

# Environmental and Social Monitoring Report

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Sixteenth Quarterly Report (October to December 2018)  
May 2019

## India: Jaipur Metro Rail Line 1-Phase B Project

Prepared by Jaipur Metro Rail Corporation Limited for the Asian Development Bank.

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

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

## **CURRENCY EQUIVALENTS**

(As of 31 December, 2018)

Currency unit	-	Indian Rupee (INR)
INR 1.00	=	\$ 0.0144
\$1.00	=	INR 69.57

## **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 16<sup>th</sup> quarterly report on environmental and social safeguards compliance of the Jaipur Metro Rail Line -1 Phase B Project. It covers the period from October 2018 to December 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 August 2019 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 December, 2018 are: i) Tunnelling works have been completed. ii) Major civil construction works of both Chhoti Chaupar and Badi Chaupar stations have been completed and finishing work is in progress at both the locations. Also construction of exit-entry structures is in progress at both locations. As on December 2018, the Kund restoration works at Chhoti Chaupar has been completed and the work of art gallery under the Kund area has been completed. Once the station becomes operational entry into the gallery area will be facilitated through the station. The Kund restoration works at Badi Chaupar is yet to begin. After completion of station work old water tanks will be reinstated at the location. As of December 2018 total physical and financial accomplishments are about 90.9% and 83.40% 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 meter and 5 meter. 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 Aravalli hills. To preserve the tanks, the Jaipur Metro Rail Corporation has altered the design to the station and alignment. 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.
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 October 2018 to December 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, so that 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 were 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 Tanwarji Ka Nauhra.

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. After complete and detailed documentation of both the Chaupars and after completion of station work, as per the directions of Government, under supervision of heritage consultant, heritage water tank at Choti Chaupar has been reinstated at its original location and a new Art Gallery has been constructed around it. The Kund and Art Gallery at Choti Chaupar were inaugurated by Hon'ble Chief Minister Rajasthan on 15<sup>th</sup> August 2018 and both of them were opened for public in the month of September 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 short-comings necessary corrective measures are taken up.





## 2. INTRODUCTION

### A. Purpose of the Report

17. 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.

18. 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.

19. 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 Sixteenth quarterly environment and social monitoring report for reporting period October 2018 to December 2018.

### B. Project Description

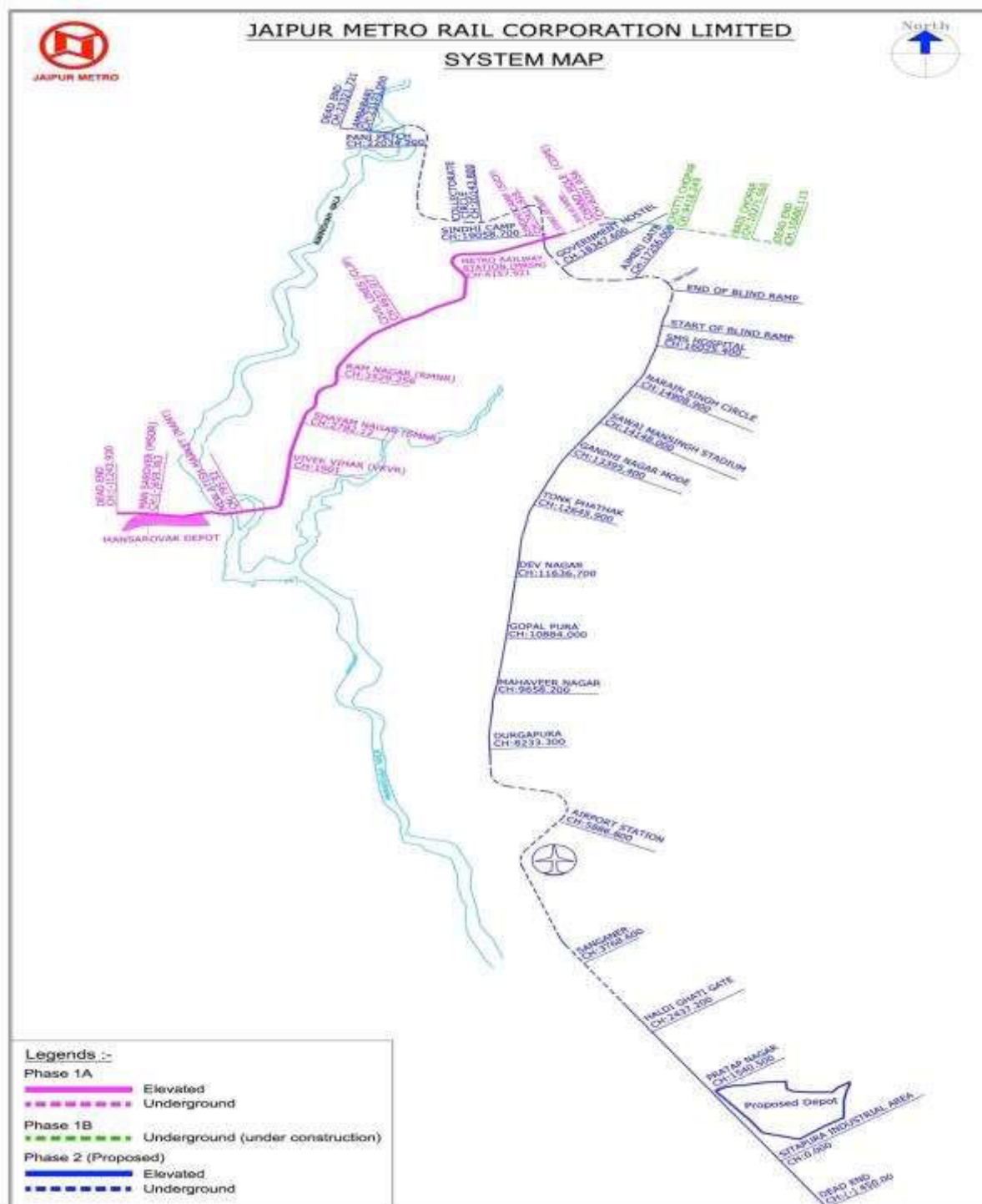
20. Jaipur, the capital of the Indian state of Rajasthan, is one of the fastest growing cities in India. The fast paced industrial and commercial development has resulted in a steep rise in travel demand, but the city's existing public transport infrastructure is inadequate in terms of capacity and service. 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 India<sup>1</sup>.

21. 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).

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

22. Line 1 – Phase B is being financed by ADB and expected to be completed by August 2019 at a cost of INR 1126 Crore<sup>2</sup>. Figure 1 show the system map of the project.



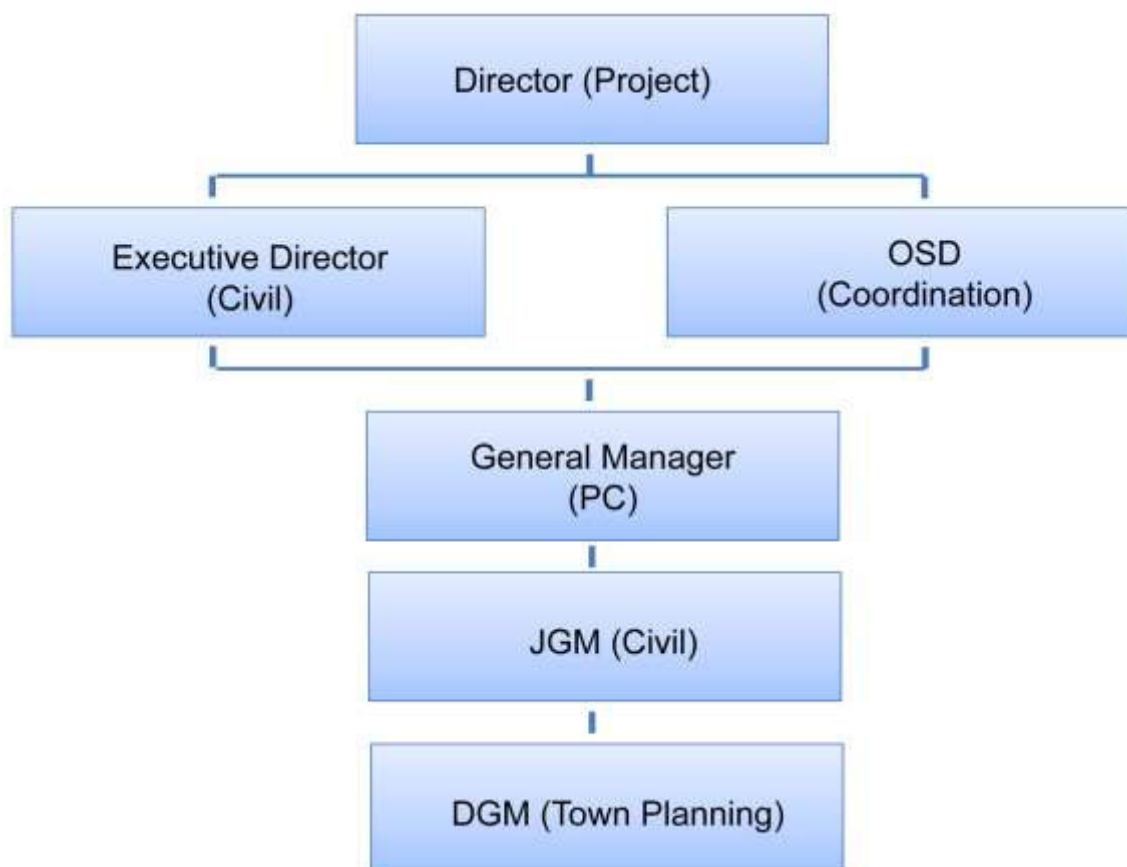
Source: JMRC

**Figure1. JMRC Project System Map**

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

### C. Project Implementation Arrangement

23. 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 safeguard measures associated with the Project. It constitutes six officials of JMRC. Organization structure of Safeguards Cell is show in Figure 2.



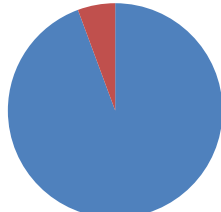
**Figure 2: Organization Structure of Safeguards Cell of JMRC**

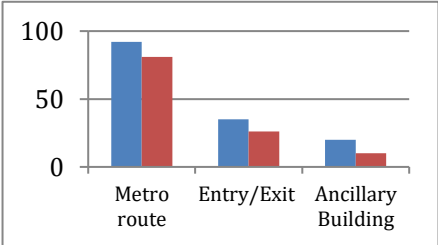
### D. Project Implementation Progress

24. As of December 2018 total physical and financial accomplishments are about 90.90% and 83.40% respectively. The status of various construction activities is provided in the Table 1. Photolog demonstrating the progress of works is provided in Appendix 1.

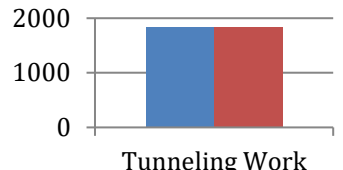
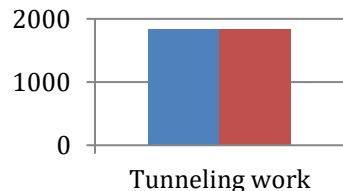
**Table 1: Status of Construction Works as of December, 2018**

S.N.	Activities	Location	Status																																
1	<p><b>Earthworks:</b></p> <p>Earthwork is to be done for construction of Launching shaft at Chandpole, construction of underground stations at Chhoti Chaupar and Badi Chaupar by cut &amp; cover method. During the tunneling earth will be excavated with Tunnel Boring Machine (TBM-I &amp; II).</p>	<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 &amp;Cover Badi Chaupar</td><td>70000</td></tr><tr><td>Choti 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	Choti 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 &amp; cover Badi Chaupar</td><td>0 %</td></tr><tr><td>Choti Chaupar (Entry-Exit)</td><td>92%</td></tr><tr><td>Badi Chaupar (Entry-Exit)</td><td>60%</td></tr></table> <div></div>	Location	% Completion	Chandpole	100 %	Chhoti Chaupar	100 %	Badi Chaupar	100 %	Tunneling Work	100 %	Cut & cover Badi Chaupar	0 %	Choti Chaupar (Entry-Exit)	92%	Badi Chaupar (Entry-Exit)	60%
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2	<p><b>Soil Disposal:</b></p> <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 &amp; cover Badi Chaupar</td><td>70000</td></tr><tr><td>Choti 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	Choti Chaupar (Entry-Exit)	20843	Badi Chaupar (Entry-Exit)	26437	<div><div><div>1. Mathuradaspura</div><div>2. Amer fire station</div><div>3. 4<sup>th</sup> Battalion, RPC, Chainpura</div><div>4. Nahargarh biological park</div><div>5. Rajasthan police academy</div><div>6. JDA park, Hathigaon</div><div>7. Police head qtr. Jaipur</div><div>8. Police line, Jaipur</div></div></div>	<div><div><div>➤ Jaipur Development Authority has allotted following soil disposal sites vide letter dated 01.09.2014</div><div><div>1. Mathuradaspura</div><div>2. Nahargarh biological park</div><div>3. JDA Park, Hathigaon</div></div></div><div><div>➤ 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:-</div><div><div>1. 4<sup>th</sup>Battalion,Chainpura</div><div>2. Amer Fire station</div><div>3. Police line, Jaipur</div><div>4. Rajasthan Police Academy</div></div></div><div><div>➤ Jaipur Development Authority has allotted for dumping C&amp;D waste at Khasra No.-1, Area 41.08 Bigha situated at revenue village, MalpuraChoud, Tehsil, Jaipur</div></div><div><div>The above mentioned seven muck disposal sites are not exclusively given for metro project. These sites are also being used by other</div></div></div>																
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S.N.	Activities	Location	Status						
			<p>agencies for disposal of muck and in some cases even disposal of C&amp;D waste. JMRC or its contractor is not responsible for 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><tr><th>Location</th><th>Disposal quantity (in cum)</th></tr><tr><td>Rajasthan Police Academy</td><td>8241.00</td></tr><tr><td>Back filling at stations</td><td>493.00</td></tr></table> <div><div><div>Rajasthan Police academy</div><div>Back filling</div></div></div> <p>On an average <b>94.93</b> 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 <b>Appendix 7.</b></p>	Location	Disposal quantity (in cum)	Rajasthan Police Academy	8241.00	Back filling at stations	493.00
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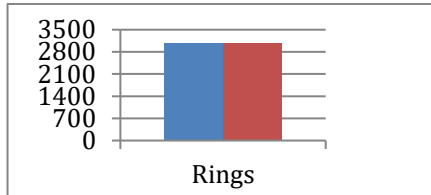
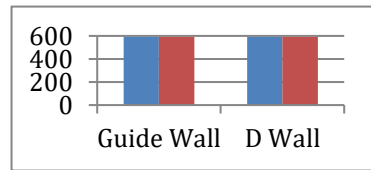
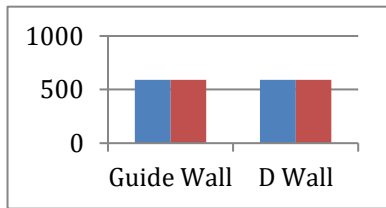
S.N.	Activities	Location	Status																												
3	<p><b>Vegetation and Plant Clearing:</b></p> <p>Some trees are coming in the metro route in launching shaft at Chandpole, station box and in entry exit at Chhoti Chaupar and Badi Chaupar. These trees are to be cut or relocated with the prior approval of District Collector.</p>	<ul style="list-style-type: none"><li>Location of the trees as per survey which are to be cut or located as under:</li></ul> <table><thead><tr><th>Location</th><th>Trees</th></tr></thead><tbody><tr><td>Metro route</td><td>92</td></tr><tr><td>Entry/Exit at Chhoti Chaupar &amp; Badi Chaupar</td><td>35</td></tr><tr><td>Ancillary Building area at Chhoti Chaupar</td><td>20</td></tr></tbody></table> <ul style="list-style-type: none"><li>The tree species include Gulmohar, Banyan tree &amp; Pipal tree.</li><li>The trees have been transplanted at Ghatki Ghuni, Sylvan Bio diversity forest Agra road Jaipur &amp; Ram Niwas Bagh, JDA Jaipur.</li></ul>	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><thead><tr><th>Location</th><th>Trees transplanted</th></tr></thead><tbody><tr><td>Metro route</td><td>51</td></tr><tr><td>Entry/Exit at Chhoti Chaupar &amp; Badi Chaupar</td><td>22</td></tr><tr><td>Ancillary Building area at Chhoti Chaupar</td><td>10</td></tr></tbody></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 <b>83</b> trees have been transplanted at three locations viz. Ghat Ki Ghuni, Ramniwas Garden and Sylvan Bio-diversity forest. The survival rate as on December, 2018 is <b>50%</b>. All efforts are being made for the survival of the transplanted trees.</p><p>In addition, transplantation the contractor has carried out multiple tree plantation drive at Casting yard, Ram Niwas Bagh and Project office, PHQ. As on December, 2018 <b>246</b> saplings have been planted at aforementioned locations. Photographs and additional details on tree plantation are annexed as <b>Appendix-8</b>.</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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			Another, 3000 no. of trees have been planted at Ghat Ki Guni and Nahargarh forest area through Forest Department.																																				
4	<p><b>Utility Shifting:</b></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><b>Chandpole – Launching shaft</b></td></tr><tr><td>Electric cables</td></tr><tr><td>Water supply lines</td></tr><tr><td>Telecom lines</td></tr><tr><td><b>Chhoti Chaupar</b></td></tr><tr><td>Electric cables</td></tr><tr><td>Water supply lines</td></tr><tr><td>Telecom lines</td></tr><tr><td><b>Badi Chaupar</b></td></tr><tr><td>Electric cables</td></tr><tr><td>Water supply lines</td></tr><tr><td>Telecom lines</td></tr></table>	<b>Chandpole – Launching shaft</b>	Electric cables	Water supply lines	Telecom lines	<b>Chhoti Chaupar</b>	Electric cables	Water supply lines	Telecom lines	<b>Badi Chaupar</b>	Electric cables	Water supply lines	Telecom lines	<p>Status during reporting period is as under:</p> <table><tr><td colspan="2"><b>Chandpole – Launching shaft</b></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"><b>Chhoti Chaupar</b></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"><b>Badi Chaupar</b></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>	<b>Chandpole – Launching shaft</b>		Electric cables	100%	Water supply lines	100%	Telecom lines	100%	<b>Chhoti Chaupar</b>		Electric cables	100%	Water supply lines	100%	Telecom lines	100%	<b>Badi Chaupar</b>		Electric cables	100%	Water supply lines	100%	Telecom lines	100%
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5	<p><b>Traffic Management and Diversion:</b></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><b>Chandpole Launching Shaft</b></p> <p>Traffic from Station Road to Jhotwara Road has been diverted via Pareek College Road.</p> <p><b>Chhoti Chaupar</b></p> <p>Direct access from Chandpole Bazar to Tripolia Bazar. Traffic is diverted via Nahargarh Road – Gangauri Bazar – Cheeni Ki Burj.</p> <p><b>Badi Chaupar</b></p> <p>Traffic Diversion Plan has been submitted.</p>	<p><b>Chandpole Launching Shaft</b></p> <p>Traffic Management &amp; traffic is smooth without any diversion.</p> <p><b>Chhoti Chaupar</b></p> <p>Road is open for traffic from all directions.</p> <p><b>Badi Chaupar</b></p> <p>Road is open for traffic from all directions.</p>																																				
6	<p><b>Launching shaft:</b></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</p>	Chandpole	Launching shaft work has been completed.																																				

