for 4 days i.e. from 08.02.2015 to 11.02.2015, the compensation of INR Rs. 660/day for 4 days was paid (total Rs. 2640.00) to each of the following shopkeepers /firm/individual doing business:

SN	Shop No.	Name of Shop owner/firm/individual doing business	Amount to be Paid (In INR)
1	369	S.K. Bangles Manufacturer	2640*
		M/s BhaiyajiFidaHussain	2640*
2	370A	Sh. Md. Eshaak	2640
3	370B	Sh. Md. Yakub	2640
4	371	Devi Singh SugandhiBhandar	2640

*Refused to accept the cheque

VII. PUBLIC CONSULTATIONS AND ADDRESSING OF GRIEVANCES

A. Public Consultations

64. Consultations are being held regularly with the local people in the project area including relevant government agencies, the business associations in the project area such as the Chandpole Bazaar Vyapar Mandal and Tripolia Bazaar VyaparMandal.

65. JMRC has taken all possible measures to ensure that following concerns are regularly addressed:

- Heritage character of Jaipur
- Traffic diversion during construction
- Inclusion of all key stakeholders

66. During the period of this report (April 2018–June 2018) following consultations were held:

Table 11: Consultations held during the reporting period

Date	Venue	Participants	Detail of discussion held
11.4.2018	Badi Chaupar	Badi Chaupar Vyapaar Mandal	Issue related to difficulty in access to Pholonwala Khanda due to barricading board.
18.05.2017	Badi Chaupar	Near by resident at Dhajji Ka Khurra	Issue related to movement of machinery for ancillary building work.
13.06.2017	Choti Chaupar	Choti Chaupar Vyapaar Mandal	Routine brief of the progress of ongoing construction work

B. Complaints and Requests Received

67. During the period of reporting (April 2018– June 2018),no written grievances and requests application was received from the local people in the project area. Although minor complaints like provision for more lighting in the area, removal/shifting of barricading etc. were raised by the general public.

VIII. UNANTICIPATED SAFEGUARD ISSUES

68. During the reporting period from April, 2018 – June, 2018, no such anticipated safeguard issues were come across.

IX. CONCLUSION

A. Summarize the overall Progress of Implementation of safeguard Measures⁴

69. The implementation environmental and social safeguard measures in this project show a highly satisfactory level. Overall compliance status of items defined in EMP is summarized in Table 12.

Table 12: EMP Compliance Status

Sl. No	Clause/Description	Compliance Status 01.01.2018 – 31.03.2018			
		FC	PC	NC	NA
1.	Pre-construction stage				
a.	HSO and Environmental officer	1			
b.	CSC Environment Expert	1			
c.	EMP documentation	1			
d.	GPR study & Baseline survey of heritage structures	1			
2.	Construction stage – General				
a.	Traffic management	1			
b.	Safe guarding of heritage structures	1			
c.	Minimum public disturbance		1		
d.	Utility diversion		1		
e.	Safe keeping of heritage findings	1			
3.	Construction stage – Legal requirement				
a.	CTE & CTO for batching plant & casting yard	1			
b.	Permission for extraction of ground water			1	
c.	Authorization for storage of hazardous materials			1	
d.	Permission for tunnelling	1			
e.	Emission compliance of vehicles	1			
f.	Permission for felling tress	1			
4.	Construction stage – Monitoring				
a.	Air & Noise monitoring	1			
b.	Instrumentation monitoring				1
5.	Construction stage – Environment protection				
a.	Tree cutting and transplantation		1		
b.	Air pollution		1		
c.	Noise pollution		1		
d.	Waste management	1			
e.	Soil/muck disposal	1			
f.	Landscape & Site aesthetics		1		
6.	Construction stage – Health & Safety				
a.	Site Safety	1			

⁴Overall sector environmental management progress could be described in qualitative terms or be evaluated based on a ranking system, such as the following:

1. Very Good
2. Good
3. Fair
4. Poor
5. Very Poor

Additional explanatory comments should be provided as necessary.

Sl. No	Clause/Description	Compliance Status 01.01.2018 – 31.03.2018			
		FC	PC	NC	NA
b.	Labour camp condition	1			
c.	Vector borne diseases	1			
d.	SHE reports	1			
Score		18	6	2	1
Percentage compliance		67%	22%	7%	4%

FC – Full Compliance

PC – Partial Compliance

NC – No Compliance

NA – Not Applicable

70. The Contractor has been advised to pursue with the regulatory authorities to obtain permission for extraction of ground water and authorization for storage of hazardous materials. Also, they have been advised to plant new saplings in lieu of damaged transplanted trees.

B. Problems Identified and Actions Recommended

71. During the previous reporting period (January 2018– March 2018), some of the issues were identified such as follow-up with regulatory / government agencies to get pending approvals/permits and full time environmental specialist by the CSC. However, these issues are still pending.

72. Table 13 present the actions that are proposed in the previous monitoring report and actions taken to address these problems:

Table 13: Status of Actions Suggested in Previous Monitoring Report

Action Recommended	Measures Taken	Remarks
Follow-up with regulatory / government agencies to get pending approvals/permits.	Application for authorization for storage of hazardous waste is under process. Permission to extract ground water from CGWA will be pursued.	Expedite process to get pending clearance on priority basis.

73. Finally, according to the field observations and investigations it was able to identify that the most of the environmental requirements are being complied with regulations.

APPENDIX 1: PHOTO LOG OF PROGRESS



View of tunnel towards Chhoti Chaupar and Chandpole



Regular Housekeeping in the stations



View of cross passage no.-3, TBM-2



Focussed training on eight work /Use of harness belt at work place



Labour camp at casting yard



Occupational Health/First Aid training and special training conducted on health & hygiene



Monthly Mass Tool Box Talk and Incentives/ Awards to workers at site



**Breath analysis during night shift
at Chhoti Chaupar station**



Noise monitoring at Badi Choupar station



Illumination testing



Barricades cleaning



Frequent pest control at site

Water sprinkling for dust suppression at site

APPENDIX 2: RECORD OF SHE TRAININGS

Details of SHE training conducted in the month of April 2018 – June 2018

SHE training for the month of April, 2018:

SN.	Date	Location	Topic	No. of person	Remarks
1.	03/04/2018	Casting yard	Welding & gas cutting	09	
2.	08/04/2018	Casting yard	Lifting & rigging	17	
3.	11/04/2018	Casting yard	Permit to work system	13	
4.	14/04/2018	Casting yard	Fire fighting	21	
5.	17/04/2018	Casting yard	Heavy lifting operation	16	
6.	19/04/2018	Casting yard	Welding cutting & bending	16	
7.	20/04/2018	Casting yard	Labour welfare measure & legal requirements	20	
8.	23/04/2018	Casting yard	Roofing work	18	
9.	25/04/2018	Casting yard	Power actuated hand tools	11	
10.	27/04/2018	Casting yard	Electrical & mechanical inspection	20	
11.	03/04/2018	Chandpole	Fire fighting	8	
12.	07/04/2018	Chandpole	Hand Tools & Power Tools	10	
13.	11/04/2018	Chandpole	Lifting Operation	8	
14.	14/04/2018	Chandpole	Waste Management	11	
15.	19/04/2018	Chandpole	Work at Height	13	
16.	26/04/2018	Chandpole	Safety Base Behavior	10	
17.	02/04/2018	Chhoti Chaupar	Scaffold Erection & inspection	124	
18.	04/04/2018	Chhoti Chaupar	Tools & tackles inspection	78	
19.	05/04/2018	Chhoti Chaupar	Work permit system	09	
20.	09/04/2018	Chhoti Chaupar	Manual material Handling	13	
21.	14/04/2018	Chhoti Chaupar	Fire fighting	20	
22.	14/04/2018	Chhoti Chaupar	SHE Communication	12	
23.	15/04/2018	Chhoti Chaupar	Traffic management	20	
24.	18/04/2018	Chhoti Chaupar	Safe scaffolding err action & dismantling	14	
25.	20/04/2018	Chhoti Chaupar	Heavy lifting operation	17	
26.	23/04/2018	Chhoti Chaupar	Hazard identification & Risk Analysis	4	
27.	25/04/2018	Chhoti Chaupar	Power tools & Hand Tools	10	
28.	25/04/2018	Chhoti Chaupar	Importance of safety PPE	24	
29.	27/04/2018	Chhoti Chaupar	CPR	19	
30.	28/04/2018	Chhoti Chaupar	Rigging	9	
31.	30/04/2018	Chhoti Chaupar	Waste management system	10	
32.	02/04/2018	Badi Chaupar	Manual material handling	17	
33.	04/04/2018	Badi Chaupar	Behavior base safety management	19	
34.	04.04.2018	Badi Chaupar	Steel erection work	17	
35.	06.04.2018	Badi Chaupar	Permit to work system	13	
36.	07.04.2018	Badi Chaupar	Traffic management	17	
37.	09.04.2018	Badi Chaupar	Road safety & traffic management	27	
38.	10.04.2018	Badi Chaupar	Fire fighting	20	
39.	11.04.2018	Badi Chaupar	She communication	20	
40.	12.04.2018	Badi Chaupar	Hot work	20	
41.	13.04.2018	Badi Chaupar	First aid & CPR	22	
42.	13.04.2018	Badi Chaupar	Safe use of hand tools	21	
43.	16.04.2018	Badi Chaupar	Roofing work	14	
44.	18.04.2018	Badi Chaupar	Welding & gas cutting work	08	

45.	20.04.2018	Badi Chaupar	Scaffolding erection & dismantling	16	
46.	23.04.2018	Badi Chaupar	Fire fighting	20	
47.	24.04.2018	Badi Chaupar	Heavy lifting operation	07	
48.	25.04.2018	Badi Chaupar	Wire rope inspection	20	
49.	25.04.2018	Badi Chaupar	Mechanical inspection	12	
50.	27.04.2018	Badi Chaupar	Scaffolding erection & dismantling	20	
51.	27.04.2018	Badi Chaupar	Use of full body harness	20	

Month of May, 2018 Training:

