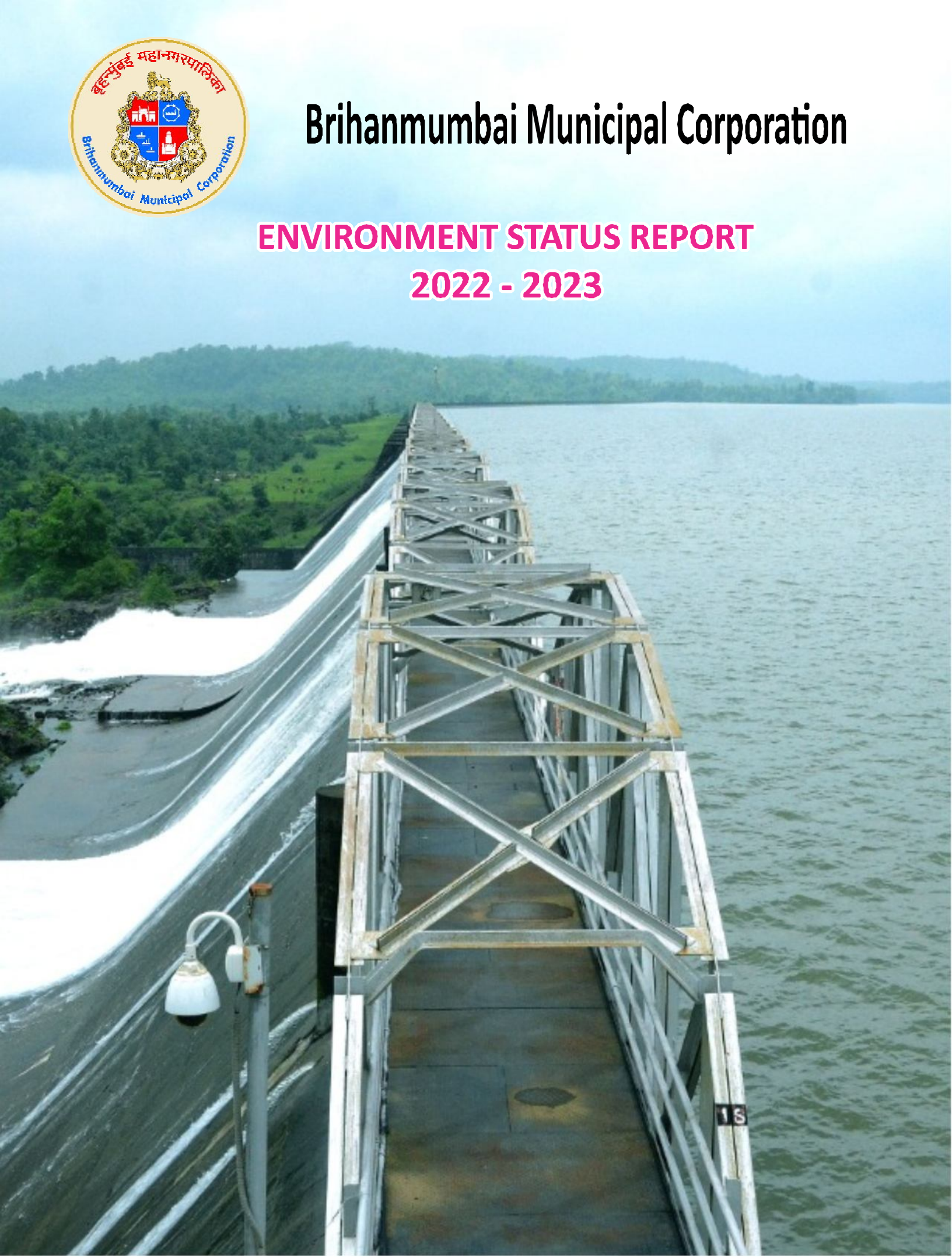
Brihanmumbai Municipal Corporation

ENVIRONMENT STATUS REPORT
2022 - 2023



Miyawaki Garden

Mangroves - Ecosystem

ENVIRONMENT STATUS REPORT
2022 - 2023

SCIENTIST IN-CHARGE

AIR QUALITY MONITORING & RESEARCH LABORATORY,

MUNICIPAL MARKET OFFICE BUILDING,

NEW PARAMOUNT CHS, TILAK ROAD,

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इ. सिं. चहल
भा. प्र. से.
महानगरपालिका आयुक्त
बृहन्मुंबई महानगरपालिका

मनोगत

सन 2022-23 या वर्षाचा 'बृहन्मुंबई पर्यावरण स्थितीदर्शक अहवाल' मुंबईकरांना सादर करताना मला अत्यंत आनंद होत आहे. मुंबई महानगरपालिका कायदा 1888 मधील कलम 61(अब) नुसार शहरातील वन, पर्यावरणाचे संरक्षण व निसर्गाचे संवर्धन करणे हे बृहन्मुंबई महानगरपालिकेचे कर्तव्य आहे. महानगरपालिकेच्या पर्यावरण विभागामार्फत बृहन्मुंबई 'पर्यावरण स्थितीदर्शक अहवाल' दरवर्षी सादर करण्यात येतो. सदर अहवालात बृहन्मुंबईतील पर्यावरणाचा मागील वर्षाचा (1 एप्रिल 2022 - 31 मार्च 2023) चिकित्सक दृष्टिने सविस्तर आढावा घेण्यात आला असून भविष्यात शहराचे पर्यावरण संवर्धनासाठी शासकीय, अशासकीय संस्थांचे व महानगरपालिकेच्या पर्यावरणस्नेही योजना व उपक्रमाचा यात परामर्श घेण्यात आलेला आहे.

बृहन्मुंबई महानगरपालिकेच्या विविध विभागाने सन 2022-23 मध्ये अनेक प्रकल्प हाती घेतले असून त्यापैकी बरीच प्रकल्प कामे पूर्ण झालेली आहेत तर काही कामे प्रगतीपथावर आहेत. यामध्ये घन कचरा व्यवस्थापन, उद्यान व प्राणीसंग्रहायल, पर्जन्य जलवाहीन्या, मलनि:सारण प्रकल्प, वर्षा संचयन विनियोग, पाणीपुरवठा, रस्ते व वाहतूक, बेस्ट उपक्रम, शिक्षण, पर्यावरण, आरोग्य, आपत्कालीन व्यवस्थापन इत्यादी विभाग पर्यावरण संवर्धनासाठी कटिबद्ध आहेत.

पर्यावरण स्थितीदर्शक अहवालाच्या अनुषंगाने मला असे निदर्शनास आणून द्यावयाचे आहे की, मुंबई शहराकरीता 'स्वच्छ भारत अभियान' राबविण्यासाठी महानगरपालिका ही महत्त्वाची प्रशासकीय यंत्रणा असून राज्य व केंद्र सरकारच्या सहकार्याने शहरातील स्वच्छता राखण्यासाठी संयुक्तरीत्या प्रयत्न केले जात आहेत. 'स्वच्छ भारत अभियान-2.0' या उपक्रमाद्वारे 'कचरामुक्त शहर' हे उद्दिष्टीत लक्ष्य गाठण्यासाठी घन कचरा व्यवस्थापन विभागामार्फत घरगुती स्तरावर कचऱ्याचे विलगीकरण (ओला व सूका कचरा), जून्या साठवलेल्या कचऱ्यावर शास्त्रोक्त पद्धतीने प्रक्रिया, आवारातच खत निर्मिती, तसेच मैला व्यवस्थापन-संकलन-वहन व प्रक्रिया इत्यादी बाबींवर भर देण्यात येत आहे. याबरोबरच स्वच्छ सर्वेक्षण-2023 अभियानाअंतर्गत शहर सुशोभिकरणासाठी स्वच्छतेबाबत जनजागृती, वर्तणूक बदल याकरीता पथनाट्य उपक्रम, प्लास्टिक पिशव्या ऐवजी परत परत वापरता येणाऱ्या कापडी पिशव्यांचा वापर, पाण्याची बचत इत्यादीबाबत जाणीवपूर्वक प्रयत्न केले जात आहेत.

मुंबई महानगरातील अनेक समस्यांपैकी महत्त्वाची समस्या म्हणजे वाढत जाणाऱ्या वाहनांची संख्या पर्यायाने हवा प्रदूषण आणि वाहतूकीची कोंडी होय. मुंबई शहरातील वाहनांच्या संख्येत सन 2022 च्या तुलनेत सन 2023 मध्ये अंदाजे 5.98% इतकी वाढ झालेली आहे. आजमितीस मुंबईतील विविध वाहनांची संख्या 45,37,211 एवढी प्रचंड असून वाढत जाणारी वाहनांची संख्या ही शहरातील हवा व ध्वनी प्रदूषण वाढण्यास कारणीभूत ठरत आहे. यावर उपाययोजना म्हणून मुंबई शहराला स्वच्छ-सुंदर आणि प्रदूषणमुक्त करण्यासाठी बृहन्मुंबई महानगरपालिकेतर्फे सन 2021-22 या वर्षापासून इलेक्ट्रिक वाहन पॉलिसीच्या परिणामकारक अंमलबजावणीला सुरुवात करण्यात आली असून सिनेमागृहे, पेट्रोल पंप आणि बृहन्मुंबई महानगरपालिका वाहनतळाजवळ 10

सार्वजनिक इलेक्ट्रिक चार्जिंग स्टेशन स्थापन करण्यात आलेली असून 10 इलेक्ट्रिक चार्जिंग स्टेशन प्रस्तावित आहेत. बृहन्मुंबई महानगरपालिकेच्या इलेक्ट्रिक वाहन धोरणाला मुंबईकरांचा वाढता प्रतिसाद बघता भविष्यात शहरातील वायु प्रदूषण कमी होण्यास निश्चितच मदत होईल.

बेस्ट उपक्रम मुंबई शहरातील वायु आणि ध्वनी प्रदूषणाची पातळी नियंत्रित ठेवण्यासाठी नेहमीच प्रयत्नशील राहिलेला आहे. पर्यावरण संवर्धनाचा एक भाग म्हणून बेस्ट उपक्रमातील सार्वजनिक वाहतुकीसाठी वापरल्या जाणाऱ्या एकूण 3225 बसेसपैकी 83% बसेस ह्या पर्यावरणपूरक सीएनजी आणि विद्युत बसेस आहे. सदर विद्युत बसेसच्या वापराने वातावरणातील सुमारे 269 लाख कि.ग्रॅ. एवढ्या कार्बनडायऑक्साईडचे उत्सर्जन कमी होण्यास मदत झाली आहे. बेस्ट उपक्रमाद्वारे विद्युत वाहनांना जास्तीत जास्त प्रोत्साहन मिळण्याकरीता बेस्ट उपक्रमाच्या वेगवेगळ्या बस आगारात आणि बस स्थानाकांमध्ये 12 सार्वजनिक इलेक्ट्रिक चार्जिंग स्टेशन स्थापन करण्यात आलेले असून आणखी बेस्टतर्फे 53 सार्वजनिक इलेक्ट्रिक चार्जिंग स्टेशन स्थापन करण्याचे प्रस्तावित आहे. विद्युत वाहनांच्या चार्जिंगकरीता आवश्यक असणारी ऊर्जा ही सुद्धा अपारंपारिक स्त्रोतापासून(हरीत ऊर्जा) तसेच प्रदूषण न करणाऱ्या स्त्रोतांपासून उपलब्ध करण्याचा बेस्ट उपक्रमाचा मानस आहे. तसेच सन 2025-26 पर्यंत बेस्ट उपक्रमातील संपूर्ण बस ताफा 100% विद्युत बसगाड्यांचा करण्याचा बेस्ट उपक्रमाने धोरणात्मक असा निर्णय घेतलेला आहे.

देशाची आर्थिक राजधानी असलेल्या या महानगरातील जनतेला करमणूकीच्या सुविधा उपलब्ध करुन देणे हे बृहन्मुंबई महानगरपालिकेचे प्रमुख कर्तव्य आहे. नागरिकांसाठी उद्याने परीरक्षित करणे, मनोरंजन मैदाने, क्रिडांगणे, उद्यानात शिल्पग्राम कला, वाहतूक नाक्यावर कारंजी, वाद्यवृंद पथकाद्वारे मनोरंजन, रोपवाटीका, रस्त्याच्या दुतर्फा व मध्यभागी हरीत पट्टा निर्मिती, मियावाकी उद्यानावर भर देणे इ. करमणुकीच्या सुविधा उपलब्ध करुन देण्यात आलेल्या आहेत. या व्यतिरिक्त क्रिडा, कला, सांस्कृतिक कार्यक्रम यांना उत्तेजन देऊन नागरिकांचे आरोग्य शिक्षण व संवर्धन करण्यावर बृहन्मुंबई महानगरपालिकेने विशेष लक्ष केंद्रीत केलेले आहे.

बृहन्मुंबई महानगरपालिकेतर्फे अंदाजे 2050 कि.मी. लांबीच्या रस्त्याची देखभाल व परिरक्षण करण्यात येते. मुंबईत कमी वेळेत जास्त प्रमाणात पडणारा पाऊस, विविध प्रकारच्या वाहनांची दैनंदिन वर्दळ, वाहतुकीची जास्त घनता, विविध उपयोगिता सेवा पुरविण्यासाठी खोदलेल्या चरी अशा अनेक कारणांमूळे रस्त्यांची अवस्था बिकट होते. यावर मात करण्यासाठी महानगरपालिकेच्या रस्ते व वाहतूक विभागामार्फत शहरातील रस्ते खड्डेमुक्त करण्यासाठी सर्व रस्त्यांचे सिमेंट काँक्रिटीकरण करण्याचे धोरण आखले आहे. सिमेंट काँक्रिटीकरणामुळे रस्ते खड्डेमुक्त होऊन वाहतूक सुरळीत व सुरक्षित होण्याबरोबरच वेळेत बचत होण्यास देखील निश्चितच मदत होईल असे मला वाटते.

मुंबईकरांमध्ये पाण्याचा काटकसरीने वापर करण्यासाठी, पाण्याचा अपव्यय टाळण्यासाठी लोकसहभागातून पाणी वाचवा मोहिम राबवून पावसाच्या पाण्याची योग्य साठवण व पाण्याच्या व्यवस्थापनासाठी बृन्हमुंबई महानगरपालिकेची वर्षा संचयन व विनियोग ही एक उत्कृष्ट पद्धत आहे. तसेच 'जलशक्ती अभियान: कॅच द रेन 2022- जेव्हा आणि जिथे पडेल तिथे' या देशव्यापी मोहिमेअंर्तगत पावसाच्या पाण्याची बचत आणि संवर्धन करण्यावर लक्ष केंद्रीत केले जात आहे. यामध्ये लोक सहभागातून जागृती निर्माण करणे तसेच पावसाच्या पाण्याचा योग्य साठा करण्यासाठी हवामान आणि मातीच्या स्थितीनुसार योग्य पावसाच्या पाण्याचे संचयन करुन साठवण संरचना तयार करणे. या मोहिमेची उद्दिष्टीत लक्ष्य गाठण्यासाठी महानगरपालिका कटिबद्ध आहे.

प्राथमिक शिक्षणाची मुलभूत सुविधा उपलब्ध करुन देणे हे बृहन्मुंबई महानगरपालिकेचे बंधनकारक कर्तव्य आहे. ही जबाबदारी सन 1907 पासून महानगरपालिकेचा शिक्षण विभाग समर्थपणे पार पाडत आहे. बालकांचा मोफत व सक्तीचा शिक्षणाचा अधिकार अधिनियम-2009 अंतर्गत बृहन्मुंबई महानगरपालिका क्षेत्रातील वय वर्षे 6 ते 14 पर्यंतची सर्व मुले-मुली नजीकच्या महानगरपालिका शाळेत किंवा अनुदानीत शाळेत मोफत शिक्षण उपलब्ध करुन देण्यात आले आहे. शैक्षणिक वर्ष 2022-23 मध्ये बृहन्मुंबई महानगरपालिका शिक्षण विभागाकडून 'एकच लक्ष्य-एक लक्ष' मोहिमेअंतर्गत मिशन ॲडमिशन हा उपक्रम राबविण्यात आला. सदर उपक्रमाच्या माध्यमातून प्रवेश पात्र असलेल्या शाळाबाह्य बहुसंख्ये विद्यार्थ्यांना शिक्षणाच्या मुख्य प्रवाहात आणण्यात बृहन्मुंबई महानगरपालिका यशस्वी झालेली आहे. सदर कार्याची देशपातळीवर दखल घेण्यात येऊन बृहन्मुंबई महानगरपालिकेला राष्ट्रीय पुरस्कराने गौरविण्यात आले याचा मला अभिमान आहे.

बृहन्मुंबईतील आपत्कालीन परिस्थिती प्रभावीपणे हाताळण्याकरिता आपत्कालीन व्यवस्थापन कक्ष आधुनिक सेवा सुविधांनी सुसज्ज करण्यात आला आहे. आपत्कालीन व्यवस्थापन विभागामार्फत कोणत्याही आपत्ती दरम्यान जलद व प्रभावी प्रतिसाद देणे, प्रतिसाद देण्याऱ्या सर्व यंत्रणांमध्ये समन्वय राखणे, आपत्तीशी संबंधीत माहिती नागरिकांना तात्काळ पुरविणे, विविध स्तरांवर तयारी करीता प्रोत्साहन देणे, आपत्कालीन परिस्थितीत सर्व बाधितांना सहाय्य करणे, तसेच अपेक्षित व अनपेक्षित आणीबाणी संदर्भात नागरिकांना सतर्क करणे इत्यादी सेवा मुंबईकरांना तात्काळ उपलब्ध असल्याने आपत्कालीन परिस्थितीचा सामना करण्यासाठी महानगरपालिका समर्थ आहे असेच म्हणावे लागेल.

अलीकडच्या काळात अतीप्रमाणात साधन संपदा वापरुन मानव प्रदूषणाचे डोंगर निर्माण करत आहे. यामुळे जैवविविधता धोक्यात तर येत आहेच परंतू निसर्गाची रचना सुद्धा बदलत आहे. याची परतफेड म्हणून पर्यावरणामध्ये असमतोल निर्माण होऊन अवकाळी पाऊस, ऋतूमानात होणारे अचानक बदल, चक्रीवादळे, भूकंपाचे हादरे, अतितापमान, अतिपर्जन्यवृष्टी या नैसर्गिक आपत्तींना आपल्याला सामोरे जावे लागत आहे. हवामान बदलाच्या पार्श्वभूमीवर ऊर्जा बचत करणे, सार्वजनिक वाहतुकीच्या साधनांचा वापर करणे, वृक्षारोपण मोहिम राबविणे, प्लास्टिक पिशव्यांचा वापर न करणे, वस्तूंचा पुनर्वापर करण्यास आग्रह धरणे, प्रदूषण मुक्त परिसर ठेवणे अशा साध्या आणि सहज करता येणाऱ्या उपायांबद्दल मुंबईकरांमध्ये जागरुकता नक्कीच निर्माण होईल.

मला अशी खात्री आहे की, येणाऱ्या काही वर्षामध्ये बृहन्मुंबई महानगरपालिकेच्या विविध खात्याने हाती घेतलेले प्रकल्प व योजना पूर्ण झाल्यावर, मुंबईकरांना स्वच्छ व आरोग्यदायी पर्यावरण निश्चितच उपलब्ध होईल. शेवटी नागरिकांचा पाठिंबा आणि सहकार्य यावर हे शहर चैतन्यदायी, स्वच्छ, हरित आणि प्रदूषणमुक्त राखण्यास सुजाण मुंबईकरांचा सहभाग सदैव राहील अशी मला आशा आहे.

धन्यवाद!

इ सिं चहल
महानगरपालिका आयुक्त
बृहन्मुंबई महानगरपालिका

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वृहन्मुंबई महानगरपालिका

मनोगत

सन 2022-23 या वर्षाचा 'बृहन्मुंबई पर्यावरण स्थितीदर्शक अहवाल' मुंबईकरांना सादर करताना मला अत्यंत आनंद होत आहे. अद्ययावत सुधारित मुंबई महानगरपालिका अधिनियम, 1888 मधील कलम 63ब च्या तरतूदीनुसार बृहन्मुंबई महानगरपालिका क्षेत्रातील पर्यावरण स्थितीदर्शक अहवाल तयार करुन दरवर्षी 31 जुलैपूर्वी बृहन्मुंबई महानगरपालिकेस सादर करणे अनिवार्य आहे. अद्ययावत सुधारित मुंबई महानगरपालिका अधिनियम, 1888 मधील कलम 6क(1) अन्वये महानगरपालिका आणि महानगरपालिकेच्या इतर प्राधिकरणांचे सर्व अधिकार आता प्रशासकांकडे निहीत असल्याने सदर अहवाल मा. महानगरपालिका आयुक्त यांच्यामार्फत मुंबईकरांना सादर करण्यात येत आहे.

शहराचा विकास करणे हे शहरातील स्थानिक स्वराज्य संस्थेचे मुलभूत कर्तव्य आहे. परंतू हे कर्तव्य बजावत असताना शहरात निर्माण होणाऱ्या पर्यावरणीय समस्या व त्यावर उपाय योजना करुन पर्यावरणाचे संरक्षण करणे हे देखील तितकेच महत्त्वाचे आहे. शहरातील विकास कामे करताना अनेक नवीन प्रकल्प उभारावे लागतात. नागरिकांना अनेक पायाभूत सुविधा उपलब्ध करुन द्याव्या लागतात. हे सर्व करत असताना याचा प्रत्यक्ष वा अप्रत्यक्षपणे पर्यावरणावर परिणाम होत असतो, ही सर्व स्थिती दर्शविण्यासाठी पर्यावरण स्थितीदर्शक अहवाल तयार करणे गरजेचे आहे. त्यानुसार 'पर्यावरण स्थितीदर्शक अहवाल' तयार करण्याचे काम बृहन्मुंबई महानगरपालिकेचा पर्यावरण विभाग मागील 26 वर्षापासून अविरतपणे करीत आहे.

नागरिकांच्या आरोग्याची काळजी घेणे हे बृहन्मुंबई महानगरपालिकेचे प्रमुख कर्तव्य आहे. बृहन्मुंबई महानगरपालिका आपल्या स्थापनेपासूनच सार्वजनिक आरोग्य क्षेत्रात समाधानकारक सुविधा पुरवित असून कोणत्याही आपत्तीच्यावेळी बृहन्मुंबई महानगरपालिकेची रुग्णालये सदैव सज्ज असतात. याचा अनुभव आपल्याला कोविड-19 साथरोगाच्या निमित्ताने आलेला आहे. बृहन्मुंबई महानगरपालिकेच्या मुख्य रुग्णालयासह सर्वसाधारण रुग्णालये, प्राथमिक आरोग्य केंद्रे, दवाखाने व प्रसूतीगृहे अशा आरोग्य संसाधनाच्या त्रिस्तरीय रुग्णालयांमार्फत मुंबईकरांना आरोग्यसेवा मोफत पुरविण्यात येतात. यामध्ये कृष्ठरोग व संबंधित आजारावर वैद्यकीय उपचार, पुनर्वसनात्मक व कल्याणकारी सेवा, विविध संसर्गजन्य रोग तसेच नव्याने उद्भवणारे रोग इत्यादींचा यात समावेश आहे. केईएम रुग्णालयाच्या अंतर्गत असलेल्या उरो औषध विभाग आणि पर्यावरण प्रदूषण व संशोधन केंद्रामार्फत श्वसन विकार सर्वेक्षण, अस्थमा उपचार पद्धती, समुपदेशन आणि अस्थमा नियंत्रण याबरोबरच पर्यावरण नियंत्रण व उपाययोजना याबाबतसुध्दा उपक्रम राबविले जातात.

मुंबई शहरातील पर्यावरणाचे रक्षण व संवर्धन करण्यासाठी बृहन्मुंबई महानगरपालिकेतर्फे मुंबई वायु प्रदूषण नियंत्रण कृती आराखडा-2019 तसेच मुंबई वातावरण कृती आराखडा-2022 या आराखड्यातील मार्गदर्शक सूचनाची काटेकोरपणे अंमलबजावणी सुरु आहे. त्याचबरोबर मुंबई शहरातील वाढते वायु प्रदूषण तात्काळ नियंत्रणात आणण्यासाठी 'मुंबई वायु प्रदूषण निर्मुलन आराखडा-2023' तयार करण्यात आला असून त्यामध्ये वायु प्रदूषण करणाऱ्या विविध स्त्रोतांची माहिती घेऊन त्यानुसार उपाययोजना सूचविण्यात आलेल्या आहेत. सदर आराखडा महानगरपालिकेच्या हद्दीत असलेल्या विविध नियोजन प्राधिकरण व इतर शासकीय विभागांच्या सहकार्याने मुंबई शहारातील वायु प्रदूषण नियंत्रणात आणण्यासाठी जाणीवपूर्वक प्रयत्न केले जात आहेत.

आपल्या पूर्वजांनी जंगले जपली, राखली, वाढवली ती आपणही निसर्गाचाच एक भाग आहोत या भावनेतून, आजचा माणूस मात्र आपल्या अमर्याद हव्यासापोटी हे अदैवत नाकारुन गोतास काळ ठरत आहे. त्यातून होणारे नुकसान फक्त वर्तमानाचे नाही तर भविष्याचे देखील आहे. आपल्याला वारसा हक्काने मिळालेली निसर्गसंपदा पुढच्या पिढीला जशीच्या तशी सुपुर्द करणे हे खरे तर आपले कर्तव्य आहे याची जाणीव ठेवून आपल्या सभोवतालचे पर्यावरण स्वच्छ आणि सुंदर ठेवण्यास महानगरपालिकेला मुंबईकरांचे सहकार्य नक्कीच लाभेल अशी मला आशा आहे.

बृहन्मुंबई महानगरपालिकेच्या स्तरावरील अनेकविध प्रयत्नाद्वारे शहरातील पर्यावरण समतोलासाठी, रक्षणासाठी व पर्यायाने संवर्धनासाठी बृहन्मुंबई महानगरपालिका कटिबद्ध आहे. तसेच हरित मुंबई, सुंदर मुंबई व प्रदुषणमुक्त मुंबईचे स्वप्न साकार होण्यास सुजाण मुंबईकरांचा सहभाग सदैव राहील अशी मला खात्री आहे.

धन्यवाद!

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बृहन्मुंबई महानगरपालिका

मिनेश दामोदर पिंपळे

महानगरपालिका उप आयुक्त

(पर्यावरण)

आभार / अभिस्विकृती

'बृहन्मुंबई महानगरपालिका पर्यावरण स्थितीदर्शक अहवाल' तयार करण्यासाठी व विविध पर्यावरण पूरक उपक्रम राबविण्यासाठी वेळोवेळी केलेल्या मार्गदर्शनाबद्दल मा. महानगरपालिका आयुक्त तसेच मा. अतिरिक्त महानगरपालिका आयुक्त (पश्चिम उपनगरे) यांचे मी मन:पूर्वक आभार मानतो.

त्याचप्रमाणे महाराष्ट्र प्रदूषण नियंत्रण मंडळ, मुंबई विद्युत पुरवठा व परिवहन, महाराष्ट्र राज्य परिवहन खाते, राष्ट्रीय केमिकल्स ॲण्ड फर्टिलाइजर्स लिमिटेड, भारत पेट्रोलिअम कार्पोरेशन लि., टाटा पॉवर, मुंबई पोर्ट ट्रस्ट, अदानी इलेक्ट्रिसिटी मुंबई लिमिटेड,कांदळवन कक्ष आणि बृहन्मुंबई महानगरपालिकेचे विविध विभाग या सर्वांकडून माहिती उपलब्ध झाली. त्याबद्दल त्यांचा मी मनस्वी: आभारी आहे.

मिनेश दामोदर पिंपळे

महानगरपालिका उप आयुक्त

(पर्यावरण)

पर्यावरण स्थितीदर्शक अहवाल 2022-2023

♦ मार्गदर्शक ♦

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♦ संकलन व निर्मिती ♦

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INDEX

TABLE OF CONTENTS

ACRONYMS

ALM	Advanced Locality Management
AMR	Automatic Meter Reading
AQI	Air Quality Index
ATC	Area Trafiic Control
BEST	Brihanmumbai Electric Supply & Transport
BMC	Brihanmumbai Municipal Corporation
224.43 mm	Bio-chemical Oxygen Demand
BRIMSTOWAD	Brihanmumbai Strom Water Drain
CAAQMS	Continuous Ambient Air Quality Monitoring Station
CNG	Compressed Natural Gas
CPCB	Central Pollution Control Board
CRZ	Coastal Regulatory Zone
CZM	PsCoastal Zone Management Plans
DO	Dissolved Oxygen
DB	Decibels (Unit of sound measurement)
DCB	Development Control Regulation
EIA	Environment Impact Assessment
EMP	Environment Mitigation Programme
ETP	Environment Treatment Plant
FSI	Floor Space Index
FC	Fecal Coliform
GVM	Gross Vehicle Weight
IEC	Information Communication and Education
IPS	Influent Pumping Station
Km	Kilometer
LCPD	Liters per capita per day
MMRDA	Mumbai Metropolitan Regional Development Authority
MOH	Medical Officer, Health
MPCB	Maharashtra Pollution Control Board
MSEB	Maharashtra State Electricity Board
MHADA	Maharashtra Housing And Area Development Authority
MLD	Million Liters Per Day MmMillimeter
MMC	Mumbai Municipal Corporation Act
MOEF&CC	Minstry of Environment,Forest & Climate Change
MEIP	Metropoliton Environment Improvement Programme
MSDP	Mumbai Sewage Disposal Project
MTPD	etric Tonnes Per Day
MVAM	Mega Volt Ampere
MSRDC	Maharashtra State Road Development Corporation
MUIP	Mumbai Urban Infrastructure Project
MUTP	Mumbai Urban Transport Project
NCZMA	National Coastal Zone Management Authority
NEERI	National Environment Engineering Research Institute
NGO	Non Governmental Organization
PAH	Polynuclear Aromatic Hydrocarbon
PUC	Pollution Under Control
PSI	Pollution Standard Index
RTO	Regional Transport Office
RSP	Respirable Suspended Particulate
SSP	Slum Sanitation Programme
SPM	Suspended Particulate Matter
STP	Sewage Treatment Plant
SW I	Seawater Criteria
ISW II	Seawater Criteria II
SWD	Storm Water Drain
TEC	Tata Electric Company
TC	Total Coliform
TSP	Total Suspended Particulates
URBAIR	Urban Air Project Quality Management
WC	Waste CarrierWSSDWater Supply & Sewerage disposal.
WWTF	Waste Water Treatment Facility

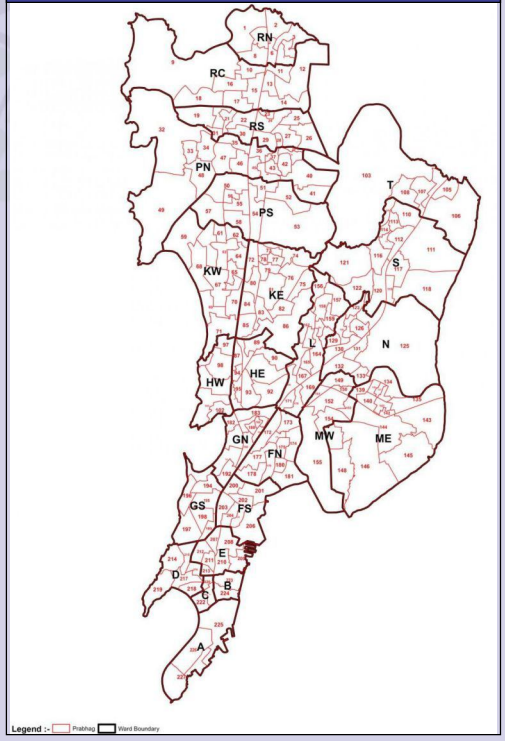
1. INTRODUCTION

The 74th amendment of the constitution of India in 1992 defines the role and duties of Municipalities & Municipal Corporations. The 12th schedule to the amended constitution states the scope of the work of the corporations. The scope includes environment protection, promotion of ecology & urban forestry. As a sequel to this, the Maharashtra state government issued an ordinance amend municipal act 1888, making "Environment Protection, Promotion of Ecology & Urban Forestry" as an obligatory duty vide section 61(a b) in the year 1994. The Environment Status Report (ESR) of the city of Mumbai for the period from April 2022 to March 2023 is prepared by Air Quality Monitoring and Research Laboratory of Environment section in Solid Waste Management department to fulfill the obligation under the clause '63B' of Mumbai Municipal Corporation (MMC) Act 1888. This report is based on the factual and statical data generated using parameters affecting the environment by different departments of BrihanMumbai Municipal Corporation and various departments of state/central government and industries.

2. DESCRIPTION OF THE AREA

Mumbai is located on the western sea coast of India from 18°53' North to 19°16' North Latitude and from 72° East to 72°59' East Longitude. It was originally a cluster of seven islands. Later on these islands were joined to form present Mumbai. The total land of Greater Mumbai identified in Earlier Draft Development Plan 2034 (EDDP)was 458.28 sq km. The Municipal Corporation of Greater Mumbai (BrihanMumbai Municipal Corporation), however, was the Planning Authority of area that was more modest, since about 8.76% of the cited area fell under the jurisdiction of Special Planning Authorities (SPA).Three such SPA exist in Greater Mumbai- MMRDA, SRA, MIDC. The EDDP therefore prepared a development plan for 434.55 sq.km. Total area specified by Surveyor General is 603 sq.km., which includes territorial waters extended into sea up to 12 nautical miles measured from appropriate base line. Its maximum width is 17 km. (East to West) and length is 42 km. (North to South).

Map 2.1: Mumbai Election Division Boundry - 2018



3. CLIMATE OF MUMBAI

The city of Mumbai has Tropical Savanna climate. Generally South-West monsoon arrives in the city in the month of June and retreats in the month of September. As per data recorded by Regional Meteorological Centre, in the year 2022, Mumbai received a total rainfall measuring 2311.2 mm at Colaba & 2875.8 mm at Santacruz. The maximum rainfall of of 1244.6 mm was recorded during July 2022 at Santacruz and it was 53.8% of total rainfall received. The maximum rainfall of 941.8 mm was recorded during July 2022 at Colaba and it was 36.2% of total rainfall received. So it is observed that there was less rainfall as compared to previous year. (In the year 2021 total rainfall received 3563.9mm at Santacruz and 2756.5mm at Colaba). In the month of April-2022 the maximum temperature of 34.0^{0}C, and in the month of January 2023 minimum temperature of 19.5^{0}C was recorded at Colaba. In the month of February 2023 the maximum temperature of 34.7^{0}C and in the month of January 2023 minimum temperature of 17.3^{0}C was recorded at Santacruz.

At Colaba the maximum Wind Speed of 6.1 Km/hr and minimum 0.5 Km/hr was recorded. At Santacruz the maximum Wind Speed of 5.4 Km/hr and minimum 1.2 Km/hr was recorded. The Relative Humidity was recorded maximum 89% and minimum 58% at Colaba. The Relative Humidity was recorded maximum 90% and minimum 35% was recorded at Santacruz.

Monthly meteorological data like temperature, rainfall and wind speed for Mumbai is shown in Table No. 3.1

TABLE NO. 3.1 METEOROLOGICAL DATA OF MUMBAI (2022-2023)

	Average Temp ^{0}C				Rainfall in mm		Relative Humidity in %				Wind Speed Km/Hr	
	Colaba		Santacruz		Colaba	Santacruz	Colaba		Santacruz		Colaba	Santacruz
	Max	Min	Max	Min			Time 0830	Time 1730	Time 0830	Time 1730		
April 2022	34.0	25.7	34.6	25.4	Trace	Trace	86	72	70	60	1.5	2.9
May 2022	33.8	27.2	34.4	27.8	6.6	0.5	82	74	70	64	1.7	4.0
June 2022	31.9	26.0	33.3	26.4	361.4	291.8	84	77	80	71	2.8	4.7
July 20222	9.4	25.5	29.7	25.1	941.8	1244.6	88	83	89	81	6.1	5.3
August2022	29.9	25.4	30.3	25.0	309.5	551.8	88	81	88	79	5.0	5.4
Sept. 2022	30.2	25.0	30.2	24.5	480.3	543.7	89	82	90	80	1.7	2.5
Oct. 2022	31.9	24.9	32.6	23.7	185.8	226.3	86	73	81	66	0.5	1.5
Nove. 2022	32.9	23.2	34.1	20.5	0.0	0.0	77	66	66	48	1.0	1.4
Dece. 2022	31.6	22.5	33.2	20.1	0.0	0.0	82	68	76	51	0.8	1.2
Janu. 2023	28.7	19.5	30.2	17.3	0.0	0.0	78	64	79	50	1.3	2.3
Febru. 2023	32.2	21.0	34.7	19.2	0.0	0.0	75	62	66	35	1.6	2.5
March 2023	33.0	23.8	34.3	22.7	25.8	17.1	70	58	67	47	1.3	2.5

Source: Regional Meteorological Centre, Colaba

4. POPULATION

Mumbai is one of the important cities of the world, is also recognized as the most densely populated city. Inverse proportion of area and population causes serious impact on its environment.