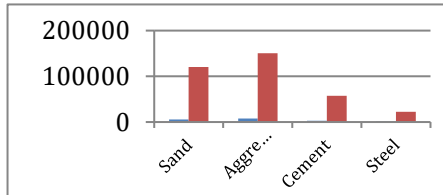
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	<p>entrance &amp; exit of the tunnel until project is complete.</p> <p>Launching shaft is rectangular in shape and constructed with reinforce cement concrete M50 grade. Walls of launching shaft are 800 mm thick. Dimension of launching shaft at Chandpole is 24m X 20m and a depth of 14m.</p>																																		
7	<p><b>Tunnel Boring Machine</b></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 chamber head or muck storage area.</p>	<p>The main activities of these TBMs are as under:</p> <table><thead><tr><th colspan="2">TBM 1</th></tr></thead><tbody><tr><td>Refurbishment</td><td></td></tr><tr><td>Lowering in launching shaft</td><td></td></tr><tr><td>Tunneling work</td><td>1875 meter</td></tr><tr><th colspan="2">TBM 2</th></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 meter</td></tr></tbody></table>	TBM 1		Refurbishment		Lowering in launching shaft		Tunneling work	1875 meter	TBM 2		Refurbishment		Lowering in launching shaft		Tunneling work	1875 meter	<table><thead><tr><th colspan="2">TBM 1</th></tr></thead><tbody><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><th colspan="2">TBM 2</th></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></tbody></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>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 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>		

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8	<p><b>Segment casting:</b></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>3062 (18132 segments)</td></tr></table>	Rings	3062 (18132 segments)	<p>Rings casted are as under:</p> <table><tr><td>Rings</td><td>100 % (3062)</td></tr></table> <div></div>	Rings	100 % (3062)																																								
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9	<p><b>Guide wall and D wall at Chhoti Chaupar &amp; Badi Chaupar stations:</b></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"><b>Chhoti Chaupar</b></td></tr><tr><td>Guide Wall</td><td>590</td></tr><tr><td>D-Wall</td><td>590</td></tr><tr><td colspan="2"><b>Badi Chaupar</b></td></tr><tr><td>Guide Wall</td><td>590</td></tr><tr><td>D-Wall</td><td>590</td></tr></table>	Location	Length (m)	<b>Chhoti Chaupar</b>		Guide Wall	590	D-Wall	590	<b>Badi Chaupar</b>		Guide Wall	590	D-Wall	590	<table><tr><th>Location</th><th>% Completion</th></tr><tr><td colspan="2"><b>Choti Chaupar</b></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"><b>Badi Chaupar</b></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>Choti Chaupar</u></p> <div></div> <p><u>Badi Chaupar:</u></p> <div></div>	Location	% Completion	<b>Choti Chaupar</b>		Guide Wall	100% (590)	D-Wall	100% (590)	<b>Badi Chaupar</b>		Guide Wall	100% (590)	D-Wall	100% (590)																
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10	<p><b>Roof Slabs at Chhoti Chaupar &amp; Badi Chaupar Station</b></p> <p>Stations are to be constructed with top down method. Top slab, roof slab, concourse slab &amp; base slab are to be constructed.</p>	<table><tr><th>Location</th><th>Area (sqm)</th></tr><tr><td colspan="2"><b>Chhoti Chaupar</b></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"><b>Badi Chaupar</b></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)	<b>Chhoti Chaupar</b>		Top slab	7000	Roof slab	7000	Concourse	7000	Base slab	7000	<b>Badi Chaupar</b>		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"><b>Choti Chaupar</b></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"><b>Badi Chaupar</b></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)	<b>Choti Chaupar</b>		Top slab	7000	Roof slab	7000	Concourse	7000	Base slab	7000	<b>Badi Chaupar</b>		Top slab	7000	Roof slab	7000	Concourse	7000	Base slab	7000
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11	<p><b>Establishment of construction camp:</b></p> <p>➤ A construction camp for laborers has been established near to casting yard area in November 2014.</p>	<p>Casting Yard, Bhankrota</p> <table><tr><td>Number of blocks</td><td>9</td></tr><tr><td>Total Camp Area</td><td>6227 Sq.m</td></tr><tr><td>Capacity</td><td>9X48</td></tr><tr><td colspan="2"><b>Facilities to be provided</b></td></tr><tr><td>Bathing room</td><td>Yes</td></tr><tr><td>Dining room</td><td>Yes</td></tr><tr><td>Urinal&amp; toilet</td><td>Yes</td></tr><tr><td>Drinking water with cooling facility</td><td>Yes</td></tr><tr><td>fans</td><td>Yes</td></tr><tr><td>playground</td><td>Yes</td></tr></table>	Number of blocks	9	Total Camp Area	6227 Sq.m	Capacity	9X48	<b>Facilities to be provided</b>		Bathing room	Yes	Dining room	Yes	Urinal& toilet	Yes	Drinking water with cooling facility	Yes	fans	Yes	playground	Yes	<p>Completed.</p> <table><tr><td>Number of blocks</td><td>9</td></tr><tr><td>Area of each block</td><td>692 Sqm</td></tr><tr><td>Workers staying</td><td>150</td></tr><tr><td colspan="2"><b>Facilities installed</b></td></tr><tr><td>Bathing room</td><td>Yes</td></tr><tr><td>Dining room</td><td>Yes</td></tr><tr><td>Urinal&amp; toilet</td><td>Yes</td></tr><tr><td>Drinking water with cooling facility</td><td>Yes</td></tr><tr><td>Fans</td><td>Yes</td></tr><tr><td>playground</td><td>Yes</td></tr></table>	Number of blocks	9	Area of each block	692 Sqm	Workers staying	150	<b>Facilities installed</b>		Bathing room	Yes	Dining room	Yes	Urinal& toilet	Yes	Drinking water with cooling facility	Yes	Fans	Yes	playground	Yes
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12	<p><b>Other Facilities:</b></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	<p>Completed.</p>																										
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13	<p><b>Establishment and operation of quarry/ borrow area:</b></p> <p>For the construction work following material is sourced:</p> <div><div>➤ Sand</div><div>➤ Aggregate</div><div>➤ Cement</div><div>➤ Steel</div></div>	<p>Quarry area and borrow area of construction material is as under:</p> <table><tr><th>Material</th><th>Quarry / borrow area</th></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><th>Material</th><th>Quantity (MT)</th></tr><tr><td rowspan="2">Sand</td><td>5483.41</td></tr><tr><td>120713.781</td></tr><tr><td rowspan="2">Aggregate</td><td>7553.93</td></tr><tr><td>150756.077</td></tr><tr><td rowspan="2">Cement</td><td>2899.82</td></tr><tr><td>57423.19</td></tr><tr><td rowspan="2">Steel</td><td>1217.408</td></tr><tr><td>22502.449</td></tr></table> <p>* Up to date quantity</p> <div></div>	Material	Quantity (MT)	Sand	5483.41	120713.781	Aggregate	7553.93	150756.077	Cement	2899.82	57423.19	Steel	1217.408	22502.449
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### 3. COMPLIANCE TO SAFEGUARDS PROVISIONS IN AGREEMENTS UNDER THE PROJECT

#### A. Compliance to Loan Agreement

25. 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><b>Schedule 4. Item 7(a):</b></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><b>Schedule 4. Item 8:</b></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><b>Schedule 5. Item 3:</b></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 preventative actions set forth in a Safeguards Monitoring Report."</p>	<p>Being complied.</p> <ul style="list-style-type: none"> <li>➤ Requirements on permits and clearance are being followed.</li> <li>➤ SHE is strictly being complied with.</li> <li>➤ Requirements of EIA and EMP are being implemented.</li> </ul>
4	<p><b>Schedule 5. Item 4(a):</b></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</p>	<p>Being complied.</p> <p>All land acquisition and resettlement activities are implemented as per</p>

	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.	provisions of Indian Law and ADB SPS.
5	<p><b>Schedule 5. Item 4 (b)</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><b>Schedule 5. Item 5</b></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, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.</p>	<p>Not applicable.</p> <p>No issues on Indigenous peoples have arisen during the reporting period.</p>
7	<b>Schedule 5. Item 6(a) &amp; 6(b)</b>	Being complied.

	<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>	<ul style="list-style-type: none"> <li>➤ Safeguards cell comprising of 06 officers has been established in JMRC since 2013.</li> <li>➤ A JV of M/s Abha Narain Lambah Associates and M/s Shashank Mehendale &amp; Associates has been engaged as Heritage Consultant through ICB.</li> <li>➤ The Heritage Consultant is to monitor the heritage structures lying along the metro route of Phase 1B.</li> <li>➤ JMRC has also engaged 3 senior Archaeological Consultants to supervise the excavation of Chhoti Chaupar and Badi Chaupar.</li> <li>➤ Safeguards experts are part of the PMC (DMRC) team and civil works contractor team.</li> <li>➤ Adequate budget allocation has been made for implementation of safeguards activities.</li> </ul>
8	<p><b>Schedule 5. Item 7(a)</b></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><b>Schedule 5. Item 7(b)</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><b>Schedule 5. Item 7(c)</b></p> <p><u>Safeguards-Related Provisions in Bidding Documents and Works Contract.</u></p> <p>7 (c) “provide the JMRC with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks</p>	<p>Being complied.</p>

	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;"	Appropriate measures are being and will be taken to address these issues, as they arise.
11	<p><b>Schedule 5. Item 8(a)</b></p> <p><u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u></p> <p>8 (a) submit quarterly Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission"</p>	<p>Being complied.</p> <p>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.</p>
12	<p><b>Schedule 5. Item 8(b)</b></p> <p><u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u></p> <p>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.</p>	<p>Being complied.</p> <p>2 ancient water tanks and old canals were discovered during excavation works in Badi Chaupar and Choti Chaupar. Project design and schedule has been revised to protect and recreate, preserve and showcase the water tanks, art gallery and canals.</p>
13	<p><b>Schedule 5. Item 8(c)</b></p> <p><u>Safeguards – Related Provisions in Bidding Documents and Works Contracts.</u></p> <p>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.</p>	Being complied.
14	<p><b>Schedule 5. Item 9</b></p> <p>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).</p>	Being complied
15	<b>Schedule 5. Item 10</b>	



	<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>	<p>Complied.</p> <ul style="list-style-type: none"> <li>➤ Various awareness programs have been conducted during the reporting period.</li> <li>➤ Special Swachh Bharat Abhiyaan (Clean India campaign) awareness campaign conducted from 15<sup>th</sup> September to 2<sup>nd</sup> October 2018 at JMRC UG-1B project sites.</li> <li>➤ World Aids Celebrated on 1<sup>st</sup> December, 2018.</li> <li>➤ Health &amp; Hygiene awareness program conducted at project sites.</li> <li>➤ Mass Tool Box Talk conducted every month for awareness of all workers, prizes and incentives.</li> <li>➤ Monthly environmental training, physical training and general housekeeping training are conducted.</li> </ul> <p>Details of Awareness Programs and trainings are provided in <b>Appendix 2</b></p>
16	<p><b>Schedule 5. Item 11</b></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"> <li>➤ 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.</li> <li>➤ JMRC through CEC (AIMIL) got the Building Condition Survey before commencement of work at site.</li> <li>➤ 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 &amp; Associates (JV).</li> </ul>

		➤ Mitigation and preventive measures are being taken up by M/s CEC in order to avoid any damage.
17	<b>Schedule 5. Item 12</b>  <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.

## B. Compliance to Project Administration Manual

26. The Project Administration Manual<sup>3</sup> (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.	<b>Section VII.</b>  <b>Safeguards</b>  <b>40. Implementation of SHE and EIA.</b>  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 <b>Appendix 3.</b>
2.	<b>(i)Pre-construction:</b>  All contractors will complete the following activities no later than 30 days from the issuance of Notice to Proceed:	Complied.

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

SN	Details	Compliance Status
	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;	
	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. 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 <b>Appendix 1</b> .
3.	<b>(ii)Construction:</b>  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	Being complied.
4.	<b>(iii)Post-construction:</b>  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	Not yet due.  Will be done in accordance with SHE & EIA.
5.	<b>41. PMC Environmental Specialist:</b>	Complied.