SN.	Date	Location	Topic	No. of person	Remarks
1.	01/05/2018	Casting yard	SHE Emergency Preparedness & Response	15	
2.	05/05/2018	Casting yard	Traffic management & Road safety	08	
3.	09/05/2018	Casting yard	Hazard identification & risk analysis	20	
4.	11/05/2018	Casting yard	Behavioral base safety management	15	
5.	12/05/2018	Casting yard	Safe driving training	09	
6.	14/05/2018	Casting yard	Waste management	13	
7.	18/05/2018	Casting yard	SHE Communication	14	
8.	18/05/2018	Casting yard	Labour welfare measure	20	
9.	20/05/2018	Casting yard	HAZMAT Handling & control	14	
10.	24/05/2018	Casting yard	Behavioral base safety management	20	
11.	29/05/2018	Casting yard	Manual material lifting	11	
12.	07/05/2018	Chandpole	Scaffolding Erection & Dismantling.	08	
13.	08/05/2018	Chandpole	Fire Fighting	09	
14.	12/05/2018	Chandpole	Hot Work	12	
15.	15/05/2018	Chandpole	Waste Management	09	
16.	28/05/2018	Chandpole	Hand Tools & Power Tools	16	
17.	30/05/2018	Chandpole	Work To Permit System	13	
18.	31/05/2018	Chandpole	First Aid	11	
19.	03/05/2018	Chhoti Chaupar	Heavy lifting operation	6	
20.	04/05/2018	Chhoti Chaupar	First aid	27	
21.	05/05/2018	Chhoti Chaupar	Scaffold erection & inspection	32	
22.	08/05/2018	Chhoti Chaupar	Welding & Gas cutting work	12	
23.	09/05/2018	Chhoti Chaupar	Scaffold erection & Dismantling	17	
24.	11/05/2018	Chhoti Chaupar	Waste management	18	
25.	15/05/2018	Chhoti Chaupar	Safe use of bar bending machine	10	
26.	17/05/2018	Chhoti Chaupar	CPR	37	
27.	18/05/2018	Chhoti Chaupar	Safe use of Full body Harness	14	
28.	18/05/2018	Chhoti Chaupar	Rigging	11	
29.	19/05/2018	Chhoti Chaupar	Permit to work system	18	
30.	21/05/2018	Chhoti Chaupar	Fire fighting	15	
31.	22/05/2018	Chhoti Chaupar	Traffic management	20	
32.	23/05/2018	Chhoti Chaupar	Work at height	18	
33.	24/05/2018	Chhoti Chaupar	Tools & Hand tools	13	
34.	25/05/2018	Chhoti Chaupar	HSE Communication	11	
35.	24/05/2018	Chhoti Chaupar	Scaffold erection & inspection	14	
36.	02/05/2018	Badi Chaupar	Work at Height	09	
37.	04/05/2018	Badi Chaupar	Scaffolding Erection & Dismantling	17	
38.	07/05/2018	Badi Chaupar	Steel Erection work	15	
39.	09/05/2018	Badi Chaupar	Welding & Gas cutting	17	
40.	10/05/2018	Badi Chaupar	Manual Material Handling	20	
41.	11/05/2018	Badi Chaupar	Behaviour Base Safety	20	

SN.	Date	Location	Topic	No. of person	Remarks
42.	14/05/2018	Badi Chaupar	Lifting & Rigging work	14	
43.	14/05/2018	Badi Chaupar	Electrical Mechanical inspection	20	
44.	16/05/2018	Badi Chaupar	Traffic Management	20	
45.	16/05/2018	Badi Chaupar	Fire Fighting	21	
46.	18/05/2018	Badi Chaupar	Work at Height	20	
47.	18/05/2018	Badi Chaupar	Crane Inspection	12	
48.	21/05/2018	Badi Chaupar	Hot work safety	20	
49.	21/05/2018	Badi Chaupar	Waste management System	09	
50.	23/05/2018	Badi Chaupar	Welding Cutting Bending	20	
51.	23/05/2018	Badi Chaupar	Wire rope inspection	20	
52.	23/05/2018	Badi Chaupar	Permit to work	18	
53.	23/05/2018	Badi Chaupar	Mechanical Inspection	09	
54.	23/05/2018	Badi Chaupar	Scaffolding erection & inspection	72	
55.	28/05/2018	Badi Chaupar	Handling of concrete & blocks	14	
56.	30/05/2018	Badi Chaupar	Safe use of hand & power tools	09	
57.	31/05/2018	Badi Chaupar	Roofing & carpentry work	20	



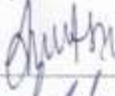




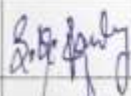




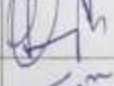

Month of June, 2018 Training:

SN	Date	Location	Topics	Attendance	Remarks
1.	01/06/2018	Casting yard	Behavioral base safety management	21	
2.	05/06/2018	Casting yard	Permit to work system	20	
3.	09/06/2018	Casting yard	Roofing work	06	
4.	12/06/2018	Casting yard	Power actuated hand tools	17	
5.	18/06/2018	Casting yard	Electrical & mechanical inspection	21	
6.	22/06/2018	Casting yard	Fire fighting	22	
7.	26/06/2018	Casting yard	Safe working with machinery	11	
8.	28/06/2018	Casting yard	Welding, cutting, bending	21	
9.	29/06/2018	Casting yard	Manual material lifting	14	
10.	30/06/2018	Casting yard	Environment management	14	
11.	04/06/2018	Chandpole	Waste Management	12	
12.	09/06/2018	Chandpole	Lifting Operation	13	
13.	11/06/2018	Chandpole	SHE Communication Hot Work	08	
14.	16/06/2018	Chandpole	Scaffolding Erection & Dismantling.	11	
15.	18/06/2018	Chandpole	Fire Fighting	9	
16.	22/06/2018	Chandpole	Permit to Work	12	
17.	25/06/2018	Chandpole	Rigging	8	
18.	29/06/2018	Chandpole	Hand Tools & Power Tools	8	
19.	02/06/2018	Chhoti Chaupar	Safe Procedure of Manual Material Handling	14	
20.	04/06/2018	Chhoti Chaupar	Scaffolding Safety Heavy lifting operation	21	
21.	05/06/2018	Chhoti Chaupar	Heat Stock	20	
22.	07/06/2018	Chhoti Chaupar	Fire fighting	16	
23.	08/06/2018	Chhoti Chaupar	Traffic management	21	
24.	09/06/2018	Chhoti Chaupar	Waste management	8	
25.	09/06/2018	Chhoti Chaupar	Behavior Base Safety Management	10	
26.	11/06/2018	Chhoti Chaupar	First Aid & CPR	14	
27.	14/06/2018	Chhoti Chaupar	Safe use of Hand & Power tools	8	
28.	14/06/2018	Chhoti Chaupar	Permit to work system	7	
29.	18/06/2018	Chhoti Chaupar	Rigging Work Safety	12	
30.	19/06/2018	Chhoti Chaupar	Manual Material Handling	8	
31.	23/06/2018	Chhoti Chaupar	Scaffolding erection & Dismantling	19	
32.	26/06/2018	Chhoti Chaupar	Work at Height	11	

SN	Date	Location	Topics	Attendance	Remarks
33	26/06/2018	Chhoti Chaupar	Use of Full body Harness	7	
34	27/06/2018	Chhoti Chaupar	Bar Bending & Cutting	11	
35	28/06/2018	Chhoti Chaupar	Safety During Block work	21	
36	29/06/2018	Chhoti Chaupar	SHE Communication	9	
37	30/06/2018	Chhoti Chaupar	Hot Work	18	
38	30/06/2018	Chhoti Chaupar	Scaffolding erection & Dismantling	20	
39	01/06/2018	Badi Chaupar	Work at height	14	
40	02/06/2018	Badi Chaupar	Waste Management system	09	
41	03/06/2018	Badi Chaupar	Wire rope inspection	15	
42	04/06/2018	Badi Chaupar	Power actuated hand tools	09	
43	05/06/2018	Badi Chaupar	Work at height	22	
44	06/06/2018	Badi Chaupar	Welding cutting & Bending	22	
45	07/06/2018	Badi Chaupar	Work at height	20	
46	08/06/2018	Badi Chaupar	Scaffolding erection & Dismantling	09	
47	09/06/2018	Badi Chaupar	Electrical mechanical inspection	09	
48	09/06/2018	Badi Chaupar	Scaffolding erection & inspection	20	
49	12/06/2018	Badi Chaupar	Scaffolding	20	
50	14/06/2018	Badi Chaupar	Traffic management	20	
51	14/06/2018	Badi Chaupar	Heavy lifting operation	10	
52	19/06/2018	Badi Chaupar	Behavior base safety	17	
53	21/06/2018	Badi Chaupar	Fire	24	
54.	22/06/2018	Badi Chaupar	CPR & First aid	31	

Record of SHE inspections attendance

Sample copy of Safety, Health and Environment (SHE) inspections/audits

 CONTINENTAL ENGINEERING CORP <small>A MEMBER OF CONTINENTAL HOLDINGS</small>		169th WEEKLY SHE WALK ATTENDANCE SHEET PROJECT:- JMRC-UG 1B			Location:- Casting Yard Date: 13/07/2018 Walk No:- 169	
SL.NO.	NAME	DESIGNATION	SIGNATURE	ORGANIZATION	E-MAIL ID	
1.	SHASHANK SHEKHAR	OPN		CEC		
2.	Anmit Sharmar	Jr. En/OPN		OPN		
3.	YOGESH KR SENGU	Jr. E. CIVIL		JMRC		
4.	KARAN KAPOOR	Sr. Electrical Engr		CEC		
5.	Mansh Kumar	Sr Engrin Re		CEC		
6.	Mandeep Ah	Sr Store Exec		CEC		
7.	Shijet B. Pandey	AM Store		CEC		
8.	SUNIL KUMAR	HR/ADMIN		CEC		
9.	Arvind Kr. Alinabli	ENV. MGR.		CEC		
10.	VIRANVAR PRASAD DWIVEDI	B/PLANT SUPN		CEC		
11.	Omprakash	Eng		CEC		
12.	Daljeet Singh	Sm ME		CEC		
13.	Hemant Kumar	Asst. manager		CEC		

Record of SHE Training Photographs



Environment Awareness and waste management training



CPR Training

Emergency Mock drill Training
in the station



TBT/ Pre start work training



Training for Fire Fighting



Breath analysis/ Alcohol Testing



General Housekeeping & brooming



Illumination Monitoring



First Aid training



Health & Hygiene training at site




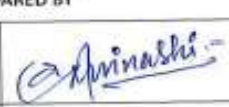


Training of safe work practices

APPENDIX 3: SAMPLE FORMAT OF MONTHLY SHE REPORT

CONTINENTAL ENGINEERING CORPORATION**MONTHLY
SAFETY, HEALTH & ENVIRONMENTAL
REPORT****June - 2018**DOCUMENT No. RP/JMRC/SHE/UG1B/PHOF/048
Revision =00, Date 07.07.2018