As per data received from Health Department of BrihanMumbai Municipal Corporation the estimated population of Mumbai is 13.01 million (year 2023). The population density of 26,934 person per sq.km (excluding no development area). Administrative Ward-wise population indicates that 'P/North' ward has maximum population of 9,84,680 persons where as 'B' ward has minimum population of 1,33,147 persons.

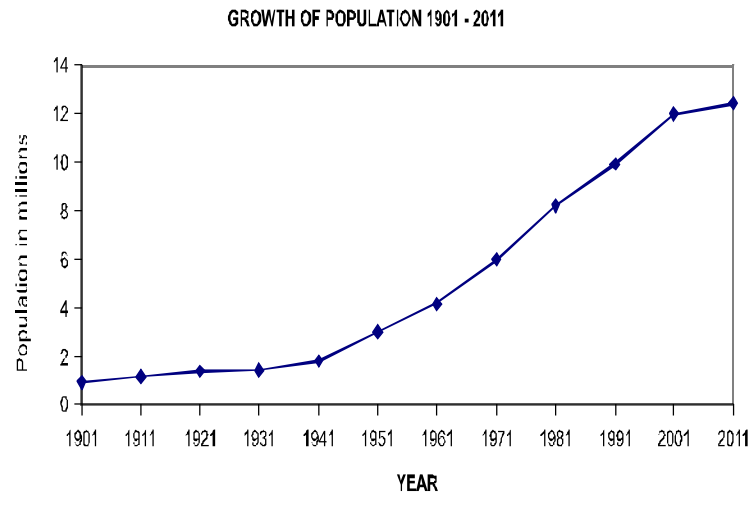
Table No.4.1 Growth of Population and rate of Increase during year 1901-2011

Table No.4.1 Growth of Population and rate of Increase during year 1901-2011

Year	Population in Million	% Growth
1901	0.93	-
1911	1.15	23.7
1921	1.38	20
1931	1.4	11.5
1941	1.8	28.6
1951	2.99	66.1
1961	4.15	38.8
1971	5.97	43.8
1981	8.22	38.0
1991	9.92	21.1
2001	11.97	20.6
2011	12.64	3.8

Source : Census Department of India

Chart 4.1 GROWTH OF POPULATION 1901 - 2011

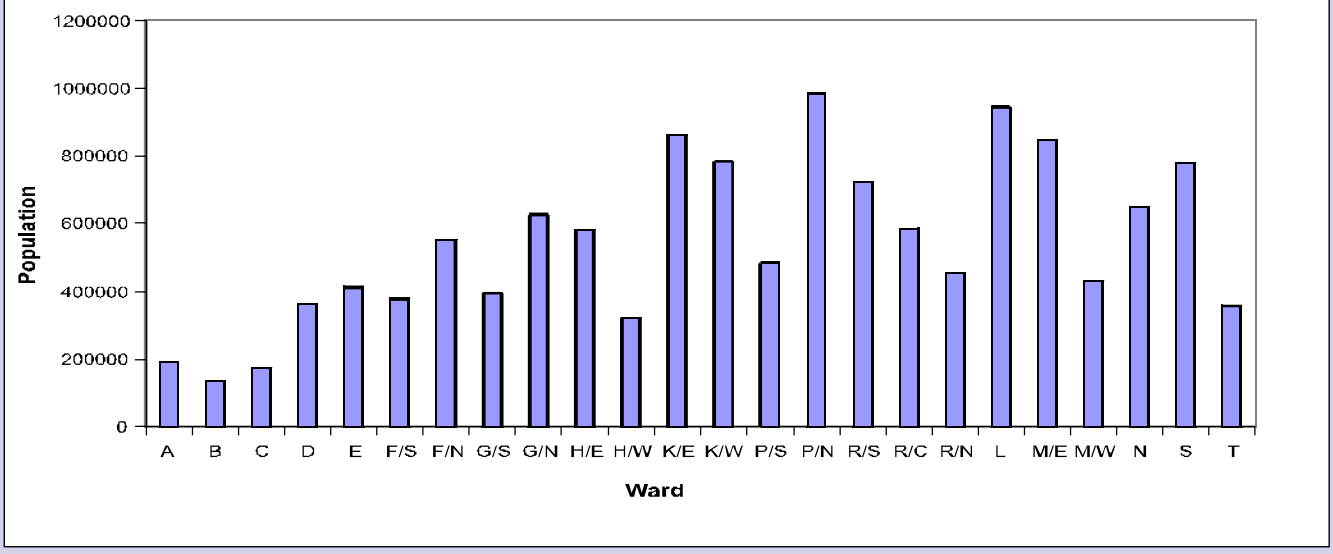


As per the mid-year election list of population in the year 2023, the wardwise area and population given by Public Health Department shown in table no.4.2

Table No 4.2: Wardwise Area & Population

Administrative Ward	Area in Sq.km	Population		Administrative Ward	Area in Sq.km	Population	
		2022	2023			2022	2023
A	11.20	192830	193527	P/S	25.19	483088	484833
B	2.65	132667	133147	P/N	46.70	981134	984680
C	1.91	173180	173807	R/S	18.31	720430	273022
D	8.30	361519	362826	R/C	47.95	585910	588028
E	7.27	409900	411382	R/N	14.17	449591	451217
F S	9.87	376221	377581	Western Ward	232.55	5760513	5781335
F N	12.85	551383	553376	L	15.62	940339	943738
G/S	9.74	393707	395130	M/E	38.19	841842	844885
G/N	8.31	624345	626602	M/W	17.62	429293	430846
City Ward	72.1	3215752	3227378	N	29.68	649165	651512
H/E	12.40	580779	582879	S	32.55	775204	778006
H/W	18.65	320575	321734	T	44.91	355888	357174
K/E	24.00	858690	861794	Eastern Ward	178.57	3991731	4006161
K/W	25.18	780316	783137	Brihan Mumbai Corporation	483.22	12967996	13014874

Chart 4.2 WARDWISE POPULATION 2022-23



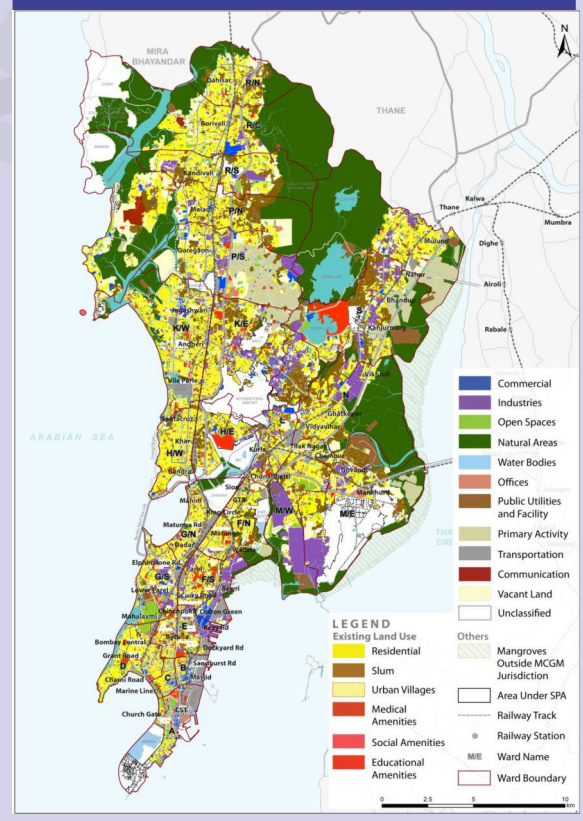
In the year 2023, if consider the area and population of BrihanMumbai, the area of Mumbai city is 72.1 sq. km Area of western suburb is 232.55 sq. km. and the area of the eastern suburb is 178.57 sq. km And the estimated population of the said division is 3227378, 5781335, 4006161 respectively.

5. LAND USE

The Municipal Corporation of Greater Mumbai was the first Municipal Corporation to adopt the concept of a development plan. The first development plan was formulated in 1964 and was sanctioned in 1967. This development plan was revised as per the provisions of Maharashtra Regional and Town Planning Act, 1966. The Sanctioned Revised Development Plan 1991 came into force in 1991-94. This plan was valid up to 2014. BrihanMumbai Municipal Corporation revised the Sanctioned Revised Development Plan 1991 during the period 2014-2018. The Development Plan for 2014-2034 was submitted to State Government under provision of section 31(1) of said Act on 02.08.2017 for sanction.

The State Government in accordance with the sub section (1) of section 31 of the Maharashtra Regional and Town Planning Act, 1966 have accorded sanction to the Draft Development Plan of Greater Mumbai with modification show in schedule-A appended to the notification No.T.P.B.-4317/629/CR-118/2017/DP/UD-11 May-2018 excluding substantial modifications as shown in schedule-B appended thereto. As per the notification dt.22.06.2019 the sanctioned D. P. 2034 is in effect from dt.01.09.2018. As per notification dt.21.09.2018 the sanctioned excluded part of Development Control and Promotion Regulation 2034 is in effect from dt.13.11.2018. The State Government has sanctioned some of the EPs vide notification dt.22.01.2019, dt.25.01.2019, dt.31.01.2019, dt.17.9.2019, dt.23.11.2020, dt.12.03.2021, dt.12.04.2021, dt.04.05.2021, dt.28.05.2021 and on dt.31.05.2022, dt.19.07.2022, dt.27.07.2022, dt.12.09.2022 & dt.24.03.2023 . The balance Excluded Parts will be sanctioned by State Government in the due course.

Map 5.1: Development Plan



Planning Area:

The ELU 2012 located the emergence of an additional area of 14.96 Sq.km, probably due to siltation of Thane creek. This area which comprises of Mangroves in within the BrihanMumbai Municipal Corporation limits and is shown as Natural Area in Development Plan 2034.

The Coastal Road approved by GoM will add an additional area of 1.80 sq.km through reclamation of the sea. The alignment of this Road is marked on the Proposed Land Use (PLU). Any changes in the alignment of Coastal Road that would get necessitated during implementation would

automatically become part of the DP-2034. Further, an area of 1.20 sq.km is proposed as green reclamation.

The addition of these land makes BrihanMumbai Municipal Corporation's total land area 476.24 sq.km. BrihanMumbai Municipal Corporation is Planning Authority for about 434.55 sq.m (91.24%) excluding the area coming under various Special Planning Authority (SPA).

Following SPAs exist in Grater Mumbai :

1. Mumbai Metropolitan Regional Development Authority (MMRDA).
2. Slum Rehabilitation Authority (SRA) – for approval of Slum Rehabilitation projects.
3. Maharashtra Industrial Development Corporation (MIDC).
4. Mumbai Port Trust (MbPT)
5. Maharashtra Housing Area Development Authority (MHADA) – for approval of MHADA projects

Coastal Regulation Zone:

Ministry of Environment & Forest (MoEF) has issued CRZ notification vide No. S.O. 19 (E) dated 06.01.2011, in supersession of the earlier notification S.O. 114 (E) of 19.02.1991. This notification is superseded by the CRZ notification vide no. GSR 37(E) dt. 18.01.2019.

Coastal Regulation Zone Notification-2019

Government of India in the erstwhile Ministry of Environment and Forests under number S.O.19 (E), dated the 6th January, 2011 the Central Government declared certain coastal stretches as Coastal Regulation Zone (referred as CRZ notification-2011).

The objectives of the new CRZ Notification includes (1) ensure livelihood security to the fisher communities, (2) protect the Coastal environment, (3) promote sustainable development.

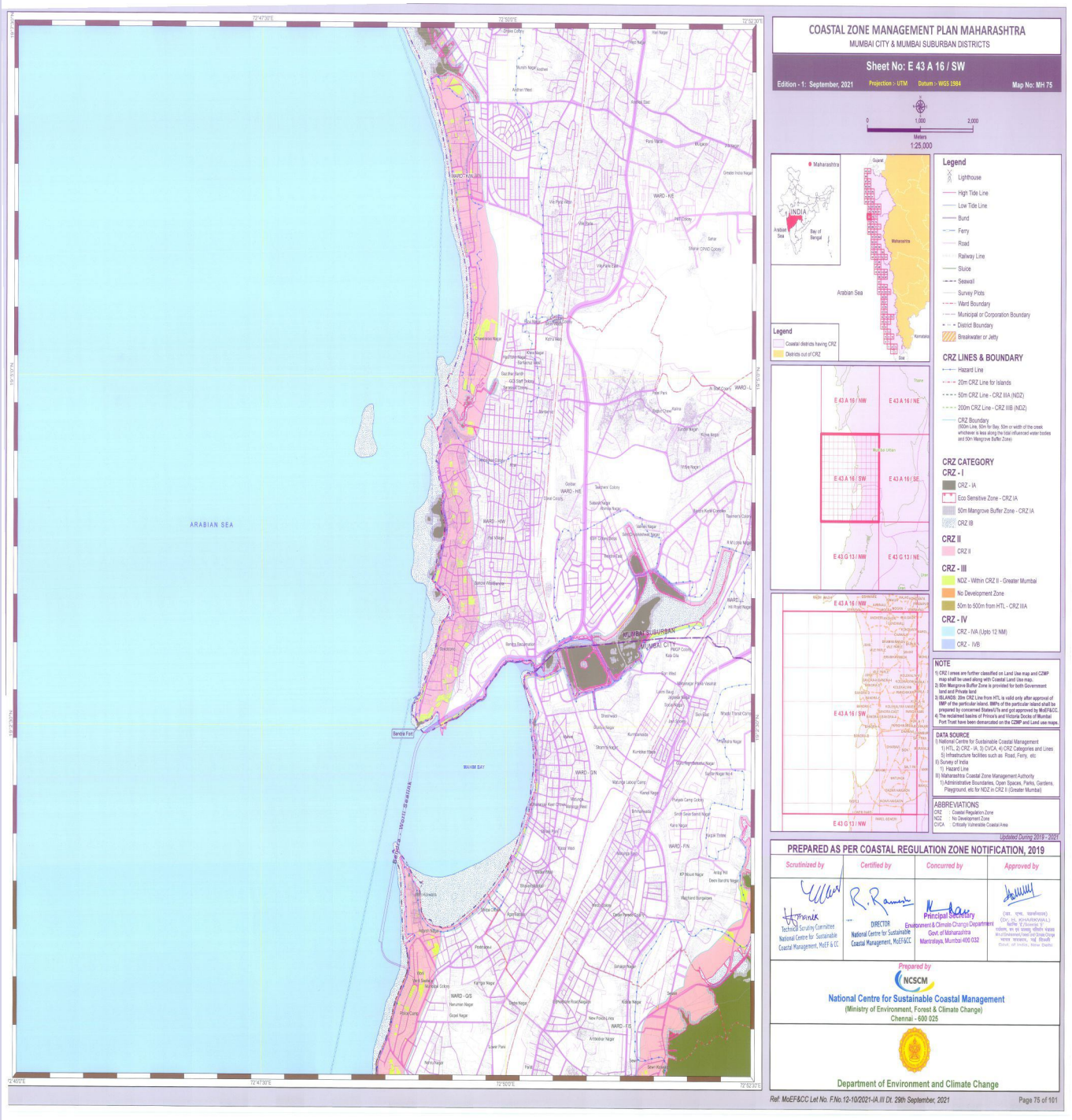
Various State Governments and Union territory administrations and stakeholders have requested the Ministry of Environment, Forest and Climate Change to address the concerns related to coastal environment and sustainable development with respect to the Coastal Regulation Zone Notification, 2011.

Thereafter in exercise of the powers conferred by sub-section (1) and clause (v) of subsection (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) and in supersession of the Coastal Regulation Zone Notification 2011, number S.O. 19(E), dated the 6th January, 2011, MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE has issued Notification dt 18th January, 2019 (referred as CRZ Notification-2019).

Additional director & Member Secretary (CRZ) vide letter dt. 29 th Sept. 2021 informed that based on recommendation of the NCZMA, the Ministry of Environment. Forest and Climate Change hereby

conveys its approval of the CZMPs for the Mumbai City and Mumbai Sub-Urban in the State of Maharashtra.

Map 5.2: Costal Regulation Zone area of Mumbai (Draft)



6. MANGROVES IN MUMBAI

Constitution of Mangrove Cell

Mangrove Cell was constituted by the Government of Maharashtra in the wake of serious public concerns about mangrove loss in the state, particularly in Mumbai and surrounding areas. The establishment of the Mangrove Cell in 2012, initiated a series of measures for conservation of mangroves in Maharashtra. The Cell is headed by the Additional Principal Chief Conservator of Forests (APCCF). A Deputy Conservator of Forests (DCF) has been appointed to boost Mangrove Conservation in Maharashtra.

In 2013, the state government ramped up efforts and elevated the status of mangrove forests on Government land from 'Protected Forest' to 'Reserved Forest'. The Mangrove Cell also facilitated the establishment of Mumbai Mangrove Conservation Unit in 2014 to specifically cheek and prevent the destruction of mangroves in Mumbai and surrounding regions.

There was also an urgent need to promote research, education, ecotourism etc. to secure the biodiversity of our coastal and marine environment and to bring tangible benefits to the coastal communities. For the mission, creating and institution with the necessary skill set and the operational flexibility to address this complex task was under the consideration of the state government, that led to the establishment of a 'Mangrove and Marine Biodiversity Conservation Foundation of Maharashtra' (Mangrove Foundation, in short). The foundation was registered in the year 2015 under the Societies Registration Act, 1860.

Function of Mangrove Cell:

Mangrove Cell functioned extensively for mangrove conservation by taking block by block approach from raising mangroves on nurseries and organizing regular large-scale plantations on degraded mangrove areas to conducting Clean Mangroves Campaigns and awareness programmes.

The Mangrove Cell also forged strong partnership with many leading national institutions and agencies, facilitating the introduction of state of the art technologies and best practices in sustainable livelihoods to the Maharashtra shores. National Institute of Oceanography (NIO), Central Marine Fisheries Research Institute (CMFRI), Central Institute of Fisheries technology (CIFT), Central Institute of Brackish Water Aquaculture (CIBA), Marine Produce Export Development Authority (MPEDA), Wildlife Institute of India (WII), Salim Ali Canter for Ornithology and Natural History (SACON) and Bombay Natural History Society (BNHS) are just a few names in that long and illustrious list of partners. Mangrove Cell also works with several NGO's, Citizen's Groups, educational institutions and private research organizations.

Based on the 'International Climate Initiative' Agreement between Government of India and the Federal Republic of Germany, a bilateral project towards improving conservation of marine biodiversity called 'Sustainable Management of Coastal and Marine Protected Areas' (SM-CMPA) was launched in Maharashtra with the help of the German development agency called GIZ. The project led to the notification of the Thane Creek Flamingo Sanctuary in 2015. Spread over on area of about 17 square kilometers with 896 Ha of Mangrove cover, it is home to over 200 species of birds, many of which are migratory like the splendidly – coloured flamingo which arrive in thousands in October – November. A 'Coastal and of Marine Biodiversity Centre' was set up at Airoli, Navi Mumbai, in 2017 as a part of the GIZ Project. This interpretation and orientation centre for mangroves and marine biodiversity serves as a gateway to the Thane Creek Flaming Sanctuary for tourists and environmentalists.

Activities of Mangrove Cell – Maharashtra Forest Departments

1. Mangrove Protection
2. Mangrove Conservation and Livelihood Generation Scheme
3. Mangrove Afforestation
4. Clean – up Campaign
5. Awareness generation
6. Coastal and Marine Biodiversity Central and mangrove Parks in Mumbai

1. Mangrove Protection:

Mangrove Forests on Government land are declared either as 'Reserve Forest' as per the Indian Forest Act, 1927. Mangroves on private land are declared as 'Forest', hence provision of Forest Conservation Act 1980 is invoked for the diversion of these forests. In Mumbai Mangrove Conservation Unit (MMCU) a total of 7565.6196 hectors of land is declared as Reserve Forest.

- A specialized unit, called Mumbai Mangrove Conservation Unit (MMCU), has been formed to diminish the increased pressure of development, waste dumping, pollution and encroachment in mangrove areas of the Mumbai Metropolitan Region.
- Patrolling is intensified in all mangrove areas.
- Considering the high vulnerability to encroachment and debris dumping in the mangrove area of Mumbai, Mumbai Suburban region and Thane the Mangrove Cell has employed the services of the Maharashtra State Security Corporation from December 2017 and a total of 158 Guards have been deployed for protection of mangroves in Mumbai and Mumbai Suburban.
- Thousands of illegal shanties, which had cropped up on mangrove lands in various parts of Mumbai,

have been given notices for evacuation and many of them have been removed.

- In an effort to closely monitor the status of mangroves in Maharashtra, Satellite mapping of mangroves areas is carried out, district by district, on a 1:5000 scale and the areas in the possession of Forest Department were demarcated on the ground with a clear boundary.
- The Mangrove Cell has now engaged the Indian Institute of Space Science and Technology (IIST) which will monitor the health of mangroves in Maharashtra using near real time satellite remote sensing data.
- Implementation of 'Mangrove Conservation and livelihood Generation Scheme' for providing livelihood associated with mangrove habitats in order to establish sustainable mangrove conservation by local communities and enabling them to receive tangible benefits from protecting this ecosystem is being undertaken. Total 13 villages are taking advantage of the scheme.
- Capacity Building of Staff for effective conservation and protection measures.

2. Mangrove Conservation and Livelihood Generation Scheme:

- The Scheme was initiated on 20th September 2017 by Government of Maharashtra in the coastal districts of Maharashtra, to conserve mangroves on both private and government lands. The Scheme aims to provide benefits to individuals and community members of selected villages.
- Based on the current mangrove cover, about 13 villages from coastal districts such as Thane have been selected for the implementation of the scheme activities by Mangrove Cell, Maharashtra Forest Department and the Mangrove Foundation.
- To ensure participation of the local communities, the Scheme is being implemented through village based Mangrove Co-Management Committees (BrihanMumbai Municipal Corporation). Through this Scheme a group activity is entitled to 90:10% of subsidy while an individual (land owners with more than 1 acre of mangroves) will get 75:25% subsidy. through the scheme, the following activities are being implemented across various villages along the coastline of MMCU:

1. Crab Farming
2. Fish Cage Culture (Asian Sea Bass)
3. Oyster and Mussel Farming
4. Ornamental Fish Culture
5. Mangrove Ecotourism
6. Mangrove Seed Collection

3. Mangrove Afforestation:

- Mangrove sapling have been raised in nurseries for establishing mangrove plantation in different coastal districts of the state.
- Since 2022-23 a total area of 2 hectares distributed over 02 locations across Mumbai and Thane has been covered under mangrove plantation programme and the a total of 8,888 lakh mangrove saplings have been planted.

4. Clean - up Campaign:

- Annual mangrove Clean – up programme are conducted to create awareness.
- The Clean Mangrove Campaign,a three- year initiative started in 2015, by the citizens of Mumbai city and Mangrove Cell, made it to the Limca Book of Records. This was one of the biggest governments - citizen partnership projects. In 2022-23, through this campaign 1,75,000 kg of garbage (mostly plastic) was cleared, involving about 10,000 Volunteers across Mumbai.

5. Awareness generation:

- Development of 'Coastal and Marine Biodiversity Centre' (CMBC) at Airoli, Navi Mumbai.
- Regular Environment education and awareness talk for students and the public in general.
- Celebration of important Nature and Wildlife days to create awareness about the pressing subjects.
- Sensitizing young minds about the coastal and marine biodiversity of Maharashtra, through school programmes, at 'Coastal and Marine Biodiversity Centre' (CMBC) at Airoli, Navi Mumbai.

6. Coastal and Marine Biodiversity Central and mangrove Parks in Mumbai:

- The Mangrove Cell, Maharashtra Forest Department has developed a Coastal and Marine Biodiversity Centre (CMBC) at Airoli, Navi Mumbai in collaboration with the German agency GIZ under the Indo German Biodiversity Programme.
- **The major attraction at the Centre are:**

  i. Vibrant and colourful exhibits of the rich coastal and marine biodiversity observed in the Thane Creek Flamingo Sanctuary.

  ii. Sounds of various birds like Flamingo, Kingfisher etc. and marine animals like Indian Ocean Humpback Dolphin and Blue Whale.

  iii. Interactive computer screens and wide LED displays showcasing interesting information and photographs about coastal and marine biodiversity.

iv. A theater room which shows documentary films and on the biodiversity of Thane Creek Flamingo Sanctuary.

v. A tourist boad for flamings safari is also operated from this centre for tourists.

- The Mangrove Cell will be establishing a Giants of the Sea museum at CMBC Airoli. This museum will house life-size exhibits of giants sea animals such as giant sea animals such as Giant Squid, Whale Sharks and also skeletons of blue whales and other Marine animals.
- In the near future the Mangrove Cell also plans to set up mangrove parks at Dahisar and Mahul which will have various attractions for tourists such as mangrove trails, bird trials and watch tower, kayaking, mangrove museum, glass bridge over mangroves, etc.
- Mangrove Park Gorai is developed the said project is to be completed in the financial year 2023-24 under the District Annual Plan (General). An administrative order for the amount of Rs. 25.30 crores has been received and the work of the said project is in progress.

Mangroves Ecosystem

Mangroves Plantation

7. URBAN RENEWAL SCHEME

The old dilapidated buildings of the Brihanmumbai Municipal Corporation and on rental basis will redeveloped by the Development Regulations to take up the city renovation plan by the Brihanmumbai Municipal Corporation and Maharashtra Housing and Area Development Authority (MHADA), a government authority involved in the housing sector and make such open spaces available for various civic amenities.

Table No. 7.1: Recreation Facilities Provided in the Mumbai for the year 2022-23.

Sr. No.	Particulars	Total No. (Up to 31.03.2023)			
		City	Western suburbs	Eastern Suburbs	Total
1	Garden (Except strip Gardens)/ Park	20	156	103	279
2	Recreation Grounds	181	202	100	483
3	Playgrounds	39	190	116	345
4	Shilpgram	0	1	0	1
5	Fountains	13	17	6	36
6	Band stands	3	1	1	5
7	Nurseries	12	9	7	28
8	Plant Sale Counter	10	9	6	25
9	Statues	29	8	14	51
10	Tree Plantations (Traditional method)	1016	3021	2177	6214
11	Tree Plantations (Miyawaki method)	2275	51700	16000	69975
12	Sales of plants	12321	330	1398	14049
13	Distribution of plants	5444	8734	3545	17723
14	Number of dead and dangerous tress removed	237	160	110	507
15	Trees trimmed for balancing	49455	44819	24953	119227
16	Deconcretized trees	581	2459	673	3713
17	Total no. of tres	718589	1221737	1034957	2975283

Source : Brihanmumbai Mahanagarpalika Garden Department

RECREATIONAL FACILITIES:

Providing recreational amenities to the public is a discretionary duty of the Corporation under section 63 of MMC Act1888. For balanced environment, abatement of air pollution and Green Mumbai, beautiful and clean Mumbai, Brihanmumbai Municipal Corporation provides recreational amenities to the citizens of this city by way of maintaining gardens and providing playgrounds (PG), recreational centres, water fountains, etc. In addition to recreation, Brihanmumbai Municipal Corporation also encourages sports, art, cultural programs etc. Whereas health education and health promotion of citizens being its objective (Table No. 7.1). These facilities are utilized by citizens as well as others from different places.

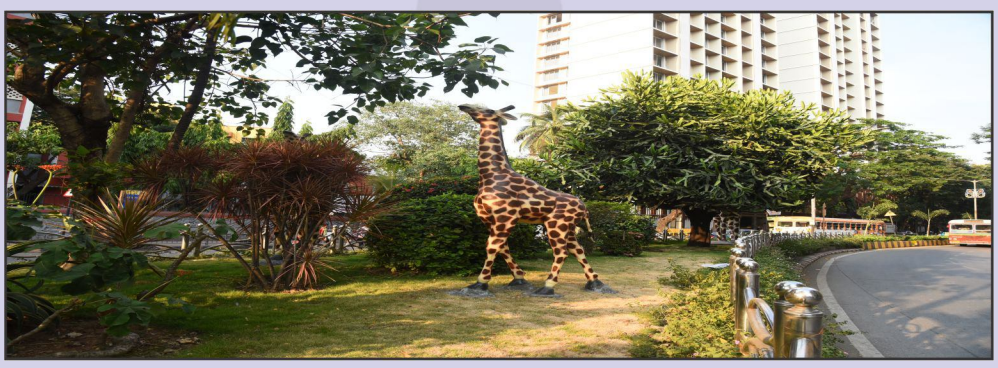


Table No. 7.2: Recreation Facilities Created in the year 2022-2023.

Sr. No.	Details	Recreation Facilities							
		Zone-1	Zone-2	Zone-3	Zone-4	Zone-5	Zone-6	Zone-7	Total
1	Garden (Except strip Gardens)/ Park	3	17	46	65	48	55	45	279
2	RecreationGrounds	66	115	56	89	55	45	57	483
3	Playgrounds	18	21	37	68	57	59	85	345
4	Shilpgram	0	0	1	0	0	0	0	1
5	Fountains	7	6	4	4	2	4	9	36
6	Band stands	3	0	1	0	0	1	0	5
7	Nurseries	6	6	3	3	3	4	3	28
8	Plant Sale Counter	6	4	3	3	3	3	3	25
9	Statues	21	8	3	1	6	8	4	51
10	Tree Plantations (Traditional method)	381	635	1173	581	657	1520	1267	6214
11	Tree Plantations (Miyawaki method)	1175	1100	36000	3900	14750	1250	11800	69975
12	Sales of plants	10350	1971	0	330	704	694	0	14049
	Distribution of plants	3669	1775	874	6525	1595	1950	1335	17723
13	Number of dead and dangerous tress removed	79	158	53	62	53	57	45	507
14	Trees trimmed for balancing	14565	34890	14328	12230	9236	15717	18261	119227
15	Deconcretized trees	136	445	110	869	167	506	1480	3713
16	Total no. of tress	255118	463471	337716	643505	411745	623212	240516	2975283

Source : Brihanmumbai Mahanagarpalika Garden Department

8. UDYAN AND ZOO

Veermata Jijabai Bhosale Botanical Udyan and Zoo is one of the oldest zoos in the country and is approxmately of 53 acres. This Udyan-Zoo is declared as "Heritage Grade II (B)" site. This Udyan-Zoo has been recognized as 'Medium Zoo' up to dt.19.08.2022 by Central Zoo Authority, New Delhi.

Visitor data and revenue -

Financial Year	No. of Visitors	Revenue (Rs.)
2021-22 (dt.01.11.2022 onwards)	7,25,101	3,00,59,995/-
2022-23	28,55,418	11,17,37,386/-

Garden Department:

For tree conservation, Garden department has done following work:

- In year 2022-23, 6214 trees are planted by traditional method and 69975 by miyawaki method on Brihanmumbai Municipal Corporation roads and available open spaces. Plantation of more than 4 lakh trees by Miyawaki method has been done till date.
- Removal of concrete and cement around 3713 no. of tress.
- Spraying of insecticides and pesticides on infected tress.
- Trimming of 119227 tree branches to balance the trees.
- Formation of Tree basins around the tress.
- Removal of 507 no. of dead and dangerous tress.

Chart No. 8.1: Wardwise Number of Trees

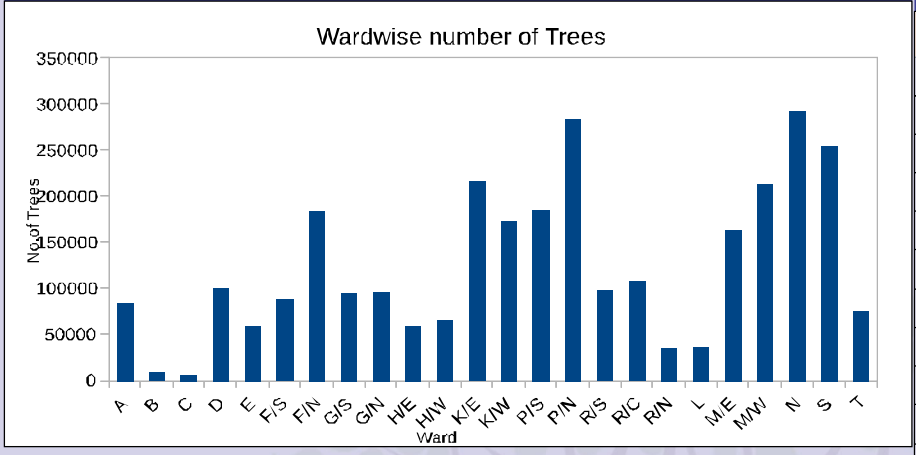


Table No. 8.1: Ward wise number of trees

Sr no.	Ward No. of tress	
1	A	83201
2	B	7816
3	C	5756
4	D	100317
5	E	58028
6	F/South	87240
7	F/North	184837
8	G/South	94774
9	G/North	96620
10	H/East	57314
11	H/West	64674
12	K/East	215728
13	K/West	173232
14	P/South	186002
15	P/North	284271
16	R/South	98305
17	R/Central	107841
18	R /North	34370
19	L	36023
20	M/East	162638
21	M/West	213084
22	N	292965
23	S	254038
24	T	76209
	Total	2975283

Source: Garden Department of Brihan Mumbai Municipal Corporation.

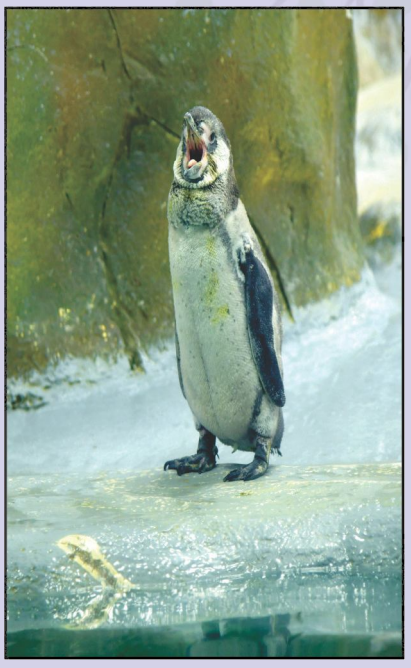
- During 2022-23, the Brihanmumbai Municipal Corporation and tree authority was organised the 26th exhibition of plants, flowers, fruits and vegetables from 3rd February to 5th February 2023 at Veermata Jijabai Bhosale Botanical Garden and Zoo. To create consciousness and awarenss about environment among the citizens, the workshop on various horticultural subject was also arranged during the same period.
- In 'T' ward of eastern suburb, flower exhibition was organised at Dr. C. D. Deshmukh Udyan, Mulund (East) from 11th February to 12th February 2023.
- In the year 2023-24, around 25000 trees are proposed to planted on roadside and on other places in Brihanmumbai Municipal Corporation Juridiction.
- As per the Tree Census the total number of trees in 24 wards is 29,75,283.
- Successfully conducted 2 days stakeholders workshop on 'Nurturing vegetation in the city with focus on addressing challenges in co-creating ecological, green spaces within vulnerable neighbourhood' from 14th December and 15th December 2022.
- Roundtable meeting has been organised on 8th march 2023 to prepare guidelines about microgreening in Mumbai and adoption of trees.
- Now Miyawaki plantation is made mandatory in the projects over 10,000 sq.Mtr. In area, as per directions given by Hon'ble Municipal Commissioner v/no.MGC/F/ 7779 dt.21.11.2022. This will help increasing greenery in the city.

Veermata Jijabai Bhosale Udyan & Zoo at present:

- As on 31st March 2023, there are in all 329 animals, which include 76 mammals of 12 species, 228 birds of 16 species and 25 reptiles and aquatic animals of 6 species displayed in this Udyan and Zoo.
- Online Ticketing facility for visitors has been started in Veermata Jijabai Bhosale Udyan and Zoo from November 2022, through which citizens can now buy entry tickets to zoo from home.
- Veermata Jijabai Bhosale Udyan and Zoo has been renamed as 'Veermata Jijabai Bhosale Botanical Udyan and Zoo' vide Corporation Resolution (Administrator) No.1107 dated 12.12.2022.