SN	Details	Compliance Status
	<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 relevant policies of the Government of India. The main output is the Quarterly monitoring report during the construction period. The responsibilities include:</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>
6.	<ul style="list-style-type: none"> <li>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.</li> </ul>	<p>Complied.</p> <p>EIA, EMP and SHE guidelines have been reviewed.</p>
	<ul style="list-style-type: none"> <li>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</li> </ul>	<p>Being complied.</p> <p>EMP will be updated as per requirements.</p>
	<ul style="list-style-type: none"> <li>Prepare monitoring checklists/ templates for daily or weekly monitoring on implementation of the SHE and site specific EMP by the contractor.</li> </ul>	<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"> <li>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.</li> </ul>	<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"> <li>Where necessary organize technical training programs to enhance the field level staff's understanding on environmental issues such as</li> </ul>	<p>Being complied.</p>

SN	Details	Compliance Status
	health impacts of dust and noise, waste/debris disposal and management, safety issues etc.	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 <b>Appendix 2</b> .
	<ul style="list-style-type: none"> <li>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.</li> </ul>	<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"> <li>Provide site based technical advice to the contractors where necessary during construction activities</li> </ul>	Site based technical advice to the contractors is being given by DMRC experts.
	<ul style="list-style-type: none"> <li>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</li> </ul>	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.
	<ul style="list-style-type: none"> <li>Coordinate with the Heritage Expert on getting data on monitoring and status of heritage structures above ground.</li> </ul>	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"> <li>Facilitate the functioning of the Grievance Redress Mechanism and maintain proper records of all environment related grievances and details on how they were addressed.</li> </ul>	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"> <li>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"> <li>➤ compliance to the SHE and site specific EMP by the contractor</li> <li>➤ vibration monitoring activities conducted by contractor's engineers</li> <li>➤ grievances redress mechanism</li> <li>➤ monitoring and status of heritage sites above ground</li> </ul> </li> </ul>	<p>Being complied.</p> <ul style="list-style-type: none"> <li>➤ For compliance of the SHE and site specific EMP by the contractor regular visit is being done by the Environmental team of CSC.</li> <li>➤ 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.</li> <li>➤ Grievances redress mechanism is in place.</li> <li>➤ 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</li> </ul>

SN	Details	Compliance Status
		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.	<p><b>42. Monitoring of Heritage Structures</b></p> <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>	<p>Being complied.</p> <ul style="list-style-type: none"> <li>➤ JMRC through competitive bidding has engaged heritage consultant M/s Abha Narain Lambah Associates and M/s Shashank Mehendale &amp; Associates (JV) to monitor the heritage structures lying along the metro route of Phase 1B.</li> <li>➤ JMRC has also engaged 3 senior Archaeology Consultants to supervise the excavation of Chhoti Chaupar and Badi Chaupar.</li> <li>➤ Heritage Consultant got conducted Baseline survey for existing building's condition along the metro route and has submitted Building Inventory report.</li> <li>➤ 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"> <li>1. Unstable Structures requiring preventive propping and immediate demolition/ evacuation.</li> <li>2. Part of structure unstable requiring propping &amp; partial replacement /demolition.</li> <li>3. No major instability.</li> </ol> </li> </ul> <p>These reports have been shared with ADB and concerned local agency who will be further taking necessary action.</p> <p>A re-evaluation 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 werelbe further shared with local agency (Jaipur</p>

SN	Details	Compliance Status
		Municipal Corporation) for further course of action.
8.	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Coordinating necessary procedures if any historical/traditional artifacts are found during tunnelling works.</li> <li>Provide advice on technical measures during construction to prevent damages to the heritage structures.</li> <li>In the event of observation in any damage to any heritage structure/s immediately alert JMRC and recommend appropriate mitigation or restoration measures.</li> <li>Provide technical advice on and supervise the mitigation or restoration activity.</li> <li>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.</li> </ul>	<p>Complied.</p> <ul style="list-style-type: none"> <li>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.</li> <li>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).</li> <li>Based on literature review of the historical background of the city, during the excavation for station work at chotichaupar and Badi Chaupar two ancient water tanks were discovered below Choti Chaupar and Badi Chaupar. Under the guidance of the Archaeology Department, the ancient water tanks were manually removed and preserved. After completion of civil work of station at Choti Chaupar, the heritage kund has been reinstated back to its original location and a new Art Gallery for display of Artefacts has been constructed. The reconstruction of Badi Chaupar heritage kund is yet to be started.</li> <li>Based on the reports and survey submitted by Heritage consultant, CEC is regularly monitoring status of buildings and the status is reported through daily and weekly reports.</li> <li>Heritage Consultant entrusted to advice on measures during construction to prevent damages to the heritage structures.</li> <li>Heritage Consultant is submitting monitoring report on monthly basis to record activities implemented and monitoring findings to JMRC. Recently heritage consultant has submitted a consolidated report on heritage monitoring and the same has been submitted to ADB.</li> </ul>
9.	<b>Section VII- Safeguards</b>	Being complied.

SN	Details	Compliance Status
	<p><b>b) Social – Involuntary resettlement.</b></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>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>
10	<p><b>Section VII - Safeguards</b></p> <p><b>c) Social – Indigenous people</b></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>	Not Applicable.
11	<p><b>Section VIII - Gender and Social Dimensions</b></p> <p><b>47 Gender consultation and participation</b></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>



SN	Details	Compliance Status
12	<p><b>Section VIII - Gender and Social Dimensions</b></p> <p><b>49. HIV and AIDS</b></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><b>Section VIII - Gender and Social Dimensions</b></p> <p><b>50. Health.</b></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><b>Section VIII - Gender and Social Dimensions</b></p> <p><b>51. Labor</b></p> <p>JMRC shall ensure that:</p> <ol style="list-style-type: none"> <li>civil works contractors comply with all applicable labor laws and regulations, do not employ child labor for construction and maintenance activities, and provide appropriate facilities for women and children in construction campsites;</li> <li>people directly affected by the projects are given priority to be employed by the contractor;</li> <li>contractors do not differentiate wages between men and women for work of equal value; and</li> <li>specific clauses ensuring these will be included in bidding documents. The construction supervision consultants monitor the provisions.</li> </ol>	<p>Complied.</p> <ul style="list-style-type: none"> <li>➤ Civil work contractor is complying with all applicable labour laws and regulations.</li> <li>➤ No child labour is employed.</li> <li>➤ Preference is being given to people directly affected by the project.</li> <li>➤ Complying with equal remuneration Act.</li> <li>➤ Specific clause for ensuring labour law etc. has been included in the bidding document.</li> </ul>
15	<p><b>Section IX - Performance Monitoring, Evaluation, Reporting and Communication</b></p> <p><b>B. Monitoring.</b></p>	<p>Being complied.</p>

SN	Details	Compliance Status
	<p><b>Disclosure of Environmental Assessments and Monitoring Reports</b></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>EIA report has been disclosed on ADB and JMRC websites.</p> <p>Also 1<sup>st</sup> Semi Annual and subsequent Quarterly Environmental and Social Monitoring Reports are also disclosed on ADB and JMRC websites. <a href="http://www.jaipurmetrorail.in">www.jaipurmetrorail.in</a></p> <p>This is the 16<sup>th</sup> quarterly report (October 2018 – December 2018) on environmental and social safeguards compliance.</p>
16	<p><b>Section IX - Performance Monitoring, Evaluation, Reporting and Communication</b></p> <p><b>B. Monitoring</b></p> <p><b>55. Safeguards monitoring - Resettlement</b></p> <p>If impact is identified during project implementation, a monitoring system will be established based on the <i>ADB 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><b>Section IX - Performance Monitoring, Evaluation, Reporting and Communication</b></p> <p><b>B. Monitoring</b></p> <p><b>56. Indigenous People</b></p> <p>If impact is identified during project implementation, a monitoring system will be established based on the <i>ADB Safeguard Policy Statement (2009)</i> and Government of India regulations.</p>	<p>No impact is identified.</p>
18	<p><b>Section IX - Performance Monitoring, Evaluation, Reporting and Communication</b></p> <p><b>B. Monitoring</b></p> <p><b>58. Grievance Redress Mechanism</b></p> <p>Grievances related to the implementation of the project, particularly regarding the land acquisition and R&amp;R will be acknowledged, evaluated, and responded to the complainant with corrective actions. Any grievance regarding the land acquisition and R&amp;R is received by OSD (Land), JMRC and is addressed through the decision of the "Negotiation Committee".</p>	<p>Being complied</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

27. 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><b>GCC Sub Clause 4.8</b></p> <p><b>Safety Procedures</b></p> <p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>a) comply with all applicable safety regulations,</li> <li>b) take care for safety of all persons entitled to be on the Site,</li> <li>c) use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,</li> <li>d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Employer's Taking Over], and</li> <li>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.</li> </ul>	<p>Being complied.</p> <p>Contractor is taking adequate measures to comply with regulations on safety of workers.</p>
2	<p><b>GCC Sub-Clause 6.7</b></p> <p><b>Health and Safety</b></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>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>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> <p>The contractor has tie-up with five hospitals viz, Rawal Hospital&amp; 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>

S.N.	Description	Compliance Status
	<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>Being complied.</p>
	<p><b>PCC Sub-Clause 4.8 and 6.7</b></p> <p><b>Safety Procedures and Health &amp; Safety</b></p> <p>“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"> <li>(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;</li> <li>(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;</li> <li>(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</li> <li>(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.</li> </ul> <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>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>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><b>Safety Precautions</b></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><b>GCC Sub-Clause 4.18</b></p> <p><b>Protection of the Environment</b></p> <p>The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and 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</p>	<p>Being complied.</p>

S.N.	Description	Compliance Status
	the Employer's Requirements, and shall not exceed the values prescribed by applicable laws.	
	<p><b>PCC Sub-Clause 4.18</b></p> <p><b>Protection of the Environment</b></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>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>	Being complied.

S.N.	Description	Compliance Status
	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."	

#### 4. COMPLIANCE TO THE ENVIRONMENTAL MANAGEMENT PLAN

28. 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). The following Table 5 lists out the status of activities during the pre-construction and construction stage as of September 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
		<b>PRE-CONSTRUCTION STAGE</b>			
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 <b>Appendix 3 &amp; 4.</b>		
		4) HSO will submit for CSC-ES approval an action plan to secure all permits and approvals needed to be secured during construction stage	Yes.		



SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		which include but not limited to-			
		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 <b>Appendix 6.</b>	Obtained
		ii) transport and storage of hazardous materials (e.g. fuel, lubricants, explosives),	Yes	Hazardous waste is disposed through government authorized agency. Relevant documents are kept at Contractor's end to show compliance .	
		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"> <li>1. Mathuradaspura</li> <li>2. Nahargarh Biological park</li> <li>3. JDA park, Hathigaon</li> </ol> <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"> <li>4. Amer Fire station</li> <li>5. 4<sup>th</sup>Battalion,chainpura</li> <li>6. Rajasthan Police Academy</li> <li>7. Policeline, Sanganer</li> </ol>	

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
				Jaipur Development Authority has allotted for dumping C&D waste at Khasra No.-1, Area 41.08 Bigha situated at revenue village, MalpuraChoud, 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.	Consturction water demand is met through external water supply 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.		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
PC2	Coordinate with the Jaipur Development Authority on Traffic Management Plan to avoid nuisance from traffic congestion	<p>The Contractors will discuss and coordinate the implementation of the traffic re-routing scheme particularly in Chhoti Chaupar and Badi Chaupar when it starts 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>	<p>Yes.</p> <p>The traffic diversion/management plan is in place in coordination with government agencies (Traffic department etc) for necessary permission as and when required.</p>		
PC3	Community Liaison to avoid complaints and/or address complaints if any	To ensure that ongoing feedback is provided on the progress of the JMRP together with feedback on the environmental management	<p>Yes.</p> <p>Details in Table no. 12</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>performance of the project.</p> <p>Contractor will provide a minimum of two (2) weeks notification to directly affected 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.</p>			
PC4	Ground staking to address chance find of artifacts	<p>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.</p> <p>The Contractor, in behalf of the JMRC, will coordinate with the Archeology Department to designate an on-site representative during the</p>	<p>Yes.</p> <p>GPR survey was conducted in April 2015 and the report was submitted and uploaded on JMRC website</p> <p><a href="https://www.jaipurmetrorail.in/pdf/2015.04.16%20GPR%20Recieved%20from%20CEC.pdf">https://www.jaipurmetrorail.in/pdf/2015.04.16%20GPR%20Recieved%20from%20CEC.pdf</a></p> <p>JMRC is coordinating with Archeology Department for excavation work.</p>		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		entire duration of the project.			
PC5	Briefing on working near heritage resource to avoid damages to heritage resources and avoid cultural conflicts	<p>All workers will undergo a briefing with the Archeology Department to ensure safeguarding of heritage resource and cultural/religious practices.</p> <p>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.</p>	<p>Yes.</p> <p>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.</p>		
		<b>CONSTRUCTION STAGE</b>			
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.	<p>Yes.</p> <p>No heritage resources have been damaged at all during construction.</p>	Complying through instrumentation & online monitoring of structures of historic importance.	
C1.1	To avoid ground settlement under the Chandpole Gate during tunnel boring	<p>The contractor will ensure that no inadvertent damage is incurred to the Chandpole gate.</p> <p>Estimated settlement under the Chandpole gate is less than 5mm. The</p>	<p>Yes. Complied</p> <p>➤ Under passing scheme prepared by M/s Omikron Kappa, of Greece, structural consultant of M/s CEC has been proof checked by M/s Ayasa of Spain.</p> <p>➤ Structural consultant of Heritage consultant has also given his comments on the underpassing scheme of M/s CEC.</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>contractor will ensure that the design value is not exceed and the trigger value = 4 mm and Alarm value = 5 millimeters are implemented.</p> <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</p>	<p>➤ Under passing scheme of Chandpole gate has also been proof checked by IIT Delhi.</p> <p>➤ Work has been done as per approved method statement &amp; GCC</p> <p>➤ Settlement at Chandpole gate was found to be -3mm, which is less than 3.5mm</p> <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.</p>		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		supervision and control of the Jaipur Archeology Department.			
C1.2	To avoid cosmetic and structural damages to the structures along the underground metro alignment along Chandpole Bazar and Tripola Bazar due to vibration from the tunnel boring machine	Expected vibration at the Chandpole Gate during tunneling is 0.682 mm/s which is lower than 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.	Complied.  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	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	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
	nuisance to JantarMantar, and HawaMahal.	<p>be informed of the nature and duration of intended activities prior to commencement and kept updated as to changes in the 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</p>			



SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		the dump site will be controlled through strict adherence to operating and maintenance instructions, routing of heavy vehicles way from noise sensitive areas whenever possible, 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, <ul style="list-style-type: none"> <li>➤ JMRC through competitive bidding has engaged heritage consultant M/s Abha Narain Lambah Associates and M/s Shashank Mehendale &amp; Associates (JV) to monitor the heritage structures lying along the metro route of Phase 1B.</li> <li>➤ JMRC had also engaged 3 senior Archaeology Consultants to supervise the excavation of Chhoti chaupar and Badi chaupar.</li> <li>➤ The work was done as per approved method statement. Also the work will be done under the supervision of said agencies.</li> </ul>		
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 validate by the CSC, and expert verification will be made by the Jaipur Archeology Department. Temporary	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 Chaupad. The project		

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		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 provided in the detailed design.	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.		
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"> <li>1) disposed spoils on permitted sites as instructed by the JMRC</li> <li>2) ensure the adequacy of the disposal site to handle the volume of spoils the will be generated</li> <li>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</li> </ol>	<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
		<p>controlling water and wind erosion, iii) measures to prevent spoil dump contamination, vehicular, and public access.</p> <p>4) Explore the possibility of using spoil materials to rehabilitate borrow pits to</p> <p>5) All hauling vehicles should be maintained at an acceptable working order and serviced regularly</p> <p>6) Haul vehicles should be routed away from noise sensitive areas</p> <p>7) Speed limit in built up areas is 40 km/h</p> <p>8) All haul vehicles should be covered or soil sprayed with water before leaving the site specially during windy condition</p> <p>9) Spoil dumps shall have slopes no steeper than 1V:2.5H</p> <p>10) Final shaping, topsoiling, and immediate revegetation</p> <p>11) No vehicles are to be allowed to enter in</p>			

SN	Activity	Mitigation measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance	Issues for further action and target dates
		revegetated spoils dump			
C3	To avoid depletion of groundwater and competition with existing groundwater users due groundwater Extraction for the construction works	<p>The Contactor shall secure permission for groundwater extraction from CGWA pertinent groundwater authorities before establishing borewells.</p> <p>Water conservation and recycling will be observed in all aspects of constructions to include water main breaks, watering roads for dust control, spraying concrete, equipment cleaning and site clean-up.</p>	Partial.	Cosntructionwater demand is met through water tankers supplied by private agencies.	
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> <p>1) coordinate and secure necessary permits for utility shifting with the Jaipur Development Authority and other service utility agencies to locate al services prior to construction in any particular area</p>	<p>Yes,</p> <p>Care is taken to avoid inconvenience to uses 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>2) inform residents of planned interruptions through local media, fliers, and public address system</p> <p>3) all planned interruptions schedules will be submitted to the safeguards cell JMRC no later than 10 working days before the interruption</p> <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</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>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 workers and local community	The contractor will comply with the occupational health and safety requirements as provided in SHE.	Yes		
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	Not yet due.		