**DESIGN AND CONSTRUCTION OF TUNNEL BETWEEN CHANDPOLE AND BADI
CHOUER AND REVERSAL LINE BY SHIELD TBM, UNDERGROUND METRO
STATION AT CHOTI CHOUER AND BADI CHOUER BY CUT & COVER METHOD
ON EAST-WEST CORRIDOR OF JAIPUR METRO (PHASE-1B) AT JAIPUR,
RAJASTHAN, INDIA**

CONTRACT NO: JP/EW/1B/C1
SUBMITTED By-**CONTINENTAL ENGINEERING CORPORATION (CEC)**

	PREPARED BY		REVIEWED BY	APPROVED BY
Signature :				
NAME :	RAJANEESH KUMAR	ARVIND KUMAR AVINASHI	RAJ KISHOR PANDEY	DIETER MEYER
DESIGNATION :	OFFICER SAFETY	ENVIRONMENT MANAGER	CHIEF SHE MANAGER	PROJECT LEADER
DATE :	7 th July, 2018		7 th July, 2018	7 th July, 2018

APPENDIX 4: SAMPLE MONITORING REPORT



Idma Laboratories Limited

(A Government Approved Test House)

NASL/NDEF/BS/FSSAI/State Pollution Boards/Drug & Cosmetic Act/ISO 9001; 14001; 18001 Certified

TEST REPORT

Ref. No. IL/D 2440	Date 05-07-18	Lab No. 020718ED-NL-013	Page No. 1/1
Customer	Continental Engineering Corporation (CEC) JMRC UG-1B Project, Old Police Head quarter (PHQ) Near FRO, Opposite City Palace, Behind Hawa Hamal, Bedi Choupar Jaipur- 302002 Rajasthan		
Type of Sample	AMBIENT AIR		
Customer's Description of Sample	AMBIENT AIR		
Quantity	1 No		
Packing, Markings	Filter Paper Packed in Polythene Pouch		
Mode of Collection of Sample	Sampling by Laboratories		
Work Order No.	I6130JSD1284	Dated	22/08/2018
Date of Receipt of Sample	02/07/2018		
Period of Analysis	02/07/2018 To 06/07/2018		
Sampling Team Idma	Mr. Biya Ram & Team	Client	Mr. Anind Kumar
Sampling Location	Near DMRC Office (Chandpole)		
Visual Observation	N/A		
Date of Sampling	27/06/2018		
Date of Reporting	05/07/2018		
Sampling Protocol	IS: 5182		
Testing Protocol	IS 5182		

RESULTS

S.No.	Test Parameter	Units	Results	Requirements (MAX)	Test Method
1	Particulate Matter (PM10)	µg/m³	179	100	IS: 5182 (P-23), 2006
2	Sulphur Dioxide (SO₂)	µg/m³	9.6	80	IS: 5182 (P-2), 2001
3	Nitrogen Dioxide (NO₂)	µg/m³	21	80	IS: 5182 (P-6), 2006
4	Carbon Monoxide (CO)*	mg/m³	0.07	2	IS: 5182 (P-10) 1999
5	Lead (Pb)	µg/m³	<0.1	1	IS: 5182 (P-23), 2004
6	Suspended Particulate Matter (SPM)	µg/m³	254	-	IS: 5182 (P-4) 1999

End of Report

For Idma Laboratories Limited

 Authorized Signatory



Idma Corporate Park, 391, Industrial Area, Phase-I, Panchkula, Haryana.
 Tel. No. : 0172-2577391, 5064827, 5064830, Fax No. : 91-172-2583587
 Website : www.idmagroup.co.in E-mail : testing@idmagroup.co.in

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Idma Laboratories Limited

(A Government Approved Test House)

NABL/MDEF/BIS/ISSA/State Pollution Board/Drug & Cosmetic Act/ISO 9001; 14001; 18001 Certified

TEST REPORT

Ref. No. IL/D-2442	Date 05-07-18	Lab No. 020718ED-NL-015	Page No. 1/1
Customer	Continental Engineering Corporation (CEC) JMRC UG-1B Project, Old Police Head quarter (PHQ) Near FRO, Opposite City Palace, Behind Hawa Hamal, Bodi Choupar Jaipur- 302002 Rajasthan		
Type of Sample	AMBIENT NOISE		
Customer's Description of Sample	AMBIENT NOISE		
Quantity	1 No.		
Packing, Markings	Instrument at Site		
Mode of Collection of Sample	Sampling by Laboratories		
Work Order No.	I6130JSD1284	Dated	22/06/2018
Date of Receipt of Sample	02/07/2018		
Period of Analysis	02/07/2018 To 04/07/2018		
Sampling Team Idma	Mr. Siya Ram & Team	Client	Mr. Arvind Kumar
Sampling Location	Hawa Mahal		
Visual Observation	N/A		
Date of Sampling	27/06/2018		
Date of Reporting	04/07/2018		
Sampling Protocol	CPCB		
Testing Protocol	CPCB		

RESULTS

S.No.	Test Parameter	Units	Results	Limits, Day	Test Method
1	Lmax	dB(A)	72.3	-	IS:7194 (1994) RA:2005
2	Lmin	dB(A)	51.6	-	IS:7194 (1994) RA:2005
3	Leq	dB(A)	60.3	-	IS:7194 (1994) RA:2005
4	L10	dB(A)	61	-	IS:7194 (1994) RA:2005
5	L50	dB(A)	58.2	-	IS:7194 (1994) RA:2005
6	L90	dB(A)	54.3	-	IS:7194 (1994) RA:2005
7	Lday	dB(A)	64.2	Max 75	IS:7194 (1994) RA:2005
8	LNight	dB(A)	63.6	Max 70	IS:7194 (1994) RA:2005
9	Ldn	dB(A)	57.8	-	IS:7194 (1994) RA:2005

End of Report

For Idma Laboratories Limited
Authorized Signatory



Idma Corporate Park, 391, Industrial Area, Phase-I, Panchkula, Haryana.
Tel. No. : 0172-2577391, 5064827, 5064830, Fax No. : 91-172-2583587
Website : www.idmagroup.co.in E-mail : testing@idmagroup.co.in

Turn Overleaf



Idma Laboratories Limited

(A Government Approved Test House)

NABL/MOEF(BIS)/FSSAI/State Pollution Boards/Drug & Cosmetic Act/ISO 9001; 14001; 18001 Certified

TEST REPORT

Ref. No. IL/D-1615	Date 06-06-18	Lab No. 010618ED-NL-021	Page No. 1/1
Customer	Continental Engineering Corporation (CEC) JMRC UG-1B Project, Old Police Head quarter (PHQ) Near FRO, Opposite City Palace, Behind Hawa Hamal, Bedi Choupar Jaipur- 302002 Rajasthan		
Type of Sample	Ground Water		
Customer's Description of Sample	Ground Water		
Quantity	5 Ltr		
Packing, Markings	Plastic Can		
Mode of Collection of Sample	Sampling by Laboratories		
Work Order No.	E MAIL	Dated	01/06/2018
Date of Receipt of Sample	01/06/2018		
Period of Analysis	01/06/2018 To 06/06/2018		
Sampling Team Idma	Mr. Sachin & Team	Client	Mr. Arvind Kumar
Sampling Location	Chandpol		
Visual Observation	N/A		
Date of Sampling	29/05/2018		
Date of Reporting	06/06/2018		
Sampling Protocol	IS: 3025-1987		
Testing Protocol	IS:10500-2012,Ad-1		

RESULTS

S.No.	Test Parameter	Units	Results	Desirable Limit	Test Methods
1	pH Value	-	7.2	6.5 to 8.5	IS:3025(P-11), 1983 RA-2012
2	Turbidity	NTU	<1	1 max.	IS:3025(P-10), 1984 RA-2012
3	Conductivity	µS/cm	1014	---	IS:3025 (P-14), 2013
4	Total Dissolved solids	mg/l	641	500 max.	IS:3025 (P-16), 1984 RA-2012
5	DO	mg/l	6.7	---	IS:3025 (P-38), 1989 RA-2009
6	Oil & Grease	mg/l	<1.0	---	IS:3025 (P-39), 1991 RA-2009
7	Total suspended solids	mg/l	<5.0	---	IS:3025 (P-17), 1984 RA-2012
8	E. coli	(MPN/100ml)	Absent	Shall Not be Detectable in 100 ml Sample	IS18522:1981(Hearthmed2003)

End of Report

For Idma Laboratories Limited



Authorized Signatory



Idma Corporate Park, 391, Industrial Area, Phase-I, Panchkula, Haryana.
Tel. No. : 0172-2577391, 5064827, 5064830, Fax No. : 91-172-2583587
Website : www.idmagroup.co.in E-mail : testing@idmagroup.co.in

Turn Overleaf

APPENDIX 5: MONTHLY REPORT OF HERITAGE CONSULTANT

In the reporting period, instrumentation and vibration monitoring were not carried out since there was no tunnelling activity.

APPENDIX 6: CONSENT TO OPERATE LETTER FROM RAJASTHAN STATE POLLUTION CONTROL BOARD



Regional Office Jaipur (S)
Rajasthan State Pollution Control Board
 4, Jhalana Institutional Area Jhalana Doongri, Jaipur
 Phone: 5159699 Fax: 5159699



Registered

File No : F(Tech)/Jaipur(Sanganer)/2805(1)/2016-2017/2142-2143

Order No : 2016-2017/Jaipur (S)/6083

Date: 09/01/2017

Unit Id : 66141

M/s Contiental Engineering Corporation

Continental Engineering Corporation C/o JMREC City Place

Premises Jalevi Chowk Jaipur, Jaipur Tehsil:Jaipur

District:Jaipur

Sub: Consent to Operate under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21(4) of Air (Prevention & Control of Pollution) Act, 1981.

Ref: Your application for Consent to Operate dated 13/06/2016 and subsequent correspondence.

Sir,

Consent to Operate under the provisions of section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 (hereinafter to be referred as the Water Act) and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981, (hereinafter to be referred as the Air Act) as amended to date and rules & the orders issued thereunder is **hereby granted** for your **Tunnel Ring Manufacturing Plant plant** situated at **Village Keshavpura Teh Sanganer, Nera Kamla Nehru Floyover, Bhankrota Jaipur Tehsil:Sanganer District:JAIPUR**, Rajasthan, subject to the following conditions:-

- 1 That this Consent to Operate is valid for a period from **22/08/2016** to **31/07/2031**.
- 2 That this Consent is granted for manufacturing / producing following products / by products or carrying out the following activities or operation/processes or providing following services with capacities given below.