Modernization Project of Veermata Jijabai Bhosale Botinical Udyan and Zoo:

- In the second phase of the modernization project of this Udyan and Zoo undertaken by the Brihanmumbai Municipal Corporation, most of the animal exhibits viz. Corcodile and Ghariyal, Indian wolf, Sambar and Barking Deer and Nilgai and Four horned antelope, etc. have been completed in the year 2022-23 and animals like Crocodile and Ghariyal, Sambar and Barking deer have been exhibited in respective exhibits.
- Through the online series 'Virtually Wild', various exhibits, services and facilities of the Zoo are being telecasted on social media under the name 'The Mumbai Zoo' (Facebook, Twitter, Youtube – The Mumbai Zoo). A lot of six episodes have been aired in first season in this series.



9. WATER SUPPLY

Mumbai receives raw water from seven impounded water resources viz. Vihar and Tulsi within Mumbai and Tansa, Modak Sagar, Upper Vaitarna, Middle Vaitarna and Bhatasa located at a distance of about 100 to 175 Kms from Mumbai.

Raw water available from these sources is conveyed with transmission main system ranging from 2235 mm to 5500 mm diameter pipelines and tunnels to the state of the art water treatment facilities at Bhandup Complex (2810 MLD) and Panjrapor (1365 MLD). Water Treatment facilities for Tulsi (14 MLD) and Vihar (100 MLD) are located near to these sources. At these treatment plants, water is treated with processes such as coagulation, flocculation, settling, rapid sand filtration and post-Chlorination and quality of the effluent water is maintained in accordance with IS 10500 : 2012 - Drinking water Specifications.

The treated water is stored in the Master Balancing Reservoirs (MBR) located near to treatment plants at Bhandup Complex (within Mumbai) and Yewai (Outside Mumbai). It is further distributed to 27 service reservoirs located throughout Mumbai City with water supply network of about 450 Kms this conveyance system remains charged for 24 hours and eliminates the chances of water contamination because of intrusion of ground water/sewage etc. There is 3924 MLD water supply to Mumbai.

Table No. 9.1:Source of Water Supply

Source	Yield in MLD	Ownership	Distance from City	Treatment Plant
Tulsi	14	Brihanmumbai Municipal Corporation	City Limit	Tulsi
Vihar	100	Brihanmumbai Municipal Corporation	City Limit	Vihar
Tansa	630	Brihanmumbai Municipal Corporation	100 KM from City	Bhandup Complex
Modak Sagar	1610	Brihanmumbai Municipal Corporation	100 KM from City	Bhandup Complex
Upper Vaitarna Middle Vaitarna		Government of Maharashtra Brihanmumbai Municipal Corporation	173 KM from City	Bhandup Complex
Bhatsa	2032	Government of Maharashtra	100 KM from City	Bhandup Complex and Panjarapur
Subtotal	4386	—	—	—
Enroute + Losses-	- 462	—	—	—
Total Supply to City	3924	—	—	—

Brief note regarding activities at Bhandup Complex Water Treatment Plant:

Mumbai city and suburban areas are being supplied with 3924 million liters of water on a daily basis. This water is drawn from various lakes as well as river sources. Out of above 3924 MLD water, 2500 MLD is treated at Bhandup Complex and is supplied to city and western suburban wards.

Water is brought to Bhandup Complex by gravity mains originating from Tansa/ Vaitarna/ Upper Vaitarna lakes. This water is prechlorinated at Yewai @ 50 Kms upstream of Bhandup Complex.

Water received at Bhandup Complex is then treated using conventional treatment methods such as pretreatment/ filtration/ post chlorination and is then distributed through Master Balancing Reservoir (MBR) to consumers through network of pipelines, tunnels, service reservoirs etc.

During all these activities, water samples at each stages of treatment are collected and tested for various parameters. The laboratory at Bhandup Complex is working round the clock for this purpose and quality of final water leaving Bhandup Complex is always maintained within prescribed limits as per drinking water standards IS 10500:2012.

Brief note regarding activities at Bhandup Complex & Panjrapur Complex Laboratory:

Laboratory at Bhandup Complex and Panjrapur Complex was commissioned in the year 1980 for daily monitoring the quality of water having supplied to Mumbai.

Activities:

Analysis of water for Physical, chemical and bacteriological parameters in order to supply safe potable water as per IS 10500 : 2012 to the Mumbai city.

Samples of raw water, clarifier water, filtered water and final water are tested for following parameters hourly.

1. Turbidity - (Every Hour)
2. pH - (Alternate Hour)
3. Residual Chlorine - (Alternate Hour)
4. Temperature - (Alternate Hour)
5. Colour - (Alternate Hour)

Jar test is conducted on Raw water sample in every shift for prescribing optimum Poly Aluminium Chloride dose. Complete analysis of water samples – Raw, Filter and Final is carried out for Total Alkalinity, Total Hardness, Calcium Hardness, Chlorides, Suspended solids, Total solids, Manganese, Iron, Aluminium, Dissolved Oxygen and Bacteriological examination for total coliform and E.coli once in a day.

Table No. 9.2: Present & Future Source of Water Supply

Parameters	Tulsi		Vihar		Bhandup Complex		Panjrapur (Bhatsa)		BIS standards 10500:2012
	Raw	Final	Raw	Final	Raw	Final	Raw	Final	
Turbidity NTU	2.2-31	0.23-4.2	1.7-8.9	0.69-3.2	1.0-123	0.10-4.6	2.7-487	2.3-4.8	1-5
pH	6.75-8.05	6.50-7.75	7.20-8.50	7.10-8.45	7.25-8.10	6.95-7.90	7.0-7.7	6.8-7.6	6.5-8.5
Chlorides (mg/l)	11-20	14-24	11-23	13-28	8-14	9-16	7.0-29	10-32	250-1000
Total Alkalanity (mg/l)	27-50	26.48	37-55	35-54	36-53	34-51	27-93	25-89	200-600
Total Hardness (mg/l)	39-55	32-52	44-60	41-59	38-55	36-53	24-85	22-79	200-600
Bacteriological examination (CFU/100ml) Total									
Coliform	0-0	0-0	0-0	0-0	0-0	0-0	≥ 1600	0-0	-
E-Coli	0-0	0-0	0-0	0-0	0-0	0-0	≥ 1600	0-0	-

Note : Raw water of Tulsi, Vihar and Bhandup complex plant is pre-chlorinated. Raw water Bhandup Complex contains
water from sources Tansa, Modaksagar (Vaitarna), Middle Vaitarna and Upper Vaitarna.
Results of all parameters for final water of Bhandup Complex, Tulsi Filtration Plant and Vihar Filtration Plant
are within Permissible Limit as per IS 10500 : 2012.

Unit : NTU= Nephelometric Turbidity Unit

mg/l = miligram per litre

CFU/100ml=Colony forming unit per 100 ml

Municipal Analyst Laboratory:

Municipal Analyst laboratory is a Public Health Laboratory of Brihanmumbai Municipal Corporation and a State Food Testing Laboratory recognized by the Food Safety And Standard Authority Of India (FSSAI) located in G/North, Dadar. In December 2020 the Laboratory has been accredited with International Standard ISO17025:2017 by National Accreditation Board For Testing and Calibration (NABL).

Activities of Municipal Analyst Laboratory:

- The laboratory provide testing service to Brihanmumbai Municipal Corporation and citizens for Chemical and Microbiological analysis of food and water samples using advance techniques as per National and International Standards.
- The Municipal Analyst laboratory supports the Public Health Department, Epidemiology cell by testing drinking water sample, Hawkers and Ice water samples for Water quality surveillance.

Testing of Drinking Water surveillance samples:

The treated drinking water is supplied all over Mumbai region through the piped distribution system. Drinking water in distribution system may get contaminated by infectious micro-organisms present in the environment. In order to protect public health as per the World health organization (WHO) guidelines verifying that safe drinking water is supplied till the consumer end, monitoring the drinking water supply throughout the distribution network is essential.

For Water quality surveillance daily around 200 water samples and in monsoon or in an emergency up-to 300 drinking water samples are jointly collected by the Public Health Department (PHD) and Hydraulic Engineering (HE) Department. The water samples are collected from the service reservoirs and sampling points throughout the distribution network across 24 wards of Mumbai by the Medical Officer Of Health (MOH) for PHD, Assistant Engineer Water Works - Quality Control and Leak Detection Department for HE Departments. These water samples are sent to the Municipal Analyst laboratory for Routine Bacteriological analysis.

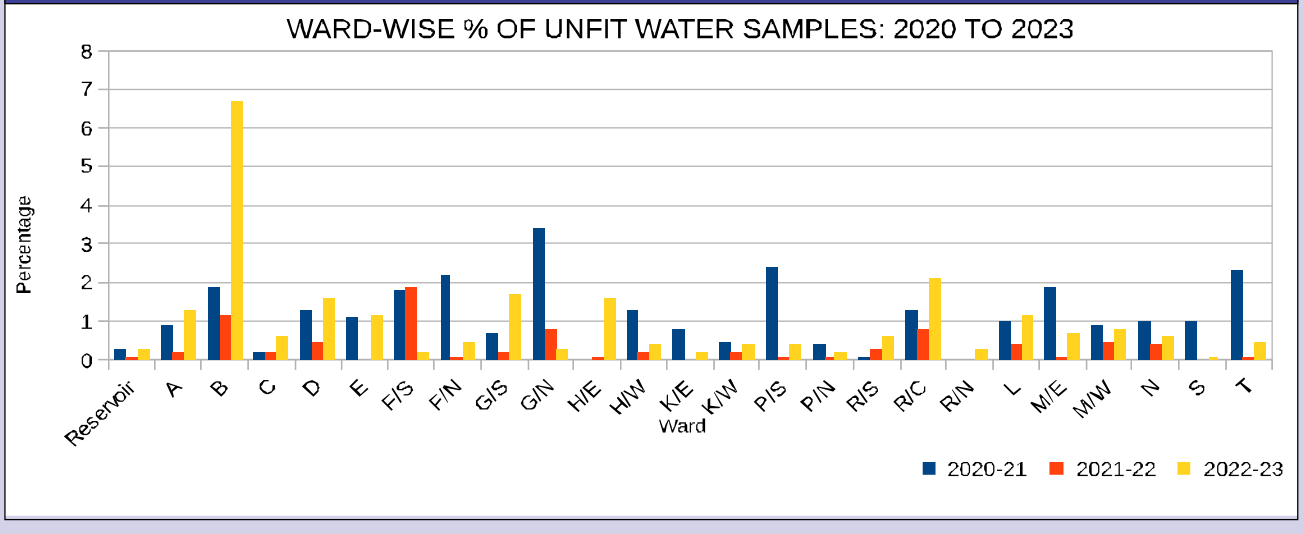
In Municipal laboratory, Bacteriological Quality of all the drinking water samples taken from the distribution system including consumers premises are tested in accordance of Indian Standard – Drinking Water - Specification IS:10500:2012 by Indian Standard IS-15185:2016. As per The Indian Standards IS 10500:2012 Drinking Water Specification prescribes that E.coli and Total Coliform bacteria shall not be

detectable in any 100 ml sample of Treated water entering the distribution system and Treated water in the distribution system. The Membrane Filtration Technique (MFT) is used to detect these water quality indicator bacteria. The MFT technique is performed as per the BIS standards. The confirm results are obtained within 24 hours. These results are sent to the Medical Health Officer (MOH) of 24 Wards, Deputy Executive Health Officer (Epidemiology Cell), AEWW-QC and AEWW-LD Departments by E-mail within 24 hours for taking remedial measure on unsafe water sample location.

Table No.9.3:Water Quality at Source (Raw) and Treated (Final) during April 2020 to March 2023.

Sr. No.	Ward	% of Unfit Samples			Sr. No.	Ward	% of Unfit Samples		
		2020-2021	2021-2022	2022-2023			2020-2021	2021-2022	2022-2023
1	Service Reservoir	0.3	0.1	0.3	14	K/W	0.5	0.2	0.4
2	A	0.9	0.2	1.3	15	P/S	0.4	0.1	0.2
3	B	1.9	1.2	6.7	16	P/N	2.4	0.1	0.4
4	C	0.2	0.2	0.6	17	R/S	0.0	0.0	0.3
5	D	1.3	0.5	1.6	18	R/C	1.3	0.8	2.1
6	E	1.1	0.0	1.2	19	R/N	0.1	0.3	0.6
7	F/S	2.2	0.1	0.5	20	L	1.0	0.4	0.2
8	F/N	1.8	1.9	0.2	21	M/E	1.9	0.1	0.7
9	G/S	3.4	0.8	0.3	22	M/W	0.9	0.5	0.8
10	G/N	0.7	.02	1.7	23	N	1.0	0.4	0.6
11	H/E	0.0	0.1	1.6	24	S	1.0	0.0	0.1
12	H/W	1.3	0.2	0.4	25	T	2.3	0.1	0.5
13	K/E	0.8	0.0	0.2	Mumbai Average		0.9	0.33	0.99

Chart 9.3 WARD-WISE % OF UNFIT WATER SAMPLES: 2020 TO 2023



Water Supply Projects

Middle Vaitarna Project is completed and the total 455 MLD water is made available in the year 2014, which is of full capacity of dam. Further, five sub-projects of Middle Vaitarna Project have also been completed and hence Mumbai City & Suburbs receives additional 455 MLD of water supply from the year 2014.

Future Sources of Water Supply to Mumbai:

The gap between demand and supply for the year 2041 is 2840 MLD. To meet the gap and to increase the water supply to Mumbai City & Suburbs, it is proposed to undertake development of following sources for augmenting water supply of Mumbai.

Future allotted sources of water are shown in following Table

Table No. 9.4: Future sources of water supply

Sources	Yield in MLD	Ownership
Gargai	440	BrihanMumbai Municipal Corporation
Pinjal	865	BrihanMumbai Municipal Corporation
Damanganga-Pinjal Project	1586	Govt. of India/Govt. of Maharashtra/ Govt. of Gujrat
TOTAL	2891	

Source: Hydraulic Engineer Department.

Gargai Project consist of construction of a dam and a tunnel of about 2.1 kms. The vetting of components of DPR by CDO Nashik is in progress along with process for obtaining MoTA clearance, Forest, Wildlife clearance form MoEFCC.

Pinjal project consist of construction of dam across Pinjal River, conveyance system and allied works like Water treatment plant, Master balancing reservoir, pumping station etc. BrihanMumbai Municipal Corporation has appointed Consultancy Services for obtaining Environmental, Forest/Wildlife clearances from Competent Authorities including socio and environmental impact assessment studies and enumeration of trees for Pinjal Project.

Under 'River Linking Programme' initiated by Government of India; it is proposed to link Damanganga & Pinjal rivers and thereby 1586 MLD water would be made available to BrihanMumbai Municipal Corporation and this water will be conveyed into Pinjal reservoir after its completion.

BrihanMumbai Municipal Corporation, has now also planned to augment water supply by 200 MLD by construction of a Desalination plant which will provide a climate change resilient and reliable source of water for Mumbai. BrihanMumbai Municipal Corporation has appointed M/s IDE as original Project Proponent for the work of preparation of Detailed Project Report (DPR)

Ongoing Projects in support for Improvement in Water Conveyance system:

Tunnels:

1. **Construction of Tunnel Powai to Veravali & Powai to Ghatkopar**

The work order for the construction of remaining 4.2 km between Powai and Ghatkopar water tunnel has been given in November 2022 and the work is in progress.

2. **Amar Mahal-Trombay reservoirs tunnel (2.5 mtrs dia, 5.5 kms length):**

Tunneling activities form Hedgewar Udyan (Amar Mahal) towards TLLR is completed . Expected completion of project by October 2024.

3. **Amar Mahal-Wadala-Parel tunnel (2.5 mtrs dia, 9.7 kms length):**

Shafting activities at Hedgewar Udyan (Amar Mahal) & Pratiksha Nagar (Wadala) completed and Tail and Assembly tunnelling activity has been completed and tunnel boring by TBM is in progress while shafting activities at Parel is in progress. Expected completion by April 2026.

4. **60 MLD Water Reclamation Plant in Panjrapur Complex:**

The work for getting balance work of Water Reclamation Plant in Panjrapur Complex at the risk and cost of M/s Pratibha Industries Ltd. Awarded to lowest successful bidder on 03.03.2022.

5. **Upgradation of Powai Lakefront:**

Aerator fountain installation in completed at Powai lake.

6. **Consultancy work for development of Hydro Electric Power Plant Project and floating solar power plant at 'Hinduhridaysamrat Shivsenapramukh Balasaheb Thackeray Middle Vaitarna Dam':**

LOA is issued to lowest bidder M/s Shapoorji Pallonji on dt. 16.02.2021.

7. **Replacement of valves and allied works at Trombay High Level Reservoir:**

All inlet & outlet valves of valve gallery of THLR are replaced.

8. **Reconstruction of Malabar Hill Reservoir:**

Acceptance letter has been given to the contractor on 29.03.2022. Expected to be completed by November 2029.

Pipelines work:

- **Missing link of MV main betn. Chinchawali to Yewai (3 mtrs dia., 4.5 km):**
  The work of laying water channel has been completed.
- **Replacement of twin Tansa main betn Balkum-Huzari bridge (3 mtrs dia, 4.5 km):**
  The 100% work of laying water channel has been completed.
- **Replacement of twin Tansa main betn Huzari Bridge to Saddle Tunnel Bhandup complex (3 mtrs dia, 4.9 km) :** The 100% work of laying water channel has been completed.
- **Construction of Inter Connection by 4000 mm dia MS pipe from Bhandup tunnel shaft to 1910 MLD old WTP in Bhandup Complex and allied works**
  (3 mtr dia and 4 mtrs dia, Total length 125 mtrs): 100% work is completed.
- **Replacement of existing twin Tansa Mains (2x1800mm) from**
  Bhandup to Maroshi by single 2400mm dia, 6.3km length: Started in Nov. 2019. 87% work is completed. Expected completion by June 2023.

Construction and reconstruction of existing retaining wall and fence wall:

Khindipada to Tulsi Gate Rajaram Wadi Near Khindipada Tunnel RCC Opposite Saibaba Mandir. Wall and Senior Staff Colony Bhandup Protection Wall Reconstruction of Compound Wall Road and Drainage Work Other Ancillary Works: The said work has been completed 100%.

Structural repairs to existing reservoirs:

- Malad hill Reservoir (50 MLD): Work has been completed February 2021.
- Trombay High Level Reservoir (55 MLD): 95% completed. Expected completion by July 2023.
- Trombay Low Level Reservoir (27MLD): 92% work completed. Expected completion by July 2023..
- Structural Repair Works to Bhandup MBR (246MLD): 45% completed. Expected completion by July 2024.
- Structural Repair Works to Yewai MBR (118 MLD): Work started recently. 27.5% work is completed. Expected completion by July 2023.
- Ghatkopar Low Level Reservoir (11.35MLD): M/s Dev Engineers have been issue Work Order on dt.01.06.202 .

Water Supply Resources- Surface as well as Underground:

Gargai project (440 MLD):

Gargai project consist of construction of dam across Gargai River and construction of 2.1 Km long tunnel to convey water from Gargai dam to Modaksagar reservoir.

Vetting of Hydrological studies is completed & vetting of design component of DPR is in progress by Central Design Organisation (CDO), Nashik. CWC approval to the Hydrology of Gargai Project has already been received. The Site specific seismic study for Gargai project finalised by M/s Central Water & Power Research Centre (CWPRS), Pune have been approved by the National Committee on Seismic Design Parameters (NCSDP). Proposal for Wild Life & Forest Clearance has been submitted to the respective authorities and follow up action is in progress. Environmental clearance has been received from the Environment Department, Govt. of Maharashtra, this being purely a water supply project. The R & R Plan as per RFCTLARR, 2013 Act has been finalized and received approval from all stakeholders. A special land acquisition cell for acquisition of Private Land is made functional for the same. Joint Measurement survey is completed for the affected villages while that at R & R site is in progress.

Pinjal Dam Project (865 MLD):

Pinjal project consist of construction of dam across Pinjal River, conveyance system and allied works like Water treatment plant, Master balancing reservoir, pumping station etc.

The work of preparation of Detailed Project Report (DPR) for Pinjal Project was entrusted to M/s. WAPCOS Ltd. by Water Resource Department (WRD) of Government of Maharashtra (GoM). There has been no further progress on the work of DPR preparation hence, BrihanMumbai Municipal Corporation will complete the DPR on its own. Meanwhile BrihanMumbai Municipal Corporation has appointed Consultants for obtaining Environmental, Forest/Wildlife clearances from Competent Authorities including socio and environmental impact assessment studies and enumeration of trees for Pinjal Project' and work for preparation of ToR of EIA is in progress.

Damanganga-Pinjal River link project (1586 MLD):

The projects comprises construction of dams at Bhugad & Khargihill and 2 nos. of tunnels for diverting additional 1586 MLD Damanganga waters into Pinjal dam reservoir.

This project will be implemented by Government of India (GoI). Central Water Commission (CWC)'s approvals to DPR have been received. Proposal for MoTA clearance has been submitted and as suggested by Ministry of Tribal affairs, preparation of revised R & R plan as per RFCTLARR act 2013 is in progress by NWDA. Further modalities of water sharing & project execution will be decided by the WRD, Government of Maharashtra in co-ordination with Government of India (GoI), Government of Maharashtra GoM & Government of Gujarat (GoG). & BrihanMumbai Municipal Corporation.

Proposed Tunnels/ Projects:

- **Proposed Tunnel from Balkum to Mulund - 9.66 Km:** The consultant have been appointed for carrying out Feasibility studies and PMC services thereafter surveys and feasibility report preparation is under recent commencement.
- **Transfer of Excess Water from Vehar Lake to inlet bay of WTP at Bhandup Complex:** The consultants have been appointed for carrying out Feasibility studies and the same is nearing completion by M/s TCE.
- **Structural Repair to 1910 MLD old WTP, Bhandup Complex:** Feasibility study for repair/ rehabilitation has been completed. Estimates of immediate construction repair works have been informed to Water Engineer Department for further action.
- **Construction of new water treatment plant of capacity 2000 MLD at Bhandup complex :** According to feasibility study, It is necessary to take up the reconstruction of the 1910 MLD capacity .Bhandup water treatment plant. For this, as per the advice of Technical Guidance Committee (TAC) and IIT (Powai) Ltd. The tender process for the new water treatment plant of capacity 2000 MLD is expected to start soon.
- **Strengthening/Renovation of Vihar, Tulsi and Powai Dams as suggested byDam Safety Organization, Nashik:** Central Design Organisation (CDO), Nashik has been appointed as Consultative Service.
- **Structural Repair of Powai Low Level Reservoir and Powai High Level Reservoir-2 in S Ward:** The tender process is in progress.
- **Decommissioning and Reconstruction of Golanji Hill Reservoir in F/South Ward with Consultancy Services:** Pre-tender works are in progress.
- **Structural repair works including consultancy for 4th compartment of Turbhe Low Level Reservoir in M(East) Ward of Mumbai Urban Upgradation Project (BUDP) Reservoir in S Ward:** Pre-tender works are in progress.
- **Construction of desalination plants to increase water supply in Mumbai:** It has been decided to implement the said project as per MahalDEA Act-2018 and for the said project the SWISS challenge method has been issued. IDE has been assigned the main adviser. Under this project, at Manori. 200 MLD capacity desalination plant is proposed to be constructed. The detailed report of the said work has been completed and its inspection work is in progress and the work of preparing the draft tender is in the final stage. Such a project will help create an additional source of water capable of overcoming climate change.

Vihar Lake

10. RAIN WATER HARVESTING

Brihanmumbai Municipal Corporation supplies 3899 million liters of water every day, against a demand of 4505 million liters per day to the Mumbai, the economic capital of our country. The purity of the water supplied to the citizens of Mumbai is very high on the "International Quality Standards Rating" and considerable expenditure is incurred for this purification. Unfortunately this water is being used for all secondary requirements also such as flushing of latrines and washing of vehicles. In view of the indiscriminately rising population and comparatively limited resources there is an urgent need to search ways to save water and to put those to actual use. Brihanmumbai Municipal Corporation may not be able to supply water for secondary requirements such as flushing, gardening, vehicle washing swimming pools, air conditioning etc. and it is expected that Citizens have to generate the water for secondary requirements through rain water harvesting or recycling.

Rain Water Harvesting (RWH) is an ancient and convenient method. It implies storage of rainwater in manmade tanks or recharging ground water and utilization as per requirements. Since, rainwater within our own compound is to be stored; anybody is entitled to do so. Most importantly, the capital expenditure and maintenance cost involved in this method is quite low. Rain Water Harvesting contributes in raising the ground water level, the quality of the ground water improves and soil erosion is arrested. Entry of seawater in ground water can be prevented.

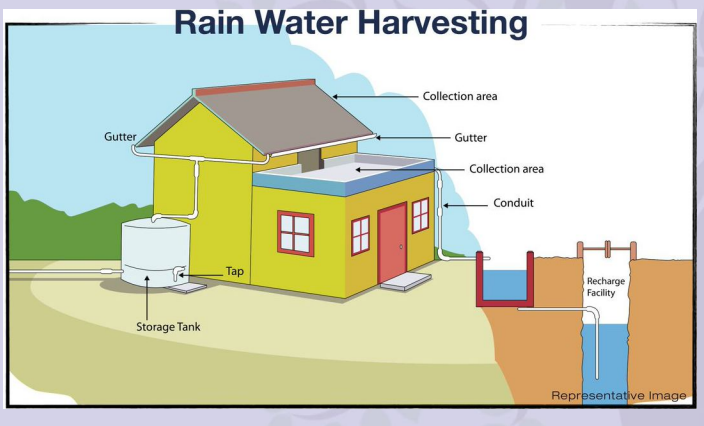
Following methods can be deployed for Rain Water Harvesting.

1. Storage in underground or above ground artificial tanks.
2. Direct recharging of the subsoil water strata (aquifer) through dug up wells or bore wells.
3. Recharging of the subsoil water by percolation.
4. Forcing rainwater in the ground through bore wells and thereby preventing entry of salty seawater in the subsoil strata.

Very large quantities of water can be stored because of the large roof areas of industrial buildings. Those who buy water in tankers can save on this expense by using rainwater. House owners or tenants can store rainwater with a little bit of effort. Brihanmumbai Municipal Corporation is making all-out efforts to actually practice Rain Water Harvesting/ water conservation.

Brihanmumbai Municipal Corporation is the 1st Municipal Corporation in Maharashtra to make Rain Water Harvesting mandatory. Rain Water Harvesting had been made mandatory to new properties coming for development from 1st Oct. 2002 having plot area 1000 sq.mt and more. This condition was extended to the properties which had come for development prior to 1st Oct. 2002 but are coming for occupation/ completion from 1.9.2003. As per Government directives u/no. TPB -4307/396/CR-124/2007/UD -11 dtd. 6.6.2007 the condition was binding to all developments having plot area 300 Sq. Mts. & more. From 8.05.2019 as per DP 2034 the condition is binding to all developments having plot area 500 Sq. Mts. & more. The condition is applicable to the properties coming for addition alternation/ use of balance FSI etc. The condition is imposed as one of the I.O.D. (Intimation of Disapproval) conditions for installation of RWH scheme and occupation certificate is granted only after compliance of the same. RWH scheme is being designed by the RWH consultant appointed by the Architect. The completion certificate for the implemented scheme is also being issued by the RWH Consultant. Building Proposal department verifies the completion certificate issued by the Consultant before issuing Occupation Certificate.

RWH is being implemented in all the new developments of Municipal Corporation where RWH is mandatory. In addition all the departmental heads of Brihanmumbai Municipal Corporation have already been directed to get RWH schemes implemented in their premises. To encourage existing private Co-op Housing Societies/ Owners to implement RWH schemes in their premise Rain Water Harvesting and Water Conservation Cell of Brihanmumbai Municipal Corporation guide regarding implementation of RWH schemes free of cost. In addition Brihanmumbai Municipal Corporation while issuing new bore well permissions in private premises, a condition is incorporated to recharge such bore well with roof top rain water.



The Cell organized first 2 days technical seminar with All India Institute of Local Self Government (A.I.I.L.S.G.) and Indian Water Works Association (I.W.W.A.) on 28th Feb./ 1st March 2003. The seminar comprised of 17 lectures and 130 participants were appraised of various aspects of Rain Water Harvesting. The RWH Cell has participated in most of the major seminars in Mumbai and conducted many awareness programs to appraise various sections of society. To involve citizen Essay competition on "My May of Water Conservation" was organized in July 2003 in four groups and four languages. An information booklet on Rain Water Harvesting and water Conservation was released in its prize distribution ceremony by Hon. Mayor of Mumbai.

The booklet is appreciated even by Government of Maharashtra and circulated to many Municipal Corporations/ Councils. Brihanmumbai Municipal Corporation Calendar 2004 was dedicated to Rain Water Harvesting so that the message is conveyed to people at large. Drawing competition for Municipal school children was also conducted in Jan/Feb. 2004 to create awareness amongst teachers, students and their parents. N.S.S. students were involved in awareness campaigns to reach more citizens. Since 2005 awareness campaign is being conducted on World Water Day 22nd March every year to draw specific attention of citizens. Techniques like Jalmelas in each administrative ward and open grounds, training ward staff for dispersing basic information, painting BEST busses relaying messages through TV sets on Railway Stations, in BEST buses and private premises, putting message on Municipal bills, advertisement hoarding at prominent locations, informative documentaries in C.S.T. subway are being adopted to reach masses. N.G.O.s are also involved in this activity. Media like TV channels and FM radios are also being used for communicating messages. The all requisite information is also uploaded on website www.mcgm.gov.in for easy access byv Citizen. As a part of awareness campaign, in 2012, Brihanmumbai Municipal Corporation has published a scholl book series in Marathi titled **प.... पाण्याचा** on water conservation and rain water harvesting for Std. I to X. Moreover, another activity titled 'Aji Ajobanche bol' has been introduced to rope in senior citizen in this campaign. It is expected that senior citizen would use their energy in convincing people in their nearby locality to save water. They would a2lso interact with school children and even out books to them and explain the ideas incorporated thereat.

In view of the late monsoon in the year 2015, (RWH & Wat. Cons.) Cell has started Save Water Awareness Campaign to spread awareness amongst the citizen of Mumbai. As a part of the continuous awareness campaign, advertisements in local newspapers were published appealing Mumbaikars to use water judiciously and to avoid wastage of water. Save water awareness posters, short videos were prepared with the help of Tata Trust. Save Water appeals / advertisements were also displayed on BEST buses, Bus Queue Shelters, TV in BEST buses and in local trains. Lectures on water conservation in various Municipal schools via virtual classroom were delivered through Marathi Vidnyan Parishad. A yearlong initiatives **'Water smart Mumbaikars'** – mass awareness for water conservation" has been initiated by **'me2green'** NGO as Brihanmumbai Municipal Corporation as concept partner. Due to late monsoon in 2019, with the help of Public Relation Dept., Hydraulic Engineer's dept. printed 1,92,000 Save water awareness posters in Marathi, English and Hindi appealing Mumbaikars to use water judiciously and to avoid wastage of water. These posters were pasted in all the Municipal offices and some of the private premises all across Mumbai.

There are approximately 18911 identified wells (4638 dug up wells, 12561 tube wells and 1712 Ring wells) in Mumbai. Assuming average per day withdrawal of approx. 20,000 lit. of water (two tanker load) per well, it can be safely presumed that 378 MLD of ground water is available every day in Mumbai. Wells are known sources of ground water and can act as line of defence in case of emergency. Fire engines have to

travel considerable distance for filling water before attending fire spot. Filling points are being set up on wells situated in Municipal premises for fire Brigade to save fuel and precious time during emergencies. Protecting wells in the city is very important considering future water crisis. Brihanmumbai Municipal Corporation has prohibited unauthorized burying of existing wells from Jan. 2003. The A.E. (B & F), A.E. (B.P.) as the case may be are required to take action under sec.53 (1) of MRTP Act in case of unauthorized filling up of wells.

Insecticide Officer Department of Brihanmumbai Municipal Corporation had informed on 28.04.2021 that the Insecticide Branch of Public Health Development issues permissions to dig new bore wells and ring wells (upto 5 ft. Diameter) and to use well water for non-portable purpose. Anopheles Stephensi, the vector mosquito responsible for transmission of Malaria prefers to breed in well water and therefore permissions are not issued for digging new surface wells of large diameters more than 05 ft. In case of existing surface wells, permissions are issued for use of well water for non potable purposes once the open well is provided with a RCC slab to convert the surface well into a Hermetical Cement Concrete (HCC) well, making it mosquito proof in condition.

Jal Shakti Abhiyan : Catch the Rain 2022

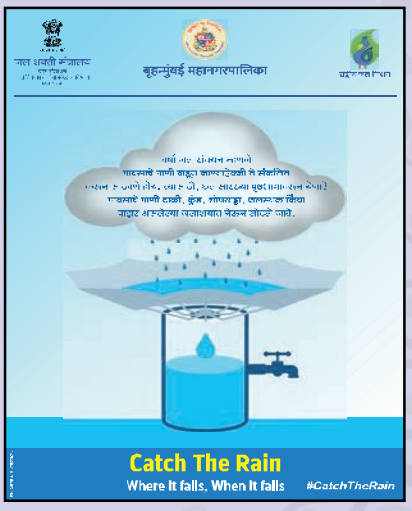
Central Government has launched a nation wide campaign "Jal Shakti Abhiyan: Catch the Rain 2022"- when it falls where it falls, focusing on saving and conserving rain water, covering both Urban and Rural Areas across the country. Hon'ble President Shri. Ramnath Kovind inaugurated the Jal Shakti Abhiyan on 29.03.2022. The staff of Hydraulic Engineer Department of Brihanmumbai Municipal Corporation has participated in this event through Facebook Live and took the water oath as per the guidelines of National Water Mission.

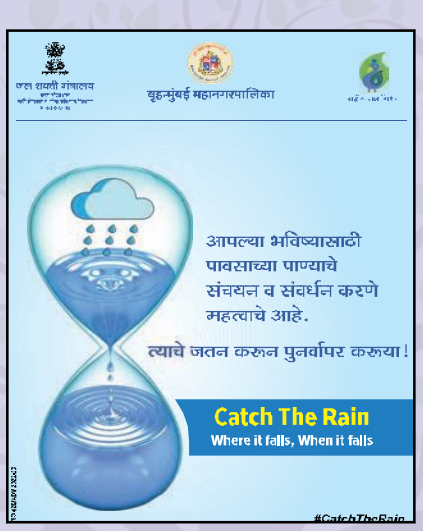
The aim of the campaign is to create awareness among the people through public participation as well as to create suitable Rainwater Harvesting Structures according to the weather and soil conditions for proper storage of Rain Water. Rainfall during the monsoon period is the only source of water for most of the parts of the country. Hence, water needs to be used carefully and to be saved to meet the increasing demand and to avoid water scarcity. Jal Shakti Abhiyan, directs to motivate the local populace for active participation of each individual in water conservation by catching the rain when it falls and where it falls.

Under the circumstances, it is necessary to create awareness among the citizens of Mumbai through public participation for using the water judiciously, to avoid wastage of water etc., as well as to create awareness for suitable Rainwater Harvesting Structures by running mass Save Water Awareness Campaign. RWH Cell of Brihanmumbai Municipal Corporation has proposed Awareness Campaign consisting of an exhibition of posters, advertisements in local daily news papers, display of banners, street plays etc. As a part of the above said Awareness Campaign, Brihanmumbai Municipal Corporation had published save

water messages through local daily newspapers in Marathi and English Languages on every Sunday from the month of May 2022 to August 2022. Digital posters and flex banners are being displayed in all the 24 Brihanmumbai Municipal Corporation Wards Offices, Municipal Hospitals, Municipal Offices, CFCs centers etc.

Brihanmumbai Municipal Corporation. takes efforts in all directions to support Rain Water Harvesting which is one of the Best Management Practices (BMP) for a Corporation. It is the duty of all citizens to contribute their own efforts to this cause to help themselves.





11. SEWAGE DISPOSAL

Sewerage disposal work is carried out by three departments of Brihanmumbai Municipal Corporation in following ways :-

1. **Sewage Operation (SO):** It Operates and maintains Municipal sewage systems comprising of conveyance systems i.e. sewer lines, collection system i.e. Sewage Pumping Stations and Sewage Treatment Facility and disposal system.

2. **Sewage Projects (SP):** This department looks after the work of sewer planning, laying of new sewers, up-sizing the existing sewers and elimination of missing links in existing sewer network.

3. **Mumbai Sewerage Disposal Project (MSDP):** This department carries out the work of construction of Waste water Treatment Facilities and Pumping Stations for treatment and disposal of sewage. It also carries out works of construction of sewer tunnels.

Brihanmumbai Municipal Corporation has prepared second sewerage master plan known as Mumbai Sewage Disposal Project (Stage II) in the year 2002. In order to provide safe and clean environment to citizens various projects such as Upgradation of existing Waste Water Treatment Facility (WwTFs), Construction of new WwTFs, Reconstruction of Sewage Pumping Station, construction of Sewer Tunnels are planned.