<b>SN</b>	<b>Activity</b>	<b>Mitigation measures</b>	<b>Compliance attained (Yes, No, Partial)</b>	<b>Comment/Reasons for Partial or Non-Compliance</b>	<b>Issues for further action and target dates</b>
		surface of surrounding ground.			

## 5. ACTIVITIES UNDERTAKEN FOR PROTECTION AND MONITORING OF HERITAGE STRUCTURES

### A. Findings in Badi Chaupar and Chhoti Chaupar:

29. 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.

30. 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



31. 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 water tanks have been incorporated over the station design. Designs have been approved by heritage consultant of JMRC.

32. After complete and detailed documentation of both the Chaupars and after completion of station work, as per the directions of Government, under supervision of heritage consultant, heritage water tank at Chhoti Chaupar has been reinstated at its original location and a new Art Gallery has been constructed around it. The Kund and Art Gallery at Chhoti Chaupar were inaugurated by Hon'ble Chief Minister Rajasthan on 15<sup>th</sup> August 2018 and both of them were opened for public in the month of September 2018.



## **B. D-Wall Construction**

33. 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.

34. 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**



35. 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.

36. 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.

37. 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  $5\text{mm}$  and  $1/1200$  respectively, values which are related with "negligible" damage even in the case of "High" vulnerable structures.

38. 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

39. 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.

40. 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.

41. 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.

42. 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. Alongwith improving the strength of the Gate, the work will also enhance the aesthetics of the historic Gate.



**Isarlat Side Pass Scheme**



43. 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.

44. 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.

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

## **D. Results of the Ground Penetrating Radar**

### **D.1 Introduction**

46. 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.

### **D.2 Study Area**

47. In order to prioritize the scanning work, the entire stretch between Chandpole & Badi Chaupar had been sub-divided 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.

### D.3 Conclusion

48. 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.

49. The interpretation of all these scans shows that two distinct layers exists upto 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.

50. 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.

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

## 6. SUMMARY OF ENVIRONMENTAL MONITORING

### A. Summary of Inspection Activities:

52. A total of 13 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
08.10.2018	Chhoti Chaupar	18	Safety & Environment
13/10/2018	Badi Chouper	17	Safety & Environment
26/10/2018	Chhoti Chouper	27	Safety & Environment
02/11/2018	Badi Chouper	27	Safety & Environment
09/11/2018	Casting Yard	9	Safety & Environment
16/11/2018	Chhoti Chouper	27	Safety & Environment
23/11/2018	Badi Chaupar	19	Safety & Environment
30/11/2018	Badi Chouper	19	Safety & Environment
14/12/2018	Chhoti Chouper	19	Safety & Environment
21/12/2018	Badi Chaupar	18	Safety & Environment
28/12/2018	Chhoti Chaupar	21	Safety & Environment

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

## **B. Monitoring of Cracks, Settlements of Structures**

53. 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.

### **Vibration Monitoring:**

54. **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.

55. 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.

56. 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.

57. It is required to carry out base line 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.

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

## **C. Noise Monitoring**

59. 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.

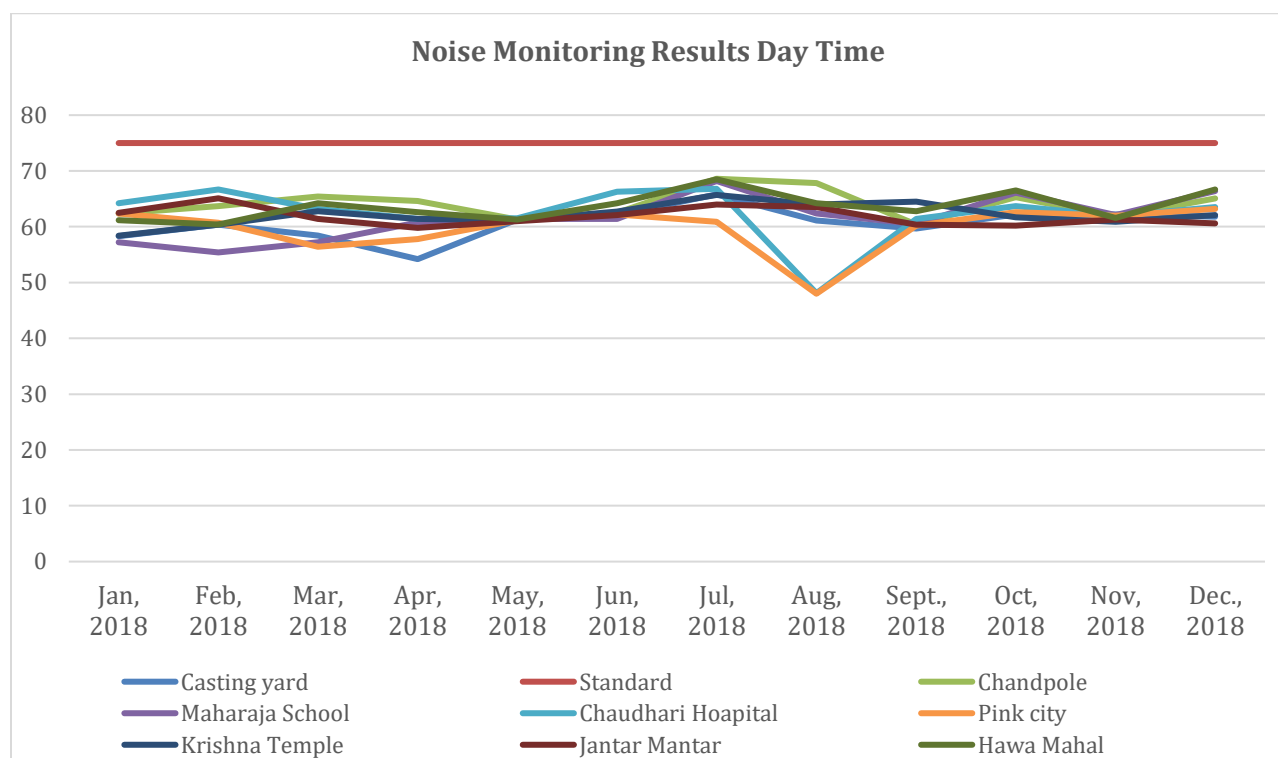
60. It has been observed from the results that noise level exceedance was recorded with respect to national standard at all sites except casting yard and Chandpole for both daytime and night. Except Chandpole and Bhankarota (casting yard) all other areas are classified as silencezone. However, these 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 8: 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)		
					Oct	Nov	Dec
Casting Yard (Bhankarota)	0	Industrial	75	NA	62.2	62.2	61.8
Chandpole	0	Commercial	65	74.2 <sup>#</sup>	65.3	61.8	65.1
Maharaja School	Approx 50 m	Silence	50	NA	66.1	62.1	66.5
Chaudhry Hospital	Approx 400m	Silence	50	NA	63.7	61.9	63.5
Pink City Hospital	Approx 250 m	Silence	50	NA	62.6	62.0	63.2
Krishna Temple	Approx 300 m	Silence	50	NA	61.7	60.9	62.1
Jantar Mantar	Approx 300 m	Silence	50	NA	60.2	61.3	60.6
Hawa Mahal	Approx 100 m	Silence	50	NA	66.5	61.5	66.7

NA – Not Available

# - As per baseline line data given in the EIA

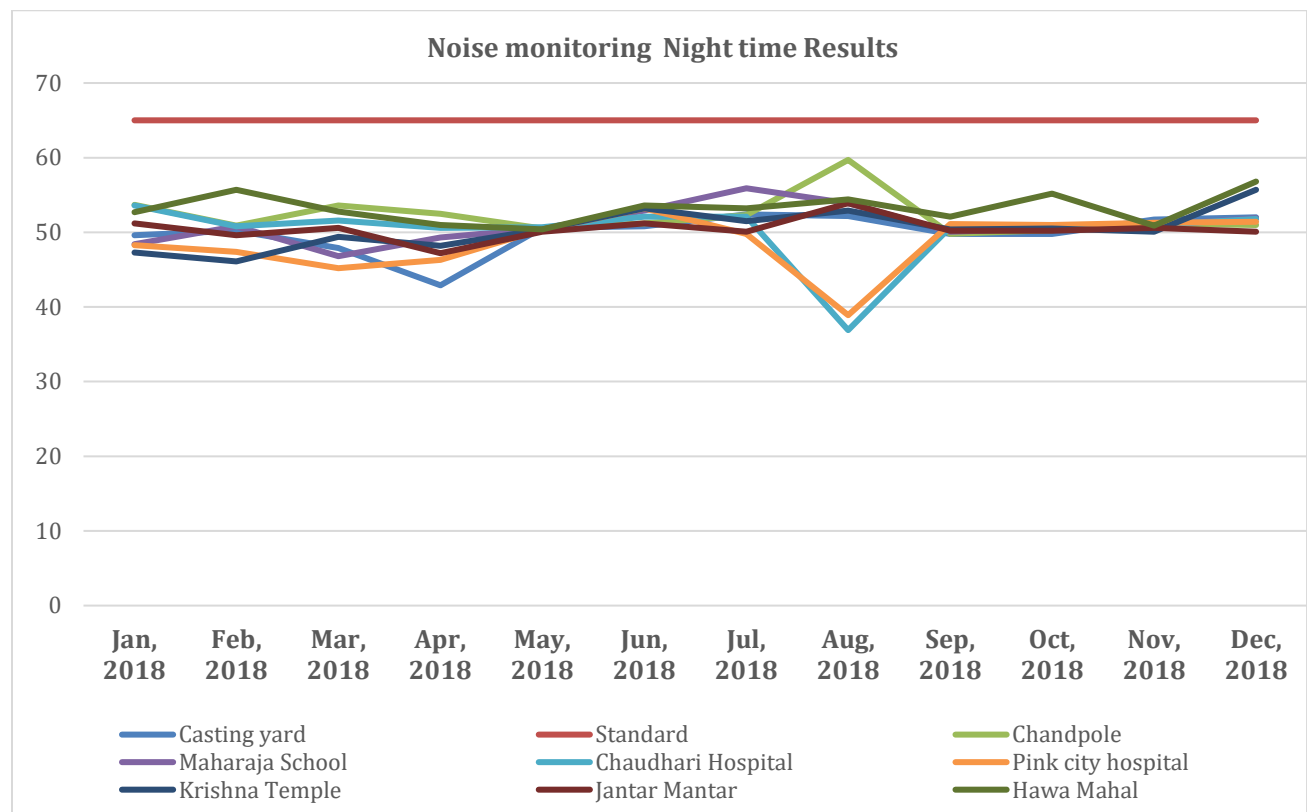


**Table 9: Noise Monitoring Results (Night time)**

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)		
					Oct	Nov	Dec
Casting Yard (Bhankarota)	0	Industrial	70	NA	49.8	51.7	52.0
Chandpole	0	Commercial	55	66 <sup>#</sup>	50.3	51.2	51.0
Maharaja School	Approx 50 m	Silence	40	NA	50.5	51.0	51.9
Chaudhry Hospital	Approx 400m	Silence	40	NA	50.8	51.0	51.8
Pink City Hospital	Approx 250 m	Silence	40	NA	51.0	51.3	51.4
Krishna Temple	Approx 300 m	Silence	40	NA	50.5	50.1	55.7
Jantar Mantar	Approx 300 m	Silence	40	NA	50.2	50.6	50.1
Hawa Mahal	Approx 100 m	Silence	40	NA	55.2	50.9	56.8

NA – Not Available

# - As per baseline line data given in the EIA



## D. Air Quality

The ambient status of five major air pollutants PM<sub>10</sub>, Sulphur Dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) 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 PM<sub>10</sub> concentration exceeds the limits specified by CPCB for all sites but the monitored values are less than the baseline value.

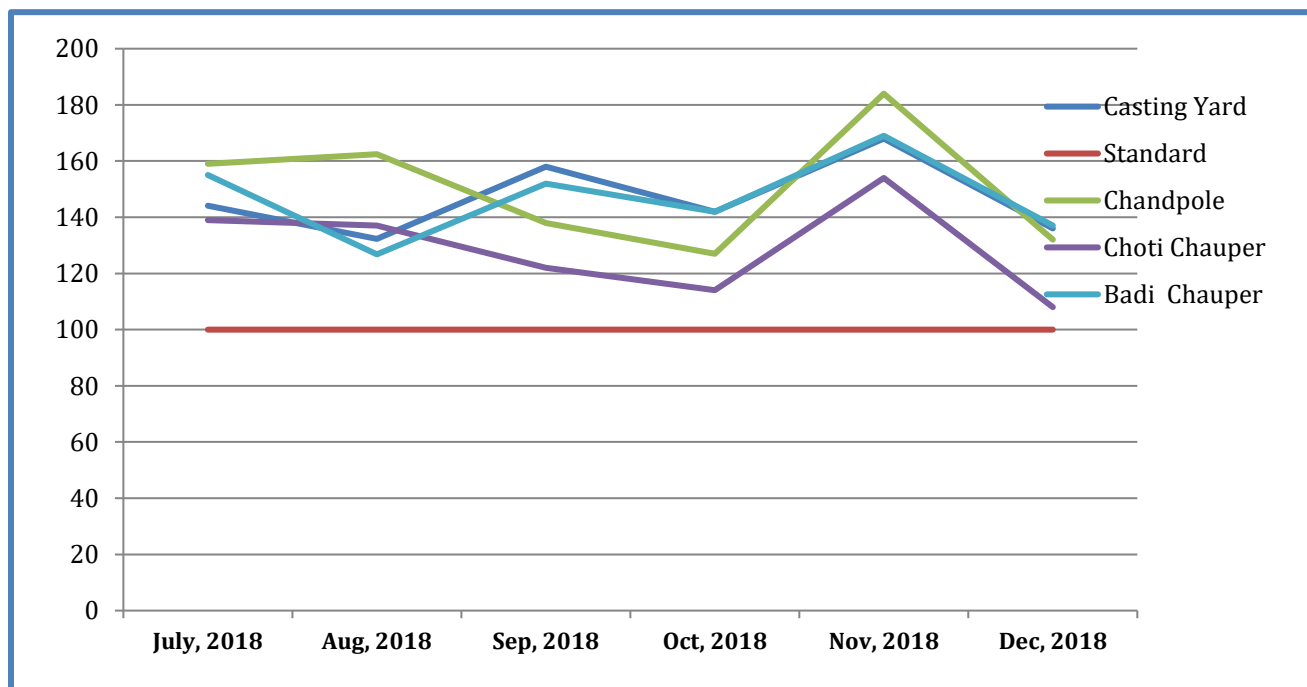
Air monitoring was carried out from October 2018. Test results are summarized in Table 10. Sample monitoring reports are given in **Appendix 4**.