Particular	Type	Quantity with Unit
READY MIX CONCRETE	By Product	6,000.00 M3/MONTH
Tunnel Rings	Product	2,350.00 PCS PER MONTH

- 3 That this consent to operate is for existing plant, process & capacity and separate consent to establish/operate is required to be taken for any addition / modification / alteration in process or change in capacity or change in fuel.
- 4 That the quantity of effluent generation along with mode of disposal for the treated effluent shall be as under:



Regional Office Jaipur (S)
Rajasthan State Pollution Control Board
 4, Jhalana Institutional Area, Jhalana Doongri, Jaipur
 Phone: 5159699 Fax: 5159699

Registered

File No : F(Tech)/Jaipur(Sanganer)/2805(1)/2016-2017/2142-2143

Order No : 2016-2017/Jaipur (S)/6083

Date: 09/01/2017

Unit Id : 66141

Type of effluent	Max. effluent generation (KLD)	Recycled Qty of Effluent (KLD)	Disposed Qty of effluent (KLD) and mode of disposal
Domestic Sewage	6.000	4.000	2.000 Septic Tank and Soakpit

- 5 That the sources of air emissions along with pollution control measures and the emission standards for the prescribed parameters shall be as under:

Sources of Air Emissions	Pollution Control Measures	Prescribed	
		Parameter	Standard
Boiler{ 150KG/HOUR}	ADEQUATE STACK HEIGHT , Cyclone	--	--
DG SET (1 No.)(225KVA)	ACOUSTIC ENCLOSURE , ADEQUATE STACK HEIGHT	--	--
DG SET (2 No.)(160KVA EACH)	ACOUSTIC ENCLOSURE , ADEQUATE STACK HEIGHT	--	--
DG SET (2 Nos.)(1000KVA EACH)	ACOUSTIC ENCLOSURE , ADEQUATE STACK HEIGHT	--	--
DG SET (3 No.)(125KVA EACH)	ACOUSTIC ENCLOSURE , ADEQUATE STACK HEIGHT	--	--



Regional Office Jaipur (S)
Rajasthan State Pollution Control Board
 4, Jhalana Institutional Area Jhalana Doongri, Jaipur
 Phone: 51596991 Fax: 5159699

Registered

File No : F(Tech)/Jaipur(Sanganer)/2805(1)/2016-2017/2142-2143

Order No: 2016-2017/Jaipur (S)/6083

Date: 09/01/2017

Unit Id : 66141

- 19 That the occupier shall ensure that the noise from the operations in the unit does not exceed the prescribed noise standards for the Residential Area i.e. 55 dB (A) Leq during the day time and 45 dB (A) Leq during the night. The day time is reckoned in between 6:00 a.m. to 10:00 p.m. and the night time is reckoned between 10:00 p.m. to 6:00 a.m.
- 20 That, notwithstanding anything provided hereinabove, the State Board shall have power and reserves its right, as contained under section 27(2) of the Water Act and under section 21(6) of the Air Act to review anyone or all the conditions imposed here in above and to make such variation as it deemed fit for the purpose of Air Act & Water Act.
- 21 That the grant of this **Consent to Operate** is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility to comply with the conditions laid down in all other laws for the time-being in force, rests with the industry/ unit/ project proponent.
- 22 That the grant of this **Consent to Operate** shall not, in any way, adversely affect or jeopardize the legal proceeding, if any, instituted in the past or that could be instituted against you by the State Board for violation of the provisions of the Act or the Rules made thereunder.

This **Consent to Operate** shall also be subject, besides the aforesaid specific conditions, to the general conditions given in the enclosed Annexure. The project proponent will comply with the provisions of the **Water Act and Air Act** and to such other conditions as may, from time to time, be specified, by the State Board under the provisions of the aforesaid Act(s). Please note that, non compliance of any of the above stated conditions would tantamount to revocation of **Consent to Operate** and project proponent / occupier shall be liable for legal action under the relevant provisions of the said Act(s).

Yours Sincerely

Regional Officer[Jaipur (S)]

Copy To:-

- 1 Master File.

APPENDIX 7: MUCK DISPOSAL DETAILS

a) Quantity of Muck Disposal:

Quantity of Muck Disposed to dumping ground (April 2018 to June 2018)	
Months	Quantities
April	4073.566 M ³
May	1777.266 M ³
June	6840.357 M ³

b) No. of trucks used for the same

Number of Trucks used for transporting muck to dumping ground (April 2018 to June 2018)	
Months	Number of Muck Disposal trucks
April	294 TRIPS
May	124 TRIPS
June	424 TRIPS

c) Average quantity of muck daily:

Average quantity of muck transported to dumping ground on daily basis (April 2018 to June 2018)	
Months	Average quantity of muck daily
April	135.785 M ³
May	59.242 M ³
June	228.011 M ³

d). Details of disposal site including photographs:

Photographs of disposal (loaded and taken) site		
		
Excavated muck stored at site	Excavated muck stored at surface level	Muck loading into dumper by excavator
		
Loaded dumper properly covered by tarpaulin	Loaded dumper is going through public road for muck disposal	Road marsal deployed for safe entry/exit of vehicle



Cleaning of public traffic road after disposal of soil from site



Landfilling at Nahargarh Biological Park, Jaipur



Landfilling at Rajasthan Police academy



Landfilling at Nahargarh Biological park



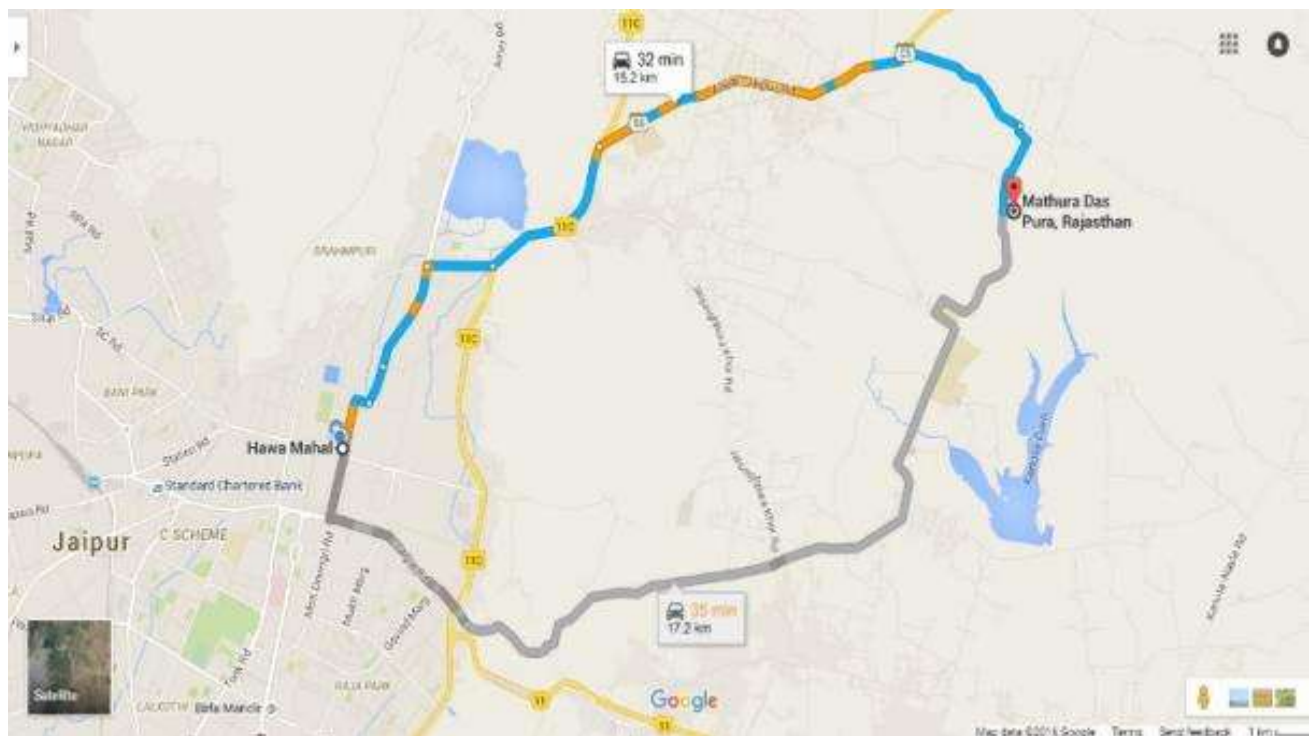
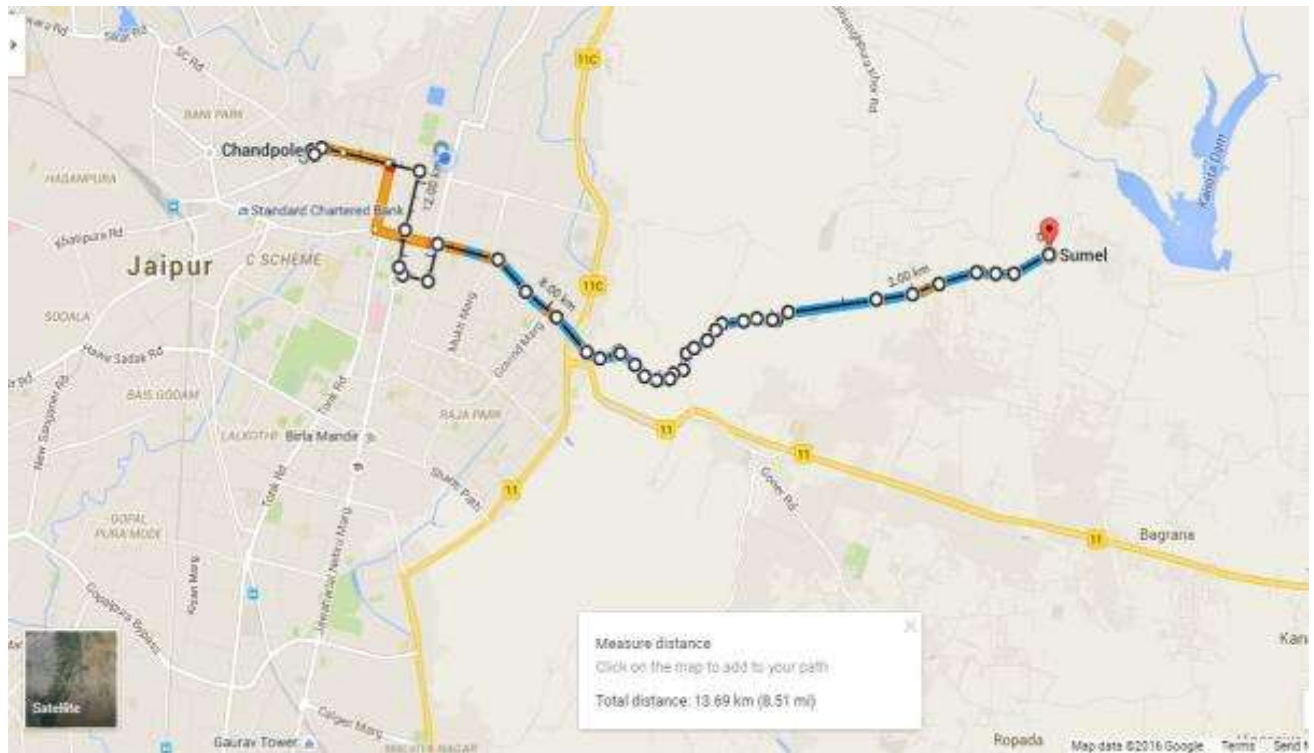
Dumping yard at Mathuradaspora

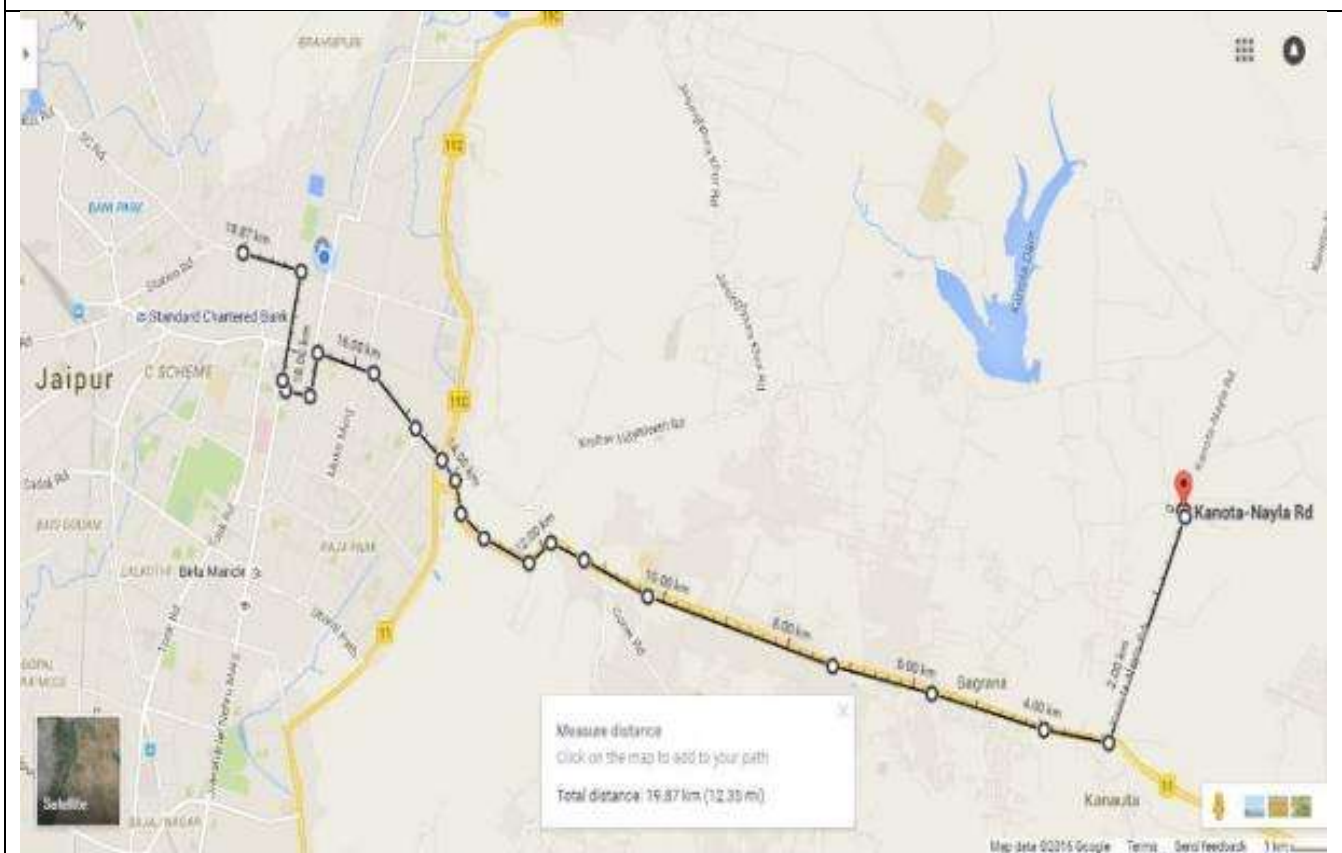
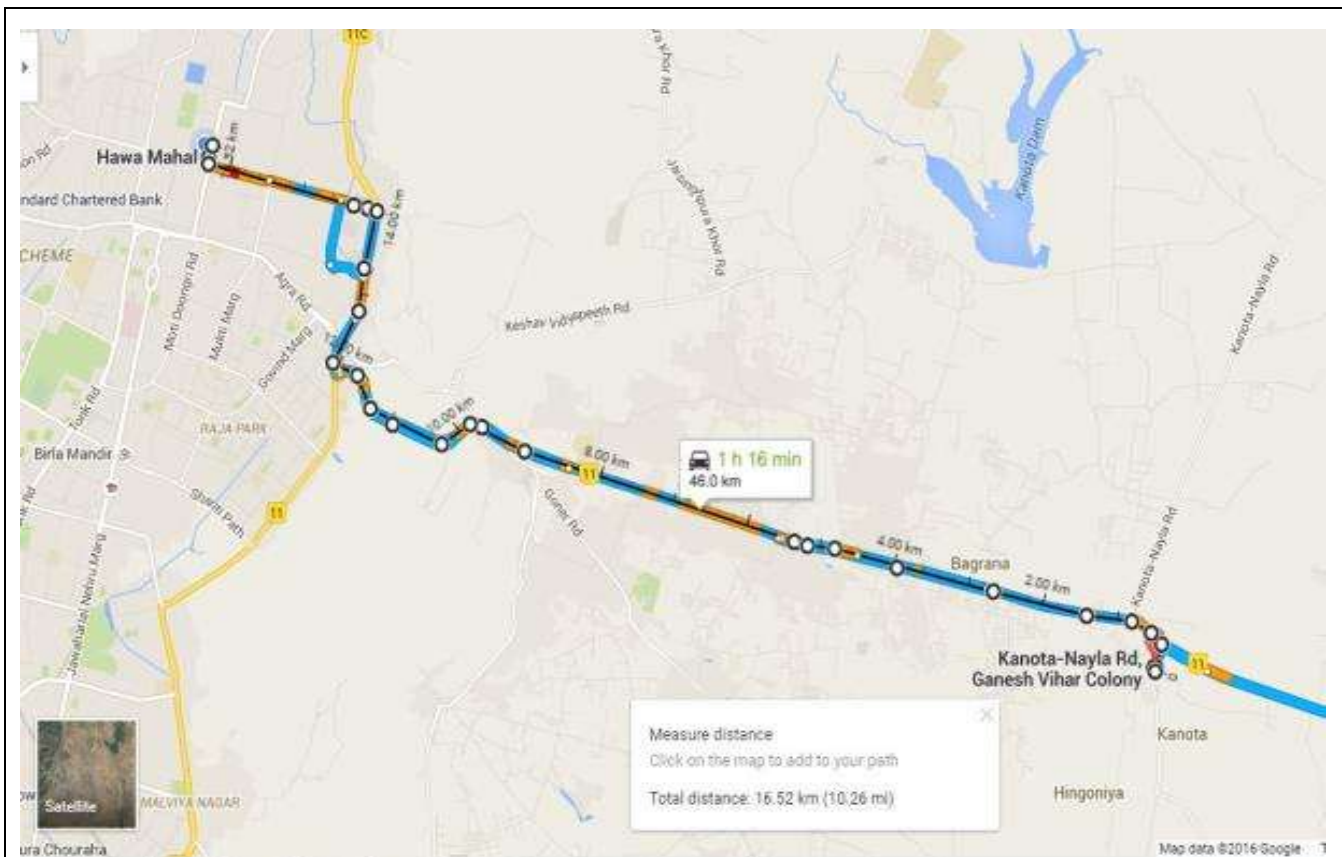


Landscaping at JDA park, Hathigaon, Jaipur

Route Map

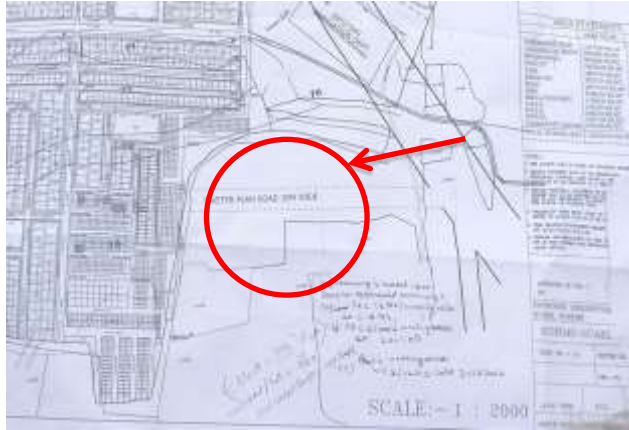
Map showing route for muck disposal
(Sumel, Mathuradaspora, Govindpura/Ropada& Langariyawas)

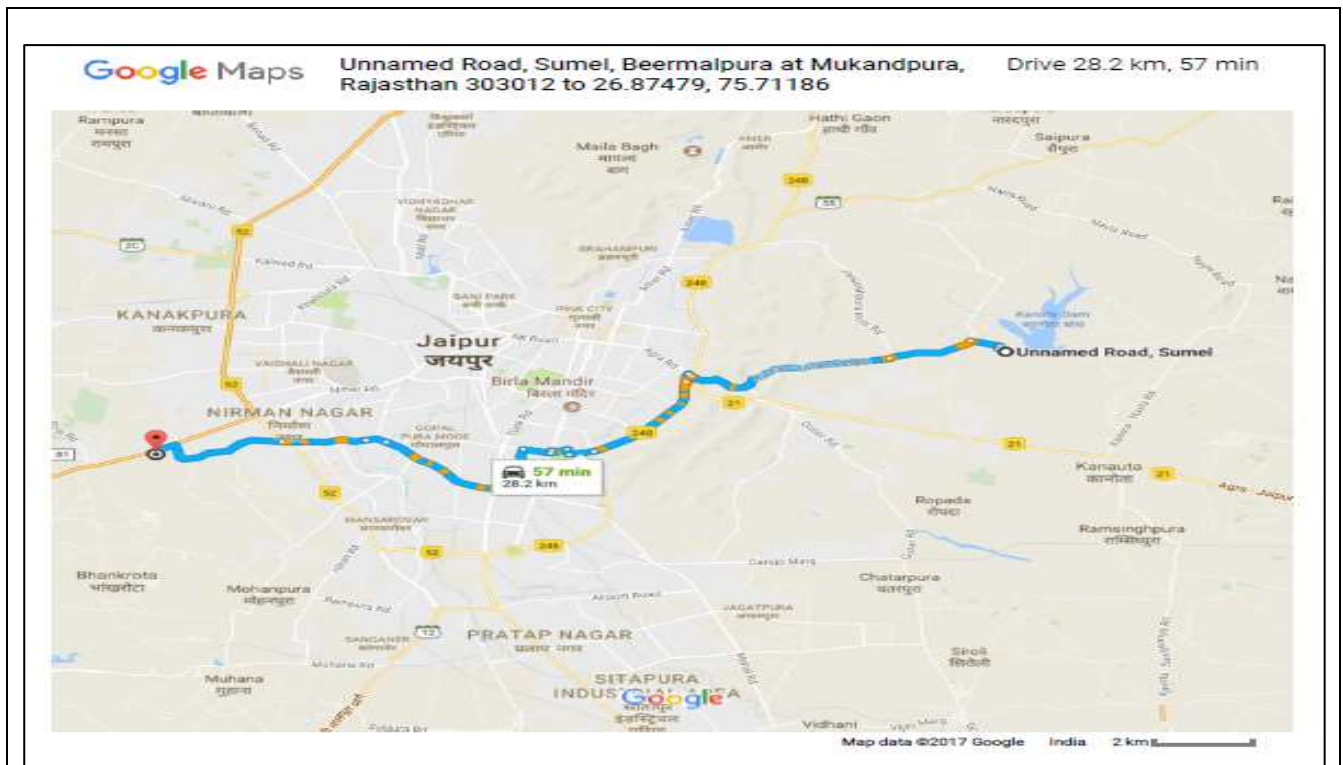








C&D waste disposal land (location & route map)




Map showing location & route for C&D waste disposal
(Khasra No.-1, Malpurachoudvillege, Near Sumel Housing scheme, Jaipur)













APPENDIX 8: TREE TRANSPLANTATION DETAILS




		CONTINENTAL ENGINEERING CORPORATION JMRC-1B PROJECT JP/EW/1B/C1			Location: Ghat Ki Ghuni
List of 1st phase Transplanted Trees					
SI No	Previous location	Current Location	Year of tree transplantation	Photographs	Remarks
1.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Did not Survive
2.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Survived
3.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Survived




SI No	Previous location	Current Location	Year of tree transplantation	Photographs	Remarks
4.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Survived
5.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Survived
6.	Badi Chaupar	Ghat Ki Ghuni	2014		Survived


 CONTINENTAL ENGINEERING CORP <small>A MEMBER OF CONTINENTAL HOLDINGS</small>		CONTINENTAL ENGINEERING CORPORATION JMRC-1B PROJECT JP/EW/1B/C1				Location: Ramnivas Bagh
		List of 2nd phase transplanted trees				
SI No	Tree No.	Tree Name	Previous location	Current Location	Date of tree transplantation	Photographs
1.	81	Gulmohar	Badi Chaupar	Ramniwas Garden	09.09.2015	
2	91	Begunvillia	Chhoti Chaupar	Ramniwas Garden	25.8.2015	
3	88	Ashok	Chhoti Chaupar	Ramniwas Garden	03.09.2015	


SI No	Tree No.	Tree Name	Previous location	Current Location	Date of tree transplantation	Photographs
4	78	Gulmohar	Badi Chaupar	Ramniwas Garden	05.09.2015	
5	67	Ashoka	Badi Chaupar	Ramniwas Garden	07.09.2015	
6	86	Ashoka	Badi Chaupar	Ramniwas Garden	07.09.2015	



SI No	Tree No.	Tree Name	Previous location	Current Location	Date of tree transplantation	Photographs
7	68	Ashoka	Badi Chaupar	Ramniwas Garden	09.09.2015	
8	76	Ashoka	Badi Chaupar	Ramniwas Garden	10.09.2015	
9	96	Gulmohar	Chhoti Chaupar	Sylvan Bio-diversity forest	26.08.2015	


SI No	Tree No.	Tree Name	Previous location	Current Location	Date of tree transplantation	Photographs
10	98	Gulmohar	Chhoti Chaupar	Sylvan Bio-diversity forest	26.08.2015	
11.	90	Shahtute	Badi Chaupar	Sylvan Bio-diversity forest	27.08.2015	
12	89	Gulmohar	Badi Chaupar	Sylvan Bio-diversity forest	04.09.2015	



SI No	Tree No.	Tree Name	Previous location	Current Location	Date of tree transplantation	Photographs
13	94	Bed	Chhoti Chaupar	Sylvan Bio-diversity forest	02.11.2015	
14	108	Pipal	PS Chhoti Chaupar	Sylvan Bio-diversity forest	04.11.2015	
15	126	Shisam	Badi Chaupar	Sylvan Bio-diversity forest	06.11.2015	



 CONTINENTAL ENGINEERING CORP <small>A MEMBER OF CONTINENTAL HOLDINGS</small>	CONTINENTAL ENGINEERING CORPORATION		JMRC-1B PROJECT JP/EW/1B/C1
	List of 3rd phase transplanted trees		
Location	Exit-Entry area, Badi chouper and Choti choupar stations		
Observations by	Arvind Kumar Avinashi (Environment Manager)		


TREE NO.	PHOTOGRAPHS	OBSERVATIONS / DETAILS	TRANSPLANTATION/ INSPECTION DATE	REMARKS
Tree No. 118		<p>Tree No. 118 Transplanted at parking area, Biological park, Nahargarh from Exit-Entry (North-East) Badi Choupar station.</p> <p>Botanical name: <i>Ficus benghalensis</i></p> <p>Common name: Bargad(बरगद)</p> <p>Girth:11100 mm</p> <p>Weight : 34 ton</p> <p>Tree is in good condition and fresh bunch of shoots and growth of leaves are seen.</p> <p>Photosynthesis of tree is in good condition and lush green leaves at various branches are seen.</p> <p>Formation of new shoots at various locations of branches seen.</p>	<p>Transplanted on 16.02.2018 (Friday)</p>	<p>Status: SURVIVED</p> <p>Water dripping and growth monitoring of tree by Environment Manager& forest staff is under progress</p>



TREE NO.	PHOTOGRAPHS	OBSERVATIONS / DETAILS	TRANSPLANTATION/ INSPECTION DATE	REMARKS
				
Tree No.120		<p>Tree No. 120 Transplanted at parking area, Biological park, Nahargarh, from Exit-Entry (South-East) Badi Choupar station.</p> <p>Botanical name: <i>Ficus benghalensis</i></p> <p>Common name: Bargad(बरगद)</p> <p>Girth: 7000 mm Weight : 16 ton</p> <p>New bunch of shoots germination and leaves growth are seen.</p> <p>Photosynthesis of tree is in good condition and lush green leaves are seen.</p>	<p>Transplanted on 13.02.2018 (Tuesday)</p>	<p>Status: Survived</p> <p>Water dripping and growth monitoring of tree by Environment Manager & Forest staff is under progress</p>



TREE NO.	PHOTOGRAPHS	OBSERVATIONS / DETAILS	TRANSPLANTATION/ INSPECTION DATE	REMARKS
		<p>Formation of shoots at various locations of branch is seen.</p> <p>Ample milky latex found in the tree.</p>		


<p>Tree No.</p> <p>115</p>	 	<p>Tree No. 115 Transplanted at parking area, Biological park, Nahargarh, from station Box, Badi Choupar station.</p> <p>Botanical name: <i>Ficus benghalensis</i></p> <p>Common name: Bargad (बरगद)</p> <p>Girth:6500 mm Weight : 12 ton</p> <p>Tree is in good condition, new bunch of shoots formation & growth of leaves are seen at various location.</p> <p>Formation of new shoots at various locations seen.</p> <p>Ample milky latex found in the tree and capillary reaction exists.</p>	<p>Transplanted on 09.02.2018 (Friday)</p>	<p>Status: Survived</p> <p>Water dripping and growth monitoring of tree by Environment Manager & Forest staff is under progress</p>
--	--	---	---	--

TREE NO.	PHOTOGRAPHS	OBSERVATIONS / DETAILS	TRANSPLANTATION/ INSPECTION DATE	REMARKS
				
<p>Tree No.</p> <p>115</p> <p>'A'</p> <p>(BRANCH)</p>		<p>Trimmed branches of tree no.-115 planted in front of Forester's Office, Biological park, Nahargarh from Badi choupar station.</p> <p>Botanical name: <i>Ficus benghalensis</i></p> <p>Common name: Bargad (बरगद)</p> <p>New bunch of shoots formation & leaves growth are seen at various locations in the branches.</p> <p>Formation of shoots at various locations of branches is seen.</p> <p>Ample milky latex found in the branches.</p>	<p>Transplanted on 13.02.2018 (Tuesday)</p>	<p>Status: Survived</p> <p>Water pouring and growth monitoring of branches by Environment Manager & Forest staff is under progress</p>

TREE NO.	PHOTOGRAPHS	OBSERVATIONS / DETAILS	TRANSPLANTATION/ INSPECTION DATE	REMARKS
	 <p>The top photograph shows a tree with green leaves and red flowers. The bottom photograph shows the tree's roots and trunk.</p>			

TREE NO.	PHOTOGRAPHS	OBSERVATIONS / DETAILS	TRANSPLANTATION/ INSPECTION DATE	REMARKS
<p>Tree No.</p> <p>115</p> <p>'B'</p> <p>(BRANCH)</p>	 	<p>Trimmed branches of tree no.-115 planted near Forester's office, Biological park, Nahargarh from Badi choupar station.</p> <p>Botanical name: Ficus Benghalensis</p> <p>Common name: Bargad (बरगद)</p> <p>New shoots formation seen, New leaves growth are seen.</p> <p>Ample milky latex found in the branches.</p>	<p>Transplanted on 13.02.2018 (Tuesday)</p>	<p>Status: Survived</p> <p>Water pouring and growth monitoring of branches by Environment Manager & Forest staff is under progress</p>


TREE NO.	PHOTOGRAPHS	OBSERVATIONS / DETAILS	TRANSPLANTATION/ INSPECTION DATE	REMARKS
<p>Tree No.</p> <p>115</p> <p>'C'</p> <p>(BRANCH)</p>		<p>Trimmed branches of tree no.-115 planted near Forester's office, Biological park, Nahargarh from Badi choupar station.</p> <p>Botanical name: Ficus Benghalensis</p> <p>Common name: Bargad (बरगद)</p> <p>Fresh branches planted but NO shoot formation and its growth seen.</p>	<p>Transplanted on 13.02.2018 (Tuesday)</p>	<p>Status: Did Not Survive</p> <p>Water pouring and growth monitoring of branches by Environment Manager & Forest staff is under progress</p>
<p>Tree No.</p> <p>93</p>		<p>Botanical name: Ficus Benghalensis</p> <p>Common name: Bargad (बरगद)</p> <p>Girth:7200 mm Weight : 14 ton</p> <p>Tree no.-93 transplanted near parking area, Biological park, Nahargarh from North-West, Exit-Entry, Choti choupar station.</p> <p>Existing leaves are burnt due to high temperature in the summers but new shoots formation at one location seen.</p> <p>Ample milky latex found at various locations in the tree.</p>	<p>Transplanted on 28.03.2018(Wednesday)</p>	<p>Status: Survived</p> <p>Water pouring and growth monitoring of tree by Environment Manager & Forest staff is under progress</p>





TREE NO.	PHOTOGRAPHS	OBSERVATIONS / DETAILS	TRANSPLANTATION/ INSPECTION DATE	REMARKS
				





50 Sapling planted at JMRC UG-1B project site on 5th June, 2018 (World Environment Day)





World Environment Day Report Attached





20Sapling planted at JMRC UG-1B project site during 47th NSW (4th-10th March-2018)




Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
1		Botanical name: Saraca asoca Common name: Ashoka(अशोक)	Project office (PHQ)	8 th March, 2018	Survived

Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
2		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Project office (PHQ)	8 th March, 2018	Survived
3		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Project office (PHQ)	8 th March, 2018	Survived
4		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2018	Survived
5		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Project office (PHQ)	8 th March, 2018	Survived


Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
6		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2018	Survived
7		Botanical name: Ficus Benghalensis Common name: Bargad (बरगद)	Project office (PHQ)	8 th March, 2018	Survived
8		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2018	Survived
9		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Project office (PHQ)	8 th March, 2018	Survived





Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
10		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2018	Survived
11		Botanical name: Ficus Benghalensis Common name: Bargad (बरगद)	Project office (PHQ)	8 th March, 2018	Survived
12		Botanical name: Saraca asoca Common name: Ashoka (अशोक)	Project office (PHQ)	8 th March, 2018	Survived
13		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Project office (PHQ)	8 th March, 2018	Survived





Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
14		Botanical name: Saraca asoca Common name: Ashoka (अशोक)	Project office (PHQ)	8 th March, 2018	Survived
15		Botanical name: Saraca asoca Common name: Ashoka (अशोक)	Project office (PHQ)	8 th March, 2018	Survived
16		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Casting Yard	8 th March, 2018	Survived
17		Botanical name: Saraca asoca Common name: Ashoka (अशोक)	Casting Yard	8 th March, 2018	Survived




Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
18		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Casting Yard	8 th March, 2018	Survived
19		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Casting Yard	8 th March, 2018	Survived
20		Botanical name: Ficus Benghalensis Common name: Bargad (बरगद)	Casting Yard	8 th March, 2018	Survived





23 Sampling planted at JMRC UG-1B project site during 46th NSW (4th-10th March-2017)





Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
1.		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Project office (PHQ)	8 th March, 2017	Survived




Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
2.		Botanical name: Ficus Benghalensis Common name: Bargad (बरगद)	Project office (PHQ)	8 th March, 2017	Survived
3.		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2017	Survived
4.		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Project office (PHQ)	8 th March, 2017	Survived
5.		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2017	Survived

Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
6.		Botanical name: Saraca asoca Common name: Ashoka (अशोक)	Project office (PHQ)	8 th March, 2017	Survived
7.		Botanical name: Ficus religiosa Common name: Peepal (पीपल)	Project office (PHQ)	8 th March, 2017	Survived
8.		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2017	Survived
9.		Botanical name: Ficus Benghalensis Common name: Bargad (बरगद)	Project office (PHQ)	8 th March, 2017	Survived

Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
10.		Botanical name: Ficus Benghalensis Common name: Bargad (बरगद)	Project office (PHQ)	8 th March, 2017	Survived
11.		Botanical name: Ficus Benghalensis Common name: Bargad (बरगद)	Project office (PHQ)	8 th March, 2017	Survived
12.		Botanical name: Saraca asoca Common name: Ashoka (अशोक)	Project office (PHQ)	8 th March, 2017	Survived

Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
13.		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2017	Survived
14.		Botanical name: Ficus benjamina Common name: Pukar (पुकर)	Project office (PHQ)	8 th March, 2017	Survived
15.		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2017	Survived
16.		Botanical name: Saraca asoca Common name: Ashoka (अशोक)	Project office (PHQ)	8 th March, 2017	Survived

Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
17.		Botanical name: Ficus Benghalensis Common name: Bargad (बरगद)	Project office (PHQ)	8 th March, 2017	Survived
18.		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2017	Survived
19.		Botanical name: Ficus religiosa Common name: Peepal (पीपल)	Project office (PHQ)	8 th March, 2017	Survived
20.		Botanical name: Psidium guajava Common name: PERU Guava (अमरुद)	Project office (PHQ)	8 th March, 2017	Survived

Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
21.		Botanical name: Syzygium cumini Common name: Java plum (जामुन)	Project office (PHQ)	8 th March, 2017	Survived
22.		Botanical name: Saraca asoca Common name: Ashoka (अशोक)	Project office (PHQ)	8 th March, 2017	Survived
23.		Botanical name: Ficus Benghalensis Common name: Bargad (बरगद)	Project office (PHQ)	8 th March, 2017	Survived

APPENDIX 9: PERMISSION LETTER FOR TREE TRANSPLANTATION AT JMRC UG-1B



NOTICE

Dear Gentlemen,
Greetings of the day!

Pleased to inform you that we are celebrating world Environment Day on 5th June, 2018.

In this occasion we are conducting following activities at all sites and PHQ office-

- | | |
|---|-----------------------|
| 1. Plantation at PHQ lawn/ casting yard/
Ram Niwas bagh by all HOD's | (10:00 to 10:30 AM) |
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(Badi Choupar/Chhoti choupar/Chandpole/Casting yard) | (02:00 PM to 3:00 PM) |
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| 5. Quiz competition for engineers & staff | (5:30 to 6:00 PM) |
| 6. Sweet distribution at all sites and PHQ | |

NOTE-

All HOD's are requested to participate in the Tree plantation event at staff camp, casting yard.


Raj Kishor Pandey
(Chief SHE Manager)


Dieter Meyer
(Project Leader)

क्रमांक: आर-1()13/पेड/1353

निर्देशक (प्रोजेक्ट)

जयपुर मेट्रो रेल कॉरपोरेशन लि०,
खनिज भवन, तिलक मार्ग, सी-स्कीम,
जयपुर।

विषय:- जयपुर मेट्रो रेल प्रोजेक्ट के फेज-1 बी में चान्दपोल से बड़ी
बीच आ रहे पेड़ों को काटने/पुनरोपण की अनुमति प्रदान

विषयान्तर्गत प्रासंगिक पत्र द्वारा जयपुर मेट्रो रेल प्रोजेक्ट के फेज
से बड़ी चौपड के बीच आ रहे 90 पेड़ों को काटने/पुनरोपण
अनुमति प्रदान करने का निवेदन किया गया
जयपुर मेट्रो रेल प्रोजेक्ट के फेज-1 बी में
कुल 88 पेड़ों को काटने/पुनरोपण की अनुमति प्रदान
सख्या 3 व 4 (पीपल व बरगद) के पेड को काटने की

निर्देशानुसार
फेज-1 बी में

पर $88 \times 4 = 352$ पेड लगाये जावेंगे तथा काटे गये पेड की

भू-राजस्व
(मातादीन)

प्रतिलिपि तहसीलदार जयपुर को उनके पत्र क्रमांक आरए/14/
01.2014 सन्दर्भ में उपरोक्तानुसार पालना हेतु प्रेषित

11
(मातादीन)

प्रभारी अधिक

APPENDIX 10: APPLICATION SUBMITTED TO AUTHORITY FOR EXTRACTION OF GROUND WATER



Ref No.: FC/DCJR/CON/UG1B/PHOF/16/2855

Date: 01.12.2016

To,
The District Collector,
Jaipur, Rajasthan.

Rev.
2.12.16

Through: Direct Project (JMRC)

Subject. Permission to draw water from existing Bore Wells.

Dear Sir,

We, Continental Engineering Corporation (CEC) have been entrusted the underground metro rail project contract vide: ICB No. JP/EW/1B/C1 - Design and Construction of Tunnel between Chandpole and Badi Chouper and Reversal Line by Shield TBM, Underground Metro Station at Choti Chouper and Badi Chouper by Cut & Cover Method on East-West Corridor of Jaipur Metro (Phase 1b) At Jaipur, Rajasthan, India.

The Employer, Jaipur Metro Rail Corporation (JMRC) is having an approach to provide an underground metro rail facility for the public of Rajasthan while focusing on the overall objective of business which makes this project having paramount importance and in the public interest.

Land near the Bhankrota on Ajmer Road was allotted by Jaipur Development Authority vide their letter no. D-7487 dated 23.12.2010 to JMRC for casting of segments, batching plant & stacking depot of project phase 1A. Part of the same yard have been allotted to CEC for their pre-cast yard and batching plant for our underground metro project phase 1B, which is in Sanganer block of Jaipur district. This area falls under notification by central ground water authority (CGWA) dated 13.8.2011 for regulation of ground water development & management. As per the notification, permission can be accorded only for drinking and domestic purpose.

Page 1 of 2

CONTINENTAL ENGINEERING CORP

Tower B, 7th Floor, Signature Tower, Sector-29, Hill-8, Gurgaon-122002 (HR).

Area Office : Continental Engineering Corporation, (Old Police Head Quarter)

Near Jalandhar Chowk, In front of City Palace, Near PZO Office, Badi Chouper,
Jaipur, Rajasthan, Pin-302002.

Tel : +91-141-4835200

Web Site: www.cel.com.in

MEMBER OF CONTINENTAL HOLDINGS



**CONTINENTAL
ENGINEERING CORP**

Since, CEC is engaged in construction of JMRC project UG1B and having allotment of casting yard at Bhankrota, more than 500 labour are being employed. Construction activities are going on, the water will be used for drinking, domestic purpose of labour, concrete batching plant and firefighting. Duration of the project is estimated 2 years from now. To meet the above said requirement, it will be required to have 60KL per day of water.

Earlier, we have considered the use of treated water for all activities. But the Treated Water has common impurities which affects the quality of the RCC works. Use of treated water reduces the initial strength of RCC and rusting of steel therein. Hence it is require to use ground water from existing three number of bore wells at casting yard.

After completion of project, this casting yard land where 1 nos. of bore wells are located will be handover to Jaipur Development Authority. Later these bore wells may use for drinking & domestic purpose for nearby areas.


In view of foregoing facts, it is humbly requested to your good self to accord the permission for Ground water withdrawal for the construction activities, drinking and domestic purpose at the Casting yard Bhankrota from existing 1 Nos. of Bore well.

Kindly it may be treated as a special case in interest of the public of Jaipur Rajasthan. We therefore request you to please accord your approval for extracting water from existing three bore wells at casting yard.

Thanking you and assuring you of our best attention at all times.

Yours Sincerely,

For M/s Continental Engineering Corporation


Dieter Meyer
Project Leader

Enclosure:

1. Plan - A3 sheet

Page 2 of 2

CONTINENTAL ENGINEERING CORP

Tower 2, 7th Floor, Signature Tower, Sector-29, NH-8, Gurgaon-122002 (HR).

Site office : Continental Engineering Corporation, (Old Police Head-Quarters)
Near School Chandi, In front of City Police, Near FBO Office, Ball Champur,
Jaipur, Rajasthan, Pin-302001.

Tel : +91-141-4035348

Web-site: www.cec.com.hr

कार्यालय उपजिला कलक्टर एवं मजिस्ट्रेट, जयपुर द्वितीय (सांगानेर), जयपुर

टैली फ़ैक्स: 0141-2731100

ईमेल: sdo2san@gmail.com

क्रमांक: बोरिंग स्वीकृति/17/1058

दिनांक: 5/4/17

सहायक अभियंता
जनस्वास्थ्य अभियांत्रिकी

जयपुर

मानसरोवर
XI लाइफ

विषय: भूखण्ड सं० १७८८ नं० ८६० केशवपुरा मानसरोवर
तह० सांगानेर जयपुर में बोरवेल/नलकूल की अनुमति हेतु
बिन्दुवार रिपोर्ट पेश करने बाबत।

प्रसंग: श्रीमान जिला कलक्टर, जयपुर के पत्रांक: विकास/—1/
नलकूप/2017/7205 दि. 5/12/16 के क्रम में।

उपरोक्त विषयान्तर्गत प्रासंगिक पत्र द्वारा प्रार्थी/प्रार्थिया-श्री/श्रीमती Kak! Henry
Dieter पुत्र/पुत्री श्री ने अपने भूखण्ड १७८८ नं० ८६०
केशवपुरा मानसरोवर जयपुर में बोरवेल/नलकूप खोदने
की स्वीकृति चाही है।

अतः आप प्रश्नगत स्थल का मौका निरीक्षण कर निम्नांकित बिन्दुओं की स्पष्ट रिपोर्ट मय अनुमति दिये जाने बाबत मय आपकी स्पष्ट अनुशंसा के 7 दिवस में इस कार्यालय में पेश करना सुनिश्चित करें।

1. बोरिंग/नलकूल निर्माण किस प्रयोजन हेतु करवाया जा रहा है।
2. बोरिंग/नलकूप प्रस्तावित स्थल को चिह्नित करते हुए निर्मित भवन सहित दो फोटो भी भिजवावें।
3. वर्तमान में बोरिंग/नलकूप प्रस्तावित स्थल ऐरिया में पेयजल मांग एवं आपूर्ति का स्पष्ट उल्लेख करें।
4. बोरिंग/नलकूप प्रस्तावित स्थल पर प्रार्थी का स्वयं का मालिकाना हक है अथवा नहीं?
5. बोरिंग/नलकूप प्रस्तावित स्थल पर मकान निर्मित है या नहीं ?

संलग्न:- प्रा०पत्र

(32-)
a/c/
h/ (अशोक कुमार शर्मा)
उपजिला कलक्टर एवं मजिस्ट्रेट
जयपुर द्वितीय (सांगानेर)

कार्यालय जिला कलक्टर, एवम् जिला माजस्ट्रेट, जयपुर
www.jaipur.rajasthan.gov.in

क्रमांक: विकास-1/नलकूप ()2016/ 7205

दिनांक 05.12.2016

वरिष्ठ भू-जल वैज्ञानिक,
भूजल विभाग,
72, बी झालाना इंगरी, जयपुर।

विषय:- खसरा नं० 860, केशवपुरा, भांकरोटा, जयपुर में बोरवेल/नलकूप की अनुमति चाहने बाबत
द्वारा:- Karl Heinz Dieter Meyer

उपर्युक्त विषयान्तर्गत Karl Heinz Dieter Meyer के द्वारा खसरा नं० 860, केशवपुरा, अजमेर रोड, भांकरोटा, जयपुर में बोरवेल/नलकूप की अनुमति चाहने बाबत अनुरोध किया है। प्राप्त पत्र मूल संलग्न प्रेषित कर लेख है कि आवेदन पत्र को रजिस्टर में दर्ज किया जाकर अंकित तथ्यों एवं उसके द्वारा प्रस्तुत दस्तावेजों की मौके पर जाकर, नियमानुसार जांच करना सुनिश्चित करे। जांच करते समय यह सुनिश्चित किया जावे कि आवेदित स्थान उक्त प्रार्थी की सम्पत्ति हो। प्रकरण में समस्त जांच रिपोर्ट नियमों के साथ टिप्पणी सहित कमेटी में आवश्यक निर्णय हेतु रखी जावे। कमेटी द्वारा पारित निर्णय से आवेदक को एवं इस कार्यालय को भी अवगत कराया जावे।

आवेदक को कमेटी द्वारा बोरवेल खोदने की अनुमति दी जाती है तो आवेदक से निर्धारित समयावधि में अनिवार्य रूप से वाटर हार्वैस्टिंग का निर्माण निर्धारित डिजाइन अनुसार कराने के संबंध में शपथ पत्र प्राप्त किया जावे। शपथ पत्र में आवेदक से यह शपथ भी ली जावे कि वह प्राप्त अनुमति तथा नियमों के विरुद्ध कोई कार्यवाही नहीं करेगा। नियम विरुद्ध कार्य करने पर वह स्वयं उसके लिए जिम्मेदार होगा तथा सरकार द्वारा जो भी दण्ड या जुर्माना किये जाने पर उसको स्वीकार करेगा। कमेटी द्वारा पारित निर्णय का उल्लंघन न हो इस हेतु दी गई अनुमति के तहत किये गये कार्यों का निरीक्षण भी आपके विभाग द्वारा किया जावे।
संलग्न:-उपरोक्तानुसार (मूल)

(श्याम सिंह शेखावत)
अति.कलक्टर, चतुर्थ एवं
प्रभारी अधिकारी, विकास
कलक्ट्रेट जयपुर

दिनांक 05.12.2016

क्रमांक: विकास/नलकूप ()2016/ 7206-07

प्रतिलिपि:-

1. उपखण्ड अधिकारी, सांगानेर को प्रेषित कर लेख है कि प्रकरण में मौके की जांच एवं पानी की आवश्यकता के संबंध में जांच कर रिपोर्ट के साथ मौके पर बने हुए भवन की फोटो आवेदक से प्राप्त कर प्रकरण अपनी टिप्पणी सीधे ही वरिष्ठ भूजल वैज्ञानिक भू-जल विभाग 72,बी झालाना इंगरी जयपुर को प्रेषित करते हुए एक प्रति इस कार्यालय को भी भिजवाये। संलग्न:-उपरोक्तानुसार।
2. Karl Heinz Dieter Meyer खसरा नं० 860, केशवपुरा, अजमेर रोड, भांकरोटा, सांगानेर, जयपुर को सूचनार्थ प्रेषित है।

(श्याम सिंह शेखावत)
अति.कलक्टर, चतुर्थ एवं
प्रभारी अधिकारी, विकास
कलक्ट्रेट जयपुर

Appendix 11: WORLD ENVIRONMENT DAY CELEBRATION/ AWARENESS CAMPAIGN ON 5TH JUNE, 2018



NOTICE

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All HOD's are requested to participate in the Tree plantation event at staff camp, casting yard.


Raj Kishor Pandey
(Chief SHE Manager)


Dieter Meyer
(Project Leader)



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 Raj Kishor Pandey
 (Chief SHE Manager)


 Dieter Meyer
 (Project Leader)



**Display of Banners/Posters for workers and Public awareness
on World Environment Day (5th June, 2018)**



Display of badges by workers & staff for World Environment Day awareness campaign, (5th June, 2018)



Plantation by Mr. Akhilesh Saxena (Executive Director-JMRC)



Plantation by Mr. A.K. Roy (Project Director - DMRC)



Plantation by Mr. Bhanu Pratap Singh (Treasurer - Union Football Club)



Plantation by Mr. Ravi Poonia (DMRC)



Plantation by Mr. Sachindra Mohan (DMRC)



**Plantation by Mr. Shashank Shekhar
(DPM)**



**Plantation by Mr. Jeevan Bhatt
(Station Manager - Badi chouper)**



**Plantation by Mr. Sunil Kumar R
(DGM – HR&ADMIN)**



Plantation by Mr. Raj kishor Pandey (CSM)



**Plantation by Mr. Nishant Agarwal
(Sr. Manager–Contracts)**



**Plantation by Mr. Sharwan Suman
(Manager - Accounts)**



**Plantation by Mr. Vinoth Ganesan
(Manager - Commercial)**



**Plantation by Mr. Arvind Sharma
(Manager - Planning)**



Plantation by Mr. Siddhu Patil (HOD-Design)



**Plantation by Mr. Arvind Kumar Avinashi
(Environment Manager)**



Plantation by Mr. Nand Kumar & Mr. Rajneesh Saini (SHE staff)



50 saplings planted by JMRC, DMRC and CEC officials at Union Football Club, Ram Niwas Bagh and casting yard, Bhankrauta, Jaipur





**Plantation by Mr. Om Prakash (Enginner - Civil),
Mr. Sudhakar Senapati (Safety Supervisor) and mess staff**





**Banner, Badges display on World Environment Day Awareness campaign
among workers, staff and local public**



**Tool Box Talk (TBT) on Environment Awareness/ Waste management
at casting yard**



Mass housekeeping activity on World Environment Day in the station





Presentation on Awareness of Plastic Pollution and waste management during World Environment Day to Project Engineers & staff at Project office.



competition conducted for Engineers and staff on World Environment Day awareness campaign Quiz



**Sweets and snacks distribution among workers and staff
at JMRC UG -1B project sites**