The projects of WwTFs are undertaken as per effluent discharge standard prescribed by Hon'ble NGT in their order dated 30.04.2020 (BOD<10 mg/Ltr, TSS<20 mg/Ltr, Fecal Colliform<100 MPN/100 ml).

Table No. 11.1: The details of the WwTFs projects

Sr. No.	Name of WwTF	Plant capacity in MLD	Tertiary Treatment(Capacity in MLD for Reuse)	Design, Build Period in years	Expected date of Completion
1	Worli	500	250	50	4.07.2027
2	Bandra	360	180	5	04.07.2027
3	Dharavi	418	209	5	04.07.2027
4	Versova	180	90	4	04.07.2026
5	Malad	454	227	6	04.07.2028
6	Bhandup	215	108	4	01.09.2026
7	Ghatkopar	337	170	4	04.07.2026
	Total	2464	1234	-	-

The tenders for WwTFs at Worli, Bandra, Dharavi, Versova, Malad, Bhandup and Ghatkopar were invited on Design Build Operate (DBO) basis in which operation and maintenance of 15 years are included. All the STP works are awarded to successful contractors. STP works for Worli, Bandra, Dharavi, Varsova, Malad and Ghatkoper have commenced from 05.07.2022 and work for Bhandup STP has commenced from 23.08.2022.

The work of 37 MLD Colaba WwTF has been completed and same has been put in operation from April 2020.

Brihanmumbai Municipal Corporation has emphasized the need of recycle and reuse of treated waste water for non potable and industrial purposes.

There is a provision of 50% of plant capacity for tertiary treatment in WwTF. This tertiary treated water will be made available for non potable purposes. At present 10 MLD of treated waste water is available at Colaba WwTF for reuse. After completion of these seven STPs in Mumbai, not only 2464 MLD of sewage water will be recycled but also the much concerning issue of environmental preservation and degradation will get addressed.

List of other work being carried out by this department along with their present status is as below:

Table No. 11.2 : Sewer Tunnel Works

Sr. No.	Name of the Tunnel	Size of Tunnel in mm	Length of Tunnel in Km	Remarks
1	Versova – From D.N. Nagar old Versova Pumping station To new Versova Influent Pumping station (near Versova Lagoon)	2000	3.1	Work in progress. Tunnel Boring completed.Physical Progress = 92%
2	S. V. Road – From Jai Bharat Pumping station Khar (West) To Bandra IPS along S.V. Road Bandra (West)	2600	1.9	Work completed.
3	Priority Sewer Tunnel-I – From Don Bosco school, Borivali (West) To New Malad IPS.	3200	5.8	Work in progress.
4	Priority Sewer Tunnel-II – From Goregaon Pumping Station To new Malad IPS	2600	4.8	Physical Progress = 5% Work Commenced on 08.05.2023
5	Mithi-IV - Construction of Sewer Tunnel From Bapat Nallah and Safed Pul Nallah To Dharavi WwTF	2600	6.7	Work in progress. Physical Progress = 42%

Table No.11.3 : Pumping Stations works

Sr. No.	Sewage Pumping Station	Plant Capacity in MLD	Remarks
1	Varsova IPS	540	Work in progress (65%)
2	Kadeshwari Pumping Station	5	Work completed (100%)
3	Malad IPS	1580	Work in progress (45%)
4	Mithi-I (STP)	8	Work completed (100%)
5	Bhandup IPS	461	Work in progress (30%)
6	Ghatkopar IPS	699	Work Started on 02.05.2023

The benefits of various MSDP - II projects to the environment are as follows:

1. Saving and Conservation of Drinking Water
2. Conservation of Environment
3. Improvement in Public Health of Mumbai City
4. Improvement in Sea aquatic Life and water quality.

Sewage Operation (SO):

Laboratory at Dadar under Sewerage Operation department has carried out monitoring of marine outfalls at Worli and Bandra. Marine water samples are collected at 1km. peripheral area from outfall disposal point. The analytical reports are compared with the MPCB standards - SW II and it has been found that at Worli and Bandra, levels of pH, D.O., Turbidity are within the prescribed standards and max. level of F. Coli are exceeding at all sites. At Worli, max. level of B.O.D. exceed than standards.

Table No.11.4: Water Quality at Marine Outfall 2022-23

Sr. No.	Parameters	PH		D.O. (mg/l)		Turbidity (in NTU)		F-Coli (CFU)		B.O.D. (mg/l)	
	MPCB Standard: SW-II	6.5-8.5		>4 mg/l		≥30 NTU		>100/100 ml		>3 mg/	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1	Worli Outfall	7.68	8.28	4.8	8.0	1.69	8.14	11	140	1.3	3.7
2	Bandra Outfall	7.84	8.41	4.7	8.06	1.65	12	15	160	0.8	2.8

D.O.: Dissolved Oxygen B.O.D.: Biochemical Oxygen Demand CFU: Colony Forming Unit

Source: This information is received from Sewerage Operation Department Dadar Laboratory.

Table No.11.5: Zone wise capacity and average dry weather flow capacity of sewage (2022-2023)

Sr. No.	Name of Sewage Treatment Plant	Installed Capacity (In MLD)	Zone wise Average Dry Weather Flow of sewage (In MLD)
1	Colaba	37	26.07
2	Worli	757	258.22
3	Bandra	797	507.44
4	Versova	180	95.39
5	Malad	280	178.41
6	Bhandup	280	114.5
7	Ghatkopar	386	100.45
8	Charkop	6	3.67

M.L.D.: Milion Liters Per Day

Source: This information is received from Pumping Station Performance Monitoring System (PSPMS) software of Sewage Utility Management Centre (SUMC) of Sewerage Operation Department.

12. STORM WATER DRAINS

Mumbai is lined on the west by Arabian Sea and intercepted by number of creeks. The tidal variation is a major concern in the system of storm water drains (SWD) to release rainwater as well as waste water into sea. The present SWD system in the city area is 991 km long and existing since 100 years. This network consists of underground drains, laterals and water entrances built on the basis of area and weather conditions. The old SWD system is capable of handling rain intensity of 25 mm per hour at low tide with runoff coefficient of 0.50. If the rain intensity exceeds 25 mm per hour during high tide, there is always possibility of water logging in low lying areas of the city.

In practice however, in addition to storm water, they also carry sewage overflow from septic tank, surface water etc. Length of open SWD in Mumbai Suburbs is about 2091 km. The flow from the open SWD is discharged either into nallhas, culvert, creek or sea. This open SWD becomes on eyesore due to throwing of garbage by citizens especially in slum area and creates unhygienic conditions. Therefore, desilting is carried out through registered contractual agencies throughout the year. Due to existing inadequate Sewerage System the sewage is transported through road side open drain, underground Storm Water Drain. Consultant has suggested to prevent the sewerage transportation through SWD network. Under JNNURM Sewerage Project Department has undertaken plan to separate the sewage flowing through SWD network.

There are 90 major out-falls in the city area which drain to Arabian sea directly, also 6 at Mahim creek and 7 at Mahul creek. There are 51 out-falls in western suburbs draining directly into Arabian sea while 14 drain into Mithi river which ultimately joins Mahim creek. In eastern suburbs, 25 out-falls discharge in Thane creek, while 4 discharge in Mahul creek and 28 into Mithi river. In suburbs and extended suburbs area, open SWD are constructed on both sides of road.

Heavy rain in Mumbai city in June 1985 had resulted into flood like situation, which paralyzed the roads and railway traffic and there was heavy economic loss. In view of this, corporation decided to carry out the study of the storm water drainage system of the city. A master project was planned to help to drain out Storm Water immediately and reduce floods. In the year 1989 M/s Watson Hawksley International Pvt. Ltd. and their Indian sister concern M/s AIC was appointed as a consultant for this project. The consultants had inspected existing storm water drainage system and nallas, identified 121 catchments areas of the city and studied the deficiencies in cleaning and maintenance. They have also studied the preparation of map and its

scale again. In year 1993, to improve the storm water drainage system, they prepared a master plan, which is known as BRIMSTOWAD Master Plan. This plan suggested improvements in SWD system with design criteria, of rainfall intensity of 50 mm/hr with runoff coefficient of 1.00.

The Government of India sanctioned a special grant of Rs.1200 crores as per detailed project report submitted to Government of India to implement BRIMSTOWAD Project in year 2007. Out of these, Brihanmumbai Municipal Corporation has received Rs.1000 crores till date.

Subsequently in the year 2005 Mumbai faced unprecedented rains on 26th and 27th July 2005 and 944 mm rainfall was recorded in one day. This resulted in the flooding, therefore, Government of Maharashtra had appointed a Fact Finding Committee to analyze the factors responsible for the situation that arose during July 26th and 27th, 2005 in Mumbai and to find out the remedial measures thereat, so as to avoid such incident in future. Based on the BRIMSTOWAD Master Plan Report and recommendations of Fact Finding Committee, the balance BRIMSTOWAD works for the improvement to the storm water drainage system are undertaken. As per suggestion of the Fact Finding Committee BRIMSTOWAD report is to be reviewed and upgraded for which Brihanmumbai Municipal Corporation has appointed M/s. MWH (I) Pvt. Ltd, as the consultant. The master plan is finalized by the consultant and same is submitted on 30.04.2018.

BRIMSTOWAD project is proposed to be implemented in 2 phases. There are 20 works in Phase-I and 38 works in Phase-II (Table No. 12.1). The scope of the BRIMSTOWAD project is as under.

1. Rehabilitation and augmentation of underground drains in city.
2. Construction of new drains in RCC.
3. Training of nallhas in RCC M-40.
4. Widening and deepening of nallhas.
5. Construction of access road along the nallha.
6. Construction of Storm Water Pumping Stations.

Table No.12.1: Present status of the BRIMSTOWAD Project

Details	Phase I		Phase II					
	City	W.S.	E.S.	Total	City	W.S.	E.S.	Total
Name of the Works	5	7	8	20	16	10	12	38
No. of completed works	5	6	7	18	14	4	7	25
No. of the works in progress	0	1	1	2	1	6	4	11
Tenders yet to be invited/ Tenders invited	0	0	0	0	1	0	1	2

Table No.12.2: Status of Storm Water Pumping Stations under BRIMSTOWAD		
Sr. No.	Pumping	StationStatus
1	Haji Ali	Completed and commissioned in May 2011
2	Irla	Completed and commissioned in May 2011
3	Cleaveland	Completed and commissioned in May 2015
4	Lovegrove	Completed and commissioned in May 2015
5	Britannia	Completed and commissioned in June 2016
6	Gazdarbund	Completed and commissioned in June 2019
7	Mogra	Preliminary Survey Work is completed and regarding land, matter is in High Court.
8	Mahul	Land acquisition is in process by Development Plan Department.

Source: Storm Water Drain Dept of Brihanmumbai Municipal Corporation

Total expenditure incurred till April 2023 is approx Rs.2541.37 Crores. However, due to increased width and depth of the drains due to change in design parameters, requirement of unconventional technology specially in tidal zone and passage of time – particularly due to encroachment issues, total financial requirement of the project has seen a substantial rise and additional funds to the extent of Rs.2700 Crores are required.

Environmental Aspect:

As regards cleaning and desilting of nallhas, the same is carried out every year, prior to monsoon, within Brihanmumbai Municipal Corporation jurisdiction. The same are cleaned by specially appointed agencies. The work of desilting is carried out in phases. About 75% of the work is carried out before monsoon, 15% during monsoon and balance 10% post monsoon. Further, silt from all the water inlets are also removed. About 50% are clean depatmently Labourers and 50% are cleaned by NGO Labourers.

The desilting of the underground storm water drains is carried out by deploying sufficient machinery such as firex, suction, Recycling machine, jetting, suction cum jetting machine in deep chambers, where man entries are prohibited. The road side drains are desilted by means of rodding and dredgers. JCB, poclain, pantoon mounted poclain, machineries are engaged for desilitng of major nallhas in suburbs.

Brihanmumbai Municipal Corporation has undertaken rejuvenation work of Dahisar, Poisar and Oshiwara River. Work of rejuvenation of Dahisar, Poiser and Oshiwara River is in progress.

The rejuvenation work includes widening of river, improvisation of quality of river water, preventing contamination of rivers caused form river catchment area, network of sewage disposal line, construction of service road for sewage water process stations, beautification of river bays/ sides and installation of sewage water process stations etc.

Development of Mithi River:

Government of Maharashtra has formed 'Mithi River Development and Protection Authority' under the Chairmanship of Honorable Chief Minister of Maharashtra State on 19th August 2005 for improvement of the Mithi River. Out of the total length of Mithi River 11.00 kms of Mithi River, 6.00 kms. is under jurisdiction of MMRDA. In BMC jurisdiction part of Mithi River, widening and deepening work is almost completed except the stretch between Kurla-Kalina Brige to CST Bridge at Kurla.

Till date work of deepening and widening of Mithi River is 95% completed and construction of Mithi River retaining wall has been 85% completed. Mithi River Development and Pollution Control plan has been prepared to control the flood and pollution problem of River. The same is being carried out in 4 packages between Filtarpada, Powai and Mahim Causeway.

13. SOLID WASTE MANAGEMENT

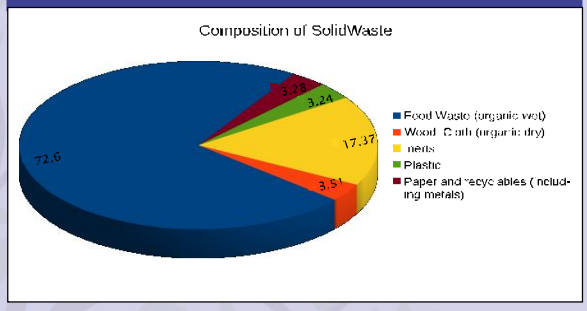
Due to various projects and programs arranged by Brihanmumbai Municipal Corporation in the last 5 years of the quantum of waste collected in the year 2022 has been approx 6300 MT per day. Of the 6300 MT transported to disposal sites by vehicles in over 921 trips/day, the waste is primarily collected separately as dry and wet waste. The waste can be broadly classified in various categories i.e. 72.60% Food waste (organic-wet), 3.51% wood, Cloth (organic-dry), 17.37% Sand, Stone and Fine earth, 3.24% Plastic, 3.28% Paper and recyclables (including metals).

Table 13.1: COMPOSITION OF GARBAGE IN MUMBAI

Sr.No.	Type of Solid Waste	Percentage
1	Food Waste (organic- wet)	72.60%
2	Wood, Cloth (organic-dry)	3.51%
3	Sand, Stone and Fine earth	17.37%
4	Plastic	3.24%
5	Paper and recyclables (including metals)	3.28%
	Total	100.00 %

Source: Report of NEERI, 2016

Chart 13.1 COMPOSITION OF GARBAGE IN MUMBAI



The waste from all over the city is collected and at present, it is treated at Kanjur processing site using Bio-Reactor Technology and Windrow Composting and rest is disposed off at the Deonar dumping site by simple dumping and leveling. Deonar dumping ground is the oldest one, receiving approximately 12% and Kanjur receiving remaining 88% of waste generated on daily basis. The activity of receiving of fresh MSW at Mulund Dumping Ground is stopped w.e.f. 21.12.2018 and the project work of recovering the land by processing the existing waste with suitable technology is in progress. Scientific Closure Project of old site at Gorai has been completed in 2009 and operation and maintenance of the site is in progress. Area of different dumping grounds is given in table 13.2. Input loads of MSW at various dumping sites are given in Table 13.3.

Table 13.2: CAPACITY OF VARIOUS DISPOSAL SITES IN MUMBAI

Disposal Site	Area (Ha) Filling m*	No. of Years in Use
Deonar	120	88
Mulund	24	47**
Kanjur	118.41	11

** Receiving of fresh MSW at Mulund Dumping ground is stopped w.e.f. 21.08.2018

Table 13.3: INPUT LOAD OF WASTE

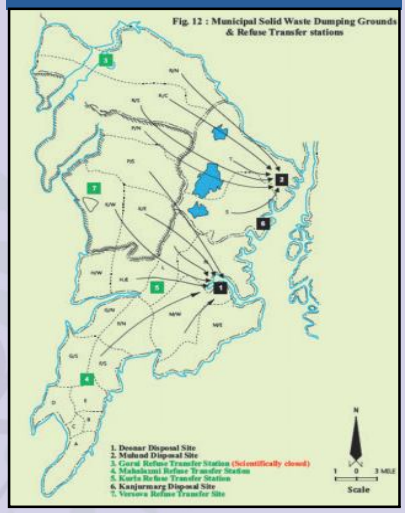
Sr. No.	Disposal Ground	Classification of Waste	Tonnes/day
1	Deonar	Municipal Solid Waste	Approx. 500-700 TPD
2	Mulund	Municipal Solid Waste	The activity of receiving of fresh MSW at Mulund Dumping Ground is stopped w.e.f. 21.12.2018 and the project work of recovering the land by processing the existing waste with suitable technology is in progress.
3	Kanjur	Municipal Solid Waste	Approx. 4500-5500

There are 2500 no. of 1.1-cubic meter containers, around 20,000 nos. of 120 Ltrs. Litter bins, 10,000 nos. of 240 Ltrs. Litter bins, 949 community collection points and 100% of total waste is collected through House-to-House collection. The daily Municipal Solid Waste (MSW) is collected and transported by deploying various types of vehicles. Salient features of transportation are given in Table 13.4.

Table 13.4 SALIENT FEATURES OF TRANSPORTATION FOR SOLID WASTE

Sr. No.	Type of Vehicle	Number of Services 2018-19	Number of Services 2019-20	Number of Services 2020-21	Number of Services 2021-22	Number of Services 2022-23
1	Compactors	1228	1584	1432	1926	1547
2	Skip Vehicles / Dumper Placers	11	1	0	0	0
3	Dumpers/Refuse Vehicle	100	126	192	315	88
4	Bulk Refuse Carriers	0	0	0	0	0
5	Tempo/Jeeps	2933	4092	3358	5294	4179
6	JCB Machines	50	63	61	127	51
7	Stationary Compactors	57	80	83	97	97
	Total	**4379**	**5946**	**5126**	**7759**	**5962**

13.1



Swacch Bharat Abhiyan 1.0:

Appropriation of funds received under S.B.A. 1.0 up to 31.03.2023 is as fallows.

Table 13.5 Swacch Bharat Abhiyan 1.0:

Sr . No.	ComponentIndi	Received Fund (In Rs. Crores)	Expenditure Fund (In Rs. Crores)	Financial Progress	Physical Progress	Concern Department
1	Individual Household Toilets	1.81	1.11	61%	3767 beneficiaries	24 Ward Offices
2	ToiletsCommunity	15.86	15.86	100%	Construction of 2484 seat community toilet seats	Slum Sanitation Program
3	Toilets Information Education and Communication Capacity	0.62	0.62	100%	Various awareness programs on cleanliness were implemented	Swachh Bharat Abhiyan Cell
4	BuildingSolid	0.02	0.02	100%	Conducted training/ workshop	
5	Waste Management	307	307	100%	Waste Processing plant at Kanjur	S.W.M.- Project

Swac

- Swachh Bharat Abhiyan 2.0 is launched on 1st October 2021 by the Hon'ble Prime Minister with vision of 'Garbage Free' cities.
- Since the Brihanmumbai Municipal Corporation is an important administrative mechanism for implementing Swachh Bharat Abhiyan, joint efforts are being made to maintain cleanliness in the city with the cooperation of the State and Central Governments.
- Under the said campaign, the efforts and programs of the Solid Waste Management Department of the Brihanmumbai Municipal Corporation have been revamped to achieve the required level of cleanliness.
- About 3,700 beneficiaries of the city have taken the benefit of the subsidy given by the central and state government for construction individual household toilets under the Swachh Bharat Abhiyan.
- Swachh Bharat Abhiyan 2.0 period is from 1 October 2021 to 1 October 2026. The objective mainly include segregation of waste at household level, scientific treatment of old accumulated waste (legacy waste), Aspirational toilets, 100% sewage management – collection/ disposal/ processing etc.
- Rs.1162 crore proposal under Swachh Bharat Abhiyan 2.0 has been approved for treatment of old accumulated waste (legacy waste) at Mulund and Deonar. In this, apart from the Municipal Corporation's share, the Central Government's Rs.290.55 (25%) crores and State Government Rs.406.77 (35%) Crores totalling Rs.697.32 crore share will be received.

Open Defecation Free + Cities:

- Mumbai city has achieved the status of Open Defecation Free (ODF+) in the rating as per guidelines for Swachh Survekshan 2023.
- Mumbai was certified as an Open Defecation Free + (ODF+) re- certified city on 18th July 2022 through the Quality Council of India (QCI).

Swachh Survekshan 2023:

- Murals were painted on walls, bridges and other prominent places for the publicity of Swachh Survekshan 2023 to display the civic message and for beautification.
- Various street plays were implemented for public awareness and behaviour change regarding cleanliness.
- Sanitation norms were assessed among various entities such as hospitals, canteens, schools, commercial establishments, residential establishments and government building in the city. Apart from this, competitions of jingles, posters, short films etc. were conducted and evaluated to get active participation of citizens in sanitation/SBM/cleanliness theme.

Solid Waste Management Rules, 2016:

On 8th April, 2016, the new SWM Rules 2016 issued by Ministry of Environment, Forest and Climate Change have come into effect and the said rules applies to the entire Country of India.

SWM Rules, 2016 also deals with the duty of manufacturers or brand owners of disposal products and sanitary napkins and diapers. Such manufacturers have been directed to provide necessary financial assistance to local authorities for establishment of Waste Management System. They have been also directed to put in place a system to collect back the packaging waste generated due to their production. In addition to the above, such manufacturers have been directed to explore the possibility of using all recyclable materials in their products and to educate masses for wrapping and disposal of their product.

In addition to the above, SWM Rules 2016 deals with the duties of waste generator. All resident welfare and market association Gated communities and institutions with more than 5000 sq. meter area, all hotels and restaurants, shall within one year from date of Notification of these rules and in partnership with local bodies, ensure segregation of waste at source by the generators as prescribed in this rule, facilitate collection of segregated waste in separate streams, handover recyclable materials to either the authorized waste picker or the authorized recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body.

SWM Rules 2016 provides for responsibility on the generation of the MSW by imposing penalty, if the same is not complied with in accordance with the Solid Waste Management Rules, 2016.

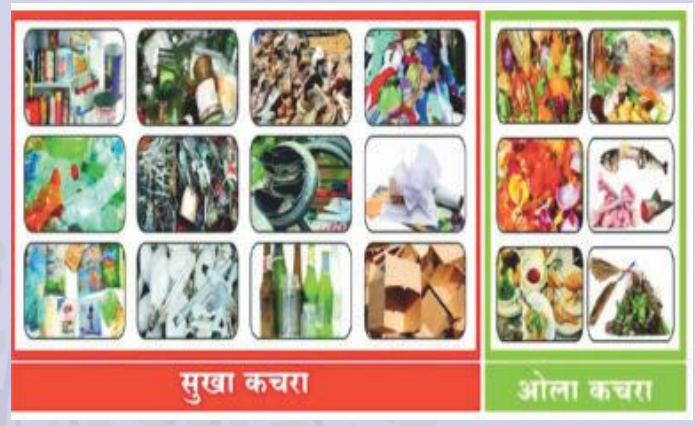
SWM Rules 2016 provides for the various compliances to be carried out by the Municipal Bodies within time frame mentioned therein.

The chart showing the various compliances to be carried out by Brihanmumbai Municipal Corporation alongwith the compliances already carried out and which are in process on behalf of the Brihanmumbai Municipal Corporation is as below.

Sr. No	Activity	Time limit from the date of notification of rules.	Action taken by Brihanmumbai Municipal Corporation
1	Identification of suitable sites for setting up solid waste processing facilities.	1 year	Already identified the land by Brihanmumbai Municipal Corporation, in January 2015. Requested Govt. of Maharashtra to allot the land at Mauje Karvale, near Taloja to Brihanmumbai Municipal Corporation for processing and disposal of Municipal Solid Waste (MSW) in compliance with SWM Rules 2016. Also Brihanmumbai Municipal Corporation has identified land at Mulund East (near Airoli bridge) and requested GoM to handover the same. GoM accorded in principle approval to allot around 52.10 Ha land at Karavale near Taloja. Out of this land 39.90 Ha. is government land and 12.20 Ha is private land. Out of 39.90 Ha Government land, the physical possession of about 12 Ha. Land is private land. Various meetings at the level of Collector Thane, Divisional Commissioner Kokan, Divisional Commissioner Kokan Division, Mantralaya, Hon'ble Chief Secretary and Hon'ble Chief Minister were held for allotment of land at Karavale to Brihanmumbai Municipal Corporation. At present handing over of around 30 Acres of Government land is completed on 16.02.2019. Complied within the time stipulated.
2	Identification of suitable sites for setting up common regional sanitary landfill facilities for suitable clusters of local authorities under 0.5 million population and for setting up common regional sanitary landfill facilities or stand alone sanitary landfill facilities by all local authorities having a population of 0.5 million or more.	1 year	Same as above,
3	Procurement of suitable sites for setting up solid waste processing facility and sanitary landfill facilities.	2 years	Is in process. The Hon'ble Bombay High Court in order dtd. 02.11.2018 has directed Government to hand over the vacant possession of about 30 Acres out of the 52.10 ha. land at Village Karavale to Brihanmumbai Municipal Corporation on or before 31st January 2019. Out of the 52.10 ha. land 30 acres of Govt. land at Karavale has been handed over to Brihanmumbai Municipal Corporation on 16.02.2019 after rehabilitation of 8 PAP families by giving temporary accommodation of 500 Sq.ft. and compensation of Rs. 50,000/- to each PAP family residing on this 30 acres of land. Brihanmumbai Municipal Corporation has also deposited Rs.25, Lakh- on 12.06.2019 to state Govt. for acquisition process of private land at Karavale. Complied within the time stipulated.
4	Enforcing waste generators to practice segregation of bio degradable, recyclable, combustible, sanitary waste domestic hazardous and inert solid wastes at source.	2 years	Notices are already issued. Enforcement is being implemented in phased manner. Brihanmumbai Municipal Corporation has taken various initiatives for encouraging the segregation by bulk generator and the action against the defaulter has been taken. Brihanmumbai Municipal Corporation, against 1325 defaulting bulk generators has taken action under section 368 of MMC Act. Out of 1325 cases, in which prosecution was launched, and fine of Rs.42,93,500/- is recovered. Also under section 53 (1) of MRTP Act, out of 326 notices issued, in 44 cases prosecution is launched against non-compliance. Further, Brihanmumbai Municipal Corporation has identified 207 Bulk generators having area more than 20,000 Sq.M. and in 7 cases Maharashtra Pollution Control Board (MPCB) has launched prosecution. Brihanmumbai Municipal Corporation has established 46 dry waste segregation centers in 24 wards for segregating collected dry waste from various establishments. For collection and transportation of dry waste, Brihanmumbai Municipal Corporation has deployed 96 vehicles in 24 wards, which carry the dry waste to segregation centers. Brihanmumbai Municipal Corporation has implemented new zonal contract for collection of waste in line with SWM Rules 2016, in which 399 nos. of large compactors and 246 nos. of mini compactors vehicles having separate compartment for collection and transportation of dry waste, e-waste and wet waste are to be provided. Complied within the time stipulated.

Sr. No	Activity	Time limit from the date of notification of rules.	Action taken by Brihanmumbai Municipal Corporation
5	Ensure door to door collection of segregated waste and its transportation in covered vehicles to processing or disposal facilities.	2 years	Brihanmumbai Municipal Corporation has taken various initiatives thereby and has achieved almost 100% house to house collection, 86% segregation. Brihanmumbai Municipal Corporation has implemented new zonal contract for collection of waste line with SWM Rules 2016, in which 399 nos. of large compactors and 246 nos. of mini compactors vehicles having separate compartment for collection and transportation of dry waste, e-waste and wet waste are to be provided. Complied within the time stipulated.
6	Ensure separate storage, collection and transportation of construction and demolition wastes.	2 years	As of date, Brihanmumbai Municipal Corporation collects and transports separately the construction and demolition waste. However, tender is being invited for processing C and D waste generated and is in stage of award. As per the direction in Hon'ble Supreme Court of India in Special Leave Petition (Civil) no. 23708 of 2017, Brihanmumbai Municipal Corporation has devised Special Software System to insure safe disposal of C and D generated by bulk generator complying with C and D Rules 2016. Also as regards to small scale C and D generators, Brihanmumbai Municipal Corporation has 'debris on call' services. Complied within the time stipulated.
7	Setting up Solid waste precessing facilities by all local bodies having 100000 or more population.	2 years	Brihanmumbai Municipal Corporation has already setup Solid Waste Processing facility at Kanjur Landfill site. The MSW processing facility has a capacity of processing 1000 TPD of MSW with composting technology and 3000-6500 TPD with bioreactor technology for period of 25 years and has been operational since 13.12.2011. Presently, around 5500 TPD is being processed and can be further enhance to 6000 TPD in near future, as needed. Further, Brihanmumbai Municipal Corporation had floated tenders for development of waste energy project at Deonar Dumping Ground of capacity 3000TDP in past. Now, the tender is restructured with smaller modules and the tender for development of 600 TDP waste to energy project at Deonar based on open techonlogy was invited. The award of project is done. Currently, process of receiving Environment Clearance and other statuatroy clearance for project is in progress. Further, on successful implementation of this module, another two modules of 600 TPD capacities each may be proposed to be installed at the same location. In Process.
8	Setting up common or stand alone sanitary landfills by or for all local bodies having 0.5 million or more population of the disposal of only such residual wastes from the processing facilities as well as un-treatable inert wastes as permitted under the Rules.	3 years	At Kanjur site, there is provision of sanitary landfill after commissioning of compost plant. As well as there is provision of sanitary landfill at Deonar Dumping Ground in Waste to Energy project. After getting possession of the land at Mauje Karavale, there is plan for setting up sanitary landfill site also at Mauje Karavale, also In process,
9	Bio-remediation or capping of old and abandoned dump sites.	5 years	The work of scientific closure of Dumping Ground at Gorai is completed in 2009 by Brihanmumbai Municipal Corporation. Brihanmumbai Municipal Corporation has issued the LOA of "Dumpsite Reclamation at Mulund Dumping Ground (MDG) in Mumbai by adopting suitable technology for existing waste dump" to private operator. The operator of the Project has started the work on 24.12.2018. The project period is 6 years and will bio-mine the existing waste of around 7 Million tons at Mulund Dumping Ground. As regards to Deonar Dumping Ground, the existing dump thereat is about 18.35 million MT. The Hon'ble High Court, Mumbai vide Order dated 26th & 29th February 2016 directed Brihanmumbai Municipal Corporation to engage the services of IIT or NEERI as consultants to suggest the measures for properly maintaining the site till proper facility is created thereon as per MSW Rules. Brihanmumbai Municipal Corporation has appointed IIT Mumbai initially as per the Order of Hon'ble High Court, Bombay. However, report submitted by IIT Mumbai was not found feasible as it was not complying the Order of Hon'ble High Court, Bombay. Thereafter, NEERI is in-principally appointed for closure plan at Deonar Dumping ground for the study to develop the closure plan for Deonar dumpsite, including advice on appropriate technologies to be used for the dumped waste at Deonar as per SWM Ruels 2016. In process,

Dry Waste Collection and Sorting Centers:



Brihanmumbai Municipal Corporation has set up 46 dry waste collection and sorting centers in 24 wards. Other than these, Brihanmumbai Municipal Corporation has decided to set up 4 more dry waste collection and sorting centers and at some places work of setting up of additional dry waste centers is in progress. 94 Nos. of separate vehicles are deployed for collection and transportation of dry waste to dry waste sorting centers, in all the 24 wards of Brihanmumbai Municipal Corporation. Waste/ Rag Pickers' Associations are appointed to carry out the collection and segregation of dry waste. Dry Waste is segregated into paper, cardboard, thermacol, plastic, metal & glass and then sent to the recyclers for recycling directly by the rag pickers' associations.

Brihanmumbai Municipal Corporation framed its own Bye-laws in 2006, named as 'Brihanmumbai Mumbai Cleanliness and Sanitation Bye-laws'. These Bye-laws are applicable to every public place within the limits of Brihanmumbai Mumbai, to every generator of Municipal solid waste and to every premise under the ownership or occupation of any person within the limits of BrihanMumbai Municipal Corporation. Currently the byelaws are in process of modification to suit the requirement of SWM Rules, 2016.

Scientific processing of MSW:

The scientific processing of MSW at Kanjur MSW Processing facility is in progress and the current status of Kanjur project is as follows:

Kanjur MSW Processing Site:

As per orders of Hon'ble High court and Hon. Supreme Court, the Government of Maharashtra handed over a plot admeasuring 141.77 hectares area at Kanjur to Brihanmumbai Municipal Corporation on 24.10.2005 for developing MSW disposal site. Out of said 141.77 Ha. area, mangroves area admeasuring 23.36 ha. was retained by the Government of Maharashtra vide notification dtd.02.04.2012.

Kanjur MSW Processing facility has received Environment Clearance from State Environment Impact Assessment Authority Maharashtra (SEIAA) on 05.12.2014 for 65.96 ha. non CRZ area.

Further, Kanjur MSW Processing facility has received Environment Clearance from State Environment Impact Assessment Authority Maharashtra (SEIAA) on 29.10.2018 for Scientific processing of

MSW in the 52.45 ha. of CRZ–III area. Renewed authorization from MPCB is received dt. 19.08.2017.

At present, processing of about 4500 TPD of MSW with bioreactor technology and about 1000 TPD of MSW with windrow composting technology is being carried out at Kanjur MSW Processing facility.

New Projects for scientific processing of MSW:

1. Development of Waste to Energy (WTE) Project at Deonar:

Work of Waste to Energy project is awarded. About 600 TPD MSW will be processed scientifically and 4 MW energy will be generated from this project. Consent to Establish (CTE) has been received for the project on 04.06.2022 form MPCB. Project is expected to be commissioned by 04.10.2025.

2. Dumpsite Reclamation at Mulund Dumping Ground (MDG) in Mumbai by adopting suitable technology for existing waste dump:

Work of Dumpsite Reclamation at Mulund Dumping Ground (MDG) is awarded to the contractor. After Obtaining required clearances and mobilization of equipments and machineries, commencement of the project is started from 01.10.2019. Till date (24.05.2023) contractor has scientifically processed and disposed off about 22,28,813 MT of legacy waste. M/s MITCON Consultancy and Engineering Services Ltd. has been appointed as Project Management Consultant (PMC) for this project.

3. Scientific processing and disposal of Waste at village Karavale, near Taloja:

Government of Maharashtra (GoM) has allotted about 52.10 Ha land to Brihanmumbai Municipal Corporation at village Karavale (Kh.), Tal – Ambernath, Dist. – Thane. Out of which about 39.90 Ha. is government land and 12.20 Ha. is private land. Out of the government land, the physical possession of about 12 Ha. of land has been given to Brihanmumbai Municipal Corporation on 16.02.2019. This land will to used for Solid Waste Management Projects of Brihanmumbai Municipal Corporation. Acquisition of remaining government land and about 12.20 Ha. private land is being carried out through Collector, Thane. After receiving physical possession of the said land, Brihanmumbai Municipal Corporation will undertake works for development of scientific waste processing facilities.

4. Scientific processing of waste at Mulund (E) Near Airoli Bridge:

GoM has allotted about 32.77 Ha land to Brihanmumbai Municipal Corporation at Mulund (E) near Airoli Bridge for development of scientific waste processing facilities. However, physical possession of the land is not yet given. After receiving the actual physical possession of the said land, Brihanmumbai Municipal Corporation will undertake works of development of site.

5. Collection, Transportation, Processing and Disposal of Construction and Demolition (C and D) Waste in Mumbai :

Brihanmumbai Municipal Corporation has planned to process scientifically 1200 TPD C and D waste. The tendering process for Collection, Transportation, Processing and Disposal of C and D Waste has been completed and Letter of Acceptance (LoA) has been issued to the contractors in Feb. 2023. The project is expected to be commissioned by Feb. 2024.

Service Level Benchmarking:

- To monitor the performance of any ULB regarding its Service Delivery to the Citizens, MoUD has devised benchmarks for each service delivered.
- For Solid Waste Management Department there are 08 such benchmarks.

The benchmarks are elaborated below. (Current achieved values are mentioned in bracket)

Description of service	Target	Achieved
Coverage of SWM services through Door to Door collection	100%	100%
Efficiency of Collection	100%	100%
Extent of Segregation of Municipal Solid Waste	100%	81%
Extent of Municipal Solid Waste Recovered	80%	35%
Extent of Scientific Disposal of Waste at Landfill site	100%	74.56%
Efficiency in Redressing Customer Complaints	85%	94.93%
Extent of Cost Recovery in SWM Services	100%	100%
Efficiency in Collection of SWM Charges	90%	100%

Bio-Medical Waste (Management and Handling) Rules, 2016:

Bio Medical Waste (Management and Handling) Rules, 2016 are notified by Ministry of Environment and Forest, Government of India, under Environment Protection Act 1986 vide Notification dated 28/03/2016. As per rules it is the duty of 'Occupier'/ 'Generator' to ensure that BMW is handled without any adverse effect to human health and environment by way of segregation, packing, transportation, storage, final treatment and disposal. An 'Occupier' is defined as an institutions like hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank etc. which generate BMW.

Brihanmumbai Municipal Corporation owns major hospitals, maternity homes, dispensaries and clinics. Brihanmumbai Municipal Corporation is therefore considered to be an 'Occupier' and is required to

dispose of the BMW generated in these institutions as per BMW Rules 2016.

Moreover as per the BMW sub rule 6, it is not an obligatory duty of Brihanmumbai Municipal Corporation to collect and treat the BMW generated from private health care establishments.

However, as per amended BMW Rules 2016, sub Rule no.7, Municipal Corporations should provide suitable sites to private medical institutions for installation of common treatment facility without prejudice to the duty of 'Occupier'. Accordingly Brihanmumbai Municipal Corporation has provided suitable land at Deonar dumping ground for installation of bio-medical waste treatment plant for disposal of bio-medical waste generated in Mumbai jurisdiction.

The provisions under BMW Rules, states that the prescribed authority is Maharashtra Pollution Control Board and they are supervising the operation of the plant. An 'Authorization' to the plant operator of BMW treatment plant is issued by M.P.C.B. As per rule, it is also necessary to obtain an authorization from M.P.C.B. as a "Generator" who are generating the bio-medical waste.

As such, Brihanmumbai Municipal Corporation has installed integrated bio-medical waste treatment facility under the guidance of M.P.C.B. at Ghatkoper Mankhurd Link Road near Deonar dumping ground through M/s. SMS Envoclean (P) Ltd. The said facility has started its operation from May 2009. In all, M/s. SMS Envoclean (P) Ltd has put 46 nos. of specialized vehicles for collection of bio-medical waste from all health care establishments. Those Health Care Establishments who are registered with the BMW treatment facility are being provided the services of BMW collection and disposal by M/s. SMS Envoclean (P) Ltd. As of now 14000 nos. of health care establishments are registered with the centralized facility. Daily approx 20 M.T. of BMW is being collected and treated at Deonar BMW treatment facility.

E-Waste (Management) Rules 2016:

1. To avoid mixing of e-waste with municipal solid waste, Brihanmumbai Municipal Corporation has proposed to appoint MPCB authorized e-waste recycling agency to set up e-waste collection centers in wards.
2. The work of setting up of e-waste collection centers can be given to MPCB authorized electronic producers/ e-waste collectors/ dismantlers/ recyclers.

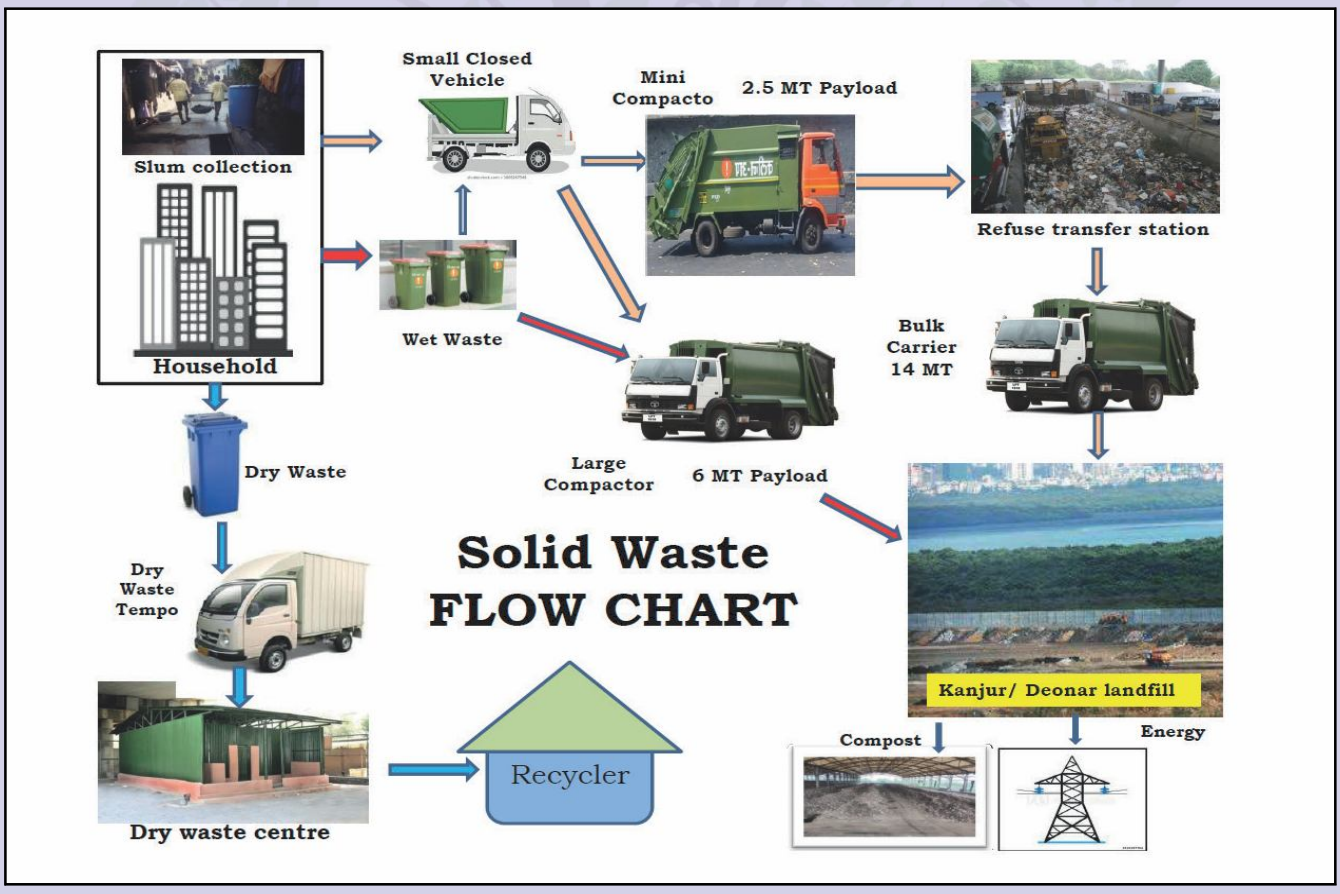
Plastic Waste (Management) Rules, 2016:

Brihanmumbai Municipal Corporation has set up 46 dry waste collection and sorting centers for segregation of collected dry waste. The plastic waste is segregated from collected dry waste and is sent to the recyclers directly by the engaged waste pickers' association. Plastic shredding machines are installed at few DWSC locations in the city. Under EPR, companies like Bisleri and Coca Cola have set up plastic processing units across city.

The use and manufacturing of plastic carry bags below 50 microns is prohibited by law. The monitoring authority for the same is Maharashtra Pollution Control Board. SWM dept has developed banned plastic collection and storage facilities for the convenience of citizens. Use of media for spreading awareness about active public participation in minimizing use of banned plastic is being done. Around 332 MT of plastic waste has been collected since the ban has come into effect.

Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2016:

Hazardous Waste Management Rules are notified to ensure safe handling, generation, processing, treatment, package, storage, transportation, use reprocessing, collection, conversion, and offering for sale, destruction and disposal of Hazardous Waste. The Rules lay down corresponding duties of various authorities such as MoEF, CPCB, State/UT Govts., SPCBs/PCCs, DGFT, Port Authority and Custom Authority while State Pollution Control Boards/ Pollution Control Committees have been designated with wider responsibilities touching across almost every aspect of Hazardous wastes generation, handing and their disposal.



14. POWER SUPPLY AND CONSUMPTION

Bombay Electric Supply and Transport (BEST), an undertaking of BrihanMumbai Municipal Corporation, supplies electric supply to city area while Reliance Infrastructure Limited and Maharashtra State Electricity Distribution Company Limited (MSEDCL) supply to eastern and western suburbs. Tata Power Company Ltd. (TPC) supplies bulk power to some industrial units and railways.

Bombay Electric Supply and Transport (BEST):

BEST is the distribution licensee to supply electricity in the old city limits of Mumbai. It covers 72 sq.km. (area from Colaba to Sion and Mahim). In FY 2022-23 the maximum demand of Mumbai City was 890 MW and power purchased was around 4267 Mus. To meet this demand, power is purchased mainly from Tata Power Company (which also includes Hydro Power) and Manikaran Power Ltd. remaining power is purchased from bilateral sources, Power exchanges and environment friendly renewable source.

As steps towards pollution control

1) Fulfilling of RPO Obligations:

As per MERC (RPO-REC) Regulation 2019 BEST, as a distribution licensee has to procure Renewable energy of 19.5% (Solar 8.00% and Non-Solar 11.50%) of total procurement of energy for FY 2022-23. BEST has met its solar and non solar RPO partially by procuring power from walwhan solar MH Ltd, rooftop solar net metered consumers and power exchanges.

2) Tie up of 234 MW Soalr power by BEST with SECI:

Power Supply Agreement has been recently signed between BEST undertaking and solar energy corporation of India on 09.12.2022 for procurement of 234 MW solar power. With earlier tying up of 400 MW Wind Solar Hybrid power in June 2021 for 25 years, BEST will be able to supply total 634 MW green, clean and cheaper powers to its esteemed consumers and as well as meet its Soalr and Non solar RPO form FY 2024-25 onwards.

BEST has been conferred with "Mumbai Sustainability Award" on 12.01.2023. GM BEST received the award at the hands of Hon. State Governor Shri Bhgat Singh Koshyari for its active role in various improvement measures undertaken, one of which is initiative to procure bulk solar energy in the future for the island city of Mumbai.

3) Implementation of MNRE Phase-II scheme for promotion of grid-connected rooftop solar PV projects:

Ministry of New and Renewable Energy (MNRE), Government of India, has launched Phase-II scheme for promotion of grid-connected rooftop solar PV projects (RTS) in residential and group housing societies. BEST Undertaking had conducted the bidding process for empanelment of agencies and issued "Letter of Empanelment" to the successful bidders for installation and commissioning of Rooftop Solar system in

Residential sector of the licensed area of BEST Undertaking.

BEST has developed a dedicated online portal of BEST and integrated BEST's portal with MNRE SPIN portal for grid connected RTS projects. BEST has formed Rooftop Solar cell at each ward of Customer Care dept. for effective implementation of RTS projects in BEST's licensed area and also uploaded the details of MNRE RTS Phase II scheme on BEST's website. SMS and emails are also forwarded to all our residential consumers informing the Rooftop Solar Scheme of MNRE. Advertised MNRE RTS Phase II scheme on electricity bills, on Facebook and Twitter. Total installed capacity of Rooftop Solar system (all categories) in BEST's licensed area as on 31.05.2023 is 14.191 MW.

4) Supply Green Power to the consumers:

BEST Undertaking is providing Green Power to the consumer who has opted for 100% green energy with additional 'Green Power Tariff' of Rs.0.66/kWh. At present, BEST meets the requirement of Green energy of its consumers by procuring power from Net metering consumers, Walwhan Solar MH Ltd. and Power exchange. From FY 2024-25 onwards, BEST will meets the requirement of Green energy of its consumers from the tie up of 634 MW Solar/Wind power with Solar Energy Corporation of India (SECI).

Table No.14.1: BEST Consumers, Connected load and Consumption for the year 2022-23.

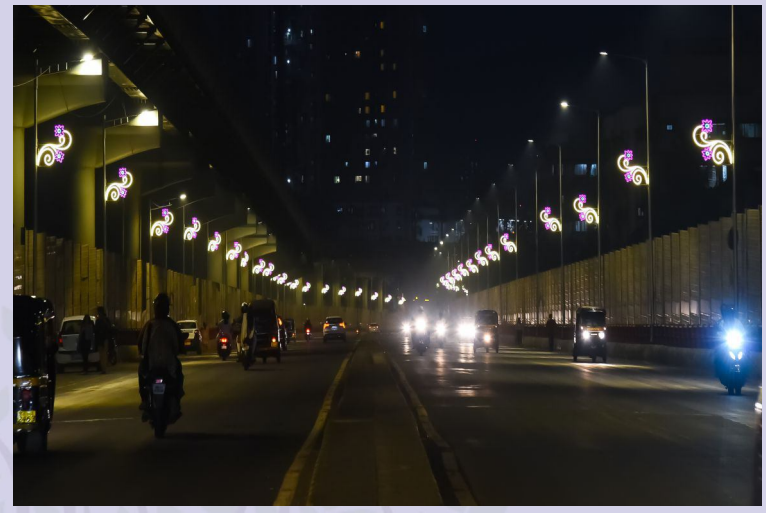
Sr. no.	Consumers Category	Mumbai City			
		Consumers #	Connected Load in MW	Consumption in Million Units (MUs)	Avg. Monthly Consumption (MUs) = e/12
1	HV Consumers	195	425.62	646.49	53.87
2	LV Consumers	1048465	4218.34	3846.80	320.57
	Total	1048660	4643.96	4493.29	374.44

Table No.14.2: Category wise Consumers, Connected Load and Consumption (2020-21)

Sr. no.	Consumers Category	Mumbai City			
		Consumers #	Connected Load in MW	Consumption in Million Units (MUs)	Avg. Monthly Consumption (MUs) = e/12
1	Residential	770303	2612.53	2074.66	172.89
2	Commercial	268707	1818.19	2033.00	169.42
3	Industrial	9122	196.45	351.60	29.30
4	E. V. Charging	32	11.84	18.49	1.54
5	Agriculture	1	0.03	0.05	0.0042
6	Public Lighting	495	4.92	15.49	1.29
	TOTAL	1048660	4643.96	4493.29	374.44

Meters installed on site

5) Providing and Fixing LED Street Lights:



As per the Government of India policy regarding energy conservation it was proposed to convert all the conventional HPSV/ MH Street lights of Mumbai by energy efficient LED Street lights. This conversion of conventional HPSV/ MH Street lights by LED Street lights has resulted in savings of minimum 47% energy consumption in various wards of Brihanmumbai Municipal Corporation.

Maharashtra State Electricity Distribution Company Limited

Maharashtra State Electricity Distribution Company Limited Thane urban zone supplies electricity to Bhandup and Mulund area of BrihanMumbai Municipal Corporation. Bhandup and Mulund Zonewise information is as follows.

Table No. 14.3: MSEDCL's Consumers, Connected Load and Consumption in MU's for F.Y. 2021-22.

Sr. No.	Category	Division Name					
		Bhandup			Mulund		
		Total Consumers	Connected load (KW)	Consumption (MU's)	Total Consumers	Connected load (KW)	Consumption (MU's)
1.	High Voltage Consumers	95	150911	200.51	46	34236	45.61
2.	Low Voltage Consumers	184828	406293	467.89	131251	419856	394.42
	Total	184923	557204	668.40	131297	454091.5	440.03

Table No. 14.4: MSEDCL Category wise Consumers, Connected Load and Consumption in MU's for F.Y. 2021-22.

Sr. No.	Category	Division Name					
		Bhandup	Mulund		Bhandup	Mulund	
		Total Consumers	Connected load (KW)	Consumption (MU's)	Total Consumers	Connected load (KW)	Consumption (MU's)
1.	Residential	161327	261421	285.94	113667	310226	271.51
2.	Commercial	18097	119372	138.74	15267	87449	98.11
3.	Industrial	4675	111545	155.70	1158	33693	53.33
4.	Others	824	64866	88.02	1205	22335	17.08
	Total	184923	557204	668.40	131297	453704	440.03

Table No. 14.5: MSEDCL's Consumers Average Consumption of energy in MU's for F.Y. 2021-22.

	Monthly Average Consumption in MU's		
	Bhandup Division	Mulund Division	Total Avg. Consumption
High Voltage Consumers	17	4	21
Low Voltage Consumers	39	33	72
Total	56	37	93

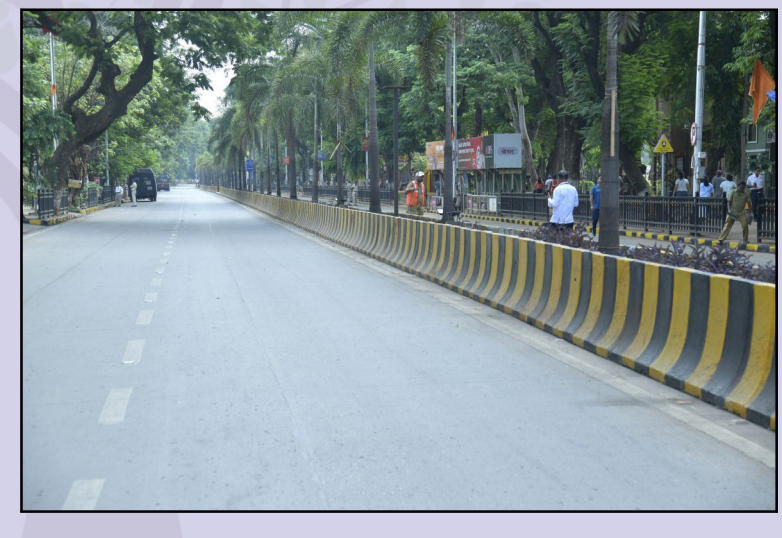
Table No. 14.6: MSEDCL's Categorywise Average Consumption of energy in MU's for F.Y. 2021-22.

LT Categorywise consumers	Monthly Average Consumption in MU's		
	Bhandup Division	Mulund Division	Total Avg. Consumption
Residential	24	23	46
Commercial	12	8	20
Industrial	13	4	17
Others	7	1	9
Total	56	37	92

15. ROAD, TRAFFIC AND TRANSPORT

1) Road Reforms:

About 2050 kilometres of roads is maintained by Brihanmumbai Municipal Corporation. DP road proposed in the DPDCR 2034 of Brihanmumbai Municipal Corporation, are being developed on priority after acquisition of land by DP department. Considering the heavy traffic, Bottleneck, the RL of respective road is increased and Roads are widened as per recommendation of ward offices. In past the roads were improved mainly using paver blocks, Bituminous concrete, Mastic asphalt etc. Roads are damage dut to the heavy rainfall in short period of time density of traffic, movement of heavy vehicles frequent trenching work by Utility agencies. Hence in order to improve the road surface and make the road pothole free, Brihanmumbai Municipal Corporation has decided to improve all the roads in cement concrete. About 990 K.M. of roads are already concretised within Brihanmumbai Municipal Corporation jurisdiction further work of construction of roads of about 265 K.M. lengths is in progress. In addition to that 5 Mega tenders are invited for construction of 397 K.M. of roads and work orders are issued to the concerned contractors. These tenders include the work of provision of utility ducts to lay utility cables, so as to avoid frequent trenching work. Rain water harvesting will be done by constructing chambers along roads. Due to the concretization of roads, all the roads will be pothole free, due to smooth traffic flow there will be saving time and fuel, also due to traffic less smooth ride there will be remarkable improvement in health of commuters.



The work of reinstatement of trenches is being carried out under strict supervision of quality

monitoring agencies. Further tender conditions are also made stringent to have good quality work.

Generally cold mix is used to fill up the potholes on roads during monsoon. However to have better quality work, advance technology such as use of rapid hardening concrete, reactive asphalt are being adopted. Potholes will be filled up with these new technologies during coming monsoon.

Eastern Express Highway and Western Express Highway, withing Brihanmumbai Municipal Corporation for repairs and maintenance work the work of preventive maintenance and beautification of Highways is being carried out by Brihanmumbai Municipal Corporation.

2) Footpath policy:

For free uninterrupted movement of pedestrians, Brihanmumbai Municipal Corporation has adopted footpath policy 'Pedestrain First' in year 2017. In the said policy various aspects such as width of footpath. Surface of footpath, Pedestrian Zone, Furniture Zone are elaborated. In order to improve the strength and beauty of footpath, all the footpaths are being improved in stamped concrete.

3) Use of Information technology:

To get quick information about the status of various roads which are in progress, use of Dashboard is proposed.

To know the exact location of utility cables below the road, utility agencies are insisted to mark the location of their utility in GIS system.

To give permission to utility agencies withing stipulated time period and to control the unauthorized trenching work new technology 'Call before You Dig (CbUD)' will be adopted in coordination with state government. Brihanmumbai Municipal Corporation has CPWM Portal for giving trench permission which will be connected to state government Gati shakti/ Mahasanchar Portal. It is proposed to make digitization of information of all roads.

TRAFFIC

1) Traffic Engineering:

The work of Traffic Planning and Traffic Co-Ordination department is carried out under the control of Dy.Ch.Eng. (Traffic) who works under Ch.Eng. (Roads and Traffic). This office look after the matters pertaining to prescription of regular line of road, design and construction of traffic islands, Providing and Fixing Signage works. Also, this office scrutinized and approves parking layout proposals received from Building proposals and Slum Rehabilitation Authority. This office also look after the work of the signal maintenance along with new signal installation work.

This office prepares policy for providing street light on newly constructed roads as well as improvement

of existing street lighting and making co-ordination with all Ward offices to get the above works done through three service provider electric companies viz. BEST, Adani Electricity and MSEB Co. Ltd. The budget provision for the same is made by traffic department.

2) Parking Policy:

In order to avoid traffic congestion due to unauthorized parking on roads tender procedure has been initiated for execution of on-street and off-street parking schemes. Out of 69 pay and park schemes on roads contractors have been appointed for 63 sites to start pay and park scheme. Similarly contractors have been appointed to operate of 32 Public Parking Lot and out of 33 Public Parking Lot which have been handed over Brihanmumbai Muncipal Corporation under DC Regulation no. 33 (24) of 1991 and Regulation no.33 (18) of DCPR 2034. There are 29 nos. of amenity parking places handed over to Brihanmumbai Municipal Corporation.

3) Parking Authority:

As per the recommendations in DP and provision in DCPR-2034, creation of Parking Authority is initiated by Brihanmumbai Municipal Corporation for regulation and management of parking in Mumbai. This Parking Authority shall decide the Parking Charges in various regions/ zones in Mumbai. Accordingly, committee has been formed to create the Parking Authority.

M/s. Tata Institute of Social Science (TISS) is appointed to collect the information and GIS mapping of various parking locations for this authority. Under MPA it is proposed to implement pilot project in G/South, D, K/West, S wards.

4) Multilevel Robotic Car Parking:

The contractor has appointed for the 546 capacity of robotic multilevel parking at near Mumbaidevi temple in C ward and the 475 capacity of robotic multilevel parking at near Central Matunga Railway Station in F/N ward. Also three Multilevel Car Parking lots are proposed and parking capacity of around 1000 will be available in near future.

5) LED Lights:

Brihanmumbai Municipal Corporation has started the implementation of fixing LED street lights in 2020-21. There are about 1,41,145 Sodium vapor lamps in Mumbai out of which 1,36,379 conventional lamps have been replaced by LED. It is proposed to complete balance 4,766 LED lights in Mumbai for year 2022-23. This causes more savings in energy bill. This savings in energy will go up as more lights will be converted to LED. The budget provision for LED conversion is Rs.5 crore for the year 2022-23.

6) Traffic Signages:

Brihanmumbai Municipal Corporation has appointed contractor for modern signages with upgradation of signages in City, Western Suburbs and Eastern Suburbs for an amount of nearly 60 Crores each for the period of two years and the work is in progress.

7) Initiative on Road Safety and High Risk Intersections (Black Spots):

As reported by the traffic police, 20 High Risk Intersections (black spots) in Brihanmumbai in 2022. For remedial measures of the said High Risk Intersections (black spots), Brihanmumbai Municipal Corporation is taking help of NGO, M/s. Bloomberg Philanthropies as a consultant. The aim is to review the High Risk Intersections (black spots) for conducting various engineering and traffic flow studies and to undertake appropriate engineering and planning interventions that can bear higher impact in saving lives on the road. Accordingly, NGO and his partner has submitted/ being the report to the Chief Enginner (Roads and Traffic). As per the said report, the concerned Deputy Chief Engineer (Roads) and concerned Ward Offices will take the necessary action on remedial measures. Also, in future, if traffic police informed the High Risk Intersections (black spots), the same procedure will be followed for eradicate High Risk Intersections (black spots).

8) Area Traffic Control (ATC):

At present 258 Signals in Brihanmumbai Municipal Corporation has already been converted into fully adaptive automated Signal System and are working satisfactorily. The maintenance of remaining 400 conventional system and 206 flashing beacons are being carried out.

16. BRIDGES IN MUMBAI

Major works completed during year 2021-22:

1. Demolition and Reconstruction of existing bridge over nalla at Juhu Tara Road near SNDT College on DBT basis is H/West Wards.
2. Demolition and Reconstruction of existing bridge over Dahisar River at Tatnan Nagar on DBT basis in R/Central Wards.
3. Demolition and Reconstruction Phase-1 of Hancock Bridge at Shivdas Chapsi Marg, Mazgaon in 'B' Ward.

Major works undertaken during year 2021-2022:

1. Reconstruction of Himalaya FOB at CSTM Station Connecting Railway FOB on D. N. Road near Time of India Building in 'A' Ward.
2. The variation in Construction of Flyover across S. V. Road at Kora Kendra, Borivali (W), Mumbai in 'R/Central' Ward for further extension from General Kariappa Bridge to Western Express Highway
3. Construction of R.O.B. at Vidyavihar Railway Station connecting LBS Marg to RC Marg in 'N' Ward.

Surface Transport

There are different types of vehicles plying on the roads of Mumbai every day. They consist of cars, taxis, trucks, buses, three-wheelers, two-wheelers etc. The total number of vehicles in Mumbai as on March 2023 is 45,37,211. Their composition is 59.3% two-wheelers, 29.31% cars, jeeps and station wagons, 2.91% taxis/cabs, 5.19% auto rickshaws, 0.29% buses, 0.26% Goods vehicles, 0.01% tractors/trailers and others 2.73%. As previous year increasing number of vehicles is 5.98% in Mumbai city. Table no. 16.1 shows number of different vehicle in Mumbai.

There are 1,31,900 metered taxis in Mumbai operating on petrol, diesel, CNG and LPG as on 31st

Table No. 16.1 Category-wise comparison of vehicle population 2020-22

Sr. No.	Category	As on 31st March		
		2021	2022	2023
1	Two Wheelers	2407016	2541033	2690367
2	Cars, Jeep, Station wagons	1156465	1252246	1329795
3	Taxi/Cabs	127993	124115	131900
4	Auto-rikshaws	222801	233325	235602
5	Buses	19682	3086	13372
6	Trucks & Lorries	94280	6514	11908
7	Tractor/ Trailors	354	384	425
8	Other	4906	120548	123842
	Total	**4033497**	**4281251**	**4537211**

Source : This information is received from RTO, GoM

Chart 16.1 (A) Category wise comparison of Vehicle Population April2021 to March2023

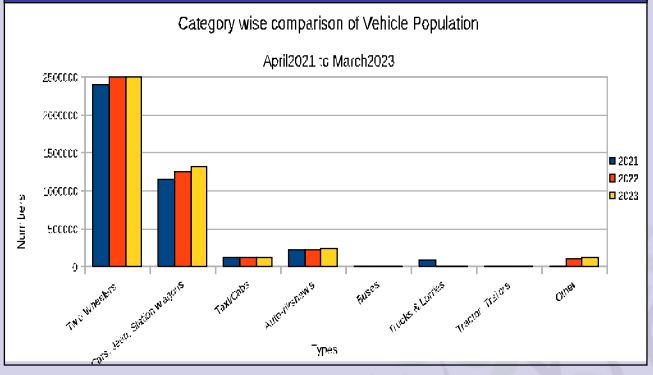


Chart 16.1 (B) Types of Vehicles as on 31 March 2023

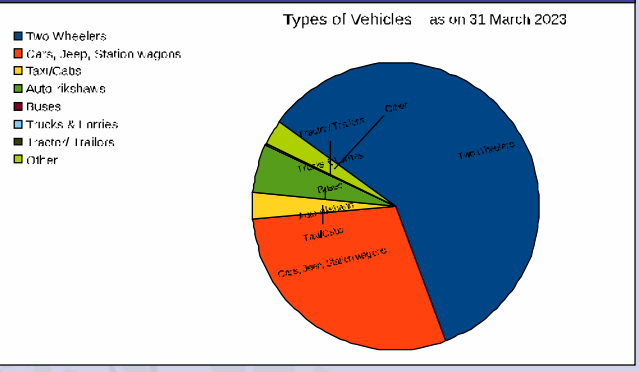


Table No 16.2 – Fuelwise Vehicle Population in Greater Mumbai Office as on 31st March 2023

Sr. No.	Category	DISEL	PETROL	LPG	CNG	ELECTRIC	OTHERS	TOTAL
1	Motor Cycles	0	1983816	0	4	9233	229	1993282
2	Scooters	0	665025	0	0	15	0	665020
3	Moped	0	32025	0	0	20	0	32045
	Total Two Wheelers	0	2680866	0	4	9268	229	2690367
4	Cars	323195	849267	10481	103126	6671	3698	1296438
5	Jeeps	29040	480	4	87	0	0	29611
6	Stn. Wagons	3039	707	0	0	0	0	3756
		355274	**850454**	**10485**	**103213**	**6671**	**3698**	**1329795**
7(a)	Taxis meter fited	1982	1426	532	40540	0	77	44557
7(b)	Luxury/ Tourist Cabs	40573	23653	378	21277	505	957	87343
		42555	**25079**	**910**	**61817**	**505**	**1034**	**131900**
8	Auto-rikshaws	20	59	4	230137	226	5156	235602
9	Stage carriages	3879	552	0	2015	114	0	6560
10	Contract carriages	8512	181	1	765	204	328	9991
	/Mini Bus							
11	School Bus	2550	151	1	677	0	2	3381
12	Private Service Vehicle	1006	12	2	90	0	0	1110
		15947	**896**	**4**	**3547**	**318**	**330**	**256644**
13	Ambulances	1587	351	0	144	0	2	2084
14	Articulated/ Multi	121	0	0	0	0	16	137
15	Truck and Lorries	11271	421	0	216	0	0	11908
16	Tanker	870	2	0	0	0	0	872
17	Delivery Van (4 wheelers)	59348	7510	4	7912	36	110	74902
18	Delivery Van (3 wheelers)	23536	4808	9	2986	431	106	31876
		95146	**12741**	**13**	**11114**	**467**	**232**	**119713**
19	Tractors	239	10	0	0	0	0	249
20	Trailers	149	2	0	0	0	25	176
		388	**12**	**0**	**0**	**0**	**25**	**425**
21	Others	5137	498	2	191	431	24	6283
		6724	**849**	**2**	**335**	**431**	**26**	**8367**
	Total	**516054**	**3570956**	**11418**	**410167**	**17886**	**10730**	**4537211**

March 2023. CNG, LPG and Electric which are regarded as clean fuel. More than 47% meter taxis and 97.78% rickshaws are running on clean fuel CNG, LPG and Electric.

In Mumbai region about 2,42,679 various types of vehicles are registered during April 2022 to March 2023. In this 59.22% of two wheelers, 29.28% of cars, jeeps and station wagons, 3.34% of taxi/cabs, 1.29% of Auto rikshwa's, 0.59% of buses, 5.58%, goods vehicles 0.02% of Tractors/Trailors and 0.69% of other vehicles.

Chart 16.2 Fuelwise Vehicle Population as on 31st March, 2023.

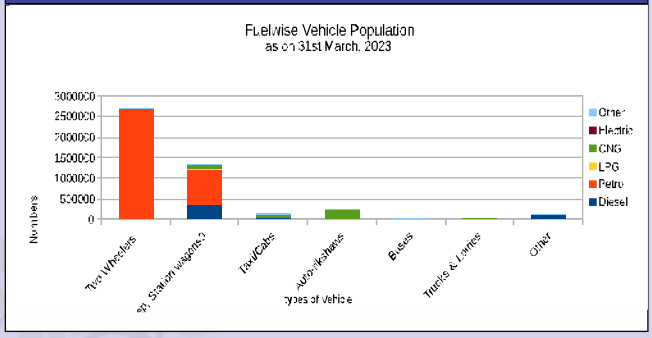
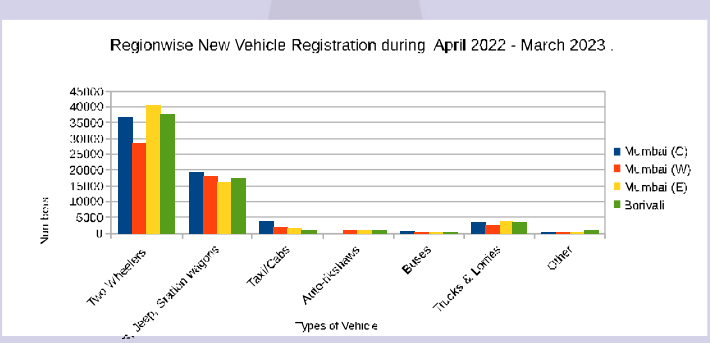


Table No 16.3 – Fuelwise Vehicle Population in Greater Mumbai Office as on 31st March 2023

Sr. No.	Category	Mumbai (C)	Mumbai (W)	Mumbai (E)	Borivali	Gr. Mumbai (Total)
1	MotorCycles	36875	28907	402081	37588	143651
2	Scooters	0	4	0	2	6
3	Moped	21	6	19	7	53
	Total Two Wheelers	**36896**	**28917**	**40300**	**37597**	**143710**
4	Cars	19547	17994	13205	17268	71014
5	Jeeps	0	0	0	0	0
6	Stn. Wagons	0	0	0	32	32
7(a)	Taxis meter fited	495	0	0	0	495
7(b)	Luxury/ Tourist Cabs	3427	1832	1481	876	7616
8	Auto-rikshaws	0	1164	971	998	3133
9	Stage carriages	70	56	0	0	126
10	Contract carriages	567	66	145	280	1058
	/Mini Bus					
11	School Bus	76	108	18	12	214
12	Private Service Vehicle	12	7	4	10	33
13	Ambulances	37	23	25	23	108
14	Articulated/ Multi	12	0	12	9	33
15	Truck and Lorries	106	0	1246	1501	3153
16	Tanker	70	0	32	3	105
17	Delivery Van (4 wheelers)	2559	2132	2067	1235	79893
18	Delivery Van (3 wheelers)	266	642	620	721	2249
19	Tractors	13	4	2	1	20
20	Trailors	0	16	0	4	20
21	Others	373	157	171	866	1567
	Total	**64826**	**53118**	**63299**	**61436**	**242679**



BEST - Transport

Promoting the Environment Friendly Transport:

The Indian government has paved the way for initiatives for Electric Vehicles to promote sustainable transportation system through several measures which will allow India to continue its paths to a greener future. BEST undertaking has accordingly taken steps in line with Indian Government initiatives.

Of the total 3225 buses used for public transportation by BEST, 83% of these are environment friendly CNG and Electric buses. The operation of Electric buses have helped in reducing emission of approx. 269 lakhs Kg of carbon di-oxide in the environment. Presently 426 electric buses are in operation and contract work order of 3000 Electric buses (2100 SD and 900 DD) is placed. By the year 2023 end, more than 50% fleet of Undertaking will be electric and by 2026, entire fleet of BEST Undertaking will be electric buses. This will help to reduce the pollution of Mumbai city as emission of 75000 tones of CO_2 per year will be reduced by operation of these buses.

BEST has deployed 185 nos. of Electric Vehicles in place of Fossil Fuel operated Vehicles for its departmental work. BEST has also installed private electric vehicle charging stations at 59 locations in various BEST depots and Quarters. of the same are as

BEST ELECTRIC BUSES

ELECTRIC CHARGING STATIONS

17. MUMBAI COASTAL ROAD

The Mumbai coastal road project (South) is one of the most prestigious projects undertaken by Brihanmumbai Municipal Corporation. This Southern Coastal Road Project of 10.58 km from Princess Street Flyover to Worli End of Bandra Worli Sea Link is proposed to resolve the traffic congestion in Mumbai. In addition this road will provide several environmental friendly features to the city. The proposed Coastal Road is having eight lanes (4+4) configuration comprising road based on reclamation, Bridges, elevated roads and tunnels.

The Mumbai Coastal Road Project will reduce the travel time, decongest existing roads, reduce the air and noise pollution levels, improve public transport facility due to proposed dedicated BRTS lane and also generate much needed additional green spaces which will also decrease CO_2 emission.

The Ministry of Environment, Forest and Climate Changes (MoEF&CC) has issued CRZ Clearance for the Project on 17.05.2017 and amendment on 18.05.2021. Also, the NOC's from other concerned departments of Central Government and State Government have been obtained for Mumbai Coastal Road (South) Project.

Table No.17.1: The salient feature of theCoastal Road Project

1	Length	10.58 km
2	Road on reclamation	4.35 km
3	Tunnel (3 Lanes, 11m internal dia.) X 2 Tubes	2.07 km
4	Bridges(4+4Lanes)	2.19 km
5	Interchanges (Amarson, Haji Ali&Worli)	3 nos.
6	Seawall Length	7.47 km
7	Reclamation area	111 hectare
8	Recreation area (Gardens, Landscape, Parks etc.)	70 hectare
9	Promenade (20 m wide)	7.50km
10	Pedestrian Underpassess	16 nos.
11	Underground Car parks4 Locations	(about 1800-Lots)
12	Generation of approximately employment opportunity due to proposed Coastal Road	1,00,000
13	BRTS, dedicated lanes for Ambulance	-
14	Sophisticated Saccardo Nozzle Ventilation system and special fire protection board intunnel	-
15	Flood risk minimizes due to construction of Sea Wall and better designed drainage system along with automated anti-flood gates and box culverts of total length	-

The total Estimated Project Cost is Rs. 12,721 Cr. This Project is divided into three packages viz. Package-IV (From Princess Street Flyover to Priyadarshini Park), Package-I (From Priyadarshini Park to Baroda Palace) and Package-II (From Baroda Palace to Worli End of Bandra Worli Sea Link). The design and Build work for Package I and Package IV is under progress through the contractor M/s. Larsen and Toubro

Ltd. and for Package II through the contractor M/s. H.C.C.- H.D.C. (Joint Venture). For each Package one Project Management Consultant (PMC) has been appointed as Employer's Personnel for supervisions and other allied works. Accordingly M/s Yooshin Engineering Corporation+ M/s Tec Cuatro S.A(JV), M/s Louis Berger Consulting Pvt. Ltd. and M/s Egis India Consulting Engineers Pvt. Ltd + Cullen Grummit and Roe (UK) Ltd., (JV) have been appointed as PMCs for Package IV, I and II respectively. Also one General Consultant M/s AECOM Asia Co. Ltd is appointed as Employer's representative for co-ordination and monitoring the entire project through all PMCs and other allied works.

This work is in progress since October 2018 and expected to be completed in November 2023. The required Budget Provision of Rs.2650 Cr. has been made in the financial year 2022-2023..

Salient Features of Site Environment Management Plan for the Project

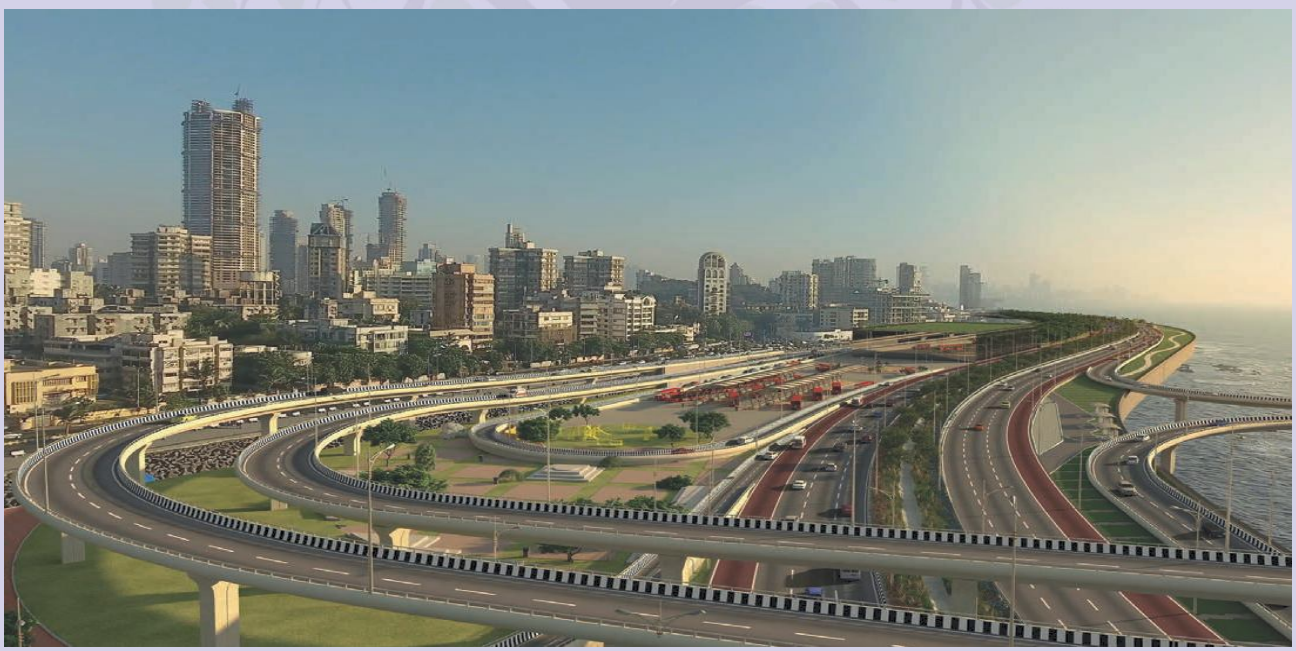
Brihanmumbai Municipal Corporation has awarded Civil Contracts of all the three Packages of Coastal Road to recognized International Contractors like L&T, HCC-HDC (JV).

The following compliance are done/ in progress through all contractors regarding Environmental Compliance mentioned in Site specific Environment Plan as well as requirements of MOEF&CC applicable to them

1. Air and Noise Monitoring is being done on sites and compared with Pre construction results (Base-LineData) and Standards of MOEF and MPCB
2. For controlling dust, Contractors are doing Water Sprinkling on their sites during construction work.
3. Wheel Wash Facilities is also provided at every Main Entrance and Exit of site where Vehicle Movement is there.
4. Noise Barriers are being provided at all Critical Locations like Near Schools and Hospitals etc. during Construction.
5. All Construction vehicles are provided with Noise Mufflers, Good Silencers on sites.
6. All Construction sites are barricaded by barricading boards in addition to Noise Barriers to Control Noise and demarcate site from General Public and Road users.
7. Preventive Maintenance schedule for all construction Machinery at site. All construction machinery is having PUC certificates. Preventive Maintenance of Machinery will also reduce noise from Machinery.
8. All rotating parts of construction machineries have provided with canopies and grills to control rotating parts noise during construction phase.
9. Contractors have provided Bio Toilets on sites.
10. The corals noticed along the Mumbai coast in Worli region and in Haji Ali region covering an area of

0.251 m^2 and 0.11 m^2 respectively. Brihanmumbai Municipal Corporation has taken the necessary permit from the Chief Wildlife Warden to translocate the Corals and appointed CSIR-NIO a Govt. agency through Contractors to carry out the work of translocation of corals and successfully carried out translocation of corals by Brihanmumbai Municipal Corporation through the CSIR-NIO agency in the presence of authorized officers of Mangrove cell of Forest department. No damage was found to the other wildlife species during translocation process. Further regular monitoring to observe coral health and survival in the region has been carried out by CSIR-NIO for one year and as mentioned in monitoring report of NIO, it is found that survival rate of Corals is100% in May 2021.11. National Institute of Oceanography (NIO), Dona Paula, Goa is engaged for investigation on impact of Coastal Road project waves, water levels, seawater quality and related environemntal aspects during progress of work and 2 years in operation phase.

11. Brihanmumbai Municipal Corporation has deposited 2% of total cost of the project (i.e. Rs.175.33 Cr) for conservation of coastal and marine biodiversity to the Mangrove Foundation of Maharashtra. The Mangrove Cell tied up with National Institute of Oceanography (NIO), Mumbai for establishment of artificial reef along the project coast as a pilot project. Artificial reef is a human created underwater structure, typically built to promote marine life. It generally provides hard surfaces were algae and invertebrates such as barnacles, corals and oyster attach. The accumulation of attached marine life in turn provides food and shelter for assemblages of fish and it enhances marine ecosystem.



18. EDUCATION

As per the directives laid under Section 61 (Q) of the MMC ACT 1888, providing free Primary Education to the Children of Mumbai, is obligatory and binding duty of the Municipal Corporation of Greater Mumbai. Since 1907, Brihanmumbai Municipal Corporation Education Department has been accomplishing this responsibility.

In the academic year 2022-23, through eight mediums in 965 primary schools of MCGM. 2,64,439 students are catered quality education. For this purpose, 6585 highly proficient and dedicated teachers are working diligently. Also, our 77 teachers are engaged in the services of our 896 specially-abled students from 19 Brihanmumbai Municipal Corporation special schools.

From the year 2007–08 Brihanmumbai Municipal Corporation has launched English medium schools under the name of 'MUMBAI PUBLIC SCHOOL' in which education facility from Jr. Kg. to 10th STD has been provided. From the year 2020–21, Brihanmumbai Municipal Corporation has established a total of 14 schools such as 11 of CBSE board and 1 of ICSE, IGCSE and IB board. A total number of 6004 students are taking education through these schools.

Under Right Education Act of 2009 for free and compulsory education of children of age 6 to 14 years, all the children can access free education in any nearby Brihanmumbai Municipal Corporation school or aided school. Children are admitted in the classes as per their age group. Entire system of Brihanmumbai Municipal Corporation education department takes all efforts to ensure that 100% students get admission in schools under preview of Brihanmumbai Municipal Corporation. In the academic year 2022-23 a venture named 'Ekach Lakshya Ek Lakshy' was implemented under 'Mission admission'. Through this venture Brihanmumbai Municipal Corporation was successful in bringing maximum school age, out of school children in main stream of education. This efforts of Brihanmumbai Municipal Corporation education department was acknowledged on National level and Education Officer of Brihanmumbai Municipal Corporation was awarded with National award for Mission admission.

Secondary Education section:

In the academic year 2022 -23, Brihanmumbai Municipal Corporation Education Department is rendering secondary education services through 190 schools out of which 49 aided and 141 unaided along with 59 MUMBAI PUBLIC SCHOOL (English Medium) secondary schools. As a result, total 249 secondary

schools are running efficiently.

The student strength of 243 secondary schools in March 2022 is as follows. Aided-16,423; Unaided-22,722 and MPS-8,256. Total Student Strengths is 47,404. Secondary Education is provided in Marathi, Hindi, English, Urdu, Gujrati, Telugu, Kannada, Tamil medium through 1378 secondary teachers. As of now 92 secondary schools have received Government recognition.

Our 16807 students appeared for the SSC board examinations, out of which 16319 students were successful i.e. our result was a stellar 97.10%. Our 138 secondary schools bagged 100% result. Our 80 students have obtained 90% & more than 90% marks in last year. The SSC result of 138 secondary schools was 100% in academic year 2021-22.

D.ED/ Science Junior College:

Facility of two D.Ed Colleges namely R.C. Urdu D.Ed college, Imamwada & R.C. Urdu D.Ed. College, Mahim are run by Municipal Corporation of Greater Mumbai on Grant in aid basis.

Currently, without any financial burden on Brihanmumbai Municipal Corporation, three Junior Science College are run by Vidyalankar - 1) Bhavani Shankar Road School Dadar (W), 2) Ratanbai Walbai Mun. School, Mulund (W), and one by Ideal Education Trust - 1) Dixit Road Vileparle (W). These three science Junior Colleges are conducted on partnership basis and provide free education to students of MCGM Sec. Schools admitted in std. 11^{Th} and 12^{th} and 137 students are pursuing their D.Ed. Course.

Private Primary Schools:

Brihnmumbai Municipal Corporation Education Department regulates the private primary schools Brihnmumbai Municipal Corporation Education department issues recognition and registration certificates to these schools. It also looks into the administration and the effective functioning of these schools. The aided and unaided schools are administered by the Duputy Education Officer Private Primary school section.

Type of School	No. of Schools	No. of Students	No. of Teachers
Aided	387	103191	2702
Unaided	680	292037	7249

Digital Classroom:

In the year 2022-23, tender process has been completed through MNE (Maintenance & Electrical Dept.) (E.I.) for the digitalization of 1300 classrooms with LED interactive panels. Electrification work of installing Digital Classrooms in Brihanmumbai Municipal Corporation schools has been completed by the appointed contractor, M/S. Bennet Coleman and Company PVT. LTD. The contractor has supplied the schools with the Digital Classroom equipment. Out of 7964 classrooms to be digitalized, last year 2514 were digitalized. In the year 2023-24, out of remaining classrooms, 1300 classrooms will be digitalized by installing LED interactive panels.

Virtual Classroom (VTC):

In the year 2011, BrihanMumbai Municipal Corporation Education Department established Virtual Classrooms. At present, 480 BrihanMumbai Municipal Corporation schools (360 primary and 120 secondary) of Marathi, Hindi, Urdu and English mediums are benefited with the live teaching by our technically expert and dedicated teachers. Not only BrihanMumbai Municipal Corporation school students but also students of STD 1st to 10th from all over the state are beneficiaries of this online teaching via 40 YouTube channels which have started on basis of both standard and medium wise for all 4 mediums of instructions (Marathi, Hindi, Urdu and English).

At present the tender process on VSAT projection technology is terminated. Therefore, the teaching process is executed through the medium of internet including digital panel board and materials already available of Virtual Class. At present the capacity to connect 200 schools has been achieved.

Competitive Exams:

Brihanmumbai Municipal Corporation conducts various examinations such as Scholarship Examination, Talent Search Examination, Mathematics, Science, English Olympiad (IFO) etc. for the betterment and enhance the quality of students from Municipal schools.

2,433 students appeared for Primary Olympiad (English, Mathematics, Science) out of which 572 students were enrolled for National Level. A total of 68 students appeared for the International Finance Examination, out of which 50 students were enrolled for the national level.

On 15-10-2022, following the occasion of Former President of India Dr. A. P. J. Abdul Kalam's birth anniversary, 'Hand Wash Day' was organized under the 'Swachh Vidyalaya' campaign at all school levels. During the period of Amrit Mahotsav of Independence, Essay competitions on 'Trees - Our Friends' were conducted in the month of July 2022 in Brihanmumbai Municipal Corporation schools. Public awareness was created at the school level through posters, pictures, banners etc. In the month of August 2022, the initiative to plant medicinal plants was implemented in Brihanmumbai Municipal Corporation schools. Essay competitions were held at the school level on topics such as 'Embellishment of Surrounding' in the

month of December 2022 and 'Measures to prevent pollution of Air, Water and Food' in March 2023.

District Training Center:

On 27th of February 2022, on the occasion of birth anniversary of Dnyaanpeeth Award winner, Poet. Shri. V. V. Shirwadkar (Kavi Kusumagraj), Marathi Language Pride Day Book was published by DTC.

Scout and Guide Section:

Scout-Guide is an 'International Movement', based on the four pillars of scouting i.e. Character building, Service to Mankind, Intelligence and Health and Craftsmanship respectively.

25,897 students and 1096 teachers are enrolled in the year 2022-23. Total 296 students got State Level Award (73 Chaturth Charan, 36 Heerak Pankh, 105 Guides and 82 Scouts) 09 Guides and 02 Scouts are qualified for the Rashtrapati Award Testing Camp.

In 2022-23, for the first time Rover and Ranger Units are registered in Brihanmumbai Municipal Corporation's D.Ed. Colleges.

In the year 2022-23, with the help of 'World Resource Institute, Parel (NGO) Urban Vegetable Farming projects is being implemented for the Brihanmumbai Municipal Corporation students at the Scout-Guide Training Centre, Powai. 'Kitchen Garden' subject is included in scout-guide syllabus. Hence, Rajyapuraskar and Rashtrapati puraskar students should master in the subject and achieve the proficiency badge of 'Kitchen Garden'. Also, to check the increasing pollution and curb the Globing Warming, the earth must be full of greenery. Keeping all these points, the 'Urban Vegetable Farming project has been carried out.

18 Guides (Girls), 18 Scouts (Boys) and 05 scout-guide officers actively and spontaneously participated in the 18th National Jamboree held in January 2023 at Pali, Rajasthan.

In 2022-23, all the activities are conducted as per the scout-guide year planning.

Housekeeping:

Recruitment of external contractors was started from 2009 by inviting Tenders through public news paper for sanitation, security and cleanliness of surrounding for all school buildings under Brihanmumbai Municipal corporation. Accordingly for the period from 2016 to 2019, for the sanitation, safety and cleanliness of the schools and surrounding area of the schools as well as to prevent anti-social behaviour from outsiders, the M/s. BVG Pvt. Ltd., M/s. Brisk India Pvt. Ltd. and Krystal Integrated service Pvt. Ltd has been appointed for City, Eastern & Western suburbs respectively. Further contract has been extended up to year 2022 with the same contractors. Therefore the cleanliness of the schools of Brihanmumbai Municipal corporation and the Health of the student in the schools have been helped. Also since the surrounding are being cleaned, it is helping to maintain the balance of the environment. At present, for the year 2022 to 2025

sanitation, protection and maintenance of 467 School buildings of Brihanmumbai Municipal corporation is being carried out through external contractors by inviting tenders for housekeeping at per Sq.ft rate and tender process is underway in this regard.

Road Safety Patrol (RSP):

10320 and 1040 students of primary and secondary schools respectively are active in the Road Safety Patrol. These students were imparted with the training on road safety rules and traffic signals by the police officers and expert people from the Mumbai Traffic Police Cell through the Road Safety Force.

Water Purifiers:

Water purifiers have been installed in the Brihanmumbai Municipal Corporation schools to provide safe drinking water to the students. The safety of such devices requires annual maintenance. Accordingly, a contractor has been selected for the annual maintenance of a total of 1600 water purifiers for the period of 2023-24.

Procurement of new 326 water purifiers is being done by Deputy Chief Engineer (Mechanical and Electrical), Conservation. Out of these 326 devices, 281 devices have been installed in the schools and remaining 45 devices will be installed as per need.

Free Distribution of Scholastic Material:

Majority of the student enrolled in Brihanmumbai Municipal Corporation schools belong to economically backward sections of the society. In such a situation, free scholastic materials are distributed since 2007-08, so that the parents of Brihanmumbai Municipal Corporation school students do not have to bear the financial burden of purchasing school supplies.

At present, a tender process for the year 2022-24 has been conducted through the Deputy Chief Engineer (CPD) Byculla, regarding the purchase of school supplies like {Uniforms, Books, Shoes and Socks, Stationery, Sandals, School Kit (Lunch Box, Bottle, School Bag) Canvas Shoes and Sports Uniform} etc. for the students of the Brihanmumbai Municipal Corporation and have been distributed to the school students in the year 2022-23. Also, for the year 2023-24, the process of distribution of school supplies to the students is underway and it has been planned accordingly so as the students would receive the school supplies before the commencement of school.

Sanitary Napkin:

Since 2018, sanitary Napkins with disposable pouches are being provided with Vending Machines for the students of 6^{th} to 8^{th} std. by the Brihanmumbai Municipal schools. At present, Sanitary Napkins have been supplied to the students of Municipal Schools till the year 2022. Also the tendering process for supply of Sanitary Napkins to the Municipal School Students for the year 2023-23 is going on.

Welfare Scheme for Divyang Students:

A) Scholarships: A Divyang students studying in std.1st to 10th are eligible for an Annual Scholarship of Rs.1000/- to Rs.2000/- on securing a 'B' grade or above in both the semester examination.
In the year 2022-23, the process of awarding Annual Scholarship for the academic year 2021-22 to 3018 students has been completed.

B) Attendance Allowance Scheme: In the year 2022-23, the payment of Attendance Allowance of Rs.20/- per day to 3757 students for the academic year 2021-22 has been completed.

These schemes will continue in the year 2023-24.

PM Poshan Shakti Nirman Scheme:

As per the indications ordained by the Central Government and the State Government, a 'MID – DAY MEAL' scheme is being implemented for the students of STD. 1st to STD. 5th standard in Brihanmumbai Municipal Corporation Primary Schools. Under this scheme students are provided with 400 to 450 grams of cooked food containing 450 calories and 12 grams of protein for at least 222 days in a year. Similarly, under the scheme of "NATIONAL MID – DAY MEAL' students of std. 6th to 8th are provided with 700 to 750 grams of cooked food containing 700 calories and 20 grams of protein for at least 222 days in a year.

During the year 2022-23, MID-DAY MEAL was distributed to approximately 5.69 lakh students in 1959 MCGM and Private Aided Primary and Secondary schools under the Brihanmumbai Municipal Corporation jurisdiction through 160 central kitchens.

Medical Officer (Schools) Section:

School Health services:

School Health Department conducts annual medical screening of students of the all Brihanmumbai Municipal Corporation schools from Std. 1st to 10th According to the need, these students are referred to Brihanmumbai Municipal Corporation dispensaries and school clinics in hospitals for further management. In academic year i.e from June to April, the medical screening is being conducted successively visiting each school by medical team. Each medical team consist of one Medical Officer, one Junior nurse and one Peon. School students, parents and teachers are being imparted health education by arranging parents-teachers meeting in schools and through virtual classroom.

Deworming tablets are given under the observation of class teachers at every six months on National Deworming days to the students of Std. 1st to 10th For the prevention of anaemia in school students 'National Iron Plus Initiative Programme' (NIPI) has been implemented in schools since November 2017. Under this programme students of 1st to 10th standard are given Iron tablet once a week under the observation of class teachers.

In the 2021-22 academic year from June 2022 to March 2023 annual medical screening of students has been conducted. In this period 112302 boys, 109856 girls so total 222158 students were medically screened. During the NDD programme in October 2022 total 371366 students of Brihanmumbai Municipal Corporation and aided schools were given Albendazole Tablets.

Balkotsav:

Annual Day program is organised every year across all our Brihanmumbai Municipal Corporation schools. Dance, Dramatization and Cultural program competition are conducted in our Brihanmumbai Municipal Corporation school hall. Approximately 20,520 students participating in this Annual Day program / Balkotsav and thus availed the opportunity to represent their dance, music and dramatization skills.

The folk dance competition is conducted at ward level and from this the selected first rank dance groups are given opportunity at our Brihanmumbai Municipal Corporation school city level. The final dance competition is organized in a huge auditorium and the first three winners are felicitated with Trophy, certificates and cash prizes, while all the participant students are given participation certificates.

In year 2022-2023 this program was conducted on 23rd January 2023 in Master Denanath Mangeshkar Auditorium.

Street-Play Competition:

Street-Play Competition are conducted in the memory of Hindu Hriday Samrat Balasaheb Thackeray. Street-Play Competition are conducted in our three zones on three different topics based on Social Problems / issues. The street plays that are selected for first rank from every three topic are nominated for the final round of competition.

In year 2022-2023 this program was conducted on 23rd January 2023 in Master Denanath Mangeshkar Auditorium.

Financial Support to SSC Merit Rank Holders:

Since March 2020 SSC examination, our first 25 rank holders in the SSC examinations will be bestowed either with Rs.25,000/- each year college tuition fees up to completing graduation in any of the professional degrees that they are enrolled into. This will be an investment for the future of our high qualifying SSC students. Total of 39 students who have given SSC exam in March 2022 are benefited from this support scheme. Due to this support, Brihanmumbai Municipal Corporation school students gets opportunity of best career for their bright future.

Career Counselling programs for higher secondary students:

Career Counseling programs for higher secondary students- Taking career Awareness program a step further, Brihanmumbai Municipal Corporation, in partnership with Antarang Foundation, started out a

WhatsApp Chatbot for class 9th and 10th students from March 2021 onwards to ensure that the students are well-informed with career option and on going update about education and also they help student for std. 11th online admission. After regular reopening of schools after covid situation is under control, they are going to set up career Ten Lab in schools with computer lab for individual guidance on career option.

Music and Art Academy:

Music:

Environmental Songs- Every year, songs on Environment Protection/Conservation, Cleanliness are included in the music curriculum. In this curriculum, public awareness is created about various environmental issues like Forest Conservation, Water Conservation, Tree Plantation, Environment / Physical Hygiene.

Through various social media platforms, these songs from the syllabus are broadcasted all over India and outside India through YouTube. These songs have received many viewers.

ENVIRONMENT SONG - https://youtu.be/1u1J3IKUOHA

CLEANLINESS SONG - https://youtu.be/STVhDEEJY9W

PHYSICAL HYGIENE SONG - https://youtu.be/31023Q06ZGE

WATER CONSERVATION SONG - https://youtu.be/00J5kshNast

ENVIRONMENT CONSERVATION SONG - https://youtu.be/ffaOmnT3zkg

Also, the Street Play Competition organized by Brihanmumbai Municipal Corporation includes Environment Conservation topics. 'SAMBAR', a children's play on the theme of Environmental Protection And Conservation, was presented at the Maharashtra State Play Year 2022-23 (Children's Drama Competition) and gained popularity by presenting it in 'Sangeet Samaroh' year 2022-23.

ART:

1. Sri Ganesh Murthy Pottery Workshop:

On behalf of the Department of Arts & the Education Department of Brihanmumbai Municipal Corporation to spread the message of public awareness to the citizens about the damage to the environment due to the use of Ganesha Idols made of plaster of Paris and the degradation of the environment due to water pollution.

Through the workshop, the students should be aware of environmental awareness and in the subject of sculpture in the form of painting, the students should be able to handle different mediums of art through the clay of Shadu and in order to give scope to the creativity of the students, the clay work workshop was organized like every year. It was conducted on 25th and 26th August 2022 at Central and Intermediate level. In this workshop, 390 Students from B.M.C. schools participated.

2. Shiv Vaibhav Fort (Gaddurg) Replica Creation Sculpture Competition:

Chhatrapati Shivaji Maharaj, the great Emperor of Maharashtra, he built various forts to protect 'Swarajya' and his people. To inculcate values of bravery, self respect and creativity we conduct Shiv Vaibhav Fort Replica creation competition at Juhu Beach. This competition is conducted on 18th October 2022. Through this activity students remember their history and dynasty of Chhatrapati Shivaji Maharaj forever. Students use only sand on the pavement and avoid using of any kind of synthetic (plastic, plaster etc.) material which will harm the eco system. Through this activity children spread awareness about our history and environment.

3. Energy Conservation Painting Competition:

Many students from the Municipal Corporation's multilingual schools participate in the State Level Energy Conservation Painting Competition 2022 organized by the Union Ministry of Power.

4. Water Conservation Painting Competition:

To create awareness among school students about ground water conservation, a drawing competition is organized every year on related topics by the Union Ministry of Groundwater.

5. Fuel Saving (PCRA) Painting Competition:

The Union Ministry of Petroleum creates awareness among school students about the use of petroleum and natural gas products. A painting competition is organized every year on related topics in relation to the awareness of petroleum production.

Work Experience:

- From mandatory activities, environmentally productive and necessary activities awareness, protection of environmental is given.
- Awareness regarding water protection and disaster management is created.
- Considering available facilities needs and interests of the students, environmental, friendly activities like competitions were conducted, such as. Sky lantern making, Cutwork Rangoli making. Rakhi making, Paper bag making, Greeting card making. Toy making, Diya making, Kite making, Toran making etc.

Scholarship Exam:

Pre-upper primary Scholarship examination (PUP) (std.5th), Pre secondary Scholarship examination (PSS) (std.8th) is an external competitive examination conducted by (MSEC), Maharashtra State Examination Council, Pune.

Students from Brihanmumbai Municipal Corporation school and all other aided and private schools appear for this scholarship examination.

For the academic year 2021-22, this exam was conducted on 31st July 2022. Total Student 5th standard 2705 and 8th standard 2687 was appeared for this exam. Out of which 284 student of 5th standard and 173 student of 8th standard was selected in District Merit List.

Maharashtra State Exam Council (MSEC) has conducted Scholarship Exam for academic year 2022-23 on 12th February 2023. 3112 students of std. 5th and 3029 students of std. 8th of BMC schools appeared for this exam.

19. AIR QUALITY STATUS

Air Quality Monitoring and Research Laboratory:

As per 74th ammendment of the constitution of India in 1992 (12th schedule) the Maharashtra State Government issued an ordinance amend Municipal Corporation Act-1888 making "environment protection, promotion of ecology and urban forestry" as an obligatory duty vide section 61 (ab) in the year 1994.

In view of fulfillment of the above Act, Air Quality Monitoring and Research Laboratory working under environment department of Brihanmumbai Mahanagarpalika to measure the levels of air pollutants in Brihanmumbai Municipal Corporation jurisdiction has established a fixed air monitoring station in different location. Also measured air pollution level with the help of automatic van (Mobile Van) in dumping ground and traffic junctions. Whenever the complaints are received from citizens, special monitoring is carried out and the reports are submitted. Also under the section '63 B' of Mumbai Municipal Corporation (MMC) Act. 1888 Environmental Status Report is prepared and submitted every year before 31st July to the Corporation. This laboratory established in the year 1976 this the only one environmental laboratory to monitored ambient air pollutant.

In the territory of BMC,. Ambient Air Quality Monitoring network comprises manually operated monitoring stations. From these monitoring station collects the samples of various pollutants with the help of High Volume Samplers like Sulpher dioxide (SO_2), Nitrogen dioxide (NO_2), Amonia (NH_3) & Suspended Particulate Matter (SPM), temperature and relative humidity daily. These samples analysed with the help of UV Spectrophotometer. Along with this analysis of Polynuclear Aromatic Hydrocarbons (Phenanthrene, Anthracene, Fluoranthere, Pyrene, Benzo (α) anthracene, Chrysene & Benzo (α) Pyrene) extracted from suspended particulate matter are analysed with the help of Gas Chromatograph. Also the analysis of heavy metals [Arsenic (AS), Cadmium (Cd), Chromium (Cr), Copper (Cu), Iron (Fe), Nickel (Ni) & Lead (Pb)] extracted from suspended particulate matter are analysed with the help of Atomic Absorption Spectrophotometer. The Air Quality monitoring is carried out as per the CPCB guidelines. Whenever the complaints are received from citizens, special monitoring is carried out and the reports are submitted to concerns.

Mobile Van Monitoring :

In the BMC area with the help of Mobile Van, monitoring is carried out at traffic junctions namely Wadala and Andheri. Similarly at the dumping grounds namely Deonar, & Kanjur. The pollutants analysed are SO_2, NO_2, CO, O_3, PM_{10}, $PM_{2.5}$, Hydrocarbans etc. Whenever the complains are received from citizens, special monitoring is carried out with the help of Mobile Van and the reports are submitted to the concern authority. Result of pollutants are compared with standards set by Central Pollution Control Board (CPCB) and Monthly/Annual report is forwarded to Dy.Ch.Eng (Civil)Env/ Ch.Eng(SWM) and HOD, Environment Pollution & Research Centre(EPRC) department (KEM).

Table 19.1 : Monthly Air Quality Levels at Traffic junctions during 2022-23

Months	Andheri							Vadala						
	So_2	No_2	Pm_{10}	$PM_{2.5}$	CO	O_3	Nh_3	So_2	No_2	Pm_{10}	$PM_{2.5}$	CO	O_3	NH_3
April 2022	6	54	38	36	1.5	13	123	6	31	71	7	0.6	18	50
May 2022	8	51	120	27	1.1	23	140	9	25	121	21	1.0	29	38
June 2022	8	61	79	13	1.4	14	118	9	28	50	16	1.0	20	43
July 2022	8	121	59	12	1.8	12	139	9	113	34	9	2.7	13	110
Aug 2022	9	59	62	13	2.0	9	68	9	50	35	9	1.3	10	47
Sep 2022	9	11	84	39	1.7	9	14	10	4	60	26	1.0	10	5
Oct 2022	10	11	159	46	1.6	10	14	10	25	111	55	1.1	12	30
Nove 2022	10	54	194	99	1.5	13	67	10	49	259	129	1.4	19	61
Dec 2022	10	38	210	69	2.0	11	49	10	46	165	67	1.6	17	58
Janu 2023	9	58	120	65	1.7	12	77	10	55	188	103	1.7	18	74
Febr 2023	10	49	290	85	1.8	13	67	10	51	245	74	1.1	20	69
Mar 2023	10	38	227	123	2.3	13	55	10	33	164	82	1.4	19	48
Average	**9**	**50**	**137**	**52**	**1.7**	**13**	**78**	**9**	**42**	**125**	**50**	**1.3**	**17**	**53**
CPCB Std. (24 तास) Avg	80 $\mu g/m^3$	80 $\mu g/m^3$	100 $\mu g/m^3$	60 $\mu g/m^3$	2.0 mg/m^3 (8Hrs)	100 $\mu g/m^3$ (8Hrs)	400 $\mu g/m^3$	80 $\mu g/m^3$	80 $\mu g/m^3$	100 $\mu g/m^3$	60 $\mu g/m^3$	2.0 mg/m (8Hrs)	100 $\mu g/m^3$ (8Hrs)	400 $\mu g/m^3$

Chart 19.1 (A) Sulphur dioxide Levels From Apr.2022 to Mar.2023

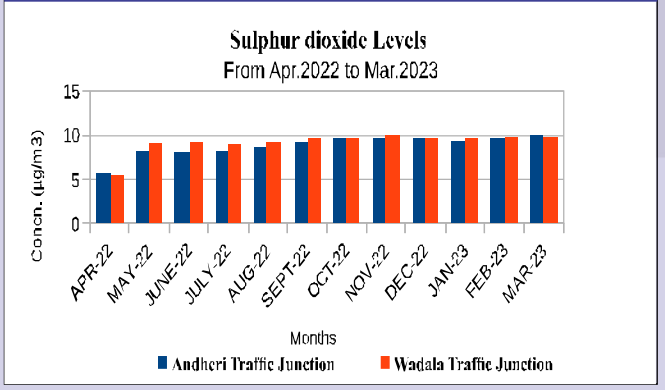


Chart 19.1(D) Ozone Level from Apr. 2022 to Mar.2023

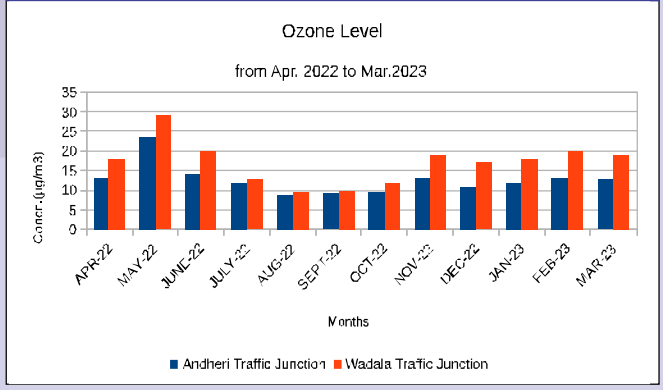


Chart 19.1(B) Nitrogen dioxide Levels From Apr.2022 to Mar. 2023

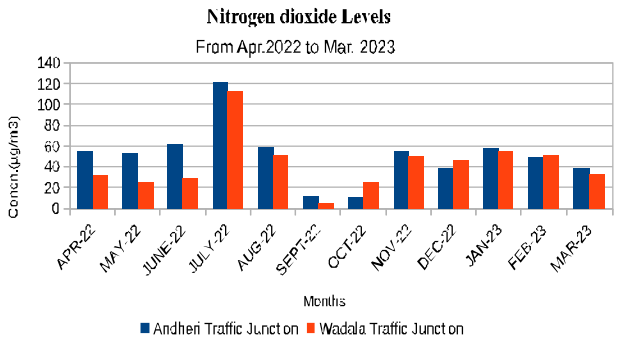


Chart 19.1 (E) Carbon monoxide Levels From Apr,2022 to Mar.2023

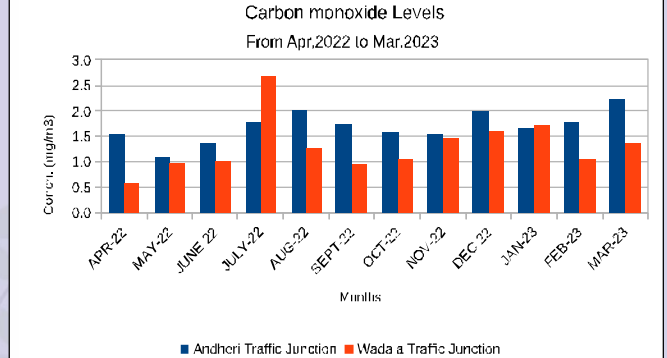


Chart 19.1 (C) PM10 & PM2.5 Levels From Apr.2022 to Mar.2023

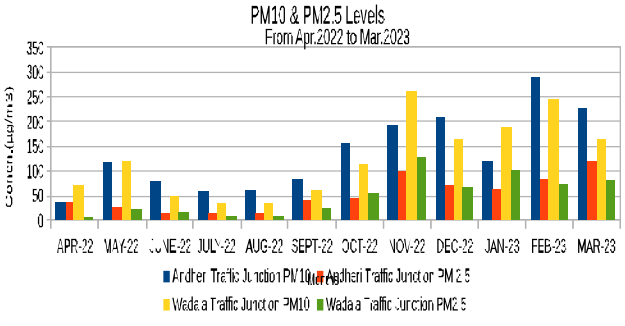
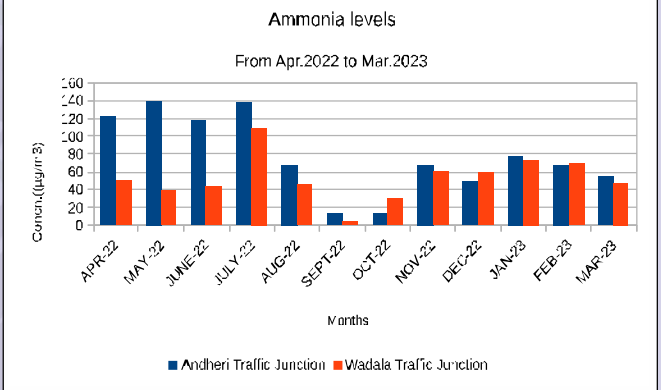


Chart 19.1 (F) Ammonia levels From Apr.2022 to Mar.2023



Comparison of monthly levels with standards prescribed by Central Pollution Control Board observations is as follows;

1. For the year 2022-23, monthly levels of Suspended Particulates (PM_{10}) are found to be in the range of 38- 290 µg/m^3 at Andheri and 34-245 µg/m^3 at Wadala , During February 2023 Maximum level of PM_{10} is observed at Andheri traffic junction (290 µg/m^3) and at Wadala trafiic junction (245 µg/m^3).
2. For the year 2022-23, monthly levels of Suspended Particulates ($PM_{2.5}$) are found to be in the range of 12-123 µg/m^3 at Andheri and 7-129 µg/m^3 at Wadala , During March 2023 Maximum level of $PM_{2.5}$ is observed at Andheri traffic junction (123 µg/m^3) and at Wadala trafiic junction (129 µg/m^3) in November 2022.
3. For the year 2022-23, monthly levels of Ozone (O_3) are found to be in the range of 9-23 µg/m^3 at Andheri and 10-29 µg/m^3 at Wadala , During May-2022. Maximum level of O_3 is observed at Andheri

traffic junction (23µg/m^3) at Wadala trafiic junction (29µg/m^3) .

4. For the year 2022-23, monthly levels of Carbon Monoxide (CO) are found to be in the range of 1.1-2.3 mg/m^3 at Andheri and 0.6-2.7 mg/m^3 at Wadala. During March 2023 Maximum level of CO is observed at Andheri traffic junction (2.3 mg/m^3) and at Wadala trafiic junction (2.7 mg/m^3) in July-2022.
5. For the year 2022-23, monthly levels of Nitrogen di-oxide (NO_2)are found to be in the range of 11-121 µg/m^3 at Andheri and 4-113 µg/m^3 at Wadala. During July 2022. Maximum level of NO_2 is observed at Andheri (21 µg/m^3) and at Wadala trafiic junction (113 µg/m^3).
6. For the year 2022-23, monthly levels of Sulphur di-oxide (SO_2)are found to be in the range of 6-10 µg/m^3 at Andheri and Wadala. Maximum level of SO_2 is observed at Andheri (10 µg/m^3) during October-2022 to December 2022 and at Wadala trafiic junction (10 µg/m^3) during September 2022 to March-2023.
7. For the year 2022-23, monthly levels of Ammonia (NH_3) are found to be in the range of 14-140 µg/m^3 at Andheri and 5-110 µg/m^3 at Wadala , During May 2022 Maximum level of Ammonia (NH_3) is observed at Andheri traffic junction (140 µg/m^3) and at Wadala trafiic junction (110 µg/m^3) in July 2022

The important project of SAFAR-Mumbai is a joint venture of BrihanMumbai Municipal Corporation (BMC) Indian Meteorology Department (IMD) Mumbai &; Indian Institute of Tropical Meteorology (IITM) Pune.Data received from 'SAFAR-Mumbai' is further analysed by Air Quality Monitoring and Research Laboratory for NO_2, CO, O_3, PM_{10}, $PM_{2.5}$ pollutants. Weather Forecast & Air Quality Index is now available to citizens on mobile app namely 'SAFAR-Air'.

Table No.19.2: National Ambient Air Quality Standards central pollution control board, new Delhi (18th November, 2009)

Parameter	Exposure Period	Industrial, Residential, Rural & Other Area	Sensitive Area
Sulphur Dioxide, SO_2 µg/m^3	Annual avg. *	50 µg/m^3	20 µg/m^3
	24 Hrs. avg.**	80 µg/m^3	80 µg/m^3
Nitrogen Dioxide, NO_2 µg/m^3	Annual avg. *	40 µg/m^3	30 µg/m^3
	24 Hrs. avg.**	80 µg/m^3	80 µg/m^3
Particulate Matter (Size less than 10μ_m) PM_{10} µg/m^3	Annual avg. *	60 µg/m^3	60 µg/m^3
	24 Hrs. avg.**	100 µg/m^3	100 µg/m^3
Particulate Matter (Size less than 2.5 μ_m) $PM_{2.5}$ µg/m^3	Annual avg. *	40 µg/m^3	40 µg/m^3
	24 Hrs. avg.*	*60 µg/m^3	60 µg/m^3
Ozone, O_3 µg/m^3	8 Hrs.**	100 µg/m^3	100 µg/m^3
	1 Hr.**	180 µg/m^3	180 µg/m^3
Lead, Pb, µg/m^3	Annual avg. *	0.5 µg/m^3	0.5 µg/m^3
	24 Hrs. avg.**	1 µg/m^3	1 µg/m^3
Carbon Monoxide, CO, µg/m^3	8 Hrs.**	2.0 mg/m^3	2.0 mg/m^3
	1 Hr.**	4.0 mg/m^3	4.0 mg/m^3
Ammonia, NH_3 µg/m^3	Annual avg. *	100 µg/m^3	100 µg/m^3
	24 Hrs. avg.**	400 µg/m^3	400 µg/m^3
Benzene, C_6H_6 µg/m^3	Annual avg. *	5.0 µg/m^3	5.0 µg/m^3
Benzo alpha Pyrene, Particulate Phase only BaP, ng/m^3	Annual avg. *	1.0 ng/m^3	1.0 ng/m^3
Arsenic, As, ng/m^3	Annual avg. *	6.0 ng/m^3	6.0 ng/m^3
Nickel, Ni, ng/m^3	Annual avg. *	20 ng/m^3	20 ng/m^3

1. Annual arithmatic mean minimum 104 measurements in a year at a particular site taken twice a week 24 hrly at uniform interval.
2. 24 hrly/8 hrly values should be met 98% of the time in a year, however, 2% of the time, it may exceed but not on two consecutive days.

NOTE:

1. National Ambient Air Quality Standard: The levels of air quality necessary with an adequate margin of safety, to protect the public health, vegetation and property.
2. Whenever and wherever two consecutive values exceed the limit specified above for the respective category, it would be considered adequate reason to institute regular/ continuous monitoring and further investigations.
3. The State Government/ State Board shall notify the sensitive and other areas in the respective states within a period of six months from the date of Notification of National Ambient Air Quality Standard.

In order to protect and preserve the environment in the city, the BrihanMumbai Municipal corporations is strictly implementing the guidelines of the Mumbai Air Pollution Control Action plan-2019 as well as the Mumbai Climate Action Plan- 2022. At the same time, 'Mumbai Air Pollution Abatement Plan - 2023' has been prepared to bring the increasing air pollution in Mumbai city under immediate control. According to the guidelines in the said plan, conscious efforts are being made to bring air pollution under control in the Mumbai city with the cooperation of various planning authorities and other government departments under the jurisdiction of the Municipal Corporation.

In the year 2022-2023, the Air Quaality Monitoring & Research Laboratory will set up a Continuous Ambient Air Quality Monitoring Station (CAAQMS) at five location within BMC jurisdiction, which will make it easier for Mumbaikar's to get information about Mumbai's Air Quality condition, Air Quality Index etc.

The Continuous Ambient Air Quality Monitoring Station is being set up at five pollution sensitive locations viz, Veer Jijamata Bhonsale Udyan, Byculla (E), Sewri (E), Govandi (Chembur),Pantnagar (Ghatkopar), Charkop kandivali(W)

Objectives of Continous Ambient Air Quality Monitoring Station (CAAQMS)

1. The Brihanmumbai Municipal Corporation has to provide accurate information (real time information) about the current situation at various locations in BMC juridiction.
2. Finding solutions to the increasing air pollution problem in BMC.
3. To provide accurate information to policy makers to plan regarding pollution.
4. Participating in the process of realizing the dream of a clean and green Mumbai by facilitating pollution control.

Information made available to the public through CAAQMS

1. Location wise pollution level and Air Quality Index eg. Particulate Matter 2.5, Particulate Matter 10, Nitrogen Dioxide, Carban Monoxide, Ozone etc. Also health advice.
2. Meterological factors eg. Information such as Temperature, Relative Humidity, Wind Speed and Wind Direction.
3. The information regarding the pollution level at each Air Monitoring Station will be available on BMC server and the said link will be connected to Maharashtra Pollution Control Board and Central Pollution Control Board server.

SAFAR – Mumbai

System of Air Quality and Weather Forecasting and Research - 'SAFAR' for Mumbai was launched and dedicated to country in the year 2015.

Background:

Air is a mixture of gases, is indispensable for survival of life on the earth. The imbalance of the constituents of this mixture results in deterioration of air quality and increases pollution. When the levels of pollutants exceed threshold limit, it affects human health, plants and animals. Indian Institute of Tropical Meteorology (IITM) Pune designed a specialized system to monitor air quality and disseminate the information to public.

SAFAR Mumbai comprises of following products.		
Sr. No.	**Name of the Product**	**Nos.**
1	Air Quality Monitoring Stations (AQMS)	09 nos.
2	Automatic Weather Stations (AWS)	16 nos.
3	LED, Digital Display Boards (DDS)	11 nos.

Earlier SAFAR was launched for metro cities in 2010 & 2012 in Delhi and Pune respectively, which is in operation. SAFAR-Mumbai was launched in June 2015, which is a joint venture of BrihanMumbai Municipal Corporation (BMC) Indian Meteorology Department (IMD) Mumbai &; Indian Institute of Tropical Meteorology (IITM) Pune. It provides location specific information on current and 1 to 3 days forecast for air quality and weather parameters along with UV index in a public friendly format along with health advisories.

Air Quality Monitoring Stations (AQMS), Automatic Weather System (AWS) and LED Boards are installed at various locations in Mumbai to received information about current air quality and 1 to 3 days forecast.2.

SAFAR-Mumbai Information to Public:

Air pollutants namely $PM_{2.5}$, PM_{10}, Ozone (O_3), Carbon monoxide (CO), Nitrogen dioxide (NO_2) etc. are quantified and displayed on LED boards in terms Air Quality Index (AQI) along with health advisories. The real time AQI and forecasted AQI will help people to plan their outdoor activities so that they can prevent themselves from its adverse effects.

Meteorological parameter like temperature, rainfall, relative humidity, wind speed and wind direction, high & low and alerts of severe weather conditions will be helpful to public, specially to fishermen.
Communication Media for benefit of society:

SAFAR-Mumbai communicates with the society via,

1) 'SAFAR-Air' (Mobile App)
2) 'SAFAR-INDIA' (Website)
3) LED System (Digital Display Boards)

1) 'SAFAR-Air' (Mobile Application):

This "Mobile App" which can be downloaded free of cost. The "Mobile App" provides location specific current and forecaste Air Quality Index (AQI) and UV-index. This "Mobile App" is user friendly and will benefit the common man.

2) 'SAFAR-India' (Website):

This is a web portal (http://safar.tropmet.res.in) which can be accessed by people to collect location specific information.

3) LED Digital Display Boards (DDB):

3 x 1.80 Meter LED digital display boards are installed at various sites for public viewing. The colour coded AQI, UVI and Health advisories and environmental slogans will educate the citizens of Mumbai.

नकाशा 9.1:'सफर-मुंबई' वायु सर्वेक्षण केंद्रे व एलईडी फलक

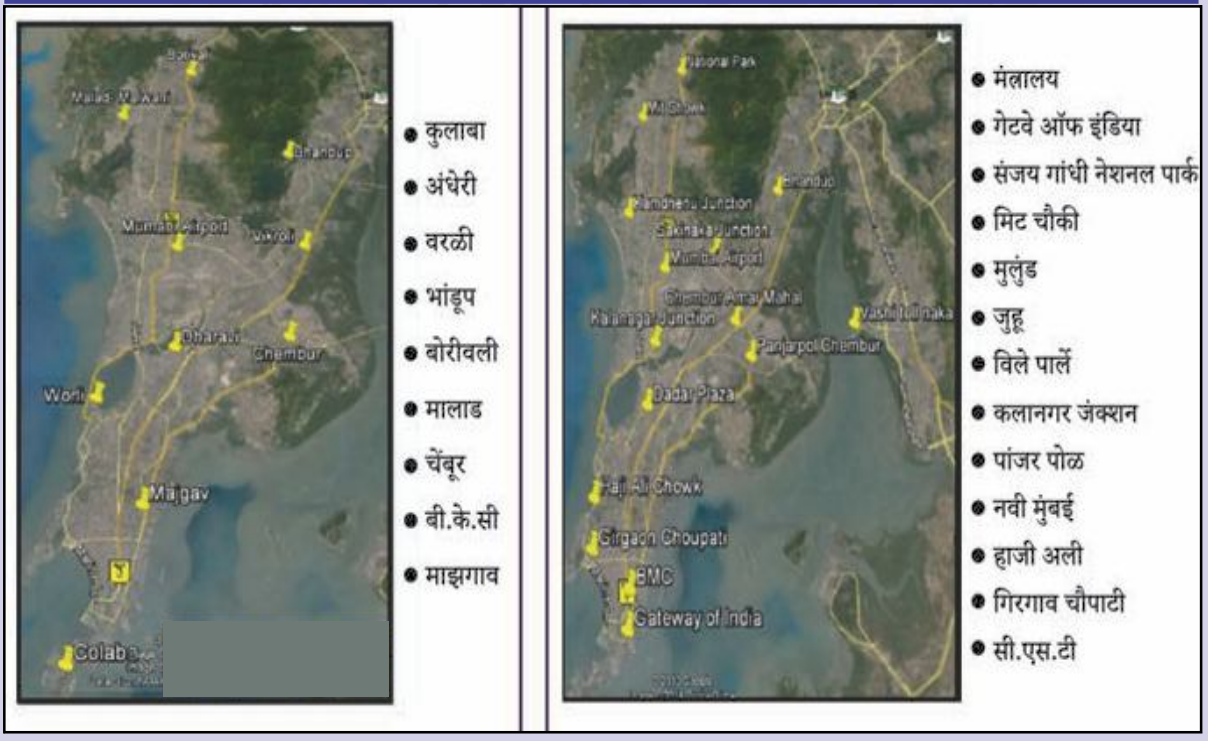


Table no. 19.3 Air quality levels at "SAFAR-Mumbai" sites (2020 to 2023)

Sr. No.		2020-21					2021-22					2022-23				
		Pm_{10}	$PM_{2.5}$	O_3	CO	No_2	Pm_{10}	$PM_{2.5}$	O_3	CO	No_2	Pm_{10}	$PM_{2.5}$	O_3	CO	NO_2
1	Chembur	94	54	22	0.6	17	93	49	12	1.2	14	130	74	22	1.5	18
2	Bhandup	63	32	24	0.6	12	64	34	17	1.3	4	91	50	25	1.0	6
3	BKC	122	57	6	0.7	18	117	54	9	0.6	6	121	68	12	1.3	48
4	Colaba	90	41	31	1.0	8	121	61	28	0.7	10	92	51	28	0.7	9
5	Andheri	110	51	13	0.8	26	99	48	12	0.7	16	100	59	16	0.8	33
6	Malad	115	57	12	0.6	18	89	69	16	1.0	7	106	74	22	1.1	7
7	Mazgaon	73	48	27	0.6	17	108	76	20	0.4	13	94	59	18	1.4	45
8	Worli	58	35	22	0.7	5	53	33	22	0.6	5	68	41	24	0.7	22
9	Borivali	97	39	13	0.5	8	100	39	12	0.3	6	92	56	14	0.5	8
	Average	91	46	19	0.7	14	94	51	16	0.7	9	99	58	20	1.0	22
		60 (ug/m3)	40 (ug/m3)	51 (8Hrs) (ppb)	1.75 (8Hrs) (ppm)	21 (ppb)	60 (ug/m3)	40 (ug/m3)	51 (8Hrs) (ppb)	1.75 (8Hrs) (ppm)	21 (ppb)	60 (ug/m3)	40 (ug/m3)	51 (8Hrs) (ppb)	1.75 (8Hrs) (ppm)	21 (ppb)

Chart 19.2 (A) Air quality levels at SAFAR-Mumbai sites (2022-23)

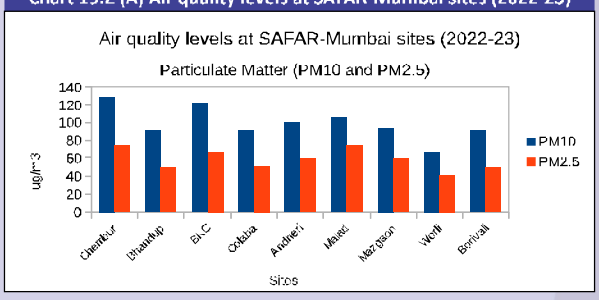


Chart 19.2 (B) Air Quality Levels of SAFAR-Mumbai Sites (2022-23)

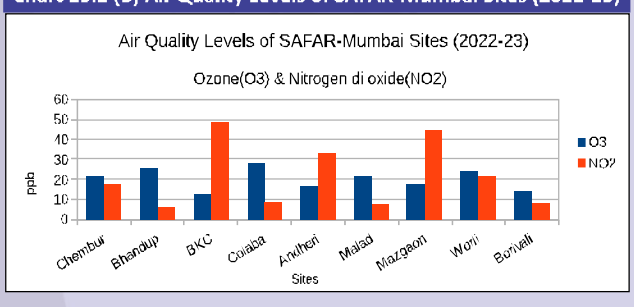
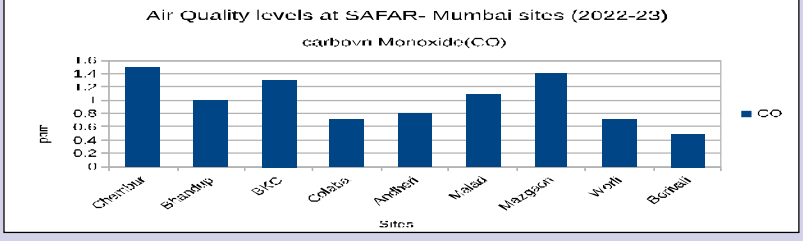


Chart 19.2 (C)Air Quality levels at SAFAR- Mumbai sites (2022-23)



Annual Averages:

Comparison of annual levels with standards prescribed by Central Pollution Control Board observations is as follows;(Table No.19.6)

1. Levels of Suspended Particulates (PM_{10}) are found to be in the range of 68-130 µg/m^3 during 2022-23. Maximum level of PM_{10} is observed at Chembur (130 µg/m^3) .
2. Levels of Suspended Particulates ($PM_{2.5}$) are found to be in the range of 41-74 µg/m^3 during 2022-23 Maximum level of $PM_{2.5}$ is observed at Chembur (74 µg/m^3).
3. Levels of Ozone (O_3) are found to be in the range of 12-28 ppb during 2022-23. Maximum level of O_3 is observed at Colaba (28 ppb).
4. Levels of Carbon Monoxide (CO) are found to be in the range of 0.5-2 ppm for the year 2022-23 Maximum level of CO is observed at Chembur (2 ppm).

Levels of Nitrogen di-oxide (NO_2)are found to be in the range of 6-48 ppb during 2022-23 Maximum level of NO_2 is observed at BKC (48 ppb).

Air Quality Index (AQI) :

Honourable Minister for Environment, Forests and Climate change, launched the national Air Quality Index (AQI) in New Delhi, on 17th September 2014 under the 'Swachh Bharat Abhiyan'. It is outlined as 'One number-One colour-One description' for the common man to judge the air quality in his vicinity.

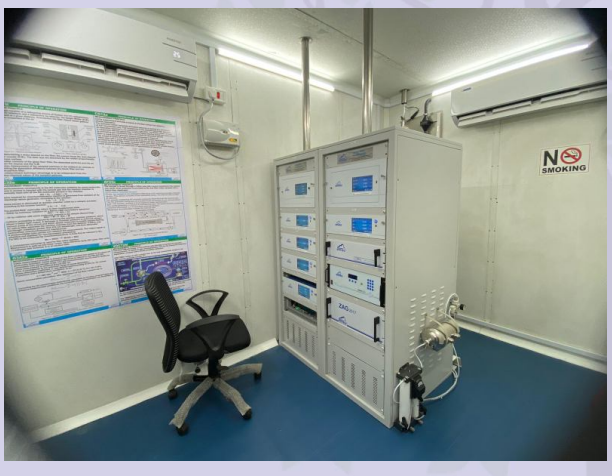
The current measurement of index is made comprehensive by the addition of 5 more parameters to the existing 3 parameters, i.e. in total 8 parameters are considered. AQI is a tool for effective dissemination of air quality of that area to common person. The information provided on air quality is in simple linguistic terms that is easily understood by people. The AQI is calculated by comparing the measured ambient concentration of the pollutant to the National Ambient Air Quality Standards (NAAQS).

There are six AQI categories namely; Good, Satisfactory, Moderately polluted, Poor, Very poor and Severe. The categories are shown in following table.

Classification of AQI:

Classification of AQI:

0-50	- Green		Good
51-100	- Light green		Satisfactory
101-200	- Yellow		Moderately polluted
201-300	- Orange		Poor
301-400	- Red		Very poor
401-500	- Brown		Severe


NO
SMOKING


NO
SMOKING


PARAM STAND UNIT_ VALUE
PM25 60 ug/m ug/m3 5.57
PM10 100 ug/ ug/m3 26.79
SO2 80 ug/m ug/m3 4
NO 80 ug/m ug/m3 1.44

20. INDUSTRIES

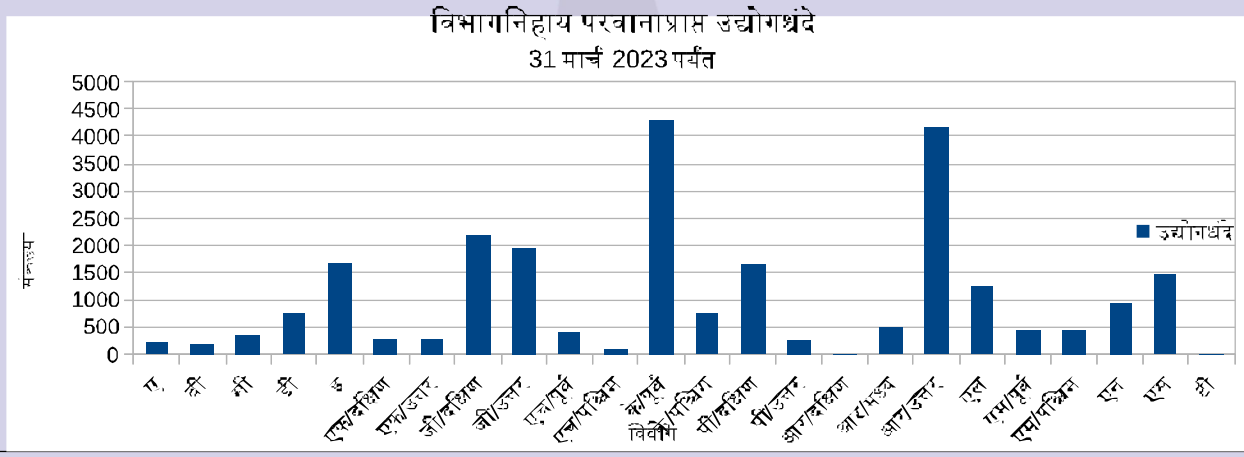
Environmental pollution is a by-product of industrialization. However, with the modern technologies, pollution potential of industries/factoroies are lowering. There are 24461 no. of industries are covered under section 390 of Mumbai Municipal Corporation Act 1888. These industries pay Air Pollution Prevention Fees on the basis of horsepower of the connected load. There are 7891 industries/factories are located in the city area, 12084 in Western Suburbs and 4486 in Eastern Suburbs. Maximum industries (4288) are in K/E ward. Ward-wise distribution of industries are shown in table20.1

Table No.20.1: Wardwise Licensed Industries

Sr. No.	Ward	upto 31.03.2023	Sr. No.	Ward	upto 31.03.2023
1	A	210	14	P/N	1640
2	B	191	15	P/S	260
3	C	339	16	R/S	05
4	D	750	17	R/C	491
5	E	1666	18	R/N	4161
6	F/S	285	19	L	1229
7	F/N	285	20	M/E	428
8	G/S	2207	21	M/W	440
9	G/N	1958	22	N	927
10	H/E	413	23	S	1447
11	H/W	97	24	T	15
12	K/E	4288		Total	24461
13	E/W	729			

Source : Environment Department of BrihanMumbai Municipal Corporation

आलेख 20.1 विभागनिहाय परवानाप्राप्त उद्योगधंदे



Ecofriendly Contribution of Industries :

In addition to the efforts of Municipal Corporation of Greater Mumbai to reduced environmental pollution, other major industries in Mumbai also contribute in development of green cover in Mumbai and reduction in environmental pollution.

Rashtriya Chemicals and Fertilizers Limited :

Rashtriya Chemicals and Fertilizers Limited (RCF) endeavors for excellence in environmental management and strives towards sustainable business development. RCF continues to be committed to develop and implement Environmental Management System (ISO 140001:2015), occupational health safety (ISO 45001:2018) and quality management system (ISO 9001:2015) throughout by measure, control and reduce environmental impact.

Adhering to the regulatory requirements and standards of the Maharashtra Pollution Control Boards, RCF incorporates appropriate ambient air quality monitoring, plant stack monitoring, effluent handling and disposal systems through constant monitoring are as fallows:

1. Four nos. of continuous ambient air quality monitoring stations to monitor ammonia, NOx, SO_2, Particulate matter (PM_{10} and $PM_{2.5}$) and metrological parameters are installed at RCF Trombay unit.
2. Continuous online stack monitoring is being done for SO_2 form Sulphuric Acid plant, NOx from Nitric Acid plant and NH_3 from Suphala plant and data is being transmitted to MPCB and CPCB server.
3. Continuous online monitoring of pH, Ammonical Nitrogen and Flow of treated effluent from Effluent treatment plant are monitored continuously and data is being transmitted to MPCB and CPCB server.
4. Various schemes with state of the are technologies and modernization schemes are implanted for environment protection also waste streams from the plants are recycled/ reused for useful purpose by 4-R strategy (Reduce, Reuse, Reuse and Recycle).
5. In-built pollution control systems are in place at RCF Trombay plants.
6. At RCF Trombay there are two nos. of Sewage Treatment Plant (STP). Sewage treatment capacity of each plant is 22.75 Million liters per day (MLD) of Municipal Sewage. Each STP produces 15 MLD of treated water ensuring water availability for RCF Trombay process which is critical for the smooth functioning of the Trombay Unit. Both STPs are in operation. A portion of the treated water is supplied to M/s Bharat Petroleum Corporation Ltd. (BPCL).

Green Belt Development at RCF Trombay Unit :

1. In the year 2022-23 at factory premises planted total 35,992 nos. trees namely Karanj, Kanchan, Satvin, Neem, Rain tree, Bahava, Bakul, Tabubia, Badam, Baoganiveiilia, Tikoma, Areca palm Different Hedges like eranthemum, Exora, Lantena, Tagar and plumbago etc.
2. Under the corporate social responsibility and create awareness regarding environment, RCF

management have been arranged saplings distribution drive every year. This year total 409 nos, of trees sapling were distributed in nearby school and societies.

Mumbai Port Trust

The Port of Mumbai is situated almost midway (Latitude 18° 54' N, Longitude 72° 49' E) on the West coast of India and is gifted with a natural deep water Harbour of about 400 square kilometres protected by the mainland of Konkan on its East and Island of Mumbai on its West. The deep waters in the Harbour provide ample shelter for shipping throughout the year.

Mumbai Port Authority has its own Environmental Management Cell (EMC) and has following on-going activities related to Environmental Protection and Conservation.

1. Mumbai Port is ISO-14001 (Environmental Management System), ISO-9001 & ISO 27001 Certified
2. Environmental Monitoring such as Marine water quality monitoring, Air quality monitoring and Noise level monitoring with regular intervals.
3. Installation of Solar Panels for Solar Energy in port premises.
4. Collection of Floating garbage from sea water in Port Limits
5. Providing reception facilities at Mumbai Port for

   Waste Oil/ Used oil.

   Garbage as per MARPOL Convention.
6. Several green patches are developed with thousands of trees planted and maintained in Mumbai Port estate. Mumbai Ports areas like North End Garden, Tejas Nagar Road Side Plantations, Wadala Hospital Garden, and Sagar Upvan – Colaba and Jawahar Dweep (JD) plantations appreciated with award from "National Society of Friends of Trees" in 2023
7. Mumbai Port Authority has Oil Spill Response Plan (OSRP) in place in joint efforts with JNPT and Oil Companies to combat with Oil Spills.
8. Mumbai Port has Sewage Treatment Plant (STP) in Colaba. Treated Sewage is reused for Sagar Upvan maintained by Mumbai Port.

Hindustan Petrolium Corporation Limited (HPCL) :

Mumbai Refinery has adapted following measures and best industrial technologies for minimizing environmental reductions:

1. HPCL-Mumbai Refinery is EnMS ISO 50001:2018 and ISO 14001:2015 certified.
2. HPCL produces and markets BS VI MS and HSD (Bharat Stage-VI fuels) which contain only 10 ppm sulphur which contribute towards lesser sulphur dioxide emissions that help in reducing air

pollution towards reduction of carbon intensity in transportation sector.

3. Continuous Ambient Air Quality Monitoring Stations for monitoring Ambient air quality are installed inside industry premises for SO_x, NO_x, CO, $PM_{2.5}$, PM_{10}, O_3, NH_3, etc. pollutants concentration monitoring. These stations also monitor BTEX and HC parameters in ambient air.
4. Installation of state-of-the-art technology Dual Optical Adsorption Spectroscopy (DOAS). This fence line system analyzes the ambient air quality along its path via Receiver to Emitter and is installed around North and West periphery of the industry.
5. Low sulphur fuel gas and fuel oil is fired to minimize stack emission. Low NO_x burners are used in refinery heaters.
6. Flue gases from Fluidized catalytic cracking units are scrubbed into Flue Gas Scrubbing units which ensures reduction in SO_2 and PM emission by 90%.
7. All process stacks are equipped with online real time monitoring analyzers which are connected with CPCB/SPCB servers, transmitting data in real time.
8. Refinery is having a state-of-the-art Effluent Treatment Plant (having API, TPI, DAF, SBR, MBR units) which is having VOC capture and treatment system for preventing air emissions and also have a dedicated STP unit for treatment of domestic effluent.
9. Petroleum storage tanks are complying to roof requirements as stated in MoEF and CC G.S.R. 186(E) dated March 18, 2008, for minimizing air emissions
10. Hydrocarbon flare is connected to recovery gas compressors for maximizing recovery of vent gases. Smokeless flare is deployed.
11. Leak Detection & Repair (LDAR) survey is carried out on quarterly basis for early identification and minimizing fugitive emissions.
12. Wastes are disposed off to authorized recyclers only. Plastic waste, E-waste, Batteries, Solid Waste Rules are being complied while disposal of these wastes.
13. Proper segregation and dedicated storage facilities are available for storing hazardous waste within premises while in transit for final disposal to CHWTSDF facility as approved by State Pollution Control Board.
14. Tree plantation drives are being carried out on periodic basis. Approx. 1000 tree saplings were planted using MIYAWAKI technique within the industry premises in FY 2022-23.
15. Refinery is having Occupational Health Centre (OHC) for monitoring health of employees handling refinery processes and records are maintained. Periodic health check-up of all the employees and contractors is carried out.
16. Promoting cleaner fuels such as LPG and maximizing distribution network to reach out to a greater

number of households

17. Comprehensive Environmental Pollution Index (CEPI) study in Chembur area is facilitated by the industry.
18. Automated sweeper vacuum trucks are used for removal of road dust to minimize particulate matter emissions within the industrial premises.
19. Installed Solar Power generation capacity is 1080 KWp within the industry premises.
20. Approx. 1,42,368 kL Rain water harvesting carried out during the year.

Bharat Petroleum Corporation Ltd. Mumbai Refinery, (BPCL) :

BPCL Mumbai Refinery (MR) has taken initiatives in year 2022-23 for environment protection. The status of these initiatives is mentioned below:

- Real time Ambient Air Monitoring at AMS, stack monitoring for SO_x, NO_x, CO and SPM, ETP outlet parameters for BOD, COD, TSS and pH with real time data transmission to CPCB/ MPCB servers.
- Planted 3220 tree sapling of native species using MIYAWAKI method at Swami Vivekananda Engineering College Campus, Sewree Installation and MMPL station 6 near Vashala. Also, 135 no. of trees were planted inside refinery.
- Replantation of fallen tree was carried out near admin for ecosystem restoration.
- A total of 2.242 MT Used Cooking Oil (UCO) from Refinery Canteen has been sold to Bodiesel Manufacture leading to reduction of GHG emissions by 0.3 MT.
- About 1375 MWH power of generated from Solar panel in 2022-23.
- Around 51 thousand KL of Rainwater was harvested in Monsoon period from Jun to Oct-2022 and the saem has been used for cooling tower makeup.
- Butterfly garden has been developed inside Refinery for Biodiversity and ecosystem sustainability.
- Around 732 used cartridges recycled through authorized recycler and received green certificate.

Tata Power :

The following measures are taken by Tata Power to maintain the balance of the environment.

1. Fuel Quality and Emission:

- Use of low sulphure (0.1 to 0.2%) low ash (5%) imported coal for power generation.
- Stringent Environment Norms.

2. Air Pollution Control:

- Stack Height of 275 m for wider dispersion of pollutants.
- ESP for Unit # 5 and Unit # 8.
- FGD for Unit # 5 and Unit # 8.
- Low NOx burner fro Unit # 7, Over fired dampers for other units.
- Use of imported low Sulphur (0.1 to 0.2%) low ash coal (5%).

3. Fugitive dust control:

- Screw Unloader (State of Art) for unloading coal at coal berth.
- Pipe conveyor for carrying coal from coal berth to boiler.
- Stacker Reclaimer for handling of coal.
- Green belt around coal yard and coal berth.
- Water sprinkling system around coal yard for dust supperssion.

4. Pollution Control and Treatment:

- ETP for treatment of effluent generated from DM plant.
- STP (2x125 CMD) at station A and station B for treatment of domestic effluent.
- Coal Pile run off system at Coal Yard and Coal Berth.
- Cooling water channel and aerators to reduce the temp of discharge water.
- Online Effluent Monitoring (Temp)
- STP water reused for gardening.

5. Solid Waste and Hazardous Waste:

- Minimal Ash generation due to use of imported low Ash (5%) coal; 100% fly ash and bottom ash utilization.
- Used Oil is disposed to MPCB approved agency in accordance with HW Rules, 2016. Submission of HW Manifest.
- E-waste is disposed to MPCB approved recycler/ dismantler. Submission of form-2 and form-3
- Used batteries are disposed to MPCB approved agency.
- BMW is disposed to MPCB approved agency.
- Horticulture waste to MCGM approve agency for manure preparation.
- Biodegradable Plastic used for monsoon protection.
- Biogas plant installed at kitchens to utilize daily generated kitchen wastes.

21. HEALTH

Health is the level of functional efficiency of a living being. In layman terms, health usually means to be free from illness, injury or pain. The World Health Organization (WHO) defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. To lead and enjoy a wholesome life one must have sound health.

BrihanMumbai Municipal Corporation largely takes care of citizen health through Health Care Services. The State Government, Private organizations and Private medical practitioners also contribute in the providing health care services. Health care is a primary the responsibility of Municipal Corporation of Greater Mumbai.

Table No.21.1: Health Infrastructure 3-Tier System in BrihanMumbai Municipal Corporation

PRIMARY	Health posts	212
	Dispensaries	190
	Maternity Homes	29
SECONDARY	Peripheral hospitals	16
TERTIARY	Specialty hospitals	5
	Major hospitals (Medical & Dental colleges)(5 main hospitals and 1 H.B.T. hospital joint with Cooper hospital.	5

Environment contributes to the health of human being both in positive and negative ways. Better nutrition and clean environment will help to increase life span whereas, polluted environment will cause deterioration of health. Environmental hazards are responsible for as much as a quarter of the total of diseases worldwide and more than one third among children. Environment plays a major role in etiology of numerous diseases like water borne diseases (Gastroenteritis, Jaundice), vector borne diseases (Malaria, Dengue, Chikungunya) and non-communicable diseases like Hypertension, Diabetes, etc.

The health services are provided in two ways. There are hospitals, dispensaries and maternity homes all over the city catering to the medical needs of the people, while on the other hand there are Outreach Services. Under National Urban Health Mission 30 new health centers are started too. Objective of establishing health centres is to provide health service for implementation of family welfare program and outreach services for mother and child.

Table No.21.2. It shows Birth & Death Rates and also Infant & Maternal mortality in the year 2019 to 2021. In Year 2021 Birth rate in Mumbai was 8.81/1000 population and the Death rate was 8.37/1000 population in the year 2021. Infant mortality rate was 22.86/1000 Live Births and Maternal Mortality rate 83/100000 Live Births for mothers.

(These rates are as per Central Government New CRS System- Provisional)

Table No. 21.2: Health Statistics- Birth & Death Rates			
	Year 2019	**Year 2020**	**Year 2021**
Birth (Registered)	148898	120188	113792
Birth Rate/1000 population	11.61	9.33	8.81
Death (Registered)	91223	111942	108113
Death Rate/1000 population	7.11	8.69	8.37
Infant Mortality	3430	2649	2601
Infant Mortality Rate/1000 live birth	23.04	22.04	22.86
Maternal Death	131	110	95
Maternal Mortality Rate/100000 live birth	88	92	83
These Maternal Deaths are only of Mumbai residence			

Source: Health Dept.

Kasturba Hospital (Infectious Diseases):

Kasturba Hospital is located in the middle of City. It is largest Infectious Diseases hospital in the South East Asia, which admits patients of all the infectious diseases.

- At this Hospital, cases of infectious diseases i.e. Chicken-pox, Measles, Mumps, AFP, Hepatitis (A,B,C,E & Other Hepatitis), Fever, Typhoid Fever, Malaria, Lepto, Dengue, H1N1, Meningitis, Dysentery, Diarrhea & Vomiting, Cholera, Diphtheria, Pertusis, Rabies, Covid 19, SARS, Ebola Virus (except Tuberculosis Venereal Diseases and Leprosy) are isolated and treated. Cases of Plague and Cholera are compulsory transferred to this hospital.
- Separate ward was established for management for H3N2, Covid 19 & Measles Cases.
- Kasturba Hospital played & important role in controlling the Measles Outbreak of Sept. 2022.
- Kasturba Hospital has well equipped 25 bedded Burns ward & 20 bedded Intensive Care Unit with ventilators & other equipments.
- Three Oxygen Generation plants of 1068, 360 & 190 liters per minute are available at Kasturba Hospital for management of critically ill infectious diseases patients.
- Kasturba Hospital has 10 bedded Negative pressures Isolation Ward for admitting patients with different infectious diseases.
- Kasturba Hospital has Hyperbaric Oxygen Therapy Department for management of head injury & Gangrene patients.
- Kasturba Hospital has T.B. Lab for diagnosis of MDR TB patients.
- It is proposed to start Bio Safety Level 3 VDRL Lab in Kasturba Hospital.

Table No. 21.3 : April 2020 to March 2021			
Sr.No.		**Cases**	**Death**
1	Dengue	1774	04
2	Swine Flu H1N1	57	01
3	Lepto	160	0
4	Malaria	1471	02
5	Covid	217	04
6	Gover	1775	25

Group of Tuberculosis Hospitals :

Group of Tuberculosis Hospitals, Sewree of the Brihanmumbai Municipal Corporation is the largest hospital in Asia. Patients with drug sensitive and drug resistant (MDR-TB) disease come to the said hospital for examination, treatment and admission.

- Pulmonary Rehabilitation Centre was inaugurated by Hon. Add Municipal Commissioner (W/S) Mr. Suresh Kakani, Sir for the patients who are cured of Tuberculosis and given chest Physiotherapy. Up till now 2068 patients have been benefited.
- Alcoholic anonymous was started for T.B. Patients.
- 5 Nurses of the hospital were honoured with Mayor's Award for the year 2017-18.
- Two Bio-Medical waste machines were installed to dispose Bio-Medical waste of the Hospital.

1. All the T.B patients with HIV infection are treated in ART centre which was started on 14th Aug 2020
2. 24x7 digital X-ray facility.
3. 2 Bedded IRCU.
4. Separate OPD for Drug sensitive & Drug resistance patients functioning 24x7. Separate ward for Drug sensitive & Drug resistance TB Patients.
5. Upgraded laboratory (TB containment lab) increased capacity of Gen-expert testing from 8 samples to 16 samples.
6. Sakas Aahar ie supplementary high protein diet for all GTB employees. To boost their immunity
7. Regular quarterly screening of GTB employee for detection of TB & other diseases like Diabetes & Hypertension .
8. Non communicable diseases clinic (NCD) is started for TB patients and their relatives.

STATISTICAL INFORMATION YEAR WISE 2018 TO 2022		
YEAR	OPD (NEW/OLD)	ADMISSIONS
2018	38,593	6,504
2019	31,2531	5,500
2020	21,637	3,605
2021	22,562	4,157
2022	21,939	4,095

OPERATIONS			
YEAR	MAJOR	MINOR	TOTAL
2018	29	2,954	9,983
2019	09	719	728
2020	00	523	523
2021	00	614	614
2022	00	769	769

Acworth Municipal Hospital for Leprosy:

Mr. H.A. Acworth founded Acworth Municipal Hospital for Leprosy on 7th November 1890 the then Municipal Commissioner of Mumbai.

Since 1st April 1991, the hospital has been taken over by Brihanmumbai Municipal Corporation as one of the specialized hospitals under the administrative control of the Executive Health Officer.

Services provided by Acworth Municipal hospital for leprosy:

Acworth Hospital provides comprehensive care to the leprosy affected patients.

1) **Inpatient Service :** Total indoor capacity of the hospital is of 240 beds. At present average occupancy are around 91. The most of the patients are admitted in the hospital due to the old leper Act. Old, deformed, abandoned patients are provided shelter in the hospital. Majority patients are living here more than 20 years almost on a permanent basis. Presently patients are admitted for ulcers and lepra reaction.

2) **Outpatient Services :** Out-patient services include physiotherapy, social service, laboratory, dressing and pharmacy. Daily average OPD attendance is about 45 patients per day.

3) **Field Work :** Under National Leprosy Elimination Programme, hospital carries out IEC activities in its project area i.e. Brihanmumbai Municipal Corporation wards (E, F/South and F/North) covering about 16 lacs population.

4) **Training :** The hospital provides training in leprosy to post-graduate and under-graduate allopathy and non-allopathy medical students as well as to student nurses, Social Science and O.T./ P.T. student. The hospital also offers training to Government Medical Officers, Non-medical assistants.

5) **Medical Records :** The hospital maintains statistical records and generates various reports thereby assessing the progress of N.L.E.P. in entire Mumbai.

6) **Collaborative Programme of Acworth Municipal Hospital and NGO's:**

I) Acworth Leprosy Museum: Provides scientific information about all aspects of leprosy.

ii) Footware Unit: MCR footwear, Splints are provided to the leprosy patients at concessional rates.

Health Education :

Acworth Municipal Hospital provide health education at E, F/S and F/N Wards. Which helps to

Table 21.4 Mumbai District Statistics 2022-23

	2020-2021	2021-2022	2022-2023
Total Leprosy Patients	19	335	626
MB patients among total patients	13	254	482
PB patients among the total patients	6	81	144
PR for Mumbai (Per 10000 population)	0.09	0.2	0.45

Table 21.5 Acworth Hospital Statistics 2022-2023

Total Leprosy Patients in the Project area (E, F/S & F/N Ward)	82
MB patients among total patients	60
PB patients among the total patients	22
PR for AMIIL (Per 10000 population)	0.50

eradicate misconceptions about leprosy. On the occasion of death anniversary of Mahatma Ghandhiji from 31st January to 13th February, leprosy fortnight is arranged by this hospital every year. During this fortnight all active organizations effectively carry out public awareness and health education movement in their work premises.

Mumbai District AIDS Control Society:

Mumbai District AIDS Control Society (MDACS) registered under Charitable Trust Act is established by Brihanmumbai Municipal Corporation under the guiding principles of National AIDS Control Organization for prevention and control of HIV / AIDS in Mumbai. Currently National AIDS Control Programme-Phase V is being implemented in the country. Major responsibilities of MDACS are as follows:

- Prevent the spread of HIV / AIDS for reducing annual new HIV infection and AIDS-related mortalities by 80% by 2025-26 from the baseline value of 2010.
- To attain dual elimination of vertical transmission, elimination of HIV/AIDS related stigma while promoting universal access to quality STI/RTI services to at risk vulnerable population by providing care, support and treatment services to people living with HIV / AIDS (Infected and affected).

Mumbai district AIDS control society provides services free of cost through below mentioned divisions.

Basic Services:

- Integrated Counseling and HIV Testing Centres (ICTCs) are established across the city in all Government / Municipal Hospitals / Maternity Homes. These services are freely available to all Walk-in / referred clients. Trained Counselors and Laboratory Technicians perform HIV Counseling and testing using standardized testing protocols with robust quality control.
- Early detection of HIV infection in pregnant woman is the mainstay of the program for preventing the transmission of infection from infected mother to baby. For this, Multi Drug Antiretroviral treatment is initiated during first trimester of pregnancy.
- Early Infant Diagnosis: All infants born to HIV infected mothers are screened at 6th week after birth and regularly till 18 months for HIV infection.
- There are 241 ICTCs which includes 45 stand-alone ICTCs, 5 mobile vans and 184 Facility Integrated ICTCs, 7 Metro sites and also 1097 Private Nursing Home/ Corporate Hospital under Public Private partnership (PPP) providing facilities of counseling and HIV testing to ensure the access and availability of HIV counseling and diagnosis services.

Anti Retroviral Therapy (ART) :

Treatment for HIV positive patients is made available through 20 ART Centres set up in various

Hospitals in Mumbai. These centers are in 7 Medical Colleges, 6 Peripheral Hospitals, 5 are in public private partnership viz. Godrej, L&T, Wadia, K. J. Somiya and Mumbai Port Trust (MbPT) Hospitals, 2 in Brihanmumbai Municipal Corporation special hospitals (STD Clinic and TB Hospital). ART center for pediatric patients is operated through Pediatric Centre of Excellence, LTMG, Sion Hospital. Total 39115 patients living with HIV / AIDS are registered in active care of which 39091 patients are on lifelong treatment.

Blood Safety:

Preventing HIV transmission through infected blood by ensuring access to safe and adequate blood for the needy patients is one of the important services of MDACS. 21 Government, Brihanmumbai Municipal Corporation and Trust blood banks in Mumbai are supported by provision of trained manpower, HIV testing kits and grants. All the blood units collected in the blood units collected in the blood banks are tested for HIV, Hepatitis B, Hepatitis C and other blood born infections. Regular Voluntary Blood Donation Camps are organized in collaboration with Blood Banks and NGOs. Over the years, the number of voluntary blood donors has increased significantly reducing the risk of HIV infection through blood transfusion.

Sexually and Reproductive Health Services:

Unsafe sexual behavior leads to transmission of Sexually Transmitted Diseases (STDs) and HIV. STDs can be easily diagnosed and effectively treated by 'syndromic management treatment' approach. 27 designated STI/RTI clinics (DSRC) are set up in public health hospitals throughout the city with trained doctors and counselors who give treatment and counseling, condom promotion, partner notification and partner treatment. Effective management of STDs and counseling on responsible sexual behavior at STI clinics helps in prevention of HIV transmission. Regional STI training Reference Laboratory at B.Y.L. Nair Hospital is set up for etiological diagnosis of STIs.

Targeted Intervention:

Targeted Interventions are aimed at offering prevention and care services to high-risk groups viz Female Sex Workers, Men having Sex with Men, Transgender and injecting Dug Users. The bridge population of slum migrants and long distance Truckers are also provided with the information, means and skills to minimize HIV transmission. 35 Targeted Intervention projects under NACO Budget and BMC funded 1 Targeted Intervention project totaling to 36 Targeted Intervention projects are working through NGOs/CBOs who are providing prevention services including HIV/STI screening and treatment services to these high risk groups in the city.

Information, Education and Communication (I.E.C.) :

Various awareness campaigns are held using mass media, mid media and outdoor campaigns

approach among youth, slum migrants and high risk groups for reducing risk behavior. Events are organized to increase the awareness among general population, especially for women and youth on various days viz. National Voluntary Blood Donation Day, National and International Youth Day, World AIDS Day, International Women's Day.

Achievements:

HIV positivity trend has witnessed a significant decline among the general clients (from 5.4% in 2011 to 0.75% in 2023) and Pregnant Women (from 0.36% in 2011 to 0.04% in 2023) in Mumbai.

Table No.21.6: HIV/AIDS Control Programme Report (F.Y. 2022-23)

HIV testing at Integrated Counseling and Testing Centers in Mumabi	Tested	Positive
General Clients	455779	3372
Pregnant Women	191268	93

Treatment for HIV positive patients at ART Centers in Mumbai	Adult	Children	Total
Number of HIV Positive patients registered in active care	37652	1463	39115
Number of HIV Positive patients on Anti-Retroviral Treatment (ART)	37628	1463	39091

Environmental Pollution Research Center (EPRC):

Seth G.S. Medical College & King Edward Memorial Hospital

Executive Summary :-

Measures taken to control the increasing spread of corona virus infection

The first Corona-infected patient in Brihanmumbai arrived in the second week of March 2020. At that time, Mumbai had the only hospital with 28 beds for such patients & only one laboratory was available for corona testing. This facility was increased in a phased manner as per requirement.

Without waiting for the availability of a vaccine for 'Covid 19' i.e. Corona Virus, the Brihanmumbai Municipal Corporation focused on the basic things. Based on that, all measures were taken. "Chase the virus" means "Chasing the virus" and worked directly on the five principles of Testing, Tracing, Tracking, Treatment and Quarantine. Strict measures were taken by declaring the area where the patient was found as a restricted area. As a result of this, the situation of corona infection in Mumbai is now coming under control.

Sr. No.	Date	Area	Total
1	05.04.2022 to 19.04.2022	Wakola bridge, Santacruz Census, PEFR Test	75 117
2	28.02.2023 to 03.03.2023	New Sanjay Nagar, SRA Building, Andheri (E) Medical Camp	28
3	08.03.2023 to 17.03.2023	Bamanpada, Andheri East Medical Camp	104
4	29.03.2023 to 05.04.2023	Utkarsh Chaul, Andheri East	108
5	01.04.2022 to 31.03.2023	Asthma Education & Counseling	1155
	Total		1587

Arterial Blood Gas Analysis: 01 April 2022 to 31 March 2023				
ABG	Electrolytes	Coox	Metabolites	Total
63434	7642	7642	7642	86360

PFT	DLCO	RVTLC	FOT	Total
2378	243	590	515	3726

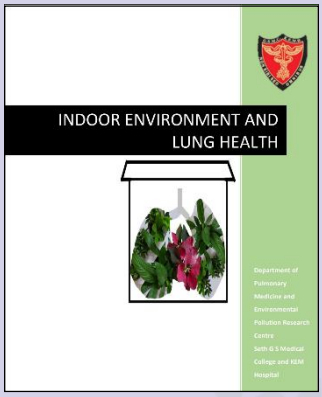
Asthma education program

Asthma care for all ! Global Initiative on Asthma management has given a call for Care for all.EPRC team, Over last two decades, conducts Asthma education, regarding asthma triggers, control of symptoms through environmental control measures, symptom control with appropriate treatment plan are inclusive in this program. Impact of imparting asthma education is seen with reduction in hospital admissions in those who are educated about environmental control measures.

Educational aids used in imparting asthma education

Health education booklet on indoor air quality and lung health :

A monogram on measures to improve indoor air quality for better lung health has been prepared. This educational booklet addresses common respiratory symptoms and outcomes of studies done by EPRC are outlined in a nutshell. Advisory on improving indoor air quality has been included.



Collection and validation of exhaled breath condensate analysis in normal individuals. :

Validation of exhaled breath condensate samples of volatile organic compounds was undertaken in normal individuals by EPRC team in the year 2022. The results will be processed by Medical Resesrch Unit team at Seth G.S.Medical College. This is a non-invasive method useful for analysis of various inflammatory markers. Measurement of biomarkers of oxidative stress and airway inflammation in exhaled breath condensate can be used in future as a non-invasive sampling method for monitoring airway inflammation.

National Environmental health profile study(restarted in December 2022).

(Funded by Ministry of Environment Health and Forest & Climate Change)

National Environmental health profile study has been restarted after COVID-19 pandemic has ended. The study involves questionnaire survey of respiratory symptoms and confounding factors to be compared with air quality and meteorological data. A total of 1058 population has been studied. A total of 241 subjects from Andheri participated in survey from February 2023 to April 2023.

Survey of respiratory morbidity related to biological contamination of ambient air will be undertaken with reference to allergic response to bird droppings in Mumbai City. An advisory will be prepared for population to prevent exposure.

Community based health resilience awareness program :

Expanding urban areas with extreme climate events(high rainfall, extreme temperature, flood and draughts) are known to pose health risks. From smog over cities to smoke inside homes, air pollution poses a major threat to health and climate across the globe.

Air pollution is the presence of one or more contaminants in the atmosphere, such as dust, fumes, gas, mist, odor, smoke or vapor in quantities and duration that can be injurious to human health. In Mumbai air quality information is widely available to people, online as well as through display boards. Health education of people at large through EPRC initiatives is proposed for involvement of people in pollution prevention and mitigation in the year 2024.

Vector Control:

Mumbai is the pioneer city where Vector Control for Vector Borne Diseases is dealt with professionally since 1923. Main Function of Insecticide Branch of Public Health Department is control of Malaria Vector Mosquitoes, Dengue and Chikungunya Vector mosquitoes, Filaria Vector (nuisance) mosquitoes, Fly Control, Rodent Control and Cockroaches Control.

To control the urban malaria Vector (Ano.Stephensi) under the anti-malaria campaign, source reduction i.e. mosquito proofing of wells and tanks etc. Engineering methods, biological control method, Legislative (legal) action and use of insecticides and fumigation is done.

Dengue and Chickunguniya Vector transmitted by Aedes aegypti mosquito which breeds in domestic and peri-domestic water container, hence they are either removed/ destroyed or they are emptied and dried.

Rodent control and fly control programmes are also carried out in all 24 wards of Brihanmumbai Municipal Corporation. If demanded, private properties are also given pest control treatment for antilarval and fogging work on payment of charges by the owner to M.C.G.M.

Drug De- Addiction Center:

Brihanmumbai Municipal Corporation's 20 bedded Drug De-addiction Centre, situated at Bhardawadi Maternity Home Building, Bhardawadi, Andheri (West), Mumbai-400058 has been functioning since 1992 under the Public Health Department of Brihanmumbai Municipal Corporation. Detoxification treatment for various types of addictions like Alcohol, Opium, Charas, Ganja, Sleeping Pills, Inhalants, MD, Amphetamine, Tobacco etc. is done at this centre. The following services are available in this centre-

1. **Inpatient Department:** Only male patients above 18 years of age are admitted in this centre for detoxification treatment for various types of addictions. Generally this period is of 21 days. During this period tea, milk and food are regularly provided free of charge to the patients. Recreation facilities such as Television, Carrom, Chess etc. are available to the patients. Also under "Shivayoga" scheme of BMC, indoor patients are taught yoga exercises on daily basis by qualified trainers.
2. **Out-Patient Department:** Every day from 9.00 am to 12.00 pm (excluding Sundays and Public Holidays) patients of various types of addictions are treated regularly in the OutPatient Department. Free OPIOID SUBSTITUTION THERAPY is provided to Brown Sugar addicts.

3. **Counselling :** Counseling of indoor and OPD patients as well as their families is done on regular basis.
4. **Blood test :** Before admission to the inpatient department, all patients are subjected to various types of blood tests at a modest cost under the Aapli chikitsa scheme of BMC.
5. **Spiritual Meetings :** Alcoholics Anonymous, Narcotics Anonymous meetings are conducted for in-door patients. Also the families of patients are guided to participate in Family Anonymous and Al-Anon meetings.

Implementation Of Preconception and Prenatal Diagnostic Technique Act.:

PCPNDT Act is implemented by MCGM since year 2001 as per instruction of Government of Maharashtra, Government of India to stop female foeticide and improve female sex ratio. For implementation of PCPNDT Act, M.O.H. appointed as appropriate authority in each ward. For Mumbai District PCPNDT Advisory committee is appointed and meetings are conducted every month. Under this act, registration of Genetic Counseling Centre/Genetic Laboratory/Genetic Clinic/Ultra Sonography Clinic Imaging center and Infertility clinic is necessary.

Till the end of March 2023, the report of registration of centers is as follows :

Total PCPNDT centres - 1688

Total MTP Centers -790

Sex ratio at Birth in year 2022 - 932/1000

Janani Surksha Yojana (JSY)

Janani Surksha Yojana (JSY) is a safe motherhood intervention under RCH-II programme which is being implemented with an objective of reducing maternal and neonatal morbidity and mortality by promoting 100 % institutional delivery among the pregnant woman. Under this scheme monetary assistance of Rs.600/- is given through PFMS (Public Finance Management System) post delivery. The Benefit of this scheme is given to pregnant woman whose age is 19 and above and belongs to SC, ST and BPL Category.

Total number of patients taken benefit of Janani SurkshaYojana from April – 2022 to March 2023 is - 9777

Maternal Deaths:

In order to bring down maternal and neonatal morbidity and mortality, all the maternal deaths occurring in all hospitals should be reported within 24 hours. All Hospitals having more than 1000 births per month should have facility based maternal death review committee and a nodal officer in their hospital. Monthly review should be conducted and minutes of the meeting to be submitted to Family Welfare

Department under Special Officer, Family Welfare.

District Level QAC will investigate all maternal deaths on a monthly basis.

Total maternal deaths reported in Mumbai from April 2022 to March 2023 - 204

Maternal deaths in Mumbai - 91 and Maternal Mortality rate - 69.

Family Welfare Programme:

1. The Family Welfare Programme is a national programme sponsored by Central Govt. implemented by Brihanmumbai Mahanagarpalika through the office of Special Officer (FW). Under this programme following services are provided free of cost.
2. Sterlization Operation (TL & NSV).
3. Intrauterine Contraceptive Devices (IUCD & PPIUCD).
4. Oral Pills.
5. Conventional Contraceptives (Nirodh).
6. Antara (DMPA)- Injectable Contraceptive (from July 2017)

No Scalpel Vasectomy (NSV):

Family Welfare center of F/South Parel is shifted to Naigaon Municipal Maternity Home and NSVs are done daily from Monday to Saturday. Family welfare unit of F/South Parel is government recognized training centre for NSV. After NSV all beneficiary gets incentives.

Health Posts and Urban Primary Health Services :

Public Heatlh Department of Municipal Corporation of Greater Mumbai has established 212 health posts providing basic primary health care services in the nearby vicinity of the H.P./ U.P.H.C. Each Health posts caters to approximately 50,000-60,000 population were One Assistant Medical Officer, One Public Health Nurse, Four Auxiliary Nurses and Midwifes (ANMs), Two Co-ordinator, and Twenty CHVs (Community Health Volunteers) / ASHA (Accredited Social Health Activists) is working.

Through these posts, various health services are being provided including immunization (P.P.I. and I.P.P.I.), Vitamin A and De-worming drive of children between 09 months to 06 years, adolescent health services, antenatal health checkups with promotion of institutional deliveries, postnatal follow up, providing family planning services to eligible couples, motivation of eligible couples for permanent methods of sterilization who have completed their family. Also, to conduct disease surveillance, epidemic survey and necessary control measures for same. Every health post conducts baseline and follow up survey of the population allotted to respective health posts and update the health profile of that area. All National Health Programs are implemented through H.P./U.P.H.C.

Maternity Homes:

There are 29 Maternity Homes and 01 Mother and Child Hospital functional in the Public Health Department of MCGM. Out of these 05 are Sentinel centres and Rest are primary Maternity Homes. 2 New Maternity Homes Ravalpada Maternity Home and Shivaji Nagar Maternity Home are started last year.

At Maternity Homes, pregnant mothers are provided with antenatal, delivery and postnatal services. Patients are also provided with family planning and contraceptive services, neonatal and pediatrics OPD service, Gynaec OPD services, ultra sonography etc.

Government schemes like JSY, JSSK, PMSMA, Free diagnostic services, Free diet, medicines and drop back services are also provided in these maternity homes. "LaQshya" Program is implemented in 16 Maternity Homes and "Suman" program is implemented in 4 Maternity Homes.

4 Sentinel centres and 2 maternity homes have each 5 bedded SNCU each. Total 30 SNCU beds are functional.

Mother and Child Hospital has 10 bedded functional NICU.

At Savitribai Phule Maternity Home, Bhandup 20 bedded NICU started from Aug-2021 on public private partnership (PPP).

To improve the quality of services at maternity homes, specialists are appointed on contract basis, RMO's, SMC's, Postgraduate Students pursuing CPS DGO and DCH and DRP Candidates are also appointed at maternity homes.

Staff Nurses, Lab Technicians, Pharmacists, Data Entry Operator are also appointed on contractual basis under National Urban Health Mission along with the regular municipal staff.

Performance of maternity homes in the year April 2022- March 2023

	Total ANC	Total Deliveries	Total LSCS	Total Operations	Total USG	Total Lab. Investigation
Total	35,802	17,147	4,863	8,608	80,613	7,92,735

Food Sanitation Programme:

Food sanitation comprises of control and supervision over the premises, where articles of food are manufacture, stored and kept for sale. This is controlled by imposing a licence under the provisions of Mumbai Municipal Corporation Act, Conditions of the licence include the condition that the trade activity will be carried out in a hygienic manner.

Destruction of Unwholesome Food:

As per the provisions of Section 415 and 416 of MMC Act, destruction of unwholesome food articles kept for sale by shopkeepers and hawkers is done daily by Junior Overseer and the staff of Encroachment Removal of Licence Department in each ward.

Hinduhridaysamrat Balasaheb Thackeray Aapla Davakhana:

On the occasion of Hinduhridaysamrat Balasaheb Thackeray's death anniversary on November 17, 2022, the Brihanmumbai Municipal Corporation launched 'Hinduhrudayasmarat Balasaheb Thackeray Aapla Dawakhana' with the aim of providing Comprehensive Health Care services to all Citizens.

Salient Features:

1. Provision of comprehensive primary health care services to citizens at place and time convenient to them.
2. Hinduhrudayasmarat Balasaheb Thackeray Aapla Dawakhana clinics have been started in Porta cabins in Open plots, Ready structure and Existing dispensaries.
3. Availability of Specialist Consultant Services at Polyclinic and Diagnostic Center in Existing Dispensaries by updating the infrastructure.
4. To reduce Out of Pocket expenditure on healthcare by providing Free of cost services to the Citizens.
5. Paperless Eco-friendly Information System by using 3 Tab software in HBT Aapla Davakhana.
6. Monthly fixed and Incentive Based remuneration to the contractual staff of HBT Aapla Davakhana.

Financial provision:

Rs 300 crore for FY 2022-23 and Rs 123 crore for 2023-24

Number of proposed and functional clinics:

At present as on 14.06.2023, 162 Hindu Hridaysamrat Bal Thackeray Aapla Davakhana are functioning in which 24 polyclinic and diagnostic centers , 54 porta cabins , 74 available clinics and 10 ready structure clinics are functioning. By December 2024, around 100 more Hindu Hridaysamrat Bal Thackeray Aapla Davakhana are proposed.

Time:

Porta Cabin and Ready structure –	7AM to 2 PM, 3PM to 10 PM
Existing Dispensaries –	9AM to 4 PM, 3PM to 10 PM

Services Provided:

1. Free Medical Check-up, Treatment
2. Free blood tests
3. Diagnostic Tests (X-ray, Sonography, C T scan, MRI etc.) at BMC rates through Empanelled Private Diagnostic Centre.
4. Free consultation through various specialists like Dentist, Gynaecologist, Paediatrician, General Physician, Dermatologist, Ophthalmologist and ENT specialist, Physiotherapist etc in Poly Clinic and Diagnostic Centre:

Manpower:

HBT Aapla Davakhana – Medical officer, Nurse, Pharmacist and MPW Polyclinic and Diagnostic Center – Consultant of various specialty along with Nurse, DEO and MPW.

22. DISASTER MANAGEMENT

DISASTER MANAGEMENT and CENTRAL COMPLAINT REGISTRATION DEPARTMENT:

The Disaster Management Department (DMD) was set up in 1999 at the Municipal Head Office managed disaster in Mumbai. Department is upgraded with modern equipments situated on second floor in Brihanmumbai Municipal Corporation Head Office.

District Disaster Management Authority:

In the year 2011 Greater Mumbai Disaster Management Authority was constituted in exercise of the powers conferred by Sub-sections (1), (2) and (4) of section 25 of the Disaster Management Act, 2005 (53 of 2005) and rule 2 of the Maharashtra District Disaster Management, by appointing Municipal Commissioner of Brihanmumbai Municipal Corporation as ex-officio Chairman of the Authority.

In the year 2018 as per the Government Resolution followed by the orders of the Hon'ble High Court the Districts Disaster Management Authority for the Mumbai City and Mumbai Suburban are constituted. Senior Most Additional Municipal Commissioner for Mumbai City and Mumbai of Suburban of Brihanmumbai Municipal Corporation are appointed as ex-officio Chairman of the District Disaster Management Authorities.

Functions of Disaster Management Department:

1. Single – point source for all issues related to disaster management.
2. Hazard Vulnerability and Risk Assessment
3. Prevention and Preparedness
4. Coordinate with relevant agencies for reducing the severity of damage.
5. Response
6. Coordinate with relevant agencies for help and rehabilitation.
7. Command and Control agency between administration and field units.
8. Coordinate for early warning to citizens.
9. Coordinate for arrangement of food and water during emergency situations.
10. Coordinate the transportation of stranded and injured people during disastrous situation.
11. Coordinate for the transportation of critically injured people on high priority.
12. Coordinate for setting up temporary shelters.
13. Coordinate with NGOs.

Objectives of Disaster Management Department:

1. Coordinate for rapid and effective response during any disaster.
2. Improve coordination among all the responding agencies.
3. To utilize social media through Public Relation Office for disseminating disaster related information among citizens.
4. To encourage preparedness on every level.
5. To encourage for helping disaster affected people.
6. Impart Training to the Citizens and stakeholders.

Emergency Operations Centre (EOC):

The Disaster Management Department works 365 days x 24 hours throughout the year. It serves as a Command and Control agency between the administration and field units. It is a single-point source for all issues related to disaster management. It coordinates with various stakeholders for quick and effective response during a disaster.

1. Direct telephone line facility.
2. Television sets which are tuned to major news channels to keep abreast of the latest news.
3. In case of interruption in communication system HAM radio is used as alternative communication system.
4. '1916' helpline with 30 hunting lines are available for Citizens registered complaints related to major/ minor accidents, fire, earthquakes, bomb blast etc.
5. 24 Administrative ward control rooms, Back Up Control Room, 3 major and 2 peripheral hospitals and 28 outside agencies are connected with 58 hotlines provides regular updates about the situation in the Mumbai City and suburbs.
6. For monitoring disaster management activities a video wall of size 6200 mm long and 1744mm height has been installed. Video wall receives feed from 5361 CCTV cameras installed by Mumbai Police.
7. DMR is an advance communication system implemented by DM dept in January 2022. This system is installed in 24 ward control rooms, 37 stakeholders and on vehicles of designated Brihanmumbai Municipal Corporation officers. Total 326 DMR sets installed. This system has advance features like Broadcast Call, Emergency Call, Pre Recorded Messages, Intelligent Audio, Blue Tooth / Wi-Fi, Man Down and Loan Worker, Secured Encrypted Voice Communication, Better Spectrum Efficiency, Integrated Voice and Data (Speech to text and text to speech), Double Capacity Per Frequency Spectrum, Longer Battery Life, Facility for Group Call, Individual Call, Enabling Data Application viz. Dispatcher, GPS Location Tracking, Geo Fencing, Data and Voice Logger, Over the Air Programming,

Text Messaging, etc.

The following types of complaints are registered in Disaster Management Department:

32 types of manmade and natural disasters are identified which are likely prone to Mumbai City and Suburbs which is categorized into 102 sub-major disasters like major/ minor accidents, landslides, felling of trees or unauthorized cutting of trees, water logging, house collapses, short circuits, floods, earthquakes, bomb explosions etc. On registration, these incidents are communicated to the concerned agencies for providing necessary assistance.

Automatic Weather Stations (AWS):

- 60 Automatic Weather Stations have been installed in Mumbai to get real time weather parameters.
- Weather Parameter data is refreshed after every 15 minutes.
- The data is monitored, analyzed and the warnings are issued accordingly.

Flow Level Sensors:

- Flow Level Sensors are installed to monitor water level in rivers and lakes. It gives real time information in Disaster Control Room.
- This will help to initiate early evacuation action low lying areas in the vicinity. Flow Level Censors are installed at Dahisar, Poiser, Wakola, Mithi, Oshiwara rivers and Powai, Vihar Lake.

Disaster Management Website:

The website 'dm.mcgm.gov.in' shows following information: High Tide-Low Tide time table, Weather forecast obtained from India Meteorological Department, Live weather parameters updated every 15 minutes, Traffic updates, Status of Local Trains, Status of Air Traffic etc.

Disaster Management App:

Disaster Management Department, Brihanmumbai Municipal Corporation launched a new android phone application to aid in citizens response to disaster management and control. The app, Disaster Management Brihanmumbai Municipal Corporation, will provide real time information of whether parameters as well as help available at hand within a radius of 500 meters from the distressed person.

Though the application, on clicking on a landmark in the vicinity of the crisis, the app will automatically generate a list of police stations, hospitals, fire brigaded station and numbers of ward offices within a radius of 500 meters.

The app will also allow the user to save emergency personal contacts in a separate list in the app and calls to numbers will be made through the app in the person chooses to notify the contacts of the disaster.

Emergency Support Functions (ESF):

- 14 Emergency Support Functions have been identified as an integral part to carry out emergency response activities, including preparedness, response during the event, and immediate recovery.
- In the events of major disaster or emergency where quick response is required, the lead agency will take action as per SOPs and work in coordination with the support agencies and other ESF's to mobilize and deploy resources to the affected area in Mumbai.
- In peace time, each ESF Plan and prepare for emergencies through review of the planning assumptions, drills, table top exercises and preparation and reviews of the Standard Operating Procedures.
- Preparedness and planning activities are essentials to ensure adequate response and to identify areas of actions that would ultimately reduce disaster risk.

GIS based Command and Control System:

Disaster Management is shifting form reactive to proactive nature and approach. Therefore risk reduction before disaster is really very important aspect in modern days.

It has been also learned from the previous disasters that, prediction, early warning are also playing vital role in disaster management along with prevention, mitigation, preparedness, planning, relief and rehabilitation. GIS based technology provides best platform for development of such system. GIS has emerged as an effective tool in disaster management since GEO spatial data and socio economic information needs to be amalgamated for the decision making and in handling a disaster or to plan for tracking disasters in scientific manner.

Prime objective of developing GIS is to help DMD for:

- Prediction and Early Warning
- Risk reduction, planning and preparedness in pre-disaster phase
- Decision Support System
- Damage Assessment and Relief Management

GIS combines layer of information on various themes to enable DMD to take the most appropriate decisions under given circumstances.

1. DMD generate maps both at macro and micro level indicating vulnerability at different extends under different threats perception.
2. Locations likely to remain unaffected or remains comparatively safe could be identified.
3. Alternated routes to relief camps and important locations in the event of disruptions of normal

surface communication could be worked out.

4. Smooth rescue and evacuations operation can be properly planned.

City Institute of Disaster Management and Research Centre (CIDM):

If main EOC at MHO is breaks down due to any reason, a backup control room has been setup at CIDM, Parