

Draft Due Diligence cum Resettlement Plan

Project Number: 53326-001
September 2020

India: Bengaluru Metro Rail Project Phase 2A Outer Ring Road Silk Board to K.R. Puram

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

CURRENCY EQUIVALENTS

(as of 8 September 2020)

Currency Unit – Indian Rupee (INR)
USD1.00 = INR 73.4270

ABBREVIATIONS

ADB	Asian Development Bank
BDA	Bengaluru Development Authority
BBMP	Bruhat Bengaluru Mahanagara Palike
BMTc	Bangalore Metropolitan Transport Corporation
BMRC	Bangalore Metro Rail Corporation Limited
BPL	Below Poverty Line
CRP	Compensation and Resettlement Package
GoK	Government of Karnataka
KIADA	Karnataka Industrial Areas Development Act
KIADB	Karnataka Industrial Areas Development Board
ORR	Outer Ring Road
RMV	Recommended Market Value

NOTE

- (i) The fiscal year (FY) of the Government of India ends on 31 March. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2020 ends on 31 March 2020.
- (ii) In this report, "\$" refers to US dollars

This Draft Due Diligence cum Resettlement Plan 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. Your attention is directed to the [“terms of use”](#) section on ADB's website.

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.

RESETTLEMENT OF PROJECT AFFECTED PERSONS

7. **GUIDING PRINCIPLES:** Resettlement & Rehabilitation activities of BMRP will be governed by the following general principles.

- i. In general, land acquisition will be undertaken in such a way that no project affected person, with or without formal title, will be worse off after land acquisition;
- ii. BMRCL will pay compensation for land and structures it is acquiring based on the principles of full replacement cost.
- iii. All activities and procedures will be formally documented;
- iv. The property and inheritance rights of project affected persons will be respected;
- v. If the livelihood of the project affected persons without formal title depends on the public land that they are using, they will be assisted in their effort to improve their livelihoods and standard of living to restore them to pre-displacement levels;
- vi. If project affected person, without legal title, is not satisfied with the above decisions, they can approach the grievance redress committee;
- vii. In cases where land is needed on a temporary basis, project affected persons who have formal title will be compensated to the assessed fair rental price for the period during which the land is used and the land will be returned in the same condition or better as before it was rented;
- viii. If resettlement is unavoidable in addition to the payment of fair market value for all land and immovable property, project affected persons will be provided assistance in relocation and other related expenses (i.e. cost of moving, transportation, administrative costs etc.);
- ix. These rights do not extend to individuals who commence any activities after cutoff date of the project;
- x. The compensation and eligible resettlement and rehabilitation assistance will be paid prior to taking over of land and other assets for construction purposes;



RESETTLEMENT OF PROJECT AFFECTED PERSONS

7. **GUIDING PRINCIPLES:** Resettlement & Rehabilitation activities of BMRP will be governed by the following general principles.

- i. In general, land acquisition will be undertaken in such a way that no project affected person, with or without formal title, will be worse off after land acquisition;
- ii. BMRCL will pay compensation for land and structures it is acquiring based on the principles of full replacement cost.
- iii. All activities and procedures will be formally documented;
- iv. The property and inheritance rights of project affected persons will be respected;
- v. If the livelihood of the project affected persons without formal title depends on the public land that they are using, they will be assisted in their effort to improve their livelihoods and standard of living to restore them to pre-displacement levels;
- vi. If project affected person, without legal title, is not satisfied with the above decisions, they can approach the grievance redress committee;
- vii. In cases where land is needed on a temporary basis, project affected persons who have formal title will be compensated to the assessed fair rental price for the period during which the land is used and the land will be returned in the same condition or better as before it was rented;
- viii. If resettlement is unavoidable in addition to the payment of fair market value for all land and immovable property, project affected persons will be provided assistance in relocation and other related expenses (i.e. cost of moving, transportation, administrative costs etc.);
- ix. These rights do not extend to individuals who commence any activities after cutoff date of the project;
- x. The compensation and eligible resettlement and rehabilitation assistance will be paid prior to taking over of land and other assets for construction purposes;



- xi. All project affected persons (private and public, individual and businesses) entitled to be compensated for land acquired; losses, structures or damages will be offered compensation and assistance in accordance with the provisions of this CRPF. Those who accept the compensation amount will be paid prior to taking possession of their land or assets. Those who do not accept it will have their grievance registered or referred to the Grievance Redress Committee (GRC)/courts as appropriate.
- xii. While acquiring land through KIADB no taxes / fee is payable by landowners. However, where BMRCL purchases the land directly in view of exigencies of the project, the stamp duty and registration charges will be paid by BMRCL.
- xiii. Wherever community assets are acquired, the same will be restored by BMRCL.

RESETTLEMENT AND REHABILITATION PROCESS

8. All attempts will be made during the final execution of the project to minimize the land acquisition, resettlement and adverse impacts on people in the project area through suitable engineering design. The assessments however reveal that the project involves minimal land acquisition.

ELIGIBILITY AND ENTITLEMENTS

9. The Compensation and Resettlement Package has been formulated based on the guiding principles followed by BMRCL for Phase 1 and Phase 2. The details of financial support for various categories of project affected persons are contained in the table below.

Table: Eligibility and Entitlement Matrix

Compensation for Land and Structures	
1	<p>Consent Awards(preferred mode): The compensation for land and structure in cases of consent awards shall be based on following norms.</p> <ul style="list-style-type: none"> i. market value of land determined based on higher of: <ul style="list-style-type: none"> a. guidance value of land for registration of sale deeds as per Indian Stamp Act, and b. average sale price for similar type of land situated in the nearest area or village. ii. market value of buildings and structures on the land as assessed by approved valuers. iii. multiplication factor of 1 in urban area and 1.5 to 2 in rural area.



	iv. solatium @ 100% of market value with applicable multiplication factor.	
	v. additional market value @ 12% p.a. from date of notification to date of consent award.	
2	Normal Award: For cases other than consent awards, the compensation shall be determined as per provisions of Karnataka Industrial Area Development Act.	
Compensation and Resettlement Entitlement:		
Sl. No	Category	Entitlement
I a.	Owner losing land and residential structure totally (Only owner staying in the premises)	1. Consent Award based on mutually agreed market value of land and structures, Or Normal Award as per KIADA for land and structure; And 2. Shifting allowance: a. Upto 1000 sq. ft. – Rs.25,000 b. 1001 sq. ft. – 1500 sq. ft. – Rs.30,000 c. 1501 sq. ft. – Rs.35,000 3. Inconvenience Allowance: Onetime payment of Rs.70,000 4. Transitional Allowance: a. Upto 1000 sq. ft. – Rs.1,35,000 b. 1001 sq. ft. – 1500 sq. ft. – Rs.1,70,000 c. more than 1501 sq. ft. – Rs.2,05,000 5. Right to salvage material totally
I b.	Owner losing land and residential structure totally (owner and tenant staying in the same building premises in separate parts)	1. Same as in I a.(1-5) And 2. Residential Rental Income Allowance in respect of rental area acquired a. Upto 1000 sq. ft. – Rs.1,35,000 b. 1001 sq. ft. – 1500 sq. ft. – Rs.1,70,000 c. more than 1501 sq. ft. – Rs.2,05,000
I c.	Owner losing land and residential structure partially but continues to remain in the balance portion of the same premises	1. Consent Award based on mutually agreed market value of land and structures, Or Normal Award as per KIADA for land and structure; And 2. Inconvenience Allowance Onetime payment of Rs.55,000



I d.	Owner losing land and residential structure partially and willing to surrender the same completely to Project Authority.	<ol style="list-style-type: none"> 1. Owner has the option of offering the remaining part of the property to the Project Authority. (A separate notification will be issued for the remaining area). Acceptance of the offer is subject to discretion of the Project Authority based on consideration of possibility of putting the remaining land to economic use by the owner. 2. Entitlements will be the same as in Category I a. (1-5) or I b., as the case may be, for the area acquired including 1 above.
II a.	Owner losing land and commercial structure totally (owner operating own business in the acquired premises)	<ol style="list-style-type: none"> 1. Consent Award based on mutually agreed market value of land and structures, Or Normal Award as per KIADA for land and structure; And 2. Shifting Allowance: <ol style="list-style-type: none"> a. Upto 150 sq. ft. - Rs.25,000 b. 151 sq. ft. to 300 sq. ft. - Rs.35,000 c. more than 301 sq. ft. - Rs.45,000 3. Business Loss Allowance: <ol style="list-style-type: none"> a. Average payment of SGST upto Rs.5000 p.m. - Allowance Rs.85,000 b. Average payment of SGST between Rs.5001 to Rs.15,000 p.m. - Allowance Rs.1,70,000 c. Average payment of SGST above Rs.15001 p.m. - Allowance Rs. 2,25,000. d. If without SGST documentation - Allowance Rs.60,000 4. Business premises re-establishment allowance: Rs.540 per sq. ft. of area acquired. 5. Right to salvage material totally
II b.	Owner losing land and commercial structure partially but continues to run business in the same	<ol style="list-style-type: none"> 1. Consent Award based on mutually agreed market value of land and structures, Or Normal Award as per KIADA for land and structure;



	premises	<p>And</p> <p>2. Business Loss Allowance:</p> <p>a. Average payment of SGST upto Rs.5000 p.m. - Allowance Rs.40,000</p> <p>b. Average payment of SGST between Rs.5001 to Rs.15,000 p.m. - Allowance Rs.85,000</p> <p>c. Average payment of SGST above Rs.15001 p.m. - Allowance Rs. 1,10,000.</p> <p>d. If without SGST documentation - Allowance Rs.30,000</p> <p>3. Right to salvage material</p>
II c.	Owner losing land and commercial structure partially and unwilling to continue in the same premises	<p>1. Owner has the option of offering the remaining part of the property to the Project Authority. (Separate notification will be given for the additional area). Acceptance of the offer is subject to discretion of the Project Authority based on consideration of possibility of putting the remaining land to economic use by the owner.</p> <p>2. Compensation and Entitlements will be the same as in Category II b.</p>
II d.	Owner losing land and commercial structure, but structure fully rented out	<p>1. Consent Award based on mutually agreed market value of land and structures, Or Normal Award as per KIADA for land and structure;</p> <p>And</p> <p>2. Commercial Rental Income Allowance</p> <p>a. Upto 1000 sq. ft. - Rs.2,70,000</p> <p>b. 1001 sq. ft. - 1500 sq. ft. - Rs.3,40,000</p> <p>c. more than 1501 sq. ft. - Rs.4,00,000</p> <p>3. Right to Salvage material</p>
II e.	Owner losing land and commercial structure partially, but structure fully rented out.	<p>1. Consent Award based on mutually agreed market value of land and structures, Or Normal Award as per KIADA for land and structure;</p> <p>And</p> <p>2. Commercial Rental Income Allowance, in respect of area acquired</p> <p>a. Upto 1000 sq. ft. - Rs.2,70,000</p> <p>b. 1001 sq. ft. - 1500 sq. ft. - Rs.3,40,000</p>



		c. More than 1501 sq. ft. - Rs.4,00,000 .
		3. Right to Salvage material
II f.	Owner losing land and commercial structure fully, commercial activity being run by owner as well as tenant.	<p>1. Consent Award based on mutually agreed market value of land and structures, Or Normal Award as per KIADA for land and structure;</p> <p>And</p> <p>2. Shifting Allowance:</p> <p>a. Upto 150 sq. ft. - Rs.25,000</p> <p>b. 151 sq. ft. to 300 sq. ft. - Rs.35,000</p> <p>c. more than 301 sq. ft. - Rs.45,000</p> <p>3. Business Loss Allowance:</p> <p>a. Average payment of SGST upto Rs.5000 p.m. - Allowance Rs.85,000</p> <p>b. Average payment of SGST between Rs.5001 to Rs.15,000 p.m. - Allowance Rs.1,70,000</p> <p>c. Average payment of SGST above Rs.15001 p.m. - Allowance Rs. 2,25,000.</p> <p>d. If without SGST documentation - Allowance Rs.60,000</p> <p>4. Business premises re-establishment allowance; Rs.540 per sq. ft. of area acquired</p> <p>5. Commercial Rental Income Allowance</p> <p>a. Upto 1000 sq. ft. - Rs.2,70,000</p> <p>b. 1001 sq. ft. - 1500 sq. ft. - Rs.3,40,000</p> <p>c. more than 1501 sq. ft. - Rs.4,00,000</p> <p>6. Right to Salvage material</p>
III	Owner losing land and residential cum commercial structure (both totally)	<p>1. Consent Award based on mutually agreed market value of land and structures, Or Normal Award as per KIADA for land and structure;</p> <p>And</p> <p>2. Shifting Allowance:</p> <p>For commercial:</p> <p>a. Upto 150 sq. ft. - Rs.25,000</p> <p>b. 151 sq. ft. to 300 sq. ft. - Rs.35,000</p> <p>c. more than 301 sq. ft. - Rs.45,000</p> <p>For residential:</p> <p>a. Upto 1000 sq. ft. - Rs.25,000</p> <p>b. 1001 sq. ft. to 1500 sq. ft. - Rs.30,000</p>

		<p>c. more than 1501 sq. ft. - Rs.35,000</p> <p>3. Inconvenience Allowance: Onetime payment of Rs.70,000</p> <p>4. Business Loss Allowance:</p> <p>a. Average payment of SGST upto Rs.5000 p.m. - Allowance Rs.85,000</p> <p>b. Average payment of SGST between Rs.5001 to Rs.15,000 p.m. - Allowance Rs.1,70,000</p> <p>c. Average payment of SGST above Rs.15001 p.m. - Allowance Rs. 2,25,000.</p> <p>d. If without SGST documentation - Allowance Rs.60,000</p> <p>5. Business premises re-establishment 540 per sq. ft. in respect of commercial portion only.</p> <p>5. Right to salvage material totally.</p>
IV	Owner Losing only land	<p>Consent Award based on mutually agreed market value of land and structures, or Normal Award as per KIADA for land and structure.</p>
V	Tenant - Residential (if displaced)	<p>1. Shifting allowance per tenant single / family tenants Rs.30,000</p> <p>2. Inconvenience Allowance a. Rs.70,000 per tenant family. b. Rs.35,000 for tenant single</p>
VI	Tenant - Commercial*	<p>1. Shifting allowance per tenant: Rs.35,000</p> <p>2. Business Loss Allowance:</p> <p>a. Average payment of SGST upto Rs.5000 p.m. - Allowance Rs.85,000</p> <p>b. Average payment of SGST between Rs.5001 to Rs.15,000 p.m. - Allowance Rs.1,70,000</p> <p>c. Average payment of SGST above Rs.15001 p.m. - Allowance Rs. 2,25,000.</p> <p>d. If without SGST documentation - Allowance Rs.60,000</p> <p>3. Business Premises Reestablishment Allowance per tenant: Rs.540 per sq. ft.</p>



		* Note: If not displaced, tenant will get BPRA only, and not the other allowances.
VII	Tenant - Residential cum Commercial*	<p>A. For residential:</p> <ol style="list-style-type: none"> 1. Shifting allowance per residential tenant Rs.30,000 2. Inconvenience Allowance: <ol style="list-style-type: none"> a. Rs.70,000 per tenant family b. Rs.35,000 for tenant single <p>B. For commercial:</p> <ol style="list-style-type: none"> 1. Shifting allowance per tenant Rs.35,000 2. Business Loss Allowance: <ol style="list-style-type: none"> a. Average payment of SGST upto Rs.5000 p.m. - Allowance Rs.85,000 b. Average payment of SGST between Rs.5001 to Rs.15,000 p.m. - Allowance Rs.1,70,000 c. Average payment of SGST above Rs.15001 p.m. - Allowance Rs. 2,25,000. d. If without SGST documentation - Allowance Rs.60,000 3. Business premises re-establishment per tenant:Rs.540 per sq. ft. <p>* Note: If not displaced, tenant will get BPRA only, and not the other allowances.</p>
VIII	Slum Dwellers	Slum Dwellers families residing in declared slums will get Rs.5,00,000/- as housing support grant.
IX	persons running business on public land without title excluding mobile vendors	Business Loss Allowance: Rs. 85,000 *
X	Common Property resources	Project authority will compensate / replace for affected portion of schools, hospitals, parks, religious structures, etc.
XI	Any other impact not identified	Unforeseen impacts shall be documented and mitigated based on the principles provided in this package.

K. Nagesh 10/7/19
(K. Nagesh)

Under Secretary to Government (PMC)(I/c),
Urban Development Department.