**Table-10: Air Quality Monitoring Results**

Location	NAAQS PM <sub>10</sub> (Unit µg/m <sup>3</sup> )	Baseline data PM <sub>10</sub> (Unit µg/m <sup>3</sup> )	PM <sub>10</sub> Monitoring results (Unit µg/m <sup>3</sup> )		
			Oct	Nov	Dec
Casting Yard	100	Not available <sup>#</sup>	142	168	136
Chandpole	100	180*	127	184	132
Chhoti Chaupar	100		114	154	108
Badi Chaupar	100		142	169	137

\*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.

<sup>#</sup> Baseline data for Casting Yard (Bhankarota) is not available





61. **Air Pollution Control:** The mitigation measures, which have adopted to reduce the air pollution, are: all transportation of construction materials should be covered manner. To minimize dust emission due to disposal of muck, handling of aggregate and cement at site, there are sprinkling of water on the internal roads. 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.

## E. Water Quality

62. Water samples were collected from nearby bore wells during December, 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 11: Water Quality Monitoring Results**

Sr. No	Parameters	Units	Results
<b>Sample Identification</b>			<b>Choti choupar</b>
1.	pH(at 25 °C)	-	7.4
2.	Turbidity	NTU	<1.0
3.	Conductivity	µs/cm	980
4.	Total Dissolved Solids	mg/L	628
5.	Total Suspended Solids	mg/L	<10
6.	Oil and Grease	mg/L	<2.5
7.	Dissolve Oxygen	mg/L	6.8
8.	E. Coli	Per 100 ml	Absent

## 7. SOCIAL AND RESETTLEMENT IMPACTS

### A. Impacts on Structures

#### A.1 Shifting of Temples

63. 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:

1. Hanuman Mandir (Chhoti Chaupar)
2. Shiv Mandir (Chhoti Chaupar)
3. Rojgareshwar Mandir (Chhoti Chaupar)
4. Shiv Mandir (Badi Chaupar)
5. Ganesh Mandir (Badi Chaupar)
6. Hanuman Mandir (Badi Chaupar)

64. 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 mt from Chhoti Chaupar) which has two courtyards admeasuring 542sqmt and 645 sqmt respectively be handed over to Jaipur Metro Rail Corporation for relocation of 6 temples and development of Two Wheeler Parking, respectively.

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



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

66. 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:

1. Barah ling Mahadev (Chhoti Chaupar)
2. Rameshwar Mahadev (Chhoti Chaupar)
3. Bajrangbali Mandir (Chhoti Chaupar)
4. Peepleshwar Mahadev (Badi Chaupar)
5. Mahadev Ji/Mataji/Hanuman Mandir (Badi Chaupar)
6. Mahadev Mandir (Badi Chaupar)
7. Mahadev/Hanuman Mandir (Badi Chaupar)

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

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

69. 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.



70. 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	

	
Site at TanwarjiKaNauhra	Site behind manak Chowk Thana (Badi Chaupar)

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

72. 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.

73. 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 19.05.15	
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 twrdsChhoti 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 TanwarJiKaNauhra
2	DhruvmukhiMahaveer Hanuman Mandir, NW Khanda	3.781	Shifted to temple behind Manak Chowk on 29 <sup>th</sup> /30 <sup>th</sup> 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 on 15 <sup>th</sup> /16 <sup>th</sup> Feb 2017. Permanently to Khanda at Badi Chaupar khanda (1.8 x 1.8 mt)	45 sqmt (Plot No. 229) At Rajarampura
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 <sup>th</sup> /16 <sup>th</sup> 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 <sup>th</sup> /30 <sup>th</sup> June 2017	Combined Plot (Plot A434) Qmt At RamnagariyaYojana
7	Mahadev/Hanuman Mandir, Outside Police thana- NE Khanda (ShriAmneshwar Mahadev Trust)	4.899		
8.	Shifting/Relocation of Ladeshwar Hanuman Temple for approach road of Ancillary Building at Badi Chaupar		Idols shifted in Om shivalay temple on 06.05.2018.	

## B. Land Acquisition and Resettlement

74. 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 BanshilalMehra	7.49
2	Bharat Cold Drink (Part of Shop No. 12)			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



75. 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.

76. 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	Shekhawat Rajpoot Dhaba 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	Mukut Behari, Satyanarayan S/o Banshilal Mehra, 105-A, Rana Pratap 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	Mukut Behari, Satyanarayan S/o Banshilal Mehra, 105-A, Rana Pratap Nagar, Jhotwada, Jaipur	3.90		
				11.39		
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 Nandlal Saini, 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. Mamta Kanwar 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. Mamta Kanwar W/o Sohan Singh & Sohan Singh S/o Mal Singh Shekhawat	5.46
Total				18.15		18.15



### C. COMPENSATION FOR DAMAGES DUE TO

77. 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:

(a) 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.

(b) 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.

(c) The construction company and the General Consultants were directed to ensure presence of a senior manager at the work site at all times.

78. 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 Bhaiyaji Fida Hussain	2640*

2	370A	Sh. Md. Eshaak	2640
3	370B	Sh. Md. Yakub	2640
4	371	Devi Singh SugandhiBhandar	2640

\*Refused to accept the cheque

## 8. PUBLIC CONSULTATIONS AND ADDRESSING OF GRIEVANCES

### A. Public Consultations carried out

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

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

- a) Heritage character of Jaipur
- b) Traffic diversion during construction
- c) Inclusion of all key stakeholders

81. During the period of this report (October2018–December 2018) following consultations were held:

**Table 12: Consultations held during the reporting period**

Date	Venue	Participants	Detail of discussion held
19.10.2018	Badi chauper	BadichauparVyapaarMandal	Issue related to difficulty in access to shops in NE Khanda at Badi Chaupar due to Baricading Board.
05.11. 2018	Chhoti Chaupar	Choti chauparVyapaar Mandal	Brief over the site progress at Chhoti chauper Entry Exist work
21.12. 2018	Choti Chaupar	ChotichauparVyapaarMandal	Issue related to debris removal near barricade in SW kandha at chotti Chaupar.

### B. Complaints and Requests Received

82. During the period of reporting (October 2018– December 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.

## 9. UNANTICIPATED SAFEGUARD ISSUES

During the reporting period from October2018 – December 2018, no such anticipated safeguard issues were come across.



## 10. CONCLUSION

### A. Summarize the overall Progress of Implementation of safeguard Measures<sup>4</sup>

83. 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 13.

**Table 13: EMP Compliance Status**

Sl. No	Clause/Description	Compliance Status 01.10.2018 – 31.12.2018			
		FC	PC	NC	NA
<b>1.</b>	<b>Pre-construction stage</b>				
a.	HSO and Environmental officer	1			
b.	CSC Environment Expert	1			
c.	EMP documentation	1			
d.	GPR study & Baseline survey of heritage structures	1			
<b>2.</b>	<b>Construction stage – General</b>				
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			
<b>3.</b>	<b>Construction stage – Legal requirement</b>				
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			
<b>4.</b>	<b>Construction stage – Monitoring</b>				
a.	Air & Noise monitoring	1			
b.	Instrumentation monitoring				1
<b>5.</b>	<b>Construction stage – Environment protection</b>				
a.	Tree cutting and transplantation	1			

<sup>4</sup>Overall 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.

b.	Air pollution		1		
c.	Noise pollution		1		
d.	Waste management	1			
e.	Soil/muck disposal	1			
f.	Landscape & Site aesthetics		1		
<b>6.</b>	<b>Construction stage – Health &amp; Safety</b>				
a.	Site Safety	1			
b.	Labour camp condition	1			
c.	Vector borne diseases	1			
d.	SHE reports	1			
<b>Score</b>		<b>20</b>	<b>4</b>	<b>0</b>	<b>4</b>
<b>Percentage compliance</b>		<b>72%</b>	<b>14%</b>	<b>0%</b>	<b>14%</b>

FC – Full Compliance

PC – Partial Compliance

NC – No Compliance

NA – Not Applicable

## **B. Problems Identified and Actions Recommended**

83. During the previous reporting period (July 2018– September 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.
84. 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.

**Appendices**

1. Photo log
2. Record of SHE Training
3. Sample format of Monthly SHE report
4. Environment Quality Monitoring Report
5. Monthly Report of Heritage Consultant
6. Consent to Operate letter from State Pollution Control Board
7. Muck disposal site photographs and details
8. Tree transplantation details
9. Permission letter from ADM for tree transplantation
10. Swachh Bharat Abhiyan (Clean India campaign) /awareness campaign from 15th September to 2nd October, 2018 at project site JMRC UG1-B.

## Appendix 1: Photo log of Progress

### Actual Photographs of Site from different locations



**View of Concourse platform Chhoti Chouper station**



**View of Chhoti chouper Track and Platform level**



**View of Track, Traction line and Utilities in the Down line track towards Badichouper**



**View of Kund area, Choti chouper**



**HIV/AIDS Awareness program among workers on world Aids Day(1<sup>st</sup> December 2018)****Focussed training on Height 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 Choti chouper station**



**Noise monitoring at Badi choupar station**

	
<p><b>Illumination testing</b></p>	<p><b>Barricades boards cleaning</b></p>
	
<p><b>Frequent pest control at site</b></p>	<p><b>Cleaning &amp; brooming at public traffic road</b></p>

### **Appendix 2: Record of SHE Trainings**

1. Details of SHE training conducted in the month of October 2018 – December 2018

**Month of October, 2018 Trainings:**

SN.	DATE	LOCATION	TOPIC	No. of person	REMARKS
1.	03/10/2018	Casting yard	Safety Precautions in Welding and Gas cutting	21	
2.	08/10/2018	Casting yard	Safety Precautions in Lifting & Rigging work	16	
3.	10/10/2018	Casting yard	Permit to Work System	21	
4.	12/10/2018	Casting yard	Fire Fighting	16	
5.	15/10/2018	Casting yard	Heavy Lifting Operation	16	
6.	17/10/2018	Casting yard	Safety Precaution Welding, cutting and Bending work	17	
7.	18/10/2018	Casting yard	Welfare measures and Legal Requirments	21	
8.	23/10/2018	Casting yard	First Aid & CPR	18	
9.	26/10/2018	Casting yard	Enviroment Pollution and Control	20	
10.	30/10/2018	Casting yard	Safe Rigging Operation	17	
11.	31/10/2018	Casting yard	Use of SCABA	17	
12.	01/10/2018	Chandpole	Traffic Management	08	
13.	04/10/2018	Chandpole	Safe operation of Power and Hand Tools	13	
14.	05/10/2018	Chandpole	Safety Precaution in Welding and Gas cutting	11	
15.	08/10/2018	Chandpole	Fire Safety	11	
16.	10/10/2018	Chandpole	Scaffolding erection & Dismantling	14	
17.	12/10/2018	Chandpole	Safe Lifting and Rigging	16	
18.	17/10/2018	Chandpole	Permit to Work System	13	
19.	18/10/2018	Chandpole	First Aid	11	
20.	22/10/2018	Chandpole	Waste Management	09	
21.	23/10/2018	Chandpole	Use of PPEs	11	
22.	01/10/2018	Chhoti Chouper	Safe operation of Hand Tools	20	
23.	04/10/2018	Chhoti Chouper	Safe operation of Power Tools	28	
24.	04/10/2018	Chhoti Chouper	Manual Material Handling	32	
25.	05/10/2018	Chhoti Chouper	Scaffolding safety.	47	
26.	05/10/2018	Chhoti Chouper	Safe lifting and Rigging of Materials	16	
27.	08/10/2018	Chhoti Chouper	Traffic Safety	20	
28.	09/10/2018	Chhoti Chouper	HSE Communication	36	
29.	09/10/2018	Chhoti Chouper	Electrical Safety(High Voltage)	17	
30.	09/10/2018	Chhoti Chouper	Electrical safety	9	
31.	10/10/2018	Chhoti Chouper	First Aid(CPR)	38	
32.	11/10/2018	Chhoti Chouper	Waste Management	26	



33.	12/10/2018	Chhoti Chouper	Fire Safety	30	
34.	16/10/2018	Chhoti Chouper	Safety During operation of Bar Bending and Cutting	14	
35.	18/10/2018	Chhoti Chouper	Safe use of Safety Harness	30	
36.	22/10/2018	Chhoti Chouper	Use of PPEs	27	
37	23/10/2018	Chhoti Chouper	Safe Erection and Dismantling of Scaffolding	20	
38.	25/10/2018	Chhoti Chouper	Permit to Work System	20	
39.	28/10/2018	Chhoti Chouper	Hot work Safety	14	
40.	01/10/2018	Badi Chouper	Hazard Identification and Risk Assessment	16	
41.	01/10/2018	Badi Chouper	Manual Material Lifting and Shifting	26	
42.	03/10/2018	Badi Chouper	Safe use of Power and Hand Tools		
43.	04/10/2018	Badi Chouper	Use of Full body Harness	25	
44.	05/10/2018	Badi Chouper	Safe Erection Dismantling of Scaffolding	20	
45.	06/10/2018	Badi Chouper	Working at Height	20	
46.	08/10/2018	Badi Chouper	Waste Management	19	
47.	09/10/2018	Badi Chouper	Work Permit System	13	
48.	11/10/2018	Badi Chouper	Safety in welding and Cutting	14	
49.	13/10/2018	Badi Chouper	Fire Fighting	11	
50.	15/10/2018	Badi Chouper	Inspection of Electrical and Mechanical equipments	07	
51.	16/10/2018	Badi Chouper	Heavy Lifting Operation	20	
52.	18/10/2018	Badi Chouper	Road Safety and Traffic Safety Management	22	
53	22/10/2018	Badi Chouper	Environment Management	20	
54	23/10/2018	Badi Chouper	First Aid(CPR)	30	
55	25/10/2018	Badi Chouper	Safe Reinforcement work for roof slab	18	
56	27/10/2018	Badi Chouper	Traffic Management	18	
57	29/10/2018	Badi Chouper	Safe Rigging Operation	13	

**Month of November, 2018 Training:**

SN.	DATE	LOCATION	TOPIC	No. of person	Remarks
1.	03/11/2018	Casting yard	Hot Wor Safety	14	
2.	08/11/2018	Casting yard	Safe Lifting and Rigging operation	17	
3.	10/11/2018	Casting yard	Permit to work System	17	
4.	12/11/2018	Casting yard	Incident/Accident Investigation and Reporting	15	
5.	15/11/2018	Casting yard	Heavy Lifting Operation	18	
6.	17/11/2018	Casting yard	Safety in Welding, cutting and Bending	16	

7.	19/11/2018	Casting yard	First Aid(CPR)	15	
8.	22/11/2018	Casting yard	Behavioral Based Safety	22	
9.	27/11/2018	Casting yard	Crane Inspection	16	
10.	05/11/2018	Chandpole	Use of Full body Harness	06	
11.	09/11/2018	Chandpole	Fire Safety	07	
12.	12/11/2018	Chandpole	Safety in Welding and Gas cutting work	05	
13.	16/11/2018	Chandpole	Safe erection and Dismantling of Scaffolding	05	
14.	19/11/2018	Chandpole	Waste Management	06	
15.	01/11/2018	Chhoti Chouper	Safe use of Hand Tools	30	
16.	03/11/2018	Chhoti Chouper	Safe Operations of Power Tools	35	
17.	05/11/2018	Chhoti Chouper	Permit to Work System	22	
18.	05/11/2018	Chhoti Chouper	Hot work Safety	20	
19.	12/11/2018	Chhoti Chouper	HSE Communication	33	
20.	14/11/2018	Chhoti Chouper	Traffic Safety	19	
21.	15/11/2018	Chhoti Chouper	Safe Erection and Dismantling of Scaffolding	80	
22.	17/11/2018	Chhoti Chouper	First Aid(CPR)	33	
23.	17/11/2018	Chhoti Chouper	Fire Safety	40	
24.	19/11/2018	Chhoti Chouper	Safe operation of Bar bending, Bar Cutting Machine	15	
25.	21/11/2018	Chhoti Chouper	Safe use of Safety Harness	26	
26.	22/11/2018	Chhoti Chouper	Use of PPE'S	36	
27.	24/11/2018	Chhoti Chouper	Behavior Based Safety	19	
28.	29/11/2018	Chhoti Chouper	Safety in Lifting and Rigging	23	
29.	01/11/2018	Badi Chouper	Material Lifting and Shifting	24	
30.	03/11/2018	Badi Chouper	Safe use of Full body Harness	14	
31.	04/11/2018	Badi Chouper	Safe use of Power and Hand Tools	10	
32.	05/11/2018	Badi Chouper	Safe erection and Dismantling of Scaffolding	21	
33.	09/11/2018	Badi Chouper	Working at Height	20	
34.	11/11/2018	Badi Chouper	Work Permit System	12	
35.	13/11/2018	Badi Chouper	Waste Management System	14	
36.	15/11/2018	Badi Chouper	Fire Fighting	15	
37.	18/11/2018	Badi Chouper	Heavy Lifting Operation	10	
38.	20/11/2018	Badi Chouper	Road Safety and Traffic Management	20	
39.	22/11/2018	Badi Chouper	Environment Management	25	
40.	23/11/2018	Badi Chouper	First Aid(CPR)	25	
41.	24/11/2018	Badi Chouper	Waste Management	32	
42.	26/11/2018	Badi Chouper	Inspection of Lifting Tools	15	
43.	28/11/2018	Badi Chouper	Inspection of Electrical Installation and Machines	20	
44.	29/11/2018	Badi Chouper	Safety in Welding and Gas cutting	18	