Annexure - 9: CASE STUDY FOR CALCULATION OF COMPENSATION FOR LAND AND STRUCTURE

BMRL PROPERTY
IDENTIFICATION NUMBER
(ORR-IBL-1/6)

BANGALORE METRO RAIL CORPORATION LIMITED BANGALORE

VALUATION ABSTRACT

1. BMRL work order Ref. No. : BMRL/Phase-2A/ED CIVIL-I/ORR/2019/9310 dated 16-02-2019
2. Name of the owner (as per final notification) : Tenants: Zuvari Furnitures Om City Sleep Well
3. a) Property No. & Address : CTS NO-40, BBMP No: 814/5/6, Ibbalur Village, Begur Hobli, Bangalore-560102
- b) Date of preliminary Notification 28(1) : CI-140-SPQ- 2018 dated 28-08 -2018
- c) Date of Final Notification 28(4) : CI-140 SPQ- 2018 dated 28-11-2018
4. Extent of Acquisition

(a) Land Component

Sl. No.	Total Land Area in Sq. mtrs.	Being acquired in Sq. mtrs. (as per final notification)	%
		227.26Smt, 42.32Smt	

(b) Building component -As per BCS Drawing

Sl. No.	Floor	Extent of acquisition as per requirement in Sq.mtrs. (A)	Additional extent on account of safety in Sq. mtrs(B)	Total A+B in Sq. mtrs.
1.	Ground floor(Type-A)	204.16	37.59	204.16
2.	First floor(Type-A)	238.97	37.59	238.97
3.	Second floor(Type-A)	238.97	37.59	238.97
4.	Third floor(Type-A)	238.97	37.59	238.97
5.	Terrace floor (Type-A) Staircase and Lift Machine room)	31.82	0	31.82
	Total	952.89	150.36	1103.25

5. Valuation of property /Summary

Sl. No.	Item	Fair Market value(Rs.)
1.	Building	
a	(a) As per acquisition	20170001.24
b	(b)Additional area (functional and safety reasons)	3186331.92
c	Amenities and Extra items	1180615.04
d	Services	0.00
	Total	24536948.19
		Say Rs.2,45,36,948/-
2.	Total value of land*	
	Extent x Rate=amount	
	Grand Total	

Rupees In Words: ~~Two Crore Forty~~ Lakhs Seventy Thirty Six Thousand Nine Hundred and Forty Eight Only.

TWO CRORE FORTY FIVE LAKHS THIRTY SIX

Name & Signature of Valuer with seal

THOUSAND NINE HUNDRED AND FORTY EIGHT ONLY.

Verified by
Babbar
BANKIA Dey - A.



BMRL PROPERTY
IDENTIFICATION NUMBER
(ORR-IBL-1/6)

BANGALORE METRO RAIL CORPORATION LIMITED
BANGALORE

VALUATION ABSTRACT

1. BMRL work order Ref. No. : BMRL/Phase-2A/ED CIVIL-I/ORR/2019/9310 dated 16-02-2019
2. Name of the owner : Tenants: Zuvari Furnitures Om City Sleep Well
3. a) Property No. & Address : CTS NO:40, BBMP No: 814/6/6, Ibbalur Village, Begur Hobli, Bangalore-560102
- b) Date of preliminary Notification 28(1) : CI-140-SPQ- 2018 dated 28-08 -2018
- c) Date of Final Notification 28(4) : CI-140 SPQ- 2018 dated 28-11-2018

4. Extent of Acquisition
(a) Land Component

Sl. No.	Total Land Area in Sq. mtrs.	Being acquired in Sq. mtrs. (as per final notification)	%
		227.26Smt, 42.32Smt	

(b) Building component -As per BCS Drawing

Sl. No.	Floor	Extent of acquisition as per requirement in Sq.mtrs. (A)	Additional extent on account of safety in Sq. mtrs(B)	Total A+B in Sq. mtrs.
1.	Ground floor(Type-A)	204.16	37.59	204.16
2.	First floor(Type-A)	238.97	37.59	238.97
3.	Second floor(Type-A)	238.97	37.59	238.97
4.	Third floor(Type-A)	238.97	37.59	238.97
5.	Terrace floor (Type-A) Staircase and Lift Machine room)	31.82	0	31.82
	Total	952.89	150.36	1103.25

5. Valuation of property /Summary

Sl. No.	Item	Fair Market value(Rs.)
1.	Building	
a	(a) As per acquisition	20170001.24
b	(b) Additional area (functional and safety reasons)	3186331.92
c	Amenities and Extra items	1180615.04
d	Services	0.00
	Total	24536948.19
		Say Rs. 2,45,36,948/-
2.	Total value of land*	
	Extent x Rate=amount	
	Grand Total	

Rupees In Words: ~~Two Crore Forty Lakhs~~ Seventy Thirty Six Thousand Nine Hundred and Forty Eight Only.

TWO CRORE FORTY FIVE LAKHS THIRTY SIX

Name & Signature of Valuer with seal

THOUSAND NINE HUNDRED AND FORTY EIGHT ONLY.

Verified by
Rohini
BANKIA Dny - A.



BANGALORE METRO RAIL CORPORATION LIMITED
REPORT ON VALUATION OF IMMOVABLE PROPERTY

BMRCL WORK ORDER Ref No: BMRCL/Phase-2(UG) /VALU/2018/8118 Dated 07-01-2019.

1. GENERAL:

1	This valuation is undertaken based on the reference of	BMRCL/Phase-2/AED CIVIL-I/ORD/2019/9310 dated 16-02-2019
2	The property is owned by [enclose supporting document if the owner is different from the one notified in sec28(4)]	
3	Purpose of valuation	To assess the value of the building/structure for arriving at the compensation amount
4	Property identified by	Tenants(Anwar Pahsa Cell No: 9341033376)
5	Date on which valuation is made(specify date of preliminary notification)	CI-140-SPQ- 2018 dated 28-08-2018
6	Date of inspection	15-03-2019
7	Brief description of the property under valuation	This is a Non-Residential(Commercial) building utilized for Furniture showroom. The building is about 10year old at the time 28(1) and flooring is finished with Mosaic/Vitrified tile flooring. The building is a R.C.C. Framed Structure with Ground plus 3 floors with Staircase room and Lift machine room above it. The building is located near Ibbalur Fly Over Junction.
8	Scope of valuation	To assess the fair market value and replacement value of the property.
9	List of documents referred	JMC Sketch, BCS Drawing & Gazette notification 28(4)
10	Has the whole or part of the land been notified for acquisition by Government or any statutory body?	Property is not earmarked for acquisition by any agency except M/s BMRCL

2. LOCATION OF THE PROPERTY:

1.	Postal address of the property with PIN code	No:814/6/6, Ibbalur Village, Begur Hobli, Bangalore-560102
2.	Survey Number details	
	a. Plot No. / PID No.	BBMP No:814/6/6
	b. R.S. No.	CTS No:40
	c. Village / Block	Ibbalur Village , Begur Hobli, Bangalore South Taluk
	d. Taluk / Ward	Ward No:
	e. District / Corporation	Bengaluru City
3.	Boundaries of the property (As per notification)	
	On the North	Remaing portion of the Property
	On the South	Road
	On the East	Road
	On the West	S.Anandkumar's Property
4.	Type of Property Residential / Commercial	Commercial
5.	Whether lease hold/freehold	-
6.	Property occupied by Owners/ tenants	Tenants
7.	If tenanted (Partly or fully) Portion occupied / Name of tenant (please give details)	Not available
8.	Is the building insured, if so, the insured value?	Not insured
9.	Building sanctions details	Not available
10.	Property tax details	Not available
	a) Receipt referred	N.A
	b) Assessment No	
	c) Receipt in the name of	



11.	Electricity service connections a) R.R. No. b) In the name of	N.A
III.	PROCEDURE OF VALUATION	Adopting CDDT guide lines based on plinth area method. With Basic Rate of CPWD as on 1-10-2012. KPWD SR 2016-17 with CI 135 and weight ages as applicable. Depreciation by straight line method. Type A (framed structures) @1%/pa, Type B (load bearing) @1.5%/pa, Type C (sheet roof structures or other than A & B) @ 2.25%/pa. Total life considered as 90 years, 60 years and 40 years respectively and salvages value as 10%.
IV.	VALUATION DETAILS	Detailed in Part. A, B, C & D

TECHNICAL DETAILS**1. BUILDING SPECIFICATIONS FLOOR WISE**

Building specifications	Ground floor & Upper floors (Type-A) (Non-Residential) (Commercial)	Terrace floors & LMR (Type-A) (Non-Residential) (Commercial)
Foundation	SSM in CM & Isolated footing	SSM in CM & Isolated footing
Age of the Building	10 Years	10 Years
Superstructure	CCB Wall	CCB Wall
Roof	R.C.C. roof	R.C.C. roof
Floor to roof ht. (mtrs)	3.30 Mtrs	2.40 Mtrs
Doors	Rolling Shutter	M.S. Shutter
Windows	Aluminium Windows with M.S. Grills	Aluminium Windows with M.S. Grills
Flooring	Mosaic/Vitrified flooring	CC flooring

2. VALUATION DETAILS (Detailed in part A, B, C & D)**2. PLINTH AREA FLOOR WISE (as per IS 3861-1985/CPWD PAR)****a. As per Line of acquisition (LOA)**

Floors	Main portion (A) Smt	Cantilevered portion covered (B)	Cantilevered portion partly covered/uncovered (C)	Total (A+B+50% of C)
Ground floor (Type-A)	204.16	Nil	Nil	204.16
First floor (Type-A)	238.97	Nil	Nil	238.97
Second floor (Type-A)	238.97	Nil	Nil	238.97
Third floor (Type-A)	238.97	Nil	Nil	238.97
Terrace floor (Type-A) (Staircase & Lift machine room)	31.82	Nil	Nil	31.82
Total	952.890	Nil	Nil	952.890

b. As per Line of cut (LOC)

Floors	Main portion (A)	Cantilevered portion covered (B)	Cantilevered portion partly covered/uncovered (C)	Total (A+B+50% of C)
Ground floor (Type-A)	37.590	Nil	Nil	37.590
First floor (Type-A)	37.590	Nil	Nil	37.590
Second floor (Type-A)	37.590	Nil	Nil	37.590



Third floor(Type-A)	37.590	Nil	Nil	37.590
Terrace floor (Type-A) Staircase & Liftmachine room)	0.000	Nil	Nil	0.000
Total	150.360	Nil	Nil	150.360

2. VALUATION DETAILS (Detailed in part A, B, C & D)

Part - A - Building

As per Line of Acquisition (LOA)

Sl no.	Description	Plinth area Smt	Adopted rate(Rs)	Age of building 10Yrs@ 1% pa for Type A	Replacement value(Rs)	Depreciation amount(Rs)	Fair market value(Rs)
1	Ground floor(Type-A)	204.16	23545.948	-0.10	4807140.82	-480714.08	4326426.74
2	First floor(Type-A)	238.97	23545.948	-0.10	5626775.29	-562677.53	5064097.76
3	Second floor(Type-A)	238.97	23545.948	-0.10	5626775.29	-562677.53	5064097.76
4	Third floor(Type-A)	238.97	23545.948	-0.10	5626775.29	-562677.53	5064097.76
5	Terrace floor (Type- A) Staircase & Liftmachine room)	31.82	22741.85	-0.10	723645.80	-72364.58	651281.22
		952.890			22411112.49		20170001.24

Part B - Building

As per line of cut (LOC)

Sl no.	Description	Plinth area Smt	Adopted rate(Rs)	Age of building 10Yrs@ 1% pa for Type A	Replacement value(Rs)	Depreciation amount(Rs)	Fair market value(Rs)
1	Ground floor(Type-A)	37.590	23545.948	-0.10	885092.20	-88509.22	796582.98
2	First floor(Type-A)	37.590	23545.948	-0.10	885092.20	-88509.22	796582.98
3	Second floor(Type-A)	37.590	23545.948	-0.10	885092.20	-88509.22	796582.98
4	Third floor(Type-A)	37.590	23545.948	-0.10	885092.20	-88509.22	796582.98
5	Terrace floor (Type- A) Staircase & Liftmachine room)	0.000	22741.854	-0.10	0.00	0.00	0.00
		150.360			3540368.80		3186331.92

Part C

Amenities and extra items

Items	Description of work	Interiors, Wardrobes, Compound wall	
		Replacement value (Rs)	Fair market value (Rs)
1	Compound wall & Gate	173374.24	134365.04



2	Lift	1350000.00	1046250.00
TOTAL		1523374.24	1180615.04

Part D**Services**

Items		External stair case, overhead water tank, architectural elevation works, pelmets, false ceiling works etc.	
		Replacement value (Rs)	Fair market value (Rs)
1	U/G sump tank	0	0.00
TOTAL		0	0.00

ABSTRACT

		REPLACEMENT VALUE (Rs)	FAIR MARKET VALUE (Rs)
1	Part A building	22411112.49	20170001.24
2	Part B Buildings as per LOC	3540368.80	3186331.92
3	Part C amenities	1523374.24	1180615.04
4	Part D services	0.00	0.00
	TOTAL	27474855.53	24536948.19
			Say 2,45,36,948/-

PART E – CERTIFICATE

- The fair market value of the above structure (property) with the existing conditions and specifications in my opinion is **Rs. 2,45,36,948/- (Two Crore Forty Five Lakhs Thirty Six Thousand Nine Hundred and Forty Eight Only)** as on date on which valuation is made, to the best of my knowledge and belief.
- The relevant document for the subject property vide JMC, BCS, Gazette notification were verified for the purpose of Valuation.
- The property was inspected by me personally on 15-03-2019
- I have no direct or indirect interest in the property valued, except for the valuation charges.

Date: 06-04-2019

Place: Bangalore

Enclosures:

1. Calculation Sheet/ Work Sheet

- Plinth Area Calculation
- Arrival of Basic Rate (As per CPWD plinth area rates)

2. Color Photo's**3. Sketch/Plan of the building.**

Signature of Regd. Valuer with name & seal





SOUTH , SOUTH EAST VIEW OF THE BUILDING



CLOSE SOUTH AND EAST VIEW OF BUILDING



INTERNAL VIEW OF GROUND, FIRST FLOOR



INTERNAL VIEW OF SECOND AND THIRD FLOOR





NORTH AND SOUTH VIEW OF STAIRCASE AND LIFTMACHINE ROOM

Ground plus Upper Floor							
Sl. No	Particulars						Type-A
1	Type of Property/Structure						Loadbearing
2	Basic CPWD Plinth Area Rate as per 2012 for Roof ht. 3.35Mts Non-Residential building up to 6Storeys Normal building						
2a	Type-A	19000					19000.00
2b	Type-B	14000					
2c	Type-C	11600					
3	Correction for Difference in Height(+/-) Since roof ht. 2.90Mts Correction Nil	Roof ht at Site	Roof ht as per Specification	Dif in Roof ht.	(Dif)/0.50 ± 0.3	1280/270	
3a	Add for Additional height	3.35	3.35	0.00	0.00	270	0.00
3b	Deduct for Reduction in Roof height	3.30	3.35	0.05	0.166667	-270	-45.00
4	Total after Correction						18955.00
5	Indexed value after applying building cost Index 135	CI during 28(1)	Total				
		1.35	18955				25589.25
6	Add for Internal Electricals (10% out of 12.5%)					0.1	2558.93
7	Add for Internal W & Sanitary (4% out of 4%)					0.04	1023.57
8	Add for External Services (5% out of 5%)					0.05	1279.46
9	Add for Internal Telephone conducting 0.5%					0.005	127.95
10	Total						30679.15
11	Correction(+/-) Deduct 8% for Joineries					-0.08	-2446.33
12	Since there is no partition and area is above 200Smt ie @ 5% for 50Smt above for 150 deduct @15%					-0.15	-4586.87
13	Adopted Rate Per Smt after Calculation						23545.95



Terrace Floor Staircase room & Lift Machine room							
Sl. No	Particulars						Type-A
1	Type of Property/Structure						Loadbearing
2	Basic CPWD Plinth Area Rate as per 2012 for Roof ht. 3.35Mts Non-Residential building up to 6Storeys Normal building						
2a	Type-A	19000					19000.00
2b	Type-B	14000					
2c	Type-C	11500					
3	Correction for Difference in Height(+/-)	Roof ht at Site	Roof ht as per Specification	Diff in Roof ht.	[Diff/0.5x0.3	1280/270	
3a	Add for Additional height	3.35	3.35	0.00	0.00	270	0.00
3b	Deduct for Reduction in Roof height	2.40	3.35	0.95	3.1666667	-270	-855.00
4	Total after Correction						18145.00
5	Indexed value after applying building cost Index 135	CI during 28(1)	Total				
		1.35	18145				24495.75
6	Add for Internal Electricals (3% out of 12.5%)					0.03	734.87
7	Add for Internal W.S& Sanitary(0% out of 12.5%)					0	0.00
8	Add for External Services (2.5% out of 5%)					0.025	612.39
9	Add for Internal Telephone conduiting (0 out of 0.5%)					0	0.00
10	Total						25843.02
11	Correction(+/-) Deduct 12% for Joweries					-0.12	-3101.16
12	Adopted Rate PerSmt after Calculation						22741.85



Lift Rate for 6 Passenger Lift				
Sl.No	Description	Nos	Rate	Cost of 6 Passenger lift
1	Cost of 6 Passenger lift	1	1350000	1350000
2	Replacemnt Value of Lift			1350000
3		years	dep coeff	
4	Depreciation	10	-0.0225	-303750
5	Fairmakret value of Lift			1046250



BANGALORE METRO RAIL CORPORATION LTD.
BANGALORE METRO RAIL PROJECT, PHASE-2A.
SECTION: ORR : CENTRAL SILK BOARD TO K.R.PURAM

GROUND FLOOR

LOCATION: IBBUR STATION

AREA

LOA AREA

1) $6.56 \times 4.05 = 26.37 \text{ Sqm}$

2) $(18.84 + 17.78) \times 9.71 = 177.79 \text{ Sqm}$

TOTAL = 204.16 sqm

LOC AREA

3) $1.79 \times 2.84 = 5.08 \text{ Sqm}$

4) $9.62 \times (2.88 + 3.68) = 32.51 \text{ Sqm}$

TOTAL = 37.59 sqm

KEY PLAN

*Verified by
 B. Anwar Ali
 B. Anwar Ali
 B. Anwar Ali
 B. Anwar Ali*

LEGEND

LOA	LOC	LINE OF ACQUISITION	LINE OF SET	AREA OF ACQUISITION	TYPE-A

NOTES

1. ALL DIMENSIONS ARE IN M.
2. 1:500 NET SCALE THE DRAWING.
3. ALL DIMENSIONS ARE IN M.
4. ALL DIMENSIONS ARE IN M.
5. ALL DIMENSIONS ARE IN M.
6. ALL DIMENSIONS ARE IN M.
7. ALL DIMENSIONS ARE IN M.
8. ALL DIMENSIONS ARE IN M.
9. ALL DIMENSIONS ARE IN M.
10. ALL DIMENSIONS ARE IN M.

PROPERTY DETAILS

IDENTIFICATION NO: ORR-IBL-1/8

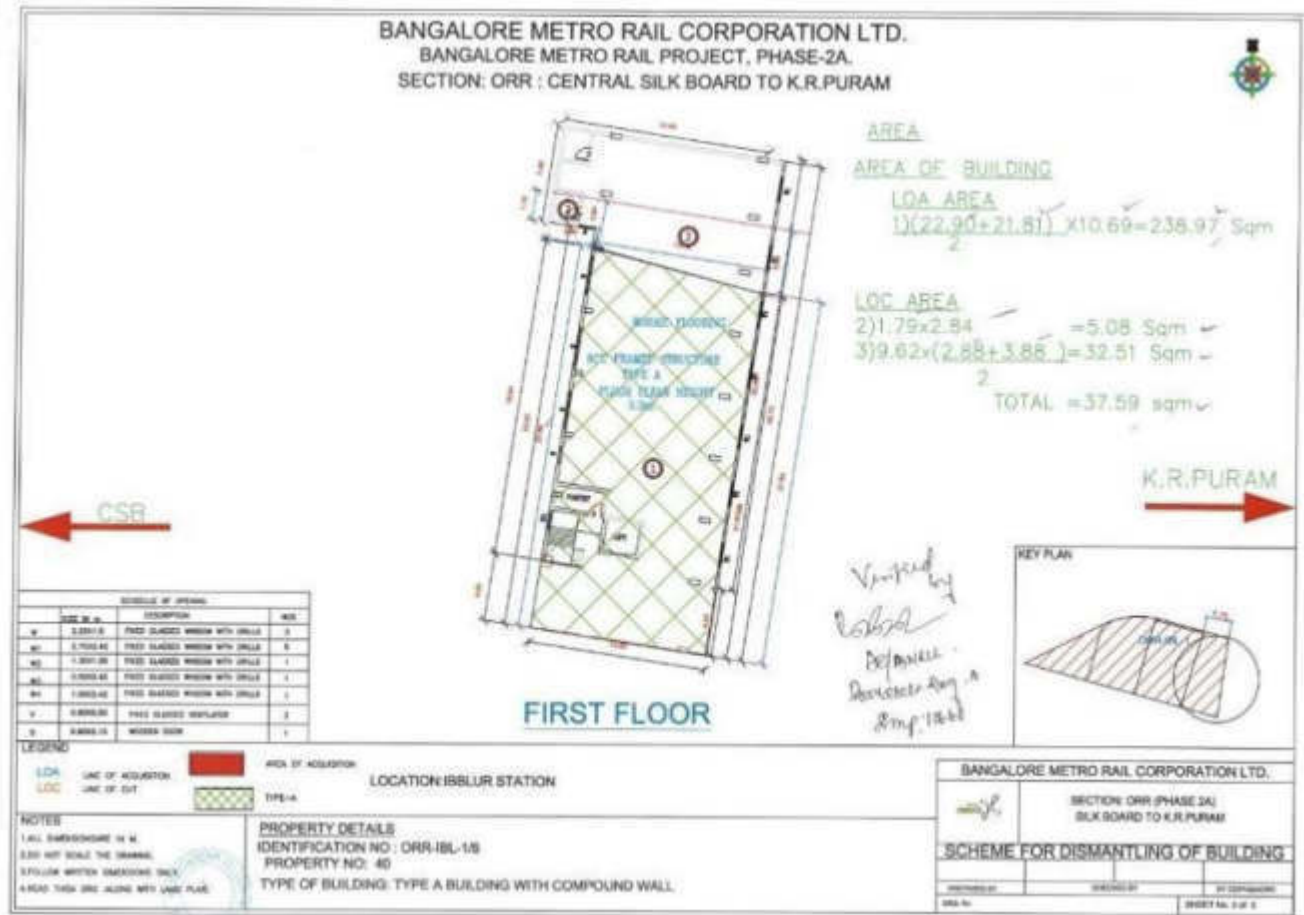
PROPERTY NO: 40

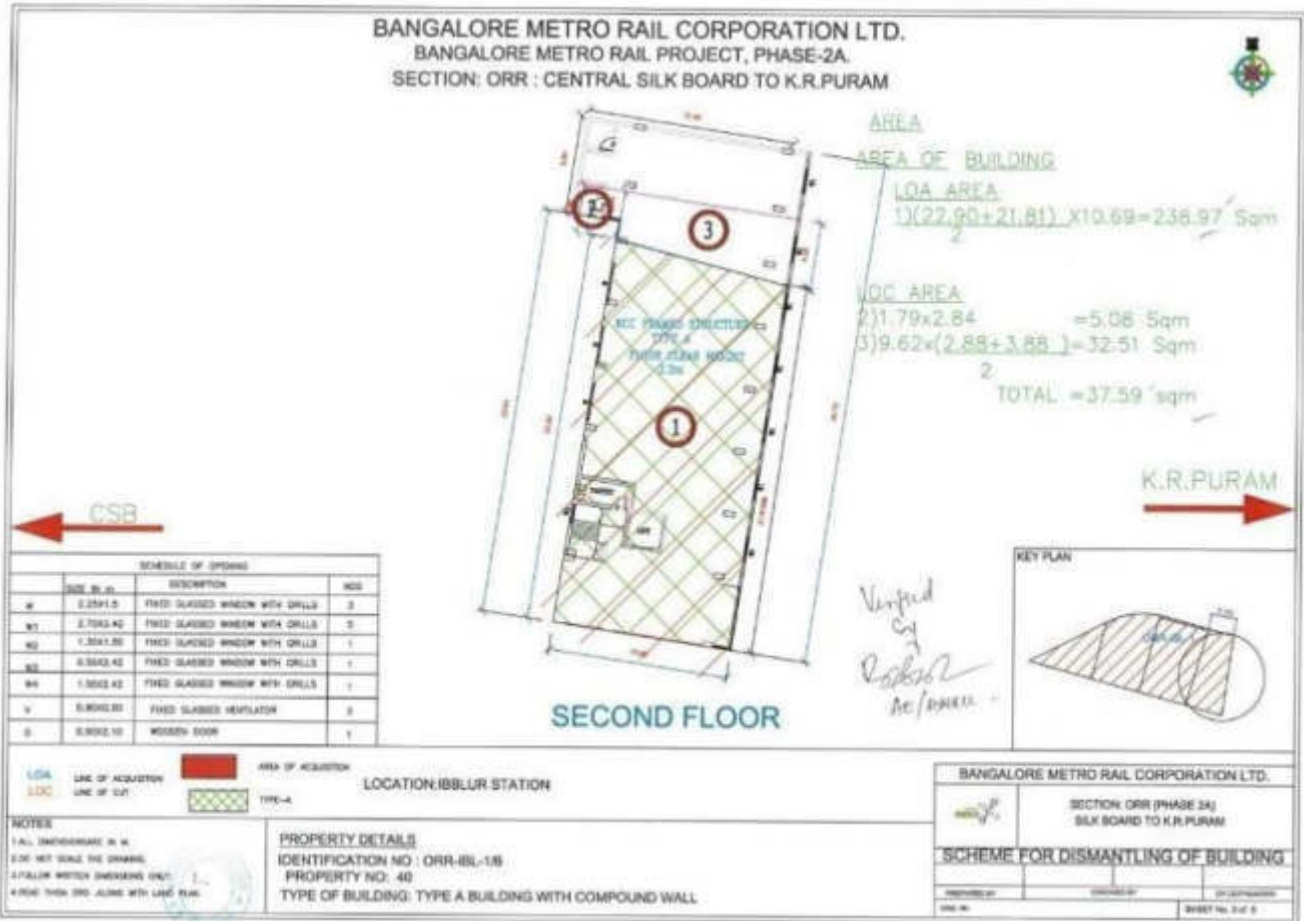
TYPE OF BUILDING: TYPE A BUILDING WITH COMPOUND WALL

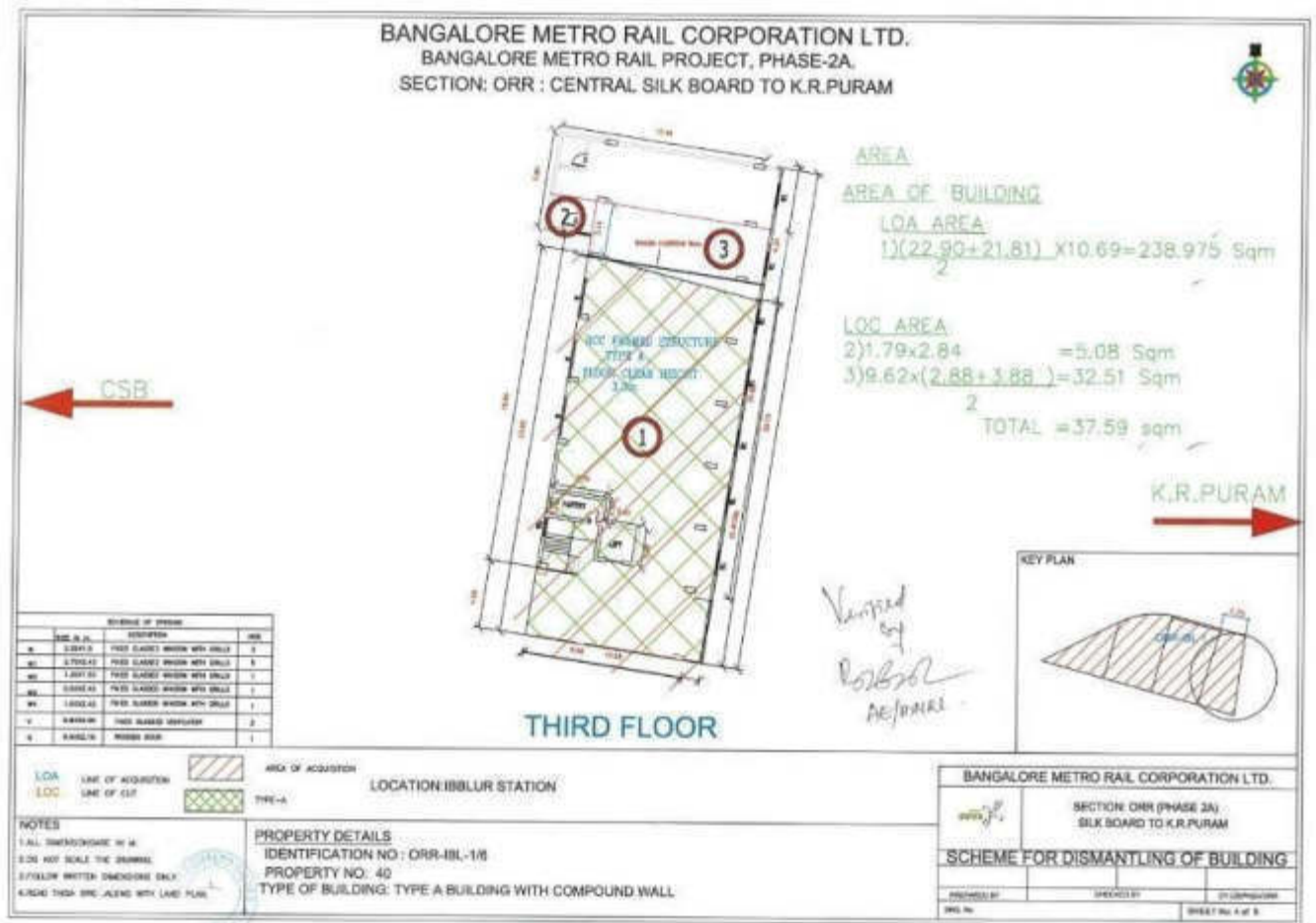
BANGALORE METRO RAIL CORPORATION LTD.
SECTION ORR PHASE 2A
SILK BOARD TO K.R.PURAM
SCHEME FOR DISMANTLING OF BUILDING

DRAWN BY: _____ CHECKED BY: _____


DATE: _____

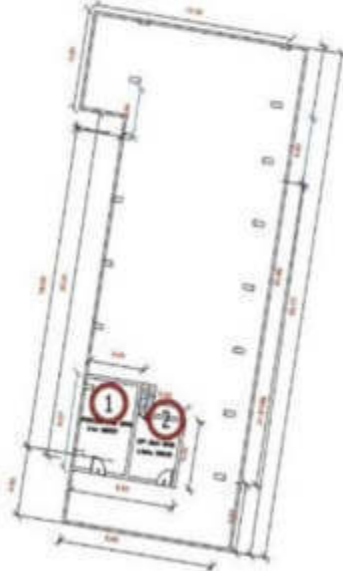






BANGALORE METRO RAIL CORPORATION LTD.
BANGALORE METRO RAIL PROJECT, PHASE-2A.
SECTION: ORR : CENTRAL SILK BOARD TO K.R.PURAM





TERRACE

AREA

AREA OF BUILDING
TERRACE TYPE-A

LQA AREA

1) 5.67 X 3.45 = 19.60 Sqm
2) 4.02 X 3.05 = 12.26 Sqm

TOTAL = 31.82 sqm


← CSB

→ K.R. PURAM

SCHEDULE OF OPENING

SL. NO.	DESCRIPTION	QTY
1	WINDOW	1
2	DOOR	1

KEY PLAN



NOTES

1. ALL DIMENSIONS IN M.
2. DO NOT SCALE THE DRAWING.
3. FOLLOW WRITTEN DIMENSIONS ONLY.
4. READ THIS SHEET ALONG WITH LQA PLAN.

PROPERTY DETAILS

IDENTIFICATION NO : ORR-IBL-1/5
PROPERTY NO: 40
TYPE OF BUILDING: TYPE A BUILDING WITH COMPOUND WALL

LEGEND

LQA LINE OF ACQUISITION
LDC LINE OF DUTY

AREA OF ACQUISITION
TYPE-A

LOCATION/IBBLUR STATION

BANGALORE METRO RAIL CORPORATION LTD.

SECTION: ORR (PHASE 2A)
SILK BOARD TO K.R.PURAM

SCHEME FOR DISMANTLING OF BUILDING

PREPARED BY: _____

CHECKED BY: _____

DATE: _____

Annex 10: Environmental Management Plan Matrix

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementa tion	Supervis ion
Pre-Construction Phase (Planning and design):								
1	Land Acquisition and resettlement	Social - Land is being acquired at all the Metro Stations along the Metro alignment. Total land to be acquired is 18490 Sqm (Government land – 7075 Sqm and Private land – 11414 Sqm) and total of 31 properties.	<ul style="list-style-type: none">Land Acquisition will be carried out as per the provision of Govt. of India and ADB policies.The acquisition of land and private properties will be done in accordance with Resettlement Plan and Entitlement Framework for the Project in line with the KIAD (Karnataka Industrial Areas Development) Act 1966 and Amendments.	The areas with additional land acquisition is proposed for the project.	Number of households and individuals affected.	Review of relevant documents, entitlement matrix and amount paid.	Land Acquisition Team, BMRCL through Revenue department of the state.	BMRCL, Karnataka a State Governm ent
2		Land use change - Change in land use is expected at station locations where the land is being acquired. The insignificant impacts on land use change are limited to a few of proposed metro stations.	The change in land use is insignificant as the proposed metro alignment is following the median of Outer Ring Road and most of the metro stations are proposed on vacant land without much impact on the existing structures. The Bengaluru Comprehensive Development Plan (CDP) and Bengaluru Revised Master Plan (RMP) 2031 both account for proposal of Phase 2A by BMRCL. Proper permissions	Throughout the project alignment and station areas.	Area of land acquired for the project.	Review of records on permission received from authorities.	Land Acquisition Team, BMRCL with District Administratio n and State Authority	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			will be ensured from competent authorities before construction.					
3	Clearance of Encroachments / Squatters (Compulsory resettlement)	Social - There are 46 owners and 62 tenants within the Corridor of Impact (CoI) along the proposed metro alignment and metro stations of Phase 2A.	Advance notice, as per Resettlement Plan will be given to the encroachers and squatters present within in the Corridor of Impact, and they will be given the financial assistance as relocation allowances. R & R activities shall be undertaken as per BMRCLs Entitlement Framework and completed before construction starts.	Throughout the project alignment and station areas.	Area of land acquired for the project.	Review of records on permission received from authorities.	Land Acquisition Team, BMRCL with District Administration and state authority	BMRCL
4	Tree Cutting	Ecology – The likely number of trees affected due to Contract Package P1 metro line is enumerated to be total of 343 trees. Out of total trees enumerated, 207 trees are planned to be trans-located depending on the tree species, girth and health of the trees. Hence	The Environmental Specialist of DE and the Contractor shall carry out joint field verification to ascertain the possibilities of saving trees and trees to be removed shall be marked with paint. Contractor, under any circumstances shall not cut or damage trees unnecessarily.	Throughout project corridor.	ROW width Number of trees to cut Compensatory plantation plan	Review of relevant documents – tree cutting permit, compensatory	Relevant agency/Forest Department Specialized in afforestation	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		<p>136 trees are getting affected.</p> <p>The trees are located on the median of proposed route along the outer ring road impacting the ecology in the project vicinity. In addition to tree cutting, pruning of branches will be required at some locations.</p>	<p>Trees identified under the project shall be cut only after receiving clearance from State Forest Department and after receipt of BMRCL's written permission.</p> <p>Transplantation of trees shall be taken up on priority suiting to the tree species, age, size, and health condition of the tree.</p> <p>Compensatory plantation shall be taken up at the rate of 10 trees for each tree being felled. Compensatory plantation taken up will be monitored regularly for their survival. Vegetation with girth size of over 30 cm shall only be considered as trees and shall be compensated.</p> <p>The tree saplings which do not survive during the first year after replanting will be compensated immediately.</p>		Number of trees replanted	<p>plantation plan</p> <p>Field observations</p>		

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
5	Relocation of Utilities and Common Property Resources	Social - The proposed metro line interferes with community utilities like water pipes, sewers, OFCs, telephone wires. Skywalks, etc. throughout the corridor. This will create nuisance to public and the commuters.	<p>Permission from all concerned departments and BBMP should be sought before commencement of utility shifting works.</p> <p>All community utilities i.e. water supply lines, sewer lines, electrical lines, telephone and OFC cables shall be planned and relocated suitably before the start of construction works.</p> <p>The Contractor will install signage consisting of information signs, construction signs and traffic signs 15 days before initiation of shifting works.</p>	Throughout the project alignment and station areas.	Area of land acquired and required for working space for the project.	Review of records on permission received from authorities.	Agency engaged by BMRCL	BMRCL
6		Traffic flow – During relocation activities regular traffic flow will be impacted.	<p>Permission from traffic police should be sought before commencement of utility shifting works.</p> <p>Traffic diversion plans shall be prepared, and detours should be properly planned and</p>	Traffic diversions and intersections locations	Approval from competent authority.	Checking of documentation.	Agency engaged by BMRCL	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>enacted during non-peak hours, if possible.</p> <p>Traffic marshals should be posted near such detours. Proper signage has to be posted informing motorists about detours to avoid congestion.</p>					
7		Air – Dust will be generated during utility shifting activities and pollutes the air.	<p>Traffic shall be diverted away from the utility shifting sites to avoid re-suspension of dust from the road surface.</p> <p>Dust suppression methods like water spraying shall be adopted during utility shifting to encapsulate the dust.</p>					
8		Safety – Workers and public will be exposed to safety threat such as excavation related safety hazards such as falls into trenches or excavations; tripping over equipment, debris and spoil; exposure to underground services, electrocution, etc.	<p>Barricades of at least 2 m height will be installed to mark the boundary of the areas where public utilities are to be relocated.</p> <p>Workers shall be provided with appropriate PPEs and ensure to operate equipment in a safe manner during shifting works</p> <p>Utility shifting shall be coordinated such that</p>	At locations of utilities shifting.	Approval from competent authority and site observations .	Checking of documentatation.	Agency engaged by BMRCL	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>information on utilities' locations is obtained before digging.</p> <p>Concerned departments shall be requested either to shift their utilities or to strictly supervise the shifting works to avoid any unforeseen safety hazards.</p> <p>Vehicles used for transporting utility equipment will be tied firmly and covered with tarpaulin to prevent them from falling onto the road surface. Vehicle speeds shall not exceed 30 km/hour in construction areas.</p> <p>Restoration of road surface, footpaths, signboards that are damaged during relocation of public utilities immediately to the original conditions.</p> <p>The Contractor shall abide by the terms and conditions stipulated in Condition of Contract of Safety, Health & Environment Manual.</p>					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
9	Relocation of affected Cultural, Religious and demolition of private properties	<p>Social – There is no major impact on the cultural and religious structures from the proposed metro alignments and 4 metro stations.</p> <p>However, there will be impact on 31 properties mostly at the proposed metro stations at Ibbalur Metro Station, Ibbalur Junction, Bellandur Metro Station, Kaadubeesanahalli Metro Station, along the alignment.</p>	<p>Impact on any cultural and religious structure, if any will be relocated suitable location in consultation with public. Access to the religious centers in the vicinity of proposed construction zone shall be ensured by planning in advance. Public shall be consulted to inform such impact and address suitably in consensus with to mitigate adverse impacts.</p> <p>Owners of private buildings shall be compensated in line with Entitlement Matrix and KIADB Act, 1966.</p> <p>Unnecessary damage to the structure shall be avoided and the structures being impacted shall be suitably compensated on par with the applicable statutory requirements.</p>	The areas with additional land acquisition is proposed for the project.	Number of structures affected.	Review of relevant documents, entitlement matrix and amount paid.	Contractor and agency engaged by BMRCL	BMRCL
10		Air – Dismantling of structures in the project location generates fugitive dust during dismantling, loading, hauling and unloading of dismantled and excavated material.	<p>Barricading to a height of 2 m will be provided to reduce dust generation.</p> <p>Water sprinkling shall be done twice or thrice both at</p>	Throughout project corridor with excavation activities.	PM _{2.5} and PM ₁₀ level measurements Dust pollution or complain of locals.	Standards CPCB methods Site observations and	Contractor and agency engaged by BMRCL	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>construction sites and haulage routes to encapsulate dust from the excavated heaps.</p> <p>Fugitive dust while loading and unloading should be controlled using water sprinkling.</p> <p>Trucks transporting dismantled debris and excavated soil to dump locations shall be covered with tarpaulins to prevent spillage of soil during transportation.</p>			Public consultation		
11		Noise – Dismantling of structures, loading, unloading and trucks carrying excavated material will result in noise (typically in excess of 57 dB(A) at 10 m distance). The adverse impacts of noise will be significant near noise sensitive receptors (Appendix – 1) and proposed metro station locations where station areas spread into residential	<p>Barricade of GI sheet up to a height of 2m will be erected on all sides of construction site to reduce the noise generated during loading and unloading being transmitted to the receptors. This will effectively cut down noise levels by 10-15 dB(A).</p> <p>Haulage of dismantled and excavated debris by trucks should be planned during non-peak hours.</p>	Throughout project section especially at construction sites near identified sensitive receptor locations.	Noise levels measurements Complaints from local people.	As per Noise Rules,2000 Consultation with local people	Contractor and agency engaged by BMRCL	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		areas especially at Central Silk Board Station, HSR layout Station, Agara Station, Ibbalur Station.						
12	Preconstruction activities	Aesthetics - Land acquisition, utility shifting activities and barricading of site will compromise the visual aesthetics temporarily.	Proper barricading ensures masking construction activities in addition to safety objectives. Residual aesthetic impact will remain until the construction is complete, which is difficult to mitigate.	At locations of utilities shifting.	Approval from competent authority and site observations .	Checking of documentat ion.	Agency engaged by BMRCL	BMRCL
13	Changes / Revisions / additions in the Project Work	New impacts - The changes or revisions in the project proposals may create the possibility of new impacts	The in-charge of Environment from BMRCL or the concerned consultant shall re-assess the possible impacts from the changes or revisions in the project proposals and revise / modify the EMP accordingly and addendum to the contract may be issued subsequently to see that the impacts are addressed properly.	At locations of changes proposed.	Approval from competent authority.	Checking of documentat ion.	Consultant	BMRCL
Pre-construction activities by the Contractor								
Sl. No.	Environmental Issue/Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	Implementati on	Supervisi on

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
14	Contractor Preparatory Works (Upon issuance of Notice to Proceed)	Non-compliance with contract conditions and regulatory requirements.	<p>The Contractor will complete the following activities no later than 30 days upon issuance of Notice to Proceed</p> <p>1) Appoint Contractor's Health and Safety Officer (HSO) and environmental focal person to EC, 2) HSO will engage with BMRCL -Environment Specialist to a meeting to discuss in detail the EMP, seek clarification and recommend corresponding revisions if necessary 3) HSO will request BMRCL copy of monthly monitoring formats and establish deadlines for submission. 4) HSO will submit for BMRCL approval an action plan to secure all permits and approvals needed to be secured during construction stage which include but not limited to: i) operation of batching plants, ii) transport and storage of hazardous materials (e.g. fuel, lubricants, explosives), iii) waste disposal sites and disposal management plan, iv) temporary storage location, iv) water use, v) vegetation should</p>	Throughout the project sections	Approval from competent authority.	Checking of documentation.	Contractor	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			be removed from the construction zone after obtaining necessary permission, and 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. 5) HSO will submit for approval of BMRCL the construction camp layout before its establishment.					
15	Identification of Quarry (If opened exclusively for metro project)	Selection and finalization of quarry is very important to avoid impacts arising out of location.	<p>The Contractor will finalize the locations in consultation with DE and BMRCL. The Contractor shall establish a new quarry with the prior consent of DE only if, the lead from existing quarries is uneconomical and alternative material sources are not available.</p> <p>Contractor shall finalize quarry for procurement of construction materials after assessment of availability of sufficient quantity</p>	Location of quarry area.	Approval from competent authority.	Checking of documentation.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>of materials, quality and the logistic arrangements.</p> <p>Contractor shall also work out haul road network and report to Environmental Specialist of DE and DE shall inspect and in turn report to BMRCL before approval.</p> <p>All the required permissions / consents from SPCB shall be obtained, if it is new quarry.</p> <p>The Contractor shall prepare a redevelopment plan for the quarry site and get approved by the DE.</p>					
16	Quarries & crushers (If established exclusively for metro project)	Impacts from location - Selection of site for establishing quarries and crushers is very important to avoid impacts arising out of location.	<p>Quarries and crushers shall be sited sufficiently (at least 500m) away from settlements and fertile agricultural lands preferably in the downwind direction.</p> <p>Quarries and crushers shall be located at a distance of 300 m</p>	Location of quarry areas and crusher plant location.	Approval from competent authority.	Checking of documentation.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>from water bodies and sensitive ecosystems such as forests.</p> <p>Contractor shall submit a detailed layout plan for all such sites and approval from Environmental Specialist of DE shall be necessary prior to the establishment.</p> <p>Specifications for crushers and batching plants shall comply with the requirements of relevant emission control legislations. Consent for the Establishment and Operation from KSPCB shall be obtained before establishment and operation respectively and a copy should be submitted to the DE and BMRCL.</p>					
17		Air – Quarrying and crushing activities generate dust and pollute the air.	Arrangements to control dust pollution through provision of windscreens, water sprinklers, and dust extraction systems shall have to be provided at all such sites.					
18		Permissions and Consents – All required permissions and authorizations shall be obtained before operating	Contractor shall obtain materials from quarries only after consent of the Department of Mines and Geology and					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		the units and monitored regularly for their validity to prevent violation of statutory regulations.	<p>Consent for Establishment & Consent for Operation from State Pollution Control Board. The crushers and all related activities shall be under taken as per the Policy guidelines for installation of stone Crushers.</p> <p>The general and specific conditions specified in the license and consents shall be strictly adhered and followed.</p>					
19	Procurement of Construction Vehicles, Equipment and other Machinery	Air & Noise – If the proper vehicles, equipment and machinery to be used in construction of project are not procured, will produce noise, pollute air.	<p>Vehicles, equipment and machinery procured for construction shall conform to the relevant Bureau of India Standard (BIS) norms. The discharge standards prescribed under the Environment Protection Act, 1986 and Motor Vehicles Act, 1988 shall be strictly adhered.</p> <p>The noiseless equipment available in the market shall be used in the construction.</p>	Project area.	Certificate from manufacturer and approvals from competent authority.	Checking of documentation.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			Contractor shall ensure regular servicing and maintenance of all vehicles and machinery used in construction. All vehicles and machinery should have a Pollution Under Control certificates which shall be sent to Environmental Specialist of DE and BMRCL's verification whenever required.					
20	Sourcing of Construction Water	Sourcing and Resource scarcity - Sourcing of construction water in Bangalore city is a big problem. Utilization of water resources available in the city may further worsen the problem of water scarcity. Hence it is very important to source water required for construction without affecting the existing users.	<p>Construction Water Management Plan shall be prepared and implemented after getting approval from Environmental Specialist of DE.</p> <p>Contractor shall arrange adequate supply and storage of water for whole of construction period at his own cost. The contractor shall submit a list of source/s from where water shall be used for the project to DE and BMRCL.</p> <p>The Contractor shall source the requirement of water preferentially by conjunctive use</p>	Project site, camp areas and batching plants.	Approval from competent authority.	Checking of documentation.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>of Surface water and groundwater but with prior permission from the concerned Groundwater Authority. Copy of permission obtained shall be submitted to DE and BMRCL prior to initiation of construction.</p> <p>Contractor shall provide a list of locations and type of sources from where water for construction shall be extracted. Contractor shall extract water only from approved locations and consult Environmental Specialist of DE before finalizing locations to avoid disruption to other water users,</p> <p>The Contractor shall take all precaution to minimize the wastage of water during construction activities.</p>					
21	Sourcing of Sand	Resource scarcity - Extraction of sand will destroy biodiversity on the river banks. In order to put an end to river sand mining,	Sand shall be procured from identified and approved sand mines only.	Location of sand quarry area.	Approval from competent authority.	Checking of documentat ion.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		the state government had banned sand to encourage use of manufactured sand.	<p>If the sand is being procured from new sand quarry / supplier, it shall be ensured that requisite license / lease has been obtained from the concerned Authorities. Contractor shall enter in to an agreement with land owner / supplier and submit to DE before procuring the sand.</p> <p>Permission for extraction of sand shall be obtained from Department of Mines & Geology. Government of Karnataka.</p>					
22	Arrangement of Labors and siting of labor camps	Labor scarcity and establishment of new labor camp and associated issues.	<p>The Contractor shall preferably use unskilled labor drawn from local communities to give maximum economic benefits to the local community.</p> <p>Labors shall be sourced from nearby locality to avoid establishment of labor camps and consequent impacts on the local resources and surrounding environment.</p> <p>Labor camps shall be sited at least 500 m away from major settlements or villages; major</p>	All construction camps	<p>Camp health records</p> <p>Existence of proper first aid kit in campsite</p>	<p>Camp records</p> <p>Site observation</p> <p>Consultation with local people living nearby</p>	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>surface water bodies and forests.</p> <p>All required consents / permissions shall be taken from State Pollution Control Board, District Health Department and Central Ground Water Authority (CGWA) to establish labor camps.</p> <p>Under SHE CoC, and under the Building & Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 the employer (contractor) is liable to arrange for health care facilities of labors, free of charge.</p> <p>Labor camps shall be constructed in semi urban / urban set-ups. Thus, sewage and other discharges from the labor camps can be discharged in public sewers. Refer to SHE Conditions of Contract (CoC).</p> <p>Labor camps are provided with canteen systems, so that the labors don't cook by themselves</p>		<p>Complaints from local people</p> <p>Availability of</p> <p>Safety gears to workers</p>	Interact with construction workers		

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			(as per BOCWR). Cooking shall be done with Commercial LPG gas cylinders (19.4 kg).					
23	Siting of Batching plants, Casting Yard and Construction Camp	Location – Improper siting of batching plant, casting yards and construction camps will lead to issues related to resource sharing, air pollution, noise pollution, water pollution, soil pollution and other impacts in the vicinity.	<p>Construction camps shall not be proposed within 500m from the nearest settlements to avoid conflicts and stress over resources and infrastructure facilities with local community.</p> <p>The batching plants, casting yards, construction camps for offices and construction plant sites shall be identified and located at a minimum distance of 500 m from any major surface water course or body.</p> <p>Contractor's camps shall be identified at least 2km away from the Forest Reserves.</p> <p>Consent to Establishment and Operate (CtE & CtO) shall be taken from State Pollution Control Board to establish batching plants, construction camps.</p>	At the specific locations of plant established.	Approval from competent authority.	Checking of documentat ion.	Contractor	DE, BMRCL
24	Orientation of Implementing Agency and Contractors	Orientation to project implementing agencies and contractor will impart insight to the project features and guidelines to ensure	BMRCL shall organize orientation sessions and regular training sessions before the start of construction of project. This trailing shall include	Throughout the project.	Training plan and records	Checking of documentat ion.	DE	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		minimum impact on the environment.	<p>general as well as specific context of the project.</p> <p>These sessions shall involve all staff of BMRCL involved in implementation of EMP, Environmental Specialists of DE and Contractors.</p>					
Construction Phase:								
25	Excavations (Clearing, grubbing and levelling of site)	<p>Soil and Surface drainage - Clearing and leveling alters the soil texture and compactness affecting the infiltration and soil ecology. Leveling of site also involves alteration of natural drainage.</p> <p>Clearing, grubbing and levelling activities are common all along the proposed metro alignment and metro station locations.</p> <p>Soil Debris - The estimated quantity of earth work</p>	<p>Only ground cover / shrubs that impinge directly on permanent works or necessary temporary works shall be removed.</p> <p>A portion of this will be reused for backfilling. The remaining soil debris will be suitably disposed of to the pre-identified approved locations.</p> <p>Infiltration losses due to site leveling and could be countered by installing Rain Water Harvesting (RWH) pits at camp and plant sites.</p>	Throughout the project areas and locations proposed for camps, plants and construction yards.	Presence of destroyed/ compacted agricultural land or land.	Site observations	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		excavation such as pile drilling muck, pile cap and open foundations and construction and demolition (concrete) waste will be approximately 59682 m ³ & 4177 m ³ respectively. (Source: Data provided by BMRCL)						
26		Vegetation - Digging, borrowing, uprooting of vegetation from construction site before commencement of construction and surface.	All works shall be carried out such that the damage to flora other than those identified for cutting is minimum. Damage to trees other than marked trees shall be suitably compensated at the rate of 10 trees for one tree being impacted.	Throughout the project area.	Number of trees removed	Approvals from concerned authority.	Contractor	DE, BMRCL
27		Noise - Noise will be generated during clearing, grubbing and levelling activities. The impact from noise will be significant at noise sensitive receptors like schools, colleges and hospitals.	Noise generated by these activities will be less. However, 2 m high barricade of GI sheet will be erected around the construction site which will effectively reduce transmission of noise to the receptors.	Throughout the project areas.	Noise and vibration levels measurements	As per Noise Rule, 2000. Site observations and	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		There are education institutions (Appendix – 1) which are sensitive to noise along the proposed metro route which are impacted temporarily by this activity.				Public consultation		
28		<p>Air - Fugitive dust will be generated during these construction activities.</p> <p>There are hospitals (Appendix – 1) along the proposed metro alignment which are impacted by air pollution temporarily during construction phase.</p>	Precaution shall be taken to reduce the level of dust from construction plants and construction sites involving earthwork by sprinkling of water. Water sprinkling will be carried out at regular interval, mutually decided by the contractor and BMRCL	Water sprinkling to be carried out as per SHE Conditions of Contract at regular interval (to be mutually decided by the contractor and BMRCL)	Throughout project corridor with excavation activities.	PM _{2.5} and PM ₁₀ level measurements Dust pollution or complaint of locals.	Contractor	DE, BMRCL
29		Aesthetics – Excavations will impact on the aesthetics of the area temporarily during construction stage.	Construction sites shall be covered with barricades on all sides and the construction	Throughout the project areas with	Site specific plans, schedules	Review of design documents	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			activities shall be limited within these barricades.	excavation activities.	and approvals.	and site observation		
30	Mechanical piling	Noise - Mechanical piling operations, generates noise which may go up to 88-90 dB(A) at 5 m distance.	<p>Augur piling will be carried out in place of mechanical piling which will generate less noise (around 70-75 dB(A)).</p> <p>Barricade of GI sheet up to height of 2m will be erected on all sides of piling operations. This could effectively cut down noise levels by 10-15 dB(A).</p> <p>Piling operations will be restricted during day time hours only. Augur piling methods will be used to reduce the impacts of noise</p>	Throughout project section especially at construction sites, residential and identified sensitive locations.	<p>Noise levels measurements</p> <p>Complaints from local people.</p>	<p>As per Noise Rules,2000</p> <p>Consultation with local people</p>	Contractor	DE, BMRCL
31		Health and Safety - Noise and vibration generated during piling will affect the health and safety of the workers.	<p>2 m tall screens of GI sheets will be installed between source (pile driver) and receptors (workers & nearby populations).</p> <p>Workers involved in piling will be provided with personal safety gears such as ear plugs, ear muffs.</p>	Throughout project section especially at construction sites, residential and identified	<p>Noise levels measurements</p> <p>Complaints from local people.</p>	<p>As per Noise rule,2000</p> <p>Consultation with local people</p>	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
				sensitive locations.				
32		Land - Piling will affect the structure and texture of soil.	Top soil of construction site up to a depth of 300mm will be excavated, piled and stored to conserve the top soil which can be used at BMRCL's tree plantation sites.	Location of excavation station area, yards and plant location	Top soil stockpile	Site observations	Contractor	DE, BMRCL
33	Loading/unloading and hauling of debris of excavations and dismantled structures	Air – Excavated material generates fugitive dust from road surface during loading, hauling and unloading of excavated material.	<p>Barricading to a height of 2 m will be provided to reduce dust generation.</p> <p>Water sprinkling shall be done twice or thrice both at construction sites and haulage routes to encapsulate dust from the excavated heaps.</p> <p>Fugitive dust while loading and unloading should be controlled using water sprinkling.</p> <p>Trucks transporting excavated soil to dump locations shall be covered with tarpaulins to prevent spillage of soil during transportation.</p>	Throughout project corridor with excavation activities.	PM _{2.5} and PM ₁₀ level measurements Dust pollution or complain of locals.	<p>Standards CPCB methods Site observations and</p> <p>Public consultation</p>	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
34		Noise – Loading, unloading and trucks carrying excavated material will result in noise (typically in excess of 57 dB(A) at 10 m distance). The adverse impacts of noise will be significant near noise sensitive receptors (Appendix – 1) and proposed metro station locations where station areas spread into residential areas especially at Central Silk Board Station, HSR layout Station, Agara Lake Station, Ibbalur Station.	<p>Barricade of GI sheet up to a height of 2m will be erected on all sides of construction site to reduce the noise generated during loading and unloading being transmitted to the receptors. This will effectively cut down noise levels by 10-15 dB(A).</p> <p>Haulage of excavated debris by trucks should be planned during non-peak hours.</p>	Throughout project section especially at construction sites near identified sensitive receptor locations.	<p>Noise levels measurements</p> <p>Complaints from local people.</p>	<p>As per Noise Rules,2000</p> <p>Consultation with local people</p>	Contractor	DE, BMRCL
35		Social - Frequent movement of trucks during debris disposal could create social issues. Often observed near proposed Metro station locations at Central Silk Board Station, HSR layout Station, Agara Lake Station, Ibbalur Station.	<p>The local community has to be taken into confidence before the construction commences. Their advice has to be taken and incorporated in decision making.</p> <p>The routing, timing and logistics of the haul truck movement should be planned to have minimal impact on noise level.</p> <p>Strict speed limits should be followed at the settlement areas and on the haulage roads.</p>	Throughout project corridor within construction zone.	Complaint of locals.	Public consultation	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			Haulage of excavated materials should be planned during non-peak hours.					
36		Traffic Congestion – Trucks hauling for disposal of debris will add to the existing traffic congestion woes, especially at Central Silk Board junction, HSR junction, Agara junction, Ibbalur junction, Kadubeesanahalli junction,	Movement of trucks transporting excavated debris shall be planned during non-peak hours.	Throughout project corridor within construction zone.	Complain of locals.	Public consultation	Contractor	DE, BMRCL
37		Health & Safety - The movement of trucks will increase the safety concerns of the dwellers and commuters.	<p>Movement of trucks shall be planned such that it causes least problematic and safer to the public.</p> <p>All required safety signboards precautions shall be erected along the haulage routes to ensure uninterrupted flow of traffic.</p> <p>Construction zone shall be separated from inhabited zones to avoid any unforeseen safety threats and consequences.</p>					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
38	Disposal of excavated materials	Social - Unscientific handling and disposal of debris from excavations and dismantling structures will lead to nuisance to public and the environment.	<p>The debris generated from excavations and dismantling of structures shall be reused for back filling subject to structural suitability of materials and approval of Engineer concerned of DE.</p> <p>All waste debris shall be completely cleared from construction sites on regular basis and disposed of in approved disposal sites and certified by Environmental Specialist of DE.</p> <p>Contractor shall prepare debris disposal plan to deal with surplus debris materials that are available after adjusting for all in-situ applications and submit it to Environmental Specialist of DE for approval.</p> <p>Waste debris shall be dumped in abandoned quarries or borrow pits in layers and compacted mechanically. Once the filling is complete, the entire debris disposal area shall be provided with a layer of good earth on the top and cover with vegetation.</p>	At all approved dumping sites	<p>Location of dumping sites</p> <p>Public complaints</p>	Field survey and interaction with local people	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>All arrangements for transportation during construction including provision, maintenance, dismantling and clearing debris, shall be considered incidental to the civil work and shall be planned and implemented by Contractor as approved and directed by the Environmental Expert of DE.</p> <p>Contractor at his cost shall resolve any claim, arising out of waste disposal or any non-compliance that may arise on account of lack of action on his part.</p>					
39		Land – Dumping may cause change in the topography and affect the natural drainage pattern in the area.	<p>The construction and demolition waste generated during the construction phase should be managed in accordance with the C&D Waste Management Rules, 2016.</p> <p>Contractor shall suitably dispose of unutilized debris materials either through filling up of borrows areas located in wasteland or at pre-designated disposal locations, subject to</p>	Throughout project corridor within construction zone.	Location of dumping sites	Field survey and interaction with local people	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>the approval of the Environmental Expert of DE. Disposal sites shall be identified out of BBMP approved land fill sites as per Construction & Demolition Waste Management Rules, 2016.</p> <p>Location of disposal sites shall be finalized prior to initiation of construction works on any corridor of the project. Environmental Specialist of DE shall approve the disposal sites after conducting a joint inspection of site with Contractor.</p>					
40		Soil erosion – Unconsolidated debris generated from pile driving or other construction activities may be eroded and silt up the nearby water bodies. The susceptible locations for disposal of debris and siltation are identified as Agara Lake at Ch 2+100 (LJHS), Bellandur Lake at Ch 4+200 (LHS), Ibbalur Lake at Ch 5+500 (LHS) and Pond at Ch 7+200 (LHS).	Debris generated from piling or other construction activities shall be disposed such that it does not flow into nearby surface water bodies or agricultural land in the area.	Throughout project corridor within construction zone.	Location of site and drainage plan	Field survey	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
41		Air - The dumping operation of excavated material will generate fugitive dust in the nearby areas.	Sprinkling of water to suppress the fugitive dust emission from the heaps of debris shall be carried out.	Throughout project corridor within construction zone.	PM _{2.5} and PM ₁₀ level measurements Dust pollution or complain of locals.	Standards CPCB methods Site observations and Public consultation.	Contractor	DE, BMRCL
42	Accessibility	Social - Construction activities may restrict the movement of public to access the roads especially at the Metro Station construction locations. Accessibility issues may be significant at Ibbalur & HSR layout metro stations.	Contractor shall provide safe and convenient passage for vehicles, and pedestrians to and from roadsides and property. Contractor shall also ensure that the existing accesses shall not be undertaken without providing adequate alternative provisions.	Nearhabitation on both sides of schools, temples, hospitals, graveyards, construction sites, haulage roads, diversionsites.	Road signage & drainage as per IRC guideline	Field observation Interaction with local people	Contractor	DE, BMRCL
43		Safety - Movement through confined space may cause inconveniences and potential safety issues amongst pedestrians and residents.	Construction sites shall be properly barricaded to ensure the safety of public residing near the construction sites.		Complaints from local people			

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			Safe passage for pedestrians with proper fall protection arrangements and caution signboards shall be planned and provided. HSE officials of contractor shall ensure this.					
44	Planning for traffic diversions and detours	Social - Traffic diversions will create inconvenience to the public and commuters.	<p>Detailed Traffic Control Plans shall be prepared by Contractor and approved by Environmental Specialist and Engineer concerned of DE prior to commencement of works on any section of Metro works. The traffic control plans shall contain details of temporary diversions, traffic safety arrangements during peak traffic hours; details of traffic arrangement after cessation of work each day, safety measures for night time traffic and arrangement of flagmen.</p> <p>Permission from BBMP and Traffic police shall be sought before commencement of construction works.</p> <p>Contractor shall ensure that the diversion/detour is always maintained in running condition,</p>	Throughout the project corridor especially at diversion and intersections	<p>Traffic Management plan</p> <p>Safety signs on site</p> <p>Number of traffic accidents</p>	<p>Review traffic management plan</p> <p>Field observation of traffic management and safety system</p> <p>Interaction with people in vehicles using the road</p>	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>particularly during the monsoon to avoid disruption to traffic flow.</p> <p>Contractor shall inform local community of the changes to traffic routes; conditions and pedestrian access arrangements with assistance from DE and BMRCL.</p>					
45		Traffic Congestion - Construction sites will be restricted for human and vehicular movements. This will result in detour of vehicles especially at busy commercial areas along Outer Ring Road. This results in traffic congestion	The temporary traffic detours shall be kept free of dust by sprinkling of water three times a day and depending on weather conditions, construction in the built-up areas and volume of traffic).					
46		Air - Air pollution from vehicular congestion along the outer ring road during construction phase. Major pollutants like PM ₁₀ , PM _{2.5} , NO _x , SO ₂ , CO, NMHC, Lead and VOCs are released.	<p>Traffic diversions shall be properly planned and implemented during peak hours.</p> <p>Traffic marshals shall be posted near such detours.</p>				Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			Proper signage shall be posted informing motorists about detours.					
47		Noise – Restrictions on vehicular movement near the construction sites by barricading & detours may result into traffic congestion along outer ring road between Central Silk Board to Kaadubeesanahalli. This will result in noise from vehicular movement and honking due to congestion.	<p>Traffic diversions shall be planned properly with prior permission from traffic police.</p> <p>Sign boards shall be displayed properly on prohibition of use of horns particularly at noise sensitive receptor locations like schools, colleges and hospitals.</p> <p>Traffic marshals shall be posted at the construction sites and near busy intersections like Central Silk Board junction, HSR junction, Agara junction, Sarjapura Road junction, Bellandur Road junction, Devara Beesanahalli junction, Kaadubeesanahalli junction, etc. to oversee the smooth flow of traffic.</p>				Contractor	DE, BMRCL
48		Travel time cost / Resource consumption - Detouring of traffic during construction will increase the road length to be travelled by vehicles. This essentially increases the overall fuel consumption	<p>The detour shall be planned with traffic department such that road length to be optimum.</p> <p>The faster completion of works will also tend to reduce fuel consumption.</p>				Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		and travel time of road users.	Congestion cost will be minimized by providing alternate route for traffic in peak hours.					
49	Construction of raft foundation	Land - Construction of raft foundation will generate concrete spoils. This will have adverse effects on land.	Concrete spoils shall be collected and disposed of in the pre-identified and approved disposal grounds.	Throughout the project corridor.	Method and location of construction site	Contractor records Field observation	Contractor	DE, BMRCL
50	Steel structure preparation	Land - Steel structure preparation will create steel scraps (approx. 5% of total BOQ steel requirement; as per CPWD standard estimate)	Steel scrap shall be collected, sorted by diameter and sold to approved scrap dealers/vendor on alter date.	At construction yards and work zones	Method and location of construction site	Contractor records Field observation	Contractor	DE, BMRCL
51		Health & safety - Bar bending & other activities (including working at heights) might pose a health & safety risks to workers	(a) Workers shall be provided with appropriate hand gloves. (b) Workers working at height or doing hot work shall seek permission from site HSE manager and shall be provided with rigs, safety harness & safety belts	Construction sites	Availability of Safety gears to workers Safety signage Training	Site observation Review records on safety	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			(Please refer to SHE Manual, BMRCL)		records on safety Number of safety related accidents	training and accidents Interact with construction workers		
52	Transporting construction materials and haul road management	Air pollution - During transportation of construction material, fugitive dust will be generated from re-suspension of dust from road surface and from the spillage of construction materials from a moving vehicle.	All vehicles delivering fine materials to the site shall be properly covered with tarpaulins to avoid spillage of materials. All existing roads used by vehicles carrying construction materials, shall be kept clear of all dust/mud or other extraneous materials dropped by such vehicles. Contractor shall arrange for regular water sprinkling as necessary for dust suppression of all such roads and surfaces	Throughout project corridor within construction zone.	PM _{2.5} and PM ₁₀ level measurements Dust pollution or complain of locals.	Standards CPCB methods Site observations and Public consultation.	Contractor	DE, BMRCL
53	Stacking & warehousing of raw material	Surface Water – The stacked earth or raw materials will be washed out and pose serious impacts on surface water bodies, If not managed properly. Water	Contractor shall construct silt fencing around the stockpiles at the construction sites including ancillary sites close to water bodies.	At construction yards and work zones	Method and location of construction site	Contractor records	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		bodies like Agara Lake at Ch 2+100 (LJHS), Bellandur Lake at Ch 4+200 (LHS), Ibbalur Lake at Ch 5+500 (LHS) and Pond at Ch 7+200 (LHS) are located along the proposed metro corridor are vulnerable to siltation.	Contractor shall ensure that construction materials containing fine particles are stored in an enclosure such that sediment-laden water does not drain into nearby watercourses. Small dikes and garlanding drains shall be constructed along the periphery of the raw materials yard and boundary shall be constructed.			Field observation		
54		Land - Spillage of materials / mix products on the ground could pollute land	Proper care shall be taken such that the spills will be cleared regularly by scraping and disposing the products.	At construction yards and work zones	Method and location of construction site	Contractor records Field observation	Contractor	DE, BMRCL
55		Health & Safety - Fine dust particles like cement / silt / sand could cause harm to respiratory system.	Cement and sand shall be stacked under tarpaulin and protected from spillage by GI sheet barricading. Workers shall be provided with suitable respiratory PPEs.					
56		Aesthetics - Stacking of raw material will cause aesthetic	The height of barricade walls between the residential area and raw material yards /					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		issues located nearby residential areas	construction areas shall be raised using GI sheets to mask the view.					
57	RCC pouring (using concrete pump) and setting of concrete (using needle vibrator)	<p>Noise & vibration - RCC pouring using concrete pump generates low frequency rumbling noise. Though pump noise is not excessively loud, it is tonal and perceptible. This will be more perceived and irritating for noise sensitive receptors such as schools, colleges and hospitals and residential areas.</p> <p>Needle vibrators generate low frequency noise when dipped in concrete but high frequency noise when raised. Sound level vary between 82-93 dB(A).</p>	<p>Timing of using RCC pumps shall be planned and specified. RCC pumps shall be housed in small mechanical closets. Bends and excessive head will be avoided.</p> <p>Consistency of concrete shall be altered, to reduce the need for use of vibrator.</p> <p>Damping could be used to reduce high frequency noise and thereby reducing the noise levels.</p> <p>The Contractor shall abide by the terms and conditions stipulated in Condition of Contract on Safety, Health & Environment and Project Safety, Health & Environment Manual.</p>	Throughout project section especially at construction sites, residential and identified sensitive locations, refer to noise and vibration level prediction study report.	Noise and vibration levels measurements	As per Noise Rules, 2000 and Public consultation.	Contractor	DE, BMRCL
58		Land - Spillage from concrete pouring may contaminate land.	Efforts shall be made to avoid spillage of concrete to prevent wastage of concrete and resources.	At construction yards and work zones	Method and location of construction site	Contractor records	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		During setting, spillage from cast could take place.	The spoils from pouring concrete shall be collected and reused as sub-grade material in road restoration works.			Field observation		
59		Aesthetics - Spoils from concrete pouring will create unpleasant visuals	After each pouring cycle, the spoils will be manually collected and reused as sub-grade material in road restoration works.				Contractor	DE, BMRCL
60	Curing of concrete (use of water)	Source scarcity – Bangalore city is facing the scarcity of water resources. Use of fresh water for curing of concrete will further lead to depletion of water resources.	<p>Treated sewage water (treated to secondary level) shall be used for curing purpose.</p> <p>Curing both by sprinkling and dipping may be adopted, where a limited amount of water is sprinkled slowly at regular intervals for curing concrete. These methods save water by reusing and recycling, energy, labor, time and cost.</p> <p>Moisture retaining fabric coverings saturated with water shall be used for curing. Wet coverings such as wet gunny bags, hessian cloth, jute</p>	At construction yards and work zones	Approved layout for drainage of construction yards.	Field observation	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>matting, straw etc., shall be wrapped to vertical surface for keeping the concrete wet. For horizontal surfaces saw dust, earth or sand are used as wet covering to keep the concrete in wet condition for a longer time.</p> <p>All the required permissions from the concerned local authorities shall be procured before use of water resources for construction and curing.</p>					
61		Surface water – Excess of curing water will drain to the low-lying areas stagnate making it as mosquito breeding places and pollute water courses	<p>Proper drainage shall be ensured to guide the curing water to the nearby drains.</p> <p>Garland drainage is proposed to be constructed around the construction yard. This will intercept the runoff generated from site.</p>	At construction yards and work zones	Method and location of construction site	Site observations and relevant records	Contractor	DE, BMRCL
62		Ground water - Hydrating water requirement @ 0.38:1 water: cement + curing will require @ 0.06 kg/m ² /hr. of water, most of it will be supplied from approved groundwater sources	Groundwater from Central Ground Water Authority designated safe areas shall be used after procuring permissions from concerned authorities.	At construction yards and work zones	Permission from authority.	Site observations and relevant records	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		(through tankers) as per the Central Ground Water Board norms.	Water can be harvested and made to percolate into the recharge pits (as a compensatory measure) should be practiced.					
63		Aesthetics – Curing water impounding may lead to inconveniences to local public and stagnation promotes vector propagation.	Garland drain shall be constructed around the construction area. The curing water impounded can be collected and reused for curing.					
64	Use of Crane & Launchers	Noise - Operation of launchers and cranes generate noise which goes up to 85-90 dB(A).	<p>Cranes and launchers shall be serviced and maintained regularly to prevent them making noise.</p> <p>Tall GI sheets of 2 m height barrier around the construction area shall be erected to control the noise transmission from the source where the cranes and launchers are used.</p> <p>The construction workers working near construction equipment shall be provided with PPEs like ear plugs / muffs</p>	Throughout project section especially at construction sites, residential and identified sensitive locations.	Noise and vibration levels measurements	As per Noise Rules, 2000 and Public consultation	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>complying with relevant standards.</p> <p>Noise emitting crane and launching works at noise sensitive receptors like schools, colleges and hospitals shall be scheduled properly to avoid or reduce impact on them.</p> <p>The Contractor shall abide by the terms and conditions stipulated in Condition of Contract on Safety, Health & Environment and Project Safety, Health & Environment Manual.</p>					
65		Health & Safety - Cranes and launchers are a major safety concern during construction.	<p>Contractor shall engage only qualified & trained crane/launcher operators.</p> <p>Contractor shall ensure regular servicing and maintenance of cranes and launchers to avoid malfunction of equipment.</p> <p>Proper training shall be given to crane & launcher operators and labors before the commencement of work.</p>	Construction sites	<p>Availability of Safety gears to workers</p> <p>Safety signage Training records on safety</p>	<p>Site observation</p> <p>Review records on safety training and accidents</p>	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>Operation of launchers and cranes shall be done only under the strict supervision of a qualified engineer and a safety supervisor.</p> <p>The operating personnel should follow the operating and maintenance manuals supplied along with the cranes & launchers to understand the crane and operate the crane efficiently and safely.</p> <p>Instructions in Safety, Health & Environment Manual shall be followed.</p> <p>The Contractor shall abide by the terms and conditions stipulated in Condition of Contract on Safety, Health & Environment and Project Safety, Health & Environment Manual.</p>		Number of safety related accidents	Interact with construction workers		
66	Construction camps and Labor camp(s) and associated	Impacts related to location – Selection of labor camp location is important as it adversely impacts from the discharge of sewage and	Contractor shall obtain permission from District Health Officer before establishing labor camps.	All construction camps	Camp health records	Camp records	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
	environmental issues	solid waste from labour camps.	<p>Contractor shall follow all relevant provisions of the Building and the other Construction Workers (Regulations of Employment and Conditions of Service) Act, 1996 for construction and maintenance of labor camp.</p> <p>The location, layout and basic facility provision of each labor camp shall be submitted to DE and BMRCL to obtain their approval prior to their establishment.</p>		<p>Existence of proper first aid kit in campsite</p> <p>Complaints from local people</p> <p>Availability of Safety gears to workers</p>	<p>Site observation</p> <p>Consultation with local people living nearby</p> <p>Interact with construction workers</p>		
67		<p>Resource scarcity – Establishment of labor camps requires resources like water thus increasing pressure on local resources.</p> <p>Water required for domestic uses in labor camps and workers if drawn from existing community bore wells and nearby surface water resources may deplete groundwater.</p>	<p>The Contractor shall provide potable water facilities for drinking & cooking and uncontaminated water for washing in the labor camps.as per standards set by the Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.</p> <p>The Contractor shall also guarantee the following:</p>					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>a) Supply of sufficient quantity of Potable Water in every workplace / labor camp (Site at suitable and easily accessible places and regular maintenance of such facilities.</p> <p>b) If any water storage tank is provided that shall be kept such that the bottom of the tank at least 1 m above the surrounding ground level.</p> <p>c) If water is drawn from any existing well, which is within 30 m proximity of any toilet, drain or other source of pollution, the well shall be disinfected before water is used for drinking.</p> <p>d) All such wells shall be entirely covered and provided with a trap door, which shall be dust proof and water proof.</p> <p>e) A reliable pump shall be fitted to each covered well. The trap door shall be kept locked and opened only for cleaning or inspection, which</p>					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		Dependency of laborers on fuel wood for cooking and heating purposes will result in cutting of trees in and around labor camp.	<p>shall be done at least once in a month.</p> <p>f) Analysis of water shall be done every month as per parameters prescribed in IS 10500-1991.</p> <p>Environmental Specialist of DE shall be required to inspect the labor camp once in a week to ensure the compliance of the EMP.</p> <p>Contractor shall provide sufficient quantity and timely supply of liquid petroleum gas to the laborers to discourage cutting of trees and vegetation.</p>					
68		<p>Sanitation and Sewage System – Waste water generated at the construction camps and labor camps will pollute the soil, surface and ground water if disposed untreated.</p> <p>Impacts from storing, treating and disposing the sewage waste and solid</p>	<p>Contractor shall follow all relevant provisions of the Building and the other Construction Workers (Regulations of Employment and Conditions of Service) Act, 1996 for construction and maintenance of labor camp.</p> <p>The location, layout and basic facility provision of each labor</p>					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		<p>wastes increases breeding sites of mosquitoes in turn increases the risk of vector borne diseases such as malaria.</p> <p>Supply of non-potable water will not only cause communicable diseases to laborers but also act as potential centers for spreading diseases</p> <p>There is also a possibility of spreading diseases such as HIV by having contact with local population.</p>	<p>camp shall be submitted to DE and BMRCL prior to their construction. The construction shall commence only upon the written approval of the DE.</p> <p>The Contractor shall maintain necessary living accommodation and ancillary facilities in functional and hygienic manner and as approved by the DE.</p> <p>The Contractor shall maintain sufficient and appropriate sanitary facilities available and maintain hygienic conditions functional in the labor camps.</p> <p>Necessary living accommodation and ancillary facilities shall be provided in labor camps as approved by the DE.</p> <p>The Contractor shall ensure that</p> <ul style="list-style-type: none"> - Waste water treatment plants shall be constructed at labor camps to treat the sewage to the prescribed standards 					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>before disposing it on the land or water in such a manner that no contamination of soil, ground water or water courses take place.</p> <ul style="list-style-type: none"> - Separate toilets / bathrooms, for men and women are to be provided. (marked in local and English language) - Adequate water supply is to be provided in all toilets and urinals <p>The Contractor shall arrange for</p> <ul style="list-style-type: none"> – A readily available first aid unit including adequate supply of sterilized dressing materials and appliances as per the Factories Rules in every work zone. - Arrangement for availability of suitable transportation at all times to take injured or sick person(s) to the nearest hospital. 					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			Contractor should ensure to conduct HIV awareness programs.					
69		Solid Waste - Poor sanitation and solid waste disposal in labor camps and work sites and possible transmission of communicable diseases from workers to local populations.	Domestic solid waste from construction and labor camps shall be segregated into biodegradable and non-biodegradable before being sent to treatment. Biodegradable wastes are treated by composting and non-biodegradable wastes are either recycled or disposed of to authorized land fill site. The Contractor shall provide garbage bins in the camps and ensure that these are regularly emptied and disposed of in a hygienic manner as per the Comprehensive Solid Waste Management Plan approved by the Environmental Specialist of DE.					
70	Use of batching plant and casting yard	Air – Handling of cement, sand and gravel materials into batching plant will generate fugitive dust and	Batching plants shall be sited at least 1 km in the downwind direction from the nearest human settlement. VehDEles delivering raw materials like	At Batching plant sites	PM _{2.5} and PM ₁₀ , Noise level	Standards CPCB methods for air quality monitoring,	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		<p>ambient air quality will be adversely affected.</p> <p>Use of DG - The batching plant will get its power backup from DG sets. In</p>	<p>sand and fine aggregates shall be covered to reduce spills on the roads.</p> <p>Water shall be sprayed on haulage roads within the premises of batching plants on a regular basis.</p> <p>The batching plants shall be fitted with dust extraction units and collectors to reduce exhaust dust.</p> <p>Batching plants / casting yards shall be barricaded and designated as a compulsory PPE zone to effectively reduce the impact from fugitive dust emissions.</p> <p>Required permissions for electrical connection and supply must be obtained from BESCO by the Contractor.</p> <p>DG sets, if used, shall:</p> <p>(a) conform to height of stack norms as per CPCB rules;</p> <p>(b) conform to emission norms as per Environment (Protection) Act, 1986;</p>		<p>measurements,</p> <p>Compliance on terms and conditions in given permission for batching plant</p>	<p>relevant records on permission from authorities</p>		

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		most cases DG sets of 100 – 250 kVA) is required to run the batching plant & ancillary facilities. Thus, the diesel required will range from 30 – 45 L/hr (at 100% load).	(c) noise level at 1 m distance from enclosure shall not be >75 dB(A). Diesel storage if done beyond threshold limit (1000 L) permission from CCOE should be obtained. Diesel should be stored on pukka platforms and spillages should be avoided.					
71		Noise - Batching plants will generate noise during operation	Batching plants / casting yards shall be barricaded and designated as a compulsory PPE zone. Workers working in close proximity of the batching plants shall be provided with suitable PPEs like ear muffs & plugs reduce the impacts of noise.					
72		Land - Soil compaction and contamination are envisaged at concrete batching plant and along access roads to	As part of mitigation measures top soil shall be preserved and back filled. The site shall be rehabilitated to the original geographical contours and natural landscape or as per the					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
		these construction establishments.	contract agreement with the land owner.					
73		Water - Batching plant will use water for concrete mixing. In most cases water will be supplied from groundwater.	Permission from CGWA must be obtained before digging and operating bore wells. Water abstracted must be measured/ recorded periodically.					
74		Permissions from Authorities	Consent to Establish (CtE) and Consent to Operation (CtO) shall be obtained for construction establishments such as batching plants from the SPCB. All project activities are adhered to the contractual obligations under clearances and approvals					
75	Curing of concrete segments & I beams	Water requirement - Curing will require a significant amount of water, which will mostly be supplied from groundwater.	Wastage / excess from curing could be collected separately and if possible reused. Stagnation of water (and resultant vector propagation) should be avoided.	At casting yards	Method and approved drainage plan	Site observations and relevant records	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
76	Hauling of concrete castings to construction site	Air - Transportation of concrete castings on the roads generates fugitive dust from road surface in addition to the obnoxious gaseous emissions from trucks used for hauling.	Truck tyres shall be washed to remove soil clinging to it near the exit points of the casting yards. Water sprinkling along the hauling route shall be undertaken. Trucks shall have PUC certificates and conform to the prescribed emission norms.	Throughout project corridor.	PM _{2.5} & PM ₁₀ level and Noise level measurements & checking PUC certificates Dust pollution or complain of locals	Standards CPCB methods Observations Public consultation	Contractor	DE, BMRCL
77		Noise – Transporting vehicles carrying concrete castings results in high noise (typically in excess 57 dB(A) at 10 m distance). The adverse impacts of noise will be significant at the residential areas and the noise sensitive receptors.	The routing, timing and logistics of the haul truck movement shall be planned to have minimal impacts on the ambient noise levels.					
78		Social - Continuous movement of haul trucks could create social issues in the form of obstruction to movement of commuters and traffic congestion.	The routing and timing of haul trucks shall be planned to take the local community into confidence.					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			They should be informed in advance on the routing and approximate timing after considering their advice.					
79		Safety - The movement of trucks will increase the risk of accidents to the commuters.	Safety sign boards shall be displayed all along the haul routes to sensitize the public.					
80	Use of DG sets at construction sites	Air - Air pollution from emissions of DG sets	<p>Contractor shall prefer to utilize power from BESCO as primary source and DG sets shall be used only as power back-ups to conserve the diesel which is a non-renewable resource.</p> <p>(a) Emissions from DG shall adhere to CPCB prescribed norms</p> <p>(b) Stack height of DG sets shall be as per CPCB requirement (stack height = $0.2 \times$ (rating in kVA) 0.5]</p>	At installation location of DG sets	<p>Monitoring of ambient air quality and Noise levels</p> <p>Measurements, compliance with consent taken from SPCB</p>	<p>Standards</p> <p>CPCB methods and as per Noise Rules, 2000</p>	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			(c) Low Sulphur diesel shall be used in the DG sets.					
81		Noise - Noise & vibration will be generated from the use of DG sets	<p>DG sets shall be insulated type to mitigate noise at source itself.</p> <p>DG sets shall be mounted on damping skids to reduce the vibration generated from DG sets.</p>					
82	Storage of fuel and lubricants	Surface and Groundwater - Spillage of fuel from underground storage or above ground storage facility will adversely affect the quality of ground and surface water respectively	<p>Spillage of fuel from underground storage facilities shall be avoided by taking required precautions during installations. Spillages reaching the soil from above ground storage facilities shall be avoided by storing on the concrete impervious platforms and installing oil interceptors at the outlet drains.</p> <p>The vehicle and construction equipment shall be properly maintained and refueling /</p>	Fuelling station, construction sites, and construction camps and disposal location.	<p>Quality of soil near Storage area</p> <p>Presence of spilled oil project area</p>	Site Observation and check of records	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>maintenance of vehicles shall not be done near the water bodies to avoid contamination from fuel and lubricants.</p> <p>Diesel Generator sets shall be placed on a cement concrete platform with oil and grease trap to control the oil ingress into soil/water bodies.</p> <p>A Contingency Plan shall be prepared by the Contractor to face and act immediately on spillage as per Petroleum Rules, 2002 and Petroleum (Amendment) Rules, 2018.</p>					
83		Health & safety - Storage of fuel and lubricants will attract the provisions of Hazardous Chemicals (Management & Handling) Rules and Petroleum Rules as amended to date. It could cause serious damage to health & safety of workers / property.	<p>Proper onsite emergency plan shall be prepared by the Contractor and get approved through BMRCL.</p> <p>If the diesel storage crosses the threshold limits permissions from Chief Controller of Explosives (CCoE).</p> <p>Proper fire protection norms have to be undertaken as per National Building Code, 2016</p>					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			(for buildings) / Oil Industry Safety Directorate Standard 117 (for installations).					
84	Construction activities near water bodies	Construction works near water bodies especially Agara Lake at Ch 2+100 (LJHS), Bellandur Lake at Ch 4+200 (LHS), Ibbalur Lake at Ch 5+500 (LHS) and Pond at Ch 7+200 (LHS) are susceptible for impact from construction activities.	<p>While working close to water bodies, contractor shall not obstruct / prevent the inflow of water. Construction close to water bodies shall be avoided in monsoon and may be undertaken in the dry season.</p> <p>Chute drains with sediment trap or silt fence and garland drains shall be planned at erosion susceptible areas to avoid ingress of silt into the water bodies.</p> <p>Vehicles and construction equipment shall not be parked near water bodies. The construction vehicle parking locations, fuel / lubricants storage sites, vehicles, machinery and equipment maintenance and refueling sites</p>	At construction work zones, plants, construction yards and camp areas.	Method and location of construction site	<p>Contractor records</p> <p>Field observation</p>	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>shall be located at least 500 m away from water bodies and storm water drainages.</p> <p>The Contractor shall submit the locations and layout plans of such sites prior to their establishment and shall be approved by the Environmental Specialist of DE.</p> <p>The Contractor shall take necessary precautionary measures to prevent wastewater construction sites, construction and labor camps entering water bodies or storm water drainages during construction.</p> <p>Operation, maintenance and refueling of all vehicle / machinery and equipment shall be carried out in such a manner that spillage of fuels and lubricants does not contaminate the ground.</p> <p>Wastewater from vehicle parking, fuel storage areas, workshops, wash down and refueling areas shall be treated in an oil interceptor before discharging it on land or into</p>					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>water bodies or into other treatment system.</p> <p>Arrangement shall be made for collection, storing and disposal of oily wastes to the pre-identified disposal sites approved by the Environmental Specialist of DE. All spills and collected petroleum wastes shall be disposed of in accordance with Petroleum Rules and Pollution Control Board guidelines.</p>					
85	Drainage and flood control	Drainage – Drainage of construction site shall be ensured at all time during construction such that the area is drained to nearby drains. Blocks in the drainage will cost inundation and flooding in the area.	<p>It shall be ensured that no construction materials like earth, stone, or appendage disposed of in a manner that block the inflow of water to water bodies and cross drainages.</p> <p>All necessary measures shall be taken to prevent blockage to the water flow. In addition, the Contractor shall take all required measures as directed by the Environmental Specialist of DE to prevent temporary or permanent flooding near the</p>	At construction yards and work zones	Approved layout for drainage of construction yards.	Field observation	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			construction site and adjacent area.					
86	Siltation of water bodies and degradation of water quality	Soil erosion and siltation - Soil erosion from construction site and siltation of sediments in to water body will impact aquatic ecosystem and silt up the nearby water body.	<p>Beds nearby water bodies shall not be excavated for borrowing earth for construction.</p> <p>Silt fencing shall be constructed around the stockpiles at the construction sites including ancillary sites close to water bodies.</p> <p>Construction materials containing fine particles are stored in an enclosure such that sediment-laden water does not drain into nearby watercourses.</p>	Throughout the entire project alignment especially along water bodies cutting/excavation is required.	Occurrence of slope failure or erosion issues	Review of design documents and site observation	Contractor	DE, BMRCL
87	Construction Vehicles, Equipment and Machineries	Emission from Construction Vehicles, Equipment and Machineries – Fugitive emissions from vehicles and equipment used in construction of project will pollute the air.	<p>All the vehicles, equipment and machinery used in construction are regularly maintained to comply with the relevant statutory standards of CPCB and Motor Vehicles Rules.</p> <p>Redundant vehicles shall not be used in construction and Pollution Under Control (PUC) certificates for all vehicles /</p>	Throughout project section especially at construction sites, residential and identified	<p>PM_{2.5} and PM₁₀, and Noise level measurements.</p> <p>Complaints from local people</p>	Standards CPCB methods for air quality monitoring, relevant records on permission from authorities ,	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			equipment / machinery used in the Project shall be ensured.	sensitive locations.		Consulation details		
88		Noise - Construction vehicles and construction equipment will generate noise during construction. The noise will be more if the vehicles are not regularly serviced and maintained.	<p>All Construction plants and equipment used in construction shall strictly conform to the MoEF&CC / CPCB noise standards.</p> <p>All Vehicles and equipment used in construction shall be fitted with exhaust silencers. The effectiveness of exhaust silencers shall be regularly checked and if found defective shall be replaced.</p> <p>Servicing of all construction vehicles and machinery shall be done regularly and during routine servicing operations.</p> <p>Maintenance of vehicles, equipment and machinery shall be regular and up to the satisfaction of the Environmental Specialist of DE to keep noise levels at the minimum.</p>				Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
89	Personnel Safety Measures for Labor	Workers working at construction sites and construction establishment sites are exposed to occupational safety risks.	<p>Contractor shall provide:</p> <ul style="list-style-type: none"> ➤ Protective footwear, protective goggles and nose masks to the workers employed in concrete works, crushers, etc. ➤ Welder's protective eye-shields to workers who are engaged in welding works ➤ Earplugs to workers exposed to loud noise, and workers working in crushing or compaction <p>Safety harness to workers working at height and shall comply with all regulations regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and egress.</p> <p>The Contractor shall comply with all the precautions as required for ensuring the safety of the workmen as per those applicable to the contract.</p> <p>The Contractor shall not employ any person below the age of 14</p>	Construction sites	<p>Availability of Safety gears to workers</p> <p>Number of safety related accidents</p>	<p>Site observation</p> <p>Review records on accidents</p> <p>Interact with construction workers</p>	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>years for any work and no woman shall be employed on the work of painting with products containing lead in any form.</p> <p>The Contractor shall also ensure that paint containing lead or lead products is used except in the form of paste or readymade paint.</p> <p>The Contractor shall make sure that during the construction work all the relevant provisions of Building and other Construction Workers (regulation of Employment and Conditions of Services) Act, 1996 are adhered to.</p> <p>Contractor is obligated to follow BMRCL's Safety, Health and Environment Manual which defines the principal requirements of the Employer on Safety, Health and Environment (SHE) associated with the Contractor / Sub-</p>					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			contractor and any other agency to be practiced at construction work sites at all time.					
90	Traffic and Safety	Traffic disruption – Construction works of metro disrupts traffic and exposes to traffic safety risks all along the proposed metro alignment and metro stations.	The Contractor shall take all necessary measures for the safety of traffic during construction and provide and maintain signs, barricades, markings, flags, lights and flagmen for information of road users and protection of traffic approaching or passing through the section of any existing cross roads as proposed in the Traffic Control Plans / Drawings. Traffic Control Plan shall be devised and implemented to the satisfaction of the Environmental Expert of DE.	At locations of traffic diversions and intersections .	Approval from competent authority.	Checking of documentat ion.	Contractor	DE, BMRCL
91	Risk from electrical equipment		The Contractor shall take all required precautions to prevent danger from electrical equipment and ensure that. ➤ No material shall be so stacked or placed as to cause danger or	At Project site.	Specification s of electrical items.	Checking of documentat ion.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>inconvenience to any person or public.</p> <p>➤ All necessary fencing and lighting shall be provided to protect the public from electrical hazards in construction zones.</p> <p>All equipment to be used in construction shall conform to the relevant Indian Standards (IS) codes, shall be free from defect; kept in good working order; regularly inspected and properly maintained as per IS provision and to the satisfaction of the Environmental Expert of DE.</p>					
92	Risk force measure		<p>Contractor shall take reasonable precautions to prevent danger to the workers and public from emergency spillage, fire, flood, etc. resulting from construction activities.</p> <p>Contractor shall make required arrangements so that in case of any mishap all necessary steps can be taken for prompt first aid</p>	The project.	Conditions on contractors' contract.	Checking of document.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			treatment. Construction Safety Plan prepared by the Contractor shall identify necessary actions in the event of an emergency.					
93	First Aid		<p>The Contractor shall arrange for –</p> <p>A readily available first aid unit including an adequate supply of sterilized dressing materials and appliances as per the Factories Rules in every work zone.</p> <p>Availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital.</p>	Construction sites	<p>Availability of first aid boxes</p> <p>Number of safety related accidents</p>	<p>Site observation</p> <p>Review records on accidents</p> <p>Interact with construction workers</p>	Contractor	DE, BMRCL
94	Informatory Signs and Hoardings		The Contractor shall provide, erect and maintain information / safety signs, hoardings written in English and local language (Kannada), wherever required or as suggested by the Environmental Specialist of DE.	Construction sites	Installation of project informatory boards.	Site observation .	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
95	Notified Archaeological Property and Chance Found Archaeological property	There is no archaeological monument notified under the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010. However, during excavation for metro project the possibility of chance found article, structure or monument is not ruled out and suitable precaution and mitigation measures shall be taken to protect and conserve the structure or site of archaeological importance.	<p>All fossils, coins, articles of value of antiquity, structures and other remains of archaeological interest discovered on the site shall be the property of the Government and shall be dealt with as per provisions of the relevant legislation.</p> <p>The Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing and damaging any such article or thing. He shall, immediately upon discovery thereof and before removal acquaint the Environmental Specialist of DE of such discovery and carry out his instructions for dealing with the same, waiting which all work shall be stopped.</p> <p>The DE shall seek direction from the Archaeological Survey of India (ASI) before instructing</p>	Throughout the project construction zones.	Ancient Monuments and remains during excavation.	Site observations.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			the Contractor to recommence the work in the site. The Archaeological structures identified along the project sites should be protected/ preserved or enhanced as per the law.					
96	Contractor's Demobilization	Environmental condition – The construction activities of metro works will cause environmental pollution. It is required to monitor the environmental attributes regularly to keep a tab on effectiveness of the mitigation measures.	The BMRCL shall undertake seasonal monitoring of air, water, noise and soil quality through an approved monitoring agency. The parameters to be monitored, frequency and duration of monitoring as well as the locations to be monitored shall be as per the Monitoring Plan prepared. National Standard of Air, Noise and Water given in Appendix- 3.	The project sites.	Baseline monitoring and monitoring during works.	Monitoring reports.	Contractor	DE, BMRCL
97		Continuous Community Participation	The Environmental Specialist of DE shall have continuous interactions with local people around the project area to ensure that the construction activities are not causing undue inconvenience to the locals residing in the vicinity of project site under construction due to	The project sites.	Community engagement plan	Communication policy and engagement plan.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			noise, dust or disposal of debris etc.					
98		Clean-up operations, restoration and rehabilitation	<p>Contractor shall prepare site restoration plans, which shall be approved by the Environmental Specialist of DE. The clean-up and restoration operations are to be implemented by the Contractor prior to demobilization.</p> <p>The Contractor shall clear all temporary structures; dispose all garbage, night soils and Petroleum, Oil and Lubricants wastes as per waste management plan and as approved by DE.</p> <p>All disposal pits or trenches shall be filled in and effectively sealed off. Residual topsoil, if any shall be distributed on adjoining/proximate barren land or areas identified by the</p>	The project sites.	Site closure plans	Approval of site closure plan.	Contractor	DE, BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>Contractor and approved by the Environmental Specialist of DE in a layer of thickness of 75 mm – 150 mm.</p> <p>All construction zones and construction establishments including proposed metro alignment, camps, batching plants, crushers, and any other area used / affected due to the project operations shall be left clean and tidy, at the Contractor's expense, to the entire satisfaction to the Environmental Specialist of DE.</p>					
Operation Phase:								
99	Operation of metro trains	Air – Implementation of metro project will have a positive impact on the ambient air quality as the public use metro in place other modes of transportation which otherwise known for emitting air pollutants.	<p>Public should be made aware and attracted to use metro more and more.</p> <p>BMRCCL should plan for integrating other modes of transport to achieve last mile connectivity to attract public to use metro.</p>	Project alignment.	Air quality and noise level monitoring during operational stage.	Monitoring reports.	BMRCCL	BMRCCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
100		Noise& vibration - The most significant source of noise during operation of metro is generated from contact between rolling wheel and rail and contact between the brake pad and wheel, followed by engine noise and aerodynamic noise.	<p>The metro train generates rolling noise of approximately 85 dB(A) at a ht. of 8-12 m, the effective noise levels perceived at at-grade roads will be approx. 55 - 60 dB(A) which is less than the monitored baseline noise levels along the alignment.</p> <p>Construction of parapet wall as mitigation measure to reduce noise level generated from metro operations. As per preliminary noise modeling study, the design height of 1070 mm is adequate to keep the noise levels within the prescribed values for noise for commercial zones as the background noise level in these areas is already on higher side.</p>	Project alignment.	Noise level prediction modelling results.	Assessment reports.	BMRCCL	BMRCCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>Use of vibration resilient pads in tracks will absorb vibration.</p> <p>Hence, the increase in noise levels at the road level will be insignificant and will be marginally different from baseline ambient noise generated from traffic.</p> <p>Since the train coaches are enclosed and air conditioned, the impacts of noise on the travelers will be insignificant.</p>					
101		Social – Implementation of metro will have a positive impact on the livelihood of society in terms of employment, commutability, improved access, comfortable travel and decreased travel time.	<p>The employment generation capacity has to be extended to the needy and underprivileged people.</p> <p>This positive impact should be enhanced to larger canopy of people by integrating with other modes of transportation to establish last mile connectivity.</p>	Working areas/offices , stations and depot	Number of Eemployment generated.	Check of relevant documents.	BMRC	BMRC

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			<p>Metro services should be extended to support disabled, students, senior citizens through special programmes.</p> <p>Parking facilities for private vehicles shall be planned and provided to attract users of metro.</p>					
102		Resources – There will be a positive impact on the conservation of resources.	This positive impact should be enhanced to larger canopy of people by integrating with other modes of transportation to establish last mile connectivity.	Development in the areas along the alignment.	Consultation with community in the locality.	Site observations and survey.	BMRCL	BMRCL
103		Health & Safety – Operation of metro rail will have significant benefit on the health due to reduced air pollution and on the safety due to reduced risk of exposure to accidents.	This positive impact should be enhanced to larger canopy of people by integrating with other modes of transportation to establish last mile connectivity.					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
104		Ancillary development - Ancillary developments will take place along with metro corridor.	Ancillary development should be monitored and only specific types of developments should be encouraged. A stringent land use policy should be developed & followed. There should be balanced and sustainable developments along the metro corridor.	Feeder route and connected stations.	Commuter satisfaction and complaints.	Site observations and consultation with users.	Appointed agency.	BMRCL
105		Aesthetics – Implementation of metro rail will enhance the aesthetics in the vicinity after completion.	Aesthetics of metro structure should be regularly maintained and monitored for proper housekeeping landscaping underneath metro line, vertical gardens on the piers and upkeep of metro coaches & metro stations.				Facility Contractor	BMRCL
106		Water pollution – Washing of metro coaches in metro workshops will have oil & grease in the waste water which contributes for Chemical Oxygen Demand (COD) & Total Suspended Solid content if disposed into the nearby water bodies.	Effluent Treatment Plants (ETPs) shall be designed and planned in the workshops to treat the waste water and then dispose it suitably.	Stations and Depot locations.	Water quality parameters.	As per CPCB requirements	BMRCL	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
107	Use of DG sets	Air – Use of DGs will release air pollutants to the environment.	<p>It shall be preferred to use power source from BESCO and DGs shall only be used as power backups.</p> <p>Emissions from DG shall conform to CPCB norms and height of the stacks of DG shall be as prescribed by CPCB.</p> <p>High Speed Diesel containing low Sulphur content shall be used to run DGs.</p>	Stations and Depot locations.	Air quality and noise level parameters. Conditions mentioned in consent letter for DG sets	As per CPCB requirements.	BMRL	BMRL
108		Noise - Noise & vibration will be generated from the use of DG sets	<p>DG sets should be noiseless type and DG sets shall be provided with enclosures and mufflers to reduce the noise transmission.</p> <p>The DG sets shall be mounted on damping skids to reduce the vibration from DG sets.</p>	At location of installations at stations or power back-up.	Air quality and noise level parameters	As per CPCB requirements	BMRL	BMRL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
109	Storage of Diesel	Water Pollution – Spillage of diesel from storage facility will pollute nearby surface water bodies and groundwater quality adversely	Storage of diesel shall be done in designated areas paved with concrete floors and with an arrangement of oil interceptors to prevent oil entering the water stream. Precautions shall be taken to avoid any spillage of diesel.	Storage facility and filling facility.	Presence of spilled oil at facility. Emergency response planning and equipments. Approval from competent authority.	Site observation and compliance check on given permission.	BMRCL	BMRCL
110		Health & safety – Accidental spillage of diesel could cause serious fire hazards and affect the health of workers and damage to properties.	As the storage of diesel attracts the provisions of Hazardous Chemicals (Management & Handling) Rules and Petroleum Rules; as amended to date, required permission shall be obtained. Proper on-site emergency plan shall be prepared and get the BMRCLs approval. If the diesel storage crosses the threshold limits permissions					

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			from Chief Controller of Explosives (CCoE), proper fire protection norms shall be undertaken as per National Building Code, 2005 (if applicable).					
111	Monitoring Operation Performance	Non-compliance – Failure to monitor operation performance will lead to non-compliance of statutory requirements of project.	The BMRCL shall monitor the operational performance of the various mitigation / enhancement measures carried out as a part of the project.	Metro operations	Commuter satisfaction and complaints.	Site observations and consultation with users.	BMRCL	BMRCL
112	Maintenance of Drainage along the metro corridor	Flooding – Non maintenance of drains to ensure the flow of surface run off will lead to flooding which may create problem to access metro services.	BBMP shall ensure that all drains (side drains, median drain and all cross drainages) are periodically cleared especially before monsoon season to facilitate the quick passage of rainwater and avoid flooding.	Project alignment	Drainage layout	Site observations	BBMP	BMRCL
113	Environmental Monitoring	Construction of metro project and associated works may impact air quality, noise levels, surface and ground water quality and soil quality.	The periodic monitoring of the ambient air quality, noise level, water (both ground and surface water) quality, soil quality in the selected locations shall be done as suggested in environmental	Project alignment	Environmental parameters monitoring	Reports on monitoring	Approved Monitoring Agency	BMRCL

Sl. No.	Activity	Impact	Mitigation Measures	Location	Monitoring		Responsibility	
					indicators	Method	implementation	Supervision
			monitoring plan through the approved monitoring agency.					
114	Tree Plantation	Tree transplantation and compensatory tree plantation in lieu of trees impacted by metro project will help to maintain green cover in the city and helps to ameliorate cities weather conditions and environment.	The survival rates and success of the transplanted and compensatory planted trees under metro project shall be monitored and ensured by State Forest Department on behalf of BMRCL.	Plantation at median & station areas	Survival rates	Site observations and reports.	State Forest Department	BMRCL

Annexure: 10

Sub: Compensation to workmen in case of closing down of undertakings – reg.

The relevant provisions applicable to those employees who lose jobs on account of acquisition of their establishment are enumerated as follows:

Employees/workman employed by industrial establishments as defined under the Industrial Disputes Act, 1947 are protected under the provisions mentioned below insofar as compensation to be paid to them before retrenchment or closing down the establishment.

Under Section 25 F of the Industrial Disputes Act, 1947, has prescribed compensation to workmen in case of closing down of undertakings:

1. where an undertaking is closed down for any reason whatsoever, every workman who has been in continuous service for not less than one year in that undertaking immediately before such closure shall, subject to the provisions of sub-section (2), be entitled to notice and compensation in accordance with the provisions of Section 25 F, as if the workman had been retrenched;

Provided that where the undertaking is closed down on account of unavoidable circumstances beyond the control of the employer, the compensation paid to the workman under clause (b) of Section 25 F shall not exceed his average pay for three months.

Explanation. – An undertaking which is closed down by reason merely of –

- (i) financial difficulty (including financial losses); or
- (ii) accumulation of undisposed of stocks; or
- (iii) the expiry of the period of the lease or licence granted to it; or

(iv) in a case where the undertaking is engaged in mining operations, exhaustion of minerals in the area in which such operations are carried on,

shall not be deemed to be closed down on account of unavoidable circumstances beyond the control of the employer within the meaning of proviso to this sub-section.

According to Section 25 F of the Industrial Disputes Act, 1947, there are conditions precedent to retrenchment of workmen:

No workman employed in any industry who has been in continuous service for not less than one year under an employer shall be retrenched by that employer until –

(a) the workman has been given one month's notice in writing indicating the reasons for retrenchment and the period of notice has expired, or the workman has been paid in lieu of such notice, wages for the period of the notice;

(b) the workman has been paid, at the time of retrenchment compensation which shall be equivalent to fifteen days' average pay for every completed year of continuous service or any part thereof in excess of six months; and

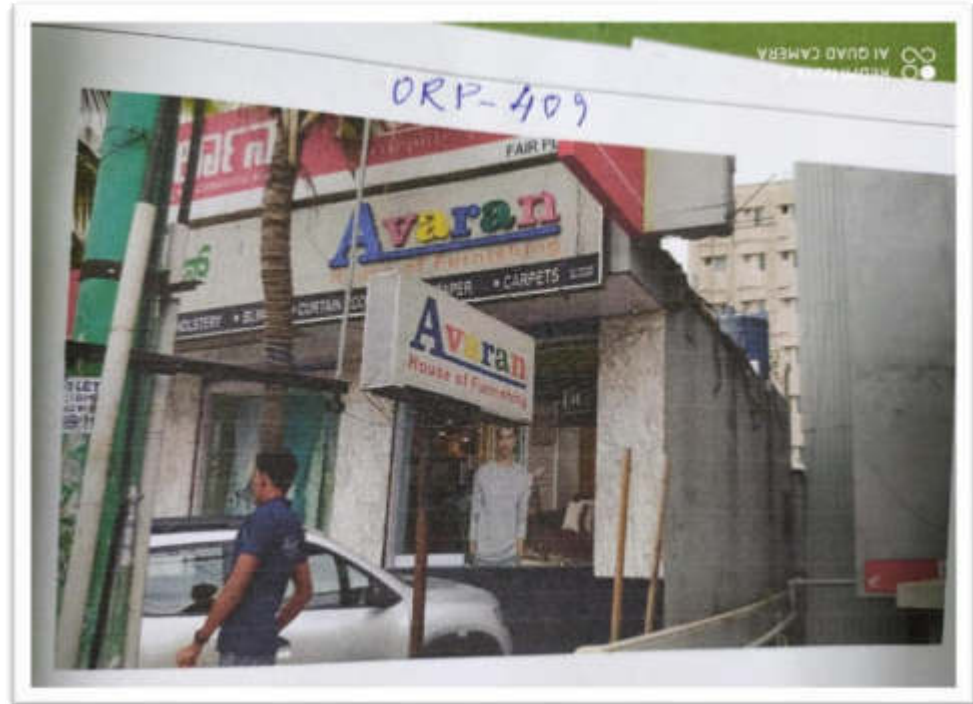
(c) notice in the prescribed manner is served on the appropriate government.

Employees working in Shops and Commercial establishments on dismissal are entitled to compensation as per Section 39 of the Karnataka Shops and Commercial Establishments Act, 1961:

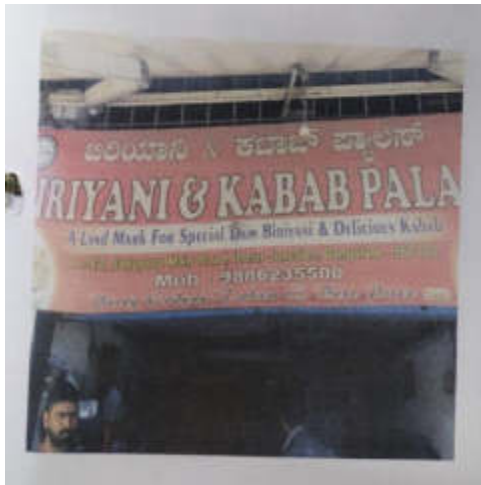

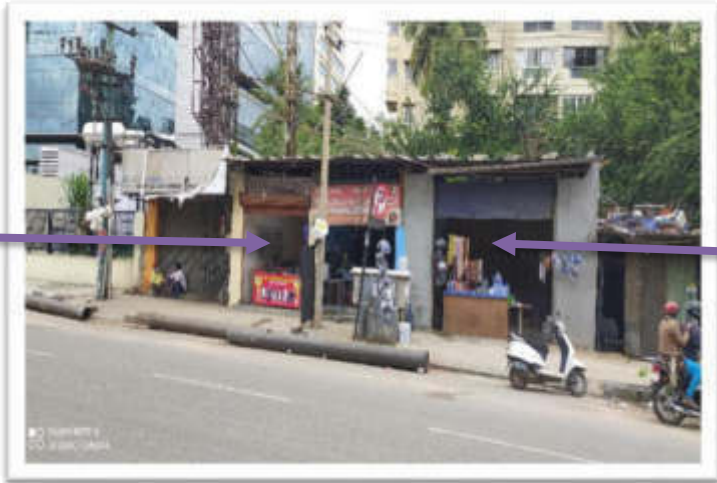
Section 39. Notice of dismissal

(1) No employer shall remove or dismiss an employee who has put in service under him continuously for a period of not less than six months, except for reasonable cost and unless and until one month's previous notice or pay in lieu thereof has been given to him;



(2) Where an employee has been removed or dismissed he shall be entitled to such compensation as the appellate authority may determine, provided that such compensation shall not exceed amount calculated at one month's pay for every year of service.

Annexure : 11**Shop Name : Avaran****ORR-MRTH-06****Village : Munnekolala (Marathhalli)****Before acquisition building location****After Relocation - White field - Varthur Circle, Bangalore.**



Shop Name : Home City	
ORR-IBL-01	Village : Ibbalur (Ibbaluru Station)
Before acquisition building location	
	
After Relocation - B T M Layout, Bangalore.	
	

Shop Name : Biryani & Kabab Palace & Popular Key Makers	
ORR-IBL-06	Village : Ibbaluru (Ibbaluru Station)
Before acquisition building location	
	
After Relocation - Ambur Biryani & Key Makers Behind Metro Acquisition area., Ibbaluru	
	

Shop Name : Arunodaya Wines	
ORR-IBL-06	Village : Ibbaluru (Ibbaluru Station)
Before acquisition building location	
	
After Relocation - K.R.Puram, Ayyappa Nagar, Near Kodigehalli gate.	
	

Shop Name : Srinivas Puncher Shop and Durga Candiments	
ORR-IBL-06	Village : Ibbaluru (Ibbaluru Station)
Before acquisition building location	
	
After Relocation - Beside Metro Acquisition area, Ibbalur.	
	

Shop Name : Manjunath Condiments	
ORR-IBL-01	Village : Ibbaluru (Ibbaluru Station)
Before acquisition building location	
	
After Relocation - Near Motherhood Hospital, Bellandur.	
	

Shop Name : Lakshmi Venkateshwara Enterprises	
ORR-DDKD-01	Village : Doddanekundi, (Doddanekundi Station)
Before acquisition building location	
	
After Relocation - Beside Metro Acquisition area. Doddanekundi.	
	

Shop Name : City Tyre Works, Shankar Tea Stall, Hemashree Military Hotel	
ORR-BLR-02	Village : Bellandur (Bellanduru Station)
Before acquisition building location	



After Relocation - Behind Bellandur Metro Station acquired area.



Shop Name : Feet Shop	
ORR-MRTH- 05	Village : Munnekolala and Marath Halli
Before acquisition building location	



After Relocation - Marath Halli (Same Place) Behind the acquired area, Bangalore.



Shop Name : Siriya Interior

ORR-MRTH- 09

Village : Munnekolala and Marath Halli

Before acquisition building location






After Relocation - Beside Metro acquired area, Marath Halli.



Shop Name : VEDIYAPPAN Building Material Supply	
ORR-DDKD-01	Village : Doddanekundi (Donekundi Station)
Before acquisition building location	
	
After Relocation - Near Udupi Garden, Doddanekundi.	
	

Shop Name : International tiles and Sanitary	
ORR- MRTH-7	Village : Munnekolalu, (Marath Halli)
Before acquisition building location	
	
After Relocation - Kundala Halli Gate. Varthuru Main Road.	
	

Shop Name : Edu 9	
ORR-MRTH-03	Village : Chinnappanahalli (Marath Halli)
Before acquisition building location	
	
After Relocation - Sahakara Nagara, Kodige Halli Gate, Ballary Road.	
	

Shop Name: Famous Aluminium Fabricators & Interior Decorators	
ORR-IBL-01	Village : Ibbaluru (Ibbaluru Metro Station)
Before acquisition building location	
	
After Relocation - Beside the Metro Acquisition Area Ibbaluru	