**Month of December, 2018 Training:**

SL NO	Date	LOCATION	TOPICS	ATTENDANCE	Remarks
1.	03/12/2018	Casting yard	Fire fighting	23	
2.	05/12/2018	Casting yard	Safety in Reinforcement work	10	
3.	08/12/2018	Casting yard	Safety in Heavy Lifting Operation	17	
4.	10/12/2018	Casting yard	Safe Rigging Operation	13	
5.	12/12/2018	Casting yard	Safe operation Of Power Tools	22	
6.	15/12/2018	Casting yard	Safe operation of Barbending, cutting and Threading Machines	18	
7.	17/12/2018	Casting yard	Inspection of Electrical and Mechanical operated Machines	16	
8.	20/12/2018	Casting yard	SHE Communication	17	
9.	22/12/2018	Casting yard	Behavioral Based Safety	19	
10.	24/12/2018	Casting yard	Waste Management	13	
11.	04/12/2018	Chandpole	Fire Fighting	09	
12.	08/12/2018	Chandpole	Manual Material Handling	07	
13.	10/12/2018	Chandpole	Permit to work System	8	
14.	14/12/2018	Chandpole	Waste Management	8	
15.	17/12/2018	Chandpole	Safe Operation of Power Tools	09	
16.	21/12/2018	Chandpole	First Aid(CPR)	08	
17.	03/12/2018	Chhoti Chouper	Electrical Safety	11	
18.	04/12/2018	Chhoti Chouper	Fire Safety	32	
19.	05/12/2018	Chhoti Chouper	Permit to Work System	17	
20.	08/12/2018	Chhoti Chouper	TrafficSafety	20	
21.	12/12/2018	Chhoti Chouper	Safety in Barbending and cutting by machine	20	
22.	14/12/2018	Chhoti Chouper	Safe erection and dismantling of Scaffolding	25	
23.	17/12/2018	Chhoti Chouper	SHE Communication	31	
24.	17/12/2018	Chhoti Chouper	First Aid(CPR)	31	
25.	18/12/2018	Chhoti Chouper	Heavy Lifting Operation	18	
26.	19/12/2018	Chhoti Chouper	Use of Safety Harness	13	
27.	20/12/2018	Chhoti Chouper	Safety in Power Tools operation	15	
28.	22/12/2018	Chhoti Chouper	Use of PPEs	26	
29.	23/12/2018	Chhoti Chouper	Safe use of Manual Hand Tools	20	
30.	23/12/2018	Chhoti Chouper	Inspection of Crane	12	
31.	26/12/2018	Chhoti Chouper	Hot work Safety	12	
32.	27/12/2018	Chhoti Chouper	Safe Erection and Dismantling of Scaffolding	20	
33.	28/12/2018	Chhoti Chouper	Waste Management	31	
34.	29/12/2018	Chhoti Chouper	Behavior base safety	30	
35.	01/12/2018	Badi Chouper	Safe operation of Power and Hand Tools	20	
36.	03/12/2018	Badi Chouper	Work Permit System	21	
37.	05/12/2018	Badi Chouper	Road Safety and Traffic Management	18	
38.	06/12/2018	Badi Chouper	Fire Fighting	20	
39.	08/12/2018	Badi Chouper	Waste Management	20	
40.	10/12/2018	Badi Chouper	Working at Height	26	

41	12/12/2018	Badi Chouper	Safe Erection and Dismantling of Scaffolding	21	
42	14/12/2018	Badi Chouper	Inspection of Lifting Tools and Tackles	12	
43	16/12/2018	Badi Chouper	Safety during Welding and Gas Cutting	28	
44	18/12/2018	Badi Chouper	First Aid(CPR)	27	
45	20/12/2018	Badi Chouper	Safety During Heavy Lifting Operation	14	
46	22/12/2018	Badi Chouper	Environment Management	25	
47	26/12/2018	Badi Chouper	Inspection of Lifting Tools and Tackles	15	
48	28/12/2018	Badi Chouper	Electrical / mechanical inspection	20	
49	31/12/2018	Badi Chouper	Safety in Cage Making for roof slab work	16	

**Appendix 2: Record of SHE inspections attendance**

Sample copy of Safety, Health and Environment (SHE) Inspections/Audits

 <b>CONTINENTAL ENGINEERING CORP</b> A MEMBER OF CONTINENTAL HOLDINGS		<b>191<sup>st</sup> WEEKLY SHE WALK ATTENDANCE SHEET</b>  <b>PROJECT:- JMRC-UG 1B</b>			Location:- Chhoti Chouper Date:- 28/12/2018 Walk No:- 191
SL.NO.	NAME	DESIGNATION	SIGNATURE	ORGANIZATION	E-MAIL ID
1	A. K. Singh	PD	[Signature]	DMRC	
2	Pooja K. Agrawal	Dy. CE / DMRC	[Signature]	DMRC	
3	T. D. Dima	Asst Mgr	[Signature]	CEC	
4	SHASHANK SINGH	PM	[Signature]	CEC	
5	DALJINDER SINGH	GM IRE	[Signature]	CEL	
6	T. R. Rajgopal	SE/SA/SP	[Signature]	DMRC	9571356111
7	D. K. Chaudhary	SE/Elect.	[Signature]	DMRC	9717155959
8	K. M. Rawat	Safety manager	[Signature]	Autometers Ltd.	9424528476
9	Kaushalendra Singh	Sr. SAE Mgr	[Signature]	MIS ETA	Singh.kaushalendra41@gmail.com
10	Rajesh Singh	Asst. SAE Ele. Officer	[Signature]	MIS ETA	8741984983
11	Syed Imran Ali	Jr SAE Manager	[Signature]	MIS ETA Engrs	8802577201
12	Karan Karan	Sr. Electrical Engr	[Signature]	CEC	
13	Jai Singh	Manager	[Signature]	ETA	9718237678
14	Kamal Sharma	Mgr-IT	[Signature]	CEC	

## Appendix 2: Record of SHE Trainings

### SHE Training photographs



### Environment awareness training on SWACHH BHARAT ABHIYAN - Clean India Campaign



**CPR Training**

**Emergency Mock drill Training  
in the station**





**TBT/ Pre start work training,  
Choti chouper station**



**Training for Fire Fighting at casting yard**



**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



**December - 2018**

DOCUMENT No. RP/JMRC/SHE/UG1B/PHOF/054  
Revision =00, Date 09.01.2019

**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	RAJ KISHOR PANDEY	ALOK TIWARI
DESIGNATION :	OFFICER SAFETY	CHIEF SHE MANAGER	PROJECT LEADER
DATE :	9 <sup>th</sup> January, 2019	9 <sup>th</sup> January, 2019	9 <sup>th</sup> January, 2019

## Appendix 4: Sample Ambient Air and Noise monitoring report



## Idma Laboratories Limited

(A Government Approved Test House)

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

## TEST REPORT

Ref. No. IL/D-7268	Date	26.12.18	Lab No.	201218ED-NL-031	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	22/06/2018		
Date of Receipt of Sample	20/12/2018				
Period of Analysis	20/12/2018 To 23/12/2018				
Sampling Team Idma	Mr. Sourav Kamboj	Client	Mr. Arvind Kumar		
Sampling Location	Badi Choupar (Near Safety Office)				
Visual Observation	N/A				
Date of Sampling	18/12/2018				
Date of Reporting	23/12/2018				
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	137	100	IS: 5182 (P-23), 2006
2	Sulphur Dioxide (SO2)	µg/m³	15.9	80	IS : 5182 (P-2), 2001
3	Nitrogen Dioxide (NO2)	µg/m³	22.4	80	IS: 5182 (P-6), 2006
4	Carbon Monoxide (CO)	mg/m³	0.76	2	IS : 5182 (P-10) 1999
5	*Lead (Pb)	µg/m³	<0.1	1	IS: 5182 (P-22), 2004
	*Suspended Particulate Matter (SPM)*	µg/m³	241	-	IS: 5182 (P-4) 1999

Opinion : Note:\*are not cover NABL

\*\*End of Report\*\*



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)

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

## TEST REPORT

Ref. No. IL/D-7272	Date	26.12.18	Lab No.	201218ED-NL-035	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 NOISE				
Customer's Description of Sample	AMBIENT NOISE				
Quantity	1 No.				
Packing, Markings	Instrumental At Site				
Mode of Collection of Sample	Sampling By Laboratories				
Work Order No.	I6130JSD1284	Dated	22/06/2018		
Date of Receipt of Sample	20/12/2018				
Period of Analysis	20/12/2018 To 23/12/2018				
Sampling Team Idma	Mr. Sourav Kamboj	Client	Mr. Arvind Kumar		
Sampling Location	Pink City Hospital (Chand Pole)				
Visual Observation	N/A				
Date of Sampling	18/12/2018				
Date of Reporting	23/12/2018				
Sampling Protocol	CPCB				
Testing Protocol	CPCB				

## RESULTS

S.No.	Test Parameter	Units	Results	Limits, Day	Test Method
1	Lmax	dB(A)	73.2		IS:7194 (1994) RA:2005
2	Lmin	dB(A)	50.2		IS:7194 (1994) RA:2005
3	Leq	dB(A)	56.3		IS:7194 (1994) RA:2005
4	L10	dB(A)	63.0		IS:7194 (1994) RA:2005
5	L50	dB(A)	60.6		IS:7194 (1994) RA:2005
	L90	dB(A)	54.1		IS:7194 (1994) RA:2005
7	Lday	dB(A)	63.2	Max 75	IS:7194 (1994) RA:2005
8	LNight	dB(A)	51.4	Max 70	IS:7194 (1994) RA:2005
9	Ldn	dB(A)	56.1		IS:7194 (1994) RA:2005

\*\*End of Report\*\*



For Idma Laboratories Limited

Authorized Signatory



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## TEST REPORT

Ref. No. IL/D- 7280	Date	26.12.18	Lab No.	201218ED-NL-043	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, Seal & Quantity	Plastic Can:				
Mode of Collection of Sample	Sampling By Laboratories				
Work Order No.	I6130JSD1284			Dated	22/06/2018
Date of Receipt of Sample	20/12/2018				
Period of Analysis	20/12/2018 To 23/12/2018				
Sampling Team Idma	Mr. Sourav Kamboj			Client	Mr. Arvind Kumar
Sampling Location	Chand Pole				
Visual Observation	N/A				
Date of Sampling	19/12/2018				
Date of Reporting	23/12/2018				
Sampling Protocol	IS: 3025				
Testing Protocol	IS:10500-2012,Ad-1				

## RESULTS

S.No.	Test Parameter	Units	Results	IS 10500:2012 Ad-1		Test Methods
				Desirable Limit	Permissible Limit	
1	pH Value	-	7.4	6.5 to 8.5	No Relaxation	IS:3025(P-11), 1983 RA-2012
2	Turbidity	NTU	<1	1 max.	5 max.	IS:3025(P-10), 1984 RA-2012
3	Conductivity	S/cm	980	---	---	IS:3025 (P-14), 2013
4	Total Dissolved solids	mg/l	628	500 max	2000 max	IS:3025 (P-16), 1984 RA-2012
5	DO	mg/l	6.8	---	---	IS:3025 (P-38), 1989 RA-2009
6	Oil & Grease	mg/l	<2.5	---	---	IS:3025 (P-39), 1991 RA-2009
7	Total suspended solids	mg/l	<10	---	---	IS:3025 (P-17), 1984 RA-2012
8	E. coli	(MPN/100ml)	<2 (Not Detected)	Shall Not be Detectable	-	IS1622:1981

\*\*End of Report\*\*



For Idma Laboratories Limited

Authorized Signatory



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### **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: 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**

- 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:

<b>Quantity of Muck Disposed to dumping ground</b> (October 2018 to December 2018)	
<b>Months</b>	<b>Quantities</b>
October	3546 M <sup>3</sup>
November	1853 M <sup>3</sup>
December	3335 M <sup>3</sup>

b) No. of trucks used for the same

<b>Number of Trucks used for transporting muck to dumping ground</b> (October 2018 to December 2018)	
<b>Months</b>	<b>Number of Muck Disposal trucks</b>
October	293 TRIPS
November	177 TRIPS
December	289 TRIPS

c) Average quantity of muck daily:

<b>Average quantity of muck transported to dumping ground on daily basis</b> (October 2018 to December 2018)	
<b>Months</b>	<b>Average quantity of muck daily</b>
October	114.39 M <sup>3</sup>
November	61.76 M <sup>3</sup>
December	107.58 M <sup>3</sup>

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 marshal 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



Muck disposal at sumel (Mathuradaspora)



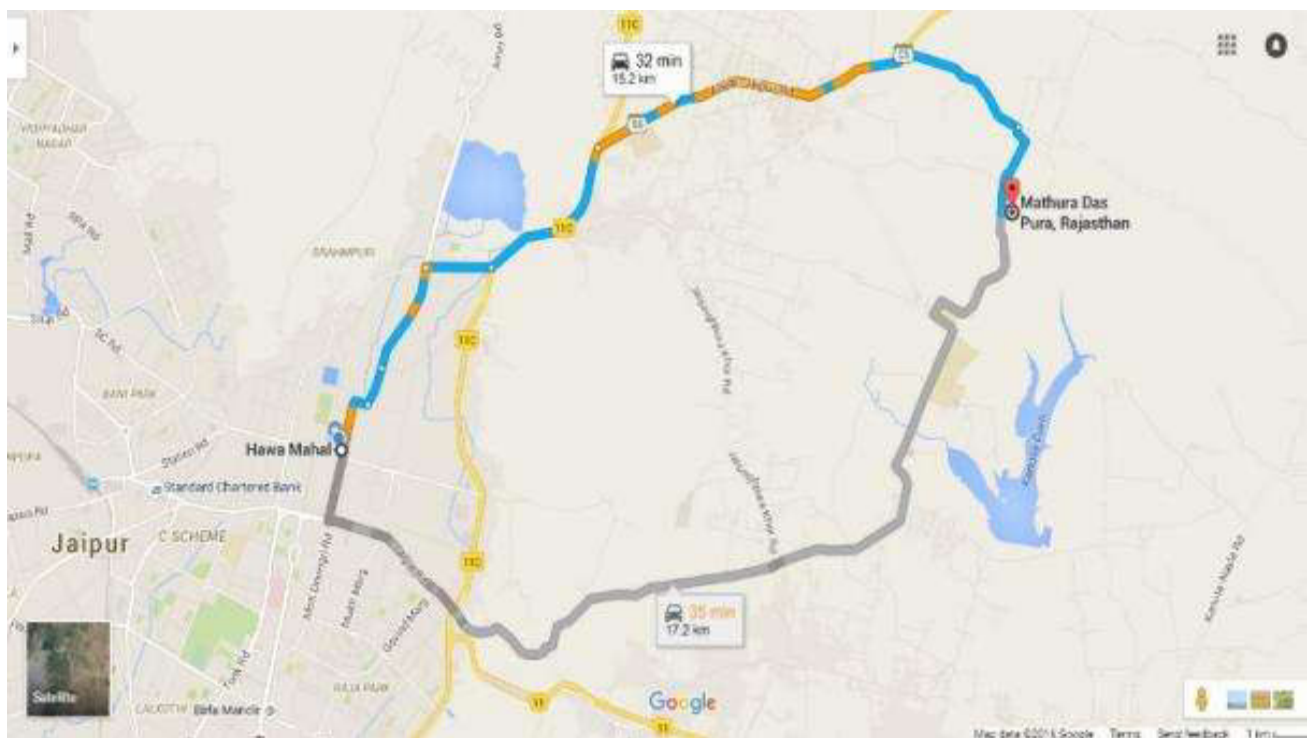
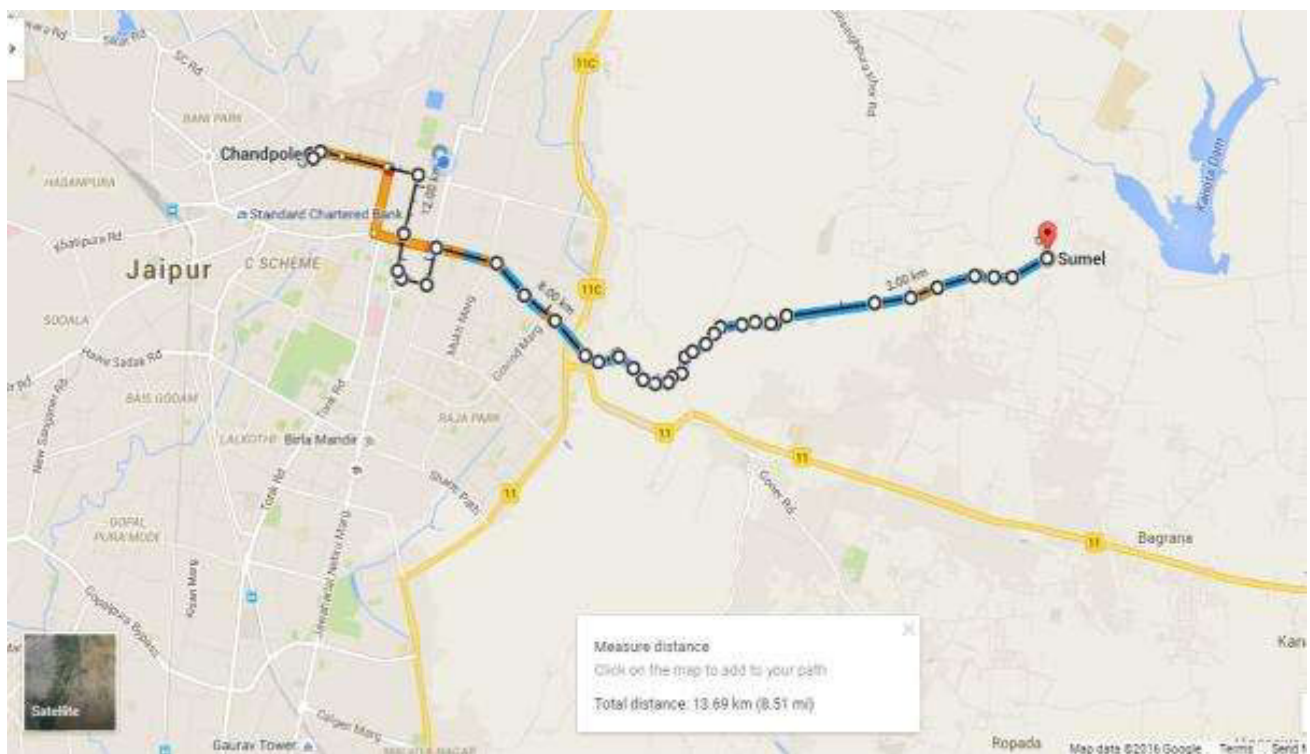
Landscalping at JDA park, Hathigaon, Jaipur

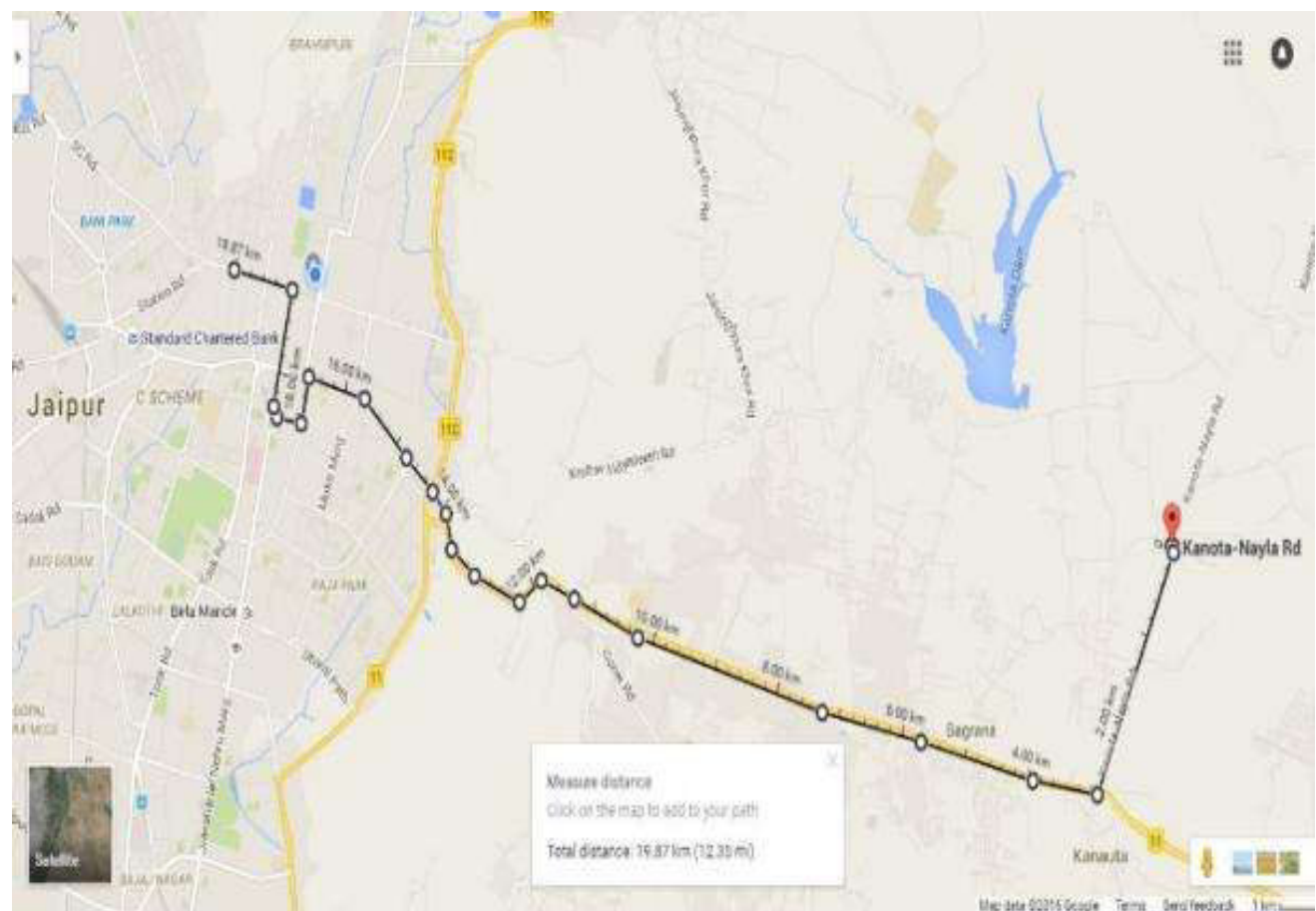
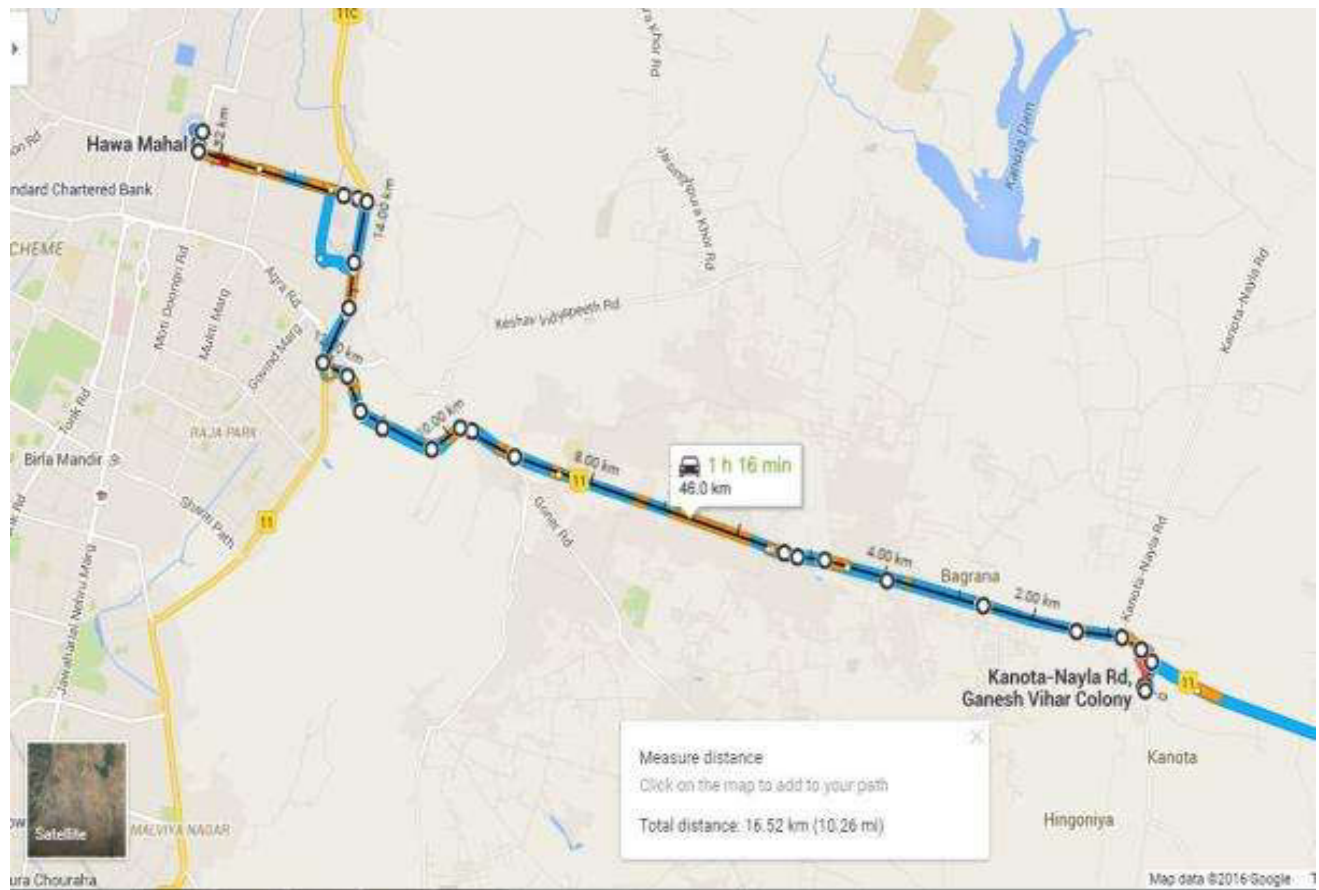




## Route Map

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

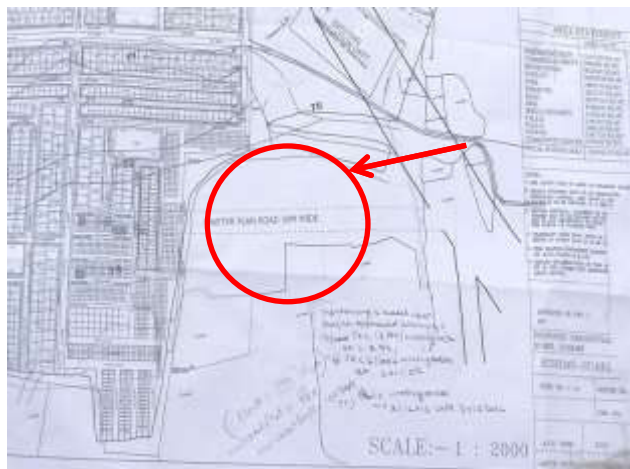




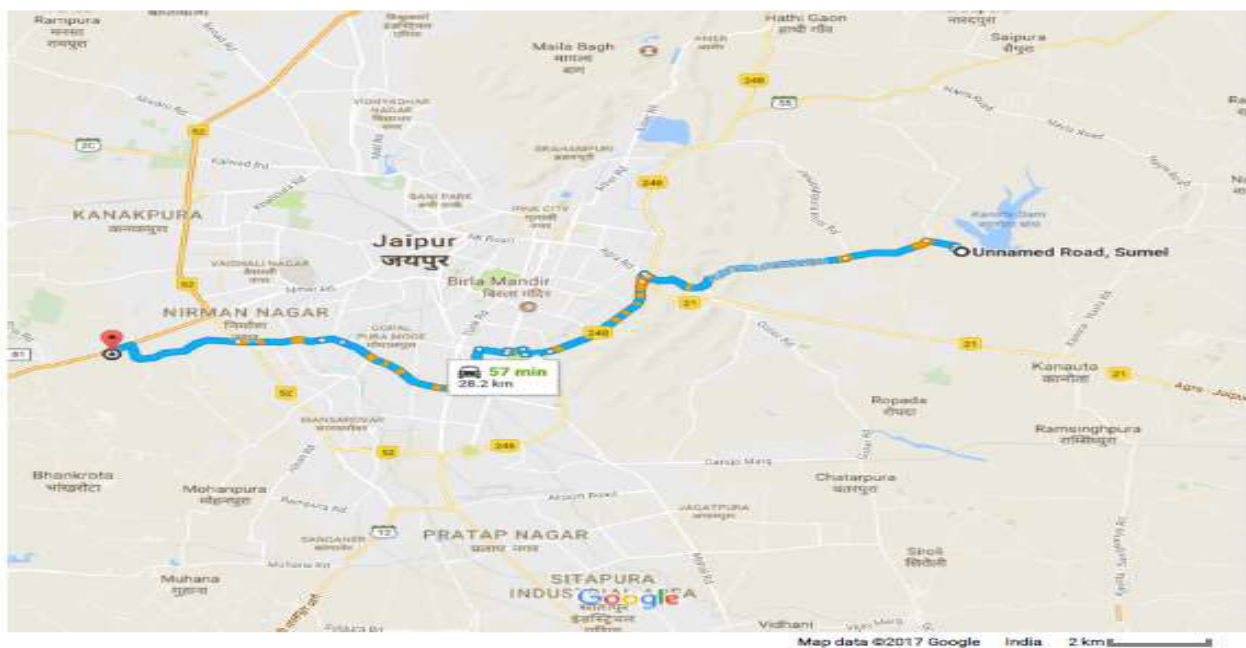


## C&D waste disposal land (location & route map)


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








Google Maps Unnamed Road, Sumel, Beermalpura at Mukandpura, Rajasthan 303012 to 26.87479, 75.71186 Drive 28.2 km, 57 min









Appendix-8 Tree Transplantation details		
	<b>CONTINENTAL ENGINEERING CORPORATION</b> <b>JMRC-1B PROJECT JP/EW/1B/C1</b>	<b>Location:</b> Ghat Ki Ghuni
	<b>List of 1<sup>st</sup> phase Transplanted Trees</b>	

SI No	Previous location	Current Location	Year of tree transplantation	Photographs	Remarks
1.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Not Survived
2.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Survived
3.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Survived




4.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Survived
5.	Chhoti Chaupar	Ghat Ki Ghuni	2014		Survived
6.	Badi Chaupar	Ghat Ki Ghuni	2014		Survived

 <b>CONTINENTAL ENGINEERING CORP</b> <small>A MEMBER OF CONTINENTAL HOLDINGS</small>			<b>CONTINENTAL ENGINEERING CORPORATION</b> <b>JMRC-1B PROJECT JP/EW/1B/C1</b>			<b>Location:</b> <b>Ramnivas Bagh</b>
			<b>List of 2<sup>nd</sup> phase transplanted trees</b>			
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	


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	





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	




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	

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 CORPORATION	JMRC-1B PROJECT JP/EW/1B/C1
	List of 3rd phase transplanted trees	
Location	Exit-Entry area, Badi chouper and Choti choupar stations	
Inspected and prepared 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><b>Botanical name:</b> FicusBenghalensis</p> <p><b>Common name:</b> Bargad(बरगद)</p> <p><b>Girth:</b>11100 mm</p> <p><b>Weight :</b> 34 ton</p>	<p><b>Transplanted on</b> <b>16.02.2018(Friday)</b></p> <p><b>Last inspected by</b> Environment Manager on <b>13.10.2018</b> <b>(Saturday)</b></p>	<p><b>Status:</b> <b>SURVIVED</b></p> <p>Water dripping and growth monitoring of tree by Environment Manager&amp; forest staff is under progress</p>
		<p><b>Tree is in good condition and fresh bunches of shoots and growth of leaves seen.</b></p> <p><b>Photosynthesis of tree is in good condition and lush green leaves at various branches seen.</b></p> <p><b>Formation of new shoots is continuing at various locations of branches seen.</b></p> <p><b>Ample milky latex available and new shoots appeared with budding branches.</b></p> <p><b>Anti-termite and Anti-fungal solutions applied.</b></p>		






<p><b>Tree No.</b></p> <p><b>120</b></p>	  	<p>Tree No. 120 Transplanted at parking area, Biological park, Nahargarh, from Exit-Entry (South-East) Badi Choupar station.</p> <p><b>Botanical name:</b> FicusBenghalensis</p> <p><b>Common name:</b> Bargad(बरगद)</p> <p><b>Girth:</b> 7000 mm <b>Weight :</b> 16 ton</p> <p><b>New bunch of shoots germination and leaves growth are seen.</b></p> <p><b>Photosynthesis of tree is in good condition and lush green leaves are seen.</b></p> <p><b>Formation of new shoots is continuing at various locations of branches seen.</b></p> <p><b>Ample milky latex with heathy capillary reaction exists in the tree.</b></p> <p><b>Anti-termite and anti-fungal solutions applied.</b></p>	<p><b>Transplanted on</b> <b>13.02.2018</b> <b>(Tuesday)</b></p> <p>Last inspected by Environment Manager on <b>13.10.2018</b> <b>(Saturday)</b></p>	<p><b>Status: Survived</b></p> <p>Water dripping and growth monitoring of tree by Environment Manager &amp; Forest staff is under progress</p>
--	--	--	--	--




--	--	--	--	--


<p><b>Tree No.</b></p> <p><b>115</b></p>	 	<p>Tree No. 115 Transplanted at parking area, Biological park, Nahargarh, from station Box, Badi Choupar station.</p> <p><b>Botanical name:</b> FicusBenghalensis</p> <p><b>Common name:</b> Bargad (बरगद)</p> <p><b>Girth:</b>6500 mm <b>Weight :</b> 12 ton</p> <p><b>Existing leaves are fallen and formation of new shoots not seen.</b></p> <p><b>Milky latex found till 3 to 5 feet height from ground level at various locations.</b></p> <p><b>Existing shoots are healthy at two locations.</b></p> <p><b>Anti-termite and anti-fungal solutions applied.</b></p>	<p><b>Transplanted on</b> <b>09.02.2018(Friday)</b></p> <p>Tree inspected by Environment Manager on <b>04.12.2018 (Tuesday)</b></p>	<p><b>Status: Survived</b></p> <p>Water dripping and growth monitoring of tree by Environment Manager &amp; Forest staff is under progress</p>
--	--	--	---	--

				
<p><b>Tree No.</b></p> <p><b>115</b></p> <p><b>'A'</b></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><b>Botanical name:</b> FicusBenghalensis</p> <p><b>Common name:</b> Bargad (बरगद)</p> <p><b>New bunches of shoots formation &amp; leaves growth are seen at various locations.</b></p> <p><b>Ample milky latex and capillary reaction exist in the tree.</b></p> <p><b>Anti-termite and anti-fungal solutions applied.</b></p>	<p><b>Transplanted on</b> <b>13.02.2018</b> <b>(Tuesday)</b></p> <p>Inspected Environment Manager <b>04.12.2018</b> <b>(Tuesday)</b></p>	<p><b>Status: Survived</b></p> <p>Water pouring and growth monitoring of branches by Environment Manager &amp; Forest staff is under progress</p>





				
<p><b>Tree No.</b></p> <p><b>115</b></p> <p><b>'B'</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><b>Botanical name:</b> FicusBenghalensis</p> <p><b>Common name:</b> Bargad (बरगद)</p> <p><b>New shoots formation seen, New leaves &amp; its growth at various locations seen.</b></p> <p><b>Ample milky latex and capillary reaction exists in the branch.</b></p> <p><b>Anti-termite and anti-fungal solutions applied.</b></p>	<p><b>Transplanted on</b> <b>13.02.2018</b> <b>(Tuesday)</b></p> <p>Inspected Environment Manager <b>04.12.2018</b> <b>(Tuesday)</b></p>	<p><b>Status: Survived</b></p> <p>Water pouring and growth monitoring of branches by Environment Manager &amp; Forest staff is under progress</p>






<p><b>Tree No.</b></p> <p><b>115</b></p> <p><b>'C'</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><b>Botanical name:</b> FicusBenghalensis</p> <p><b>Common name:</b> Bargad (बरगद)</p> <p><b>Fresh branches planted but NO shoot formation and its growth seen.</b></p>	<p><b>Transplanted on</b> <b>13.02.2018</b> <b>(Tuesday)</b></p> <p>Inspected by Environment Manager on <b>04.12.2018</b> <b>(Tuesday)</b></p>	<p><b>Status: Not Survived</b></p> <p>Water pouring and growth monitoring of branches by Environment Manager &amp; Forest staff is under progress</p>
<p><b>Tree No.</b></p> <p><b>93</b></p>	 	<p><b>Botanical name:</b> FicusBenghalensis</p> <p><b>Common name:</b> Bargad (बरगद)</p> <p><b>Girth:</b>7200 mm <b>Weight :</b> 14 ton</p> <p>Tree no.-93 transplanted near parking area, Biological park, Nahargarh from North-West, Exit-Entry, Choti choupar station.</p> <p><b>Existing leaves are burnt due to high temperature in the summers but new shoots are exists at two locations at 3 &amp; ½ feet and 1 &amp; ½ feet from ground level.</b></p> <p><b>Existing shoots are healthy present at two locations.</b></p>	<p><b>Transplanted on</b> <b>28.03.2018(Wednes day)</b></p> <p>Last inspected by Environment Manager on <b>04.12.2018</b> <b>(Tuesday)</b></p>	<p><b>Status: Survived</b></p> <p>Water pouring and growth monitoring of tree by Environment Manager &amp; Forest staff is under progress</p>






		<p><b>Anti-termite and anti-fungal solutions applied.</b></p> <p><b>Moss grass treatment applied for new shoot formation in the tree.</b></p>		
--	--	---	--	--

**Sapling planted during World Environment Day (5<sup>th</sup> June) / National Safety Week (4<sup>th</sup> to 10 March)  
at JMRC UG-1B project site**






Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
1		Botanical name: <b>Saraca asoca</b> Common name: <b>Ashoka (अशोक)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
2		Botanical name: <b>Ficus benjamina</b> Common name: <b>Pukar (पुकर)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived






3		Botanical name: <b>Ficusbenjamina</b> Common name: <b>Pukar(पुकर)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
4		Botanical name: <b>Syzygiumcumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
5		Botanical name: <b>Ficusbenjamina</b> Common name: <b>Pukar(पुकर)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
6		Botanical name: <b>Syzygiumcumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
7		Botanical name: <b>FicusBenghalensis</b> Common name: Bargad( <b>बरगद</b> )	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived



8		Botanical name: <b>Syzygiumcumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
9		Botanical name: <b>Ficusbenjamina</b> Common name: <b>Pukar(पुकर)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
10		Botanical name: <b>Syzygiumcumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
11		Botanical name: <b>FicusBenghalensis</b> Common name: Bargad(बरगद)	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
12		Botanical name: <b>Saracaasoca</b> Common name: <b>Ashoka(अशोक)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived












13		Botanical name: <b>Ficus benjamina</b> Common name: <b>Pukar(पुकर)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
14		Botanical name: <b>Saraca asoca</b> Common name: <b>Ashoka(अशोक)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
15		Botanical name: <b>Saraca asoca</b> Common name: <b>Ashoka(अशोक)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2018	Survived
16		Botanical name: <b>Ficus benjamina</b> Common name: <b>Pukar(पुकर)</b>	Casting Yard	8 <sup>th</sup> March, 2018	Survived
17		Botanical name: <b>Saraca asoca</b> Common name: <b>Ashoka(अशोक)</b>	Casting Yard	8 <sup>th</sup> March, 2018	Survived

18		Botanical name: <b>Syzygium cumini</b> Common name: <b>Java plum (जामुन)</b>	Casting Yard	8 <sup>th</sup> March, 2018	Survived
19		Botanical name: <b>Ficus benjamina</b> Common name: <b>Pukar (पुकर)</b>	Casting Yard	8 <sup>th</sup> March, 2018	Survived
20		Botanical name: <b>Ficus Benghalensis</b> Common name: <b>Bargad (बरगद)</b>	Casting Yard	8 <sup>th</sup> March, 2018	Survived





**23 Saplings planted at JMRC UG-1B project site during 46<sup>th</sup> NSW (4<sup>th</sup>-10<sup>th</sup> March-2017)**





Sr. No.	Plant Photograph	Plant Name	Plant Location	Date of Plantation	Remarks
1.		Botanical name: <b>Ficus benjamina</b> Common name: <b>Pukar (पुकर)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
2.		Botanical name: <b>Ficus Benghalensis</b> Common name: <b>Bargad (बरगद)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived





3.		Botanical name: <b>Syzygiumcumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
4.		Botanical name: <b>Ficusbenjamina</b> Common name: <b>Pukar(पुकर)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
5.		Botanical name: <b>Syzygiumcumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
6.		Botanical name: <b>Saracaasoca</b> Common name: <b>Ashoka(अशोक)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
7.		Botanical name: <b>Ficusreligiosa</b> Common name: <b>Peepal (पीपल)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived

8.		Botanical name: <b>Syzygium cumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
9.		Botanical name: <b>Ficus Benghalensis</b> Common name: Bargad(बरगद)	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
10.		Botanical name: <b>Ficus Benghalensis</b> Common name: Bargad(बरगद)	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
11.		Botanical name: <b>Ficus Benghalensis</b> Common name: Bargad(बरगद)	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived



12.		Botanical name: <b>Saraca asoca</b> Common name: <b>Ashoka (अशोक)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
13.		Botanical name: <b>Syzygium cumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
14.		Botanical name: <b>Ficus benjamina</b> Common name: <b>Pukar (पुकर)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
15.		Botanical name: <b>Syzygium cumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived

16.		Botanical name: <b>Saraca asoca</b> Common name: <b>Ashoka (अशोक)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
17.		Botanical name: <b>Ficus Benghalensis</b> Common name: Bargad (बरगद)	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
18.		Botanical name: <b>Syzygium cumini</b> Common name: Java plum (जामुन)	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
19.		Botanical name: <b>Ficus religiosa</b> Common name: Peepal (पीपल)	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived

20.		Botanical name: <b>Psidiumguajava</b> Common name: <b>PERUGuava(अमरुद)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
21.		Botanical name: <b>Syzygiumcumini</b> Common name: <b>Java plum (जामुन)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
22.		Botanical name: <b>Saracaasoca</b> Common name: <b>Ashoka(अशोक)</b>	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived
23.		Botanical name: <b>FicusBenghalensis</b> Common name: Bargad(बरगद)	Project office (PHQ)	8 <sup>th</sup> March, 2017	Survived



### NOTICE

Dear Gentlemen,  
Greetings of the day!

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

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

- |   |                       |
|---|-----------------------|
| 1. Plantation at PHQ lawn/ casting yard/<br>Ram Niwas bagh by all HOD's                               | (10:00 to 11:30 AM)   |
| 2. Mass housekeeping by all staff & workers<br>(Badi Choupari/Chhoti choupari/Chandpole/Casting yard) | (02:00 PM to 3:00 PM) |
| 3. Workshop at CC/BC/CY   | (03:00 PM to 3:30 PM) |
| 4. Presentation to all engineers and staff at PHQ   | (5:00 to 5:30 PM)     |
| 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)

### Appendix-9: Permission letter for Tree Transplantation at JMRC UG-1B



क्रमांक: आर-1( )13/पेड/1353

निदेशक (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 पेडों को काटने/पुनरोपण की अनुमति प्रदान

विषयान्तर्गत प्रासंगिक पत्र द्वारा जयपुर मेट्रो रेल प्रोजेक्ट के फेज  
से बड़ी चौपड के बीच आ रहे 90 पेडों को काटने/पुनरोपण  
अनुमति प्रदान करने का निवेदन किया गया  
जयपुर मेट्रो रेल प्रोजेक्ट के फेज-1 बी में  
कुल 88 पेडों को काटने/पुनरोपण की अनुमति प्रदान  
संख्या 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 18ए/14/  
01.2014 सन्दर्भ में उपरोक्तानुसार पालना हेतु प्रेषित

!!  
(मातादीन)

प्रभारी अधिक



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- |   |                       |
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### 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)

 <p><b>CONTINENTAL ENGINEERING CORP</b> A MEMBER OF CONTINENTAL TIRE GROUP</p>	<p><b>स्वच्छ भारत अभियान</b> <b>SWACHH BHARAT ABHIYAN</b></p>	 <p><b>JAIPUR METRO</b></p>
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**Subject:** Swachh Bharat Abhiyan campaign at our project sites JMRC UG-1B, Jaipur, (Rajasthan)  
**Location:** Choti choupar, Badi choupar station, Casting yard and chandpole shaft area  
**Dates:** 15<sup>th</sup> September to 2<sup>nd</sup> October, 2018.  
**Project:** JMRC, UG-1B, Jaipur (Rajasthan)

SR. NO.	PHOTOGRAPHS	LOCATION	REMARKS
	 		

<p>1</p>		<p>Concourse slab area, chouper station</p>	<p>Mass housekeeping during <b>SWACHH BHARAT ABHIYAN</b> on concourse slab area, Choti chouper station premises</p>
<p>2</p>		<p>Tunnel shaft area, near site entry gate, Chand pole station</p>	<p>Mass housekeeping and general cleanliness with workers and staff at site and office area during <b>SWACHH BHARAT ABHIYAN</b> at Chand pole shaft area and near chandpole station</p>



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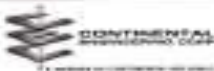

## NOTE-

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)



		<b>स्वच्छ भारत अभियान</b> <b>SWACHH BHARAT ABHIYAN</b>			
5			Plant access road, near batching plant area, Casting yard		Mass housekeeping on accessway in casting yard during <b>SWACHH BHARAT ABHIYAN</b>
					
Prepared by  Arvind Kumar Avinashi Environment Manager			Reviewed by  Raj Kishor Pandey Chief SHE Manager		Approved by  Alok Tiwari Project Leader

&lt;&lt; END OF REPORT &gt;&gt;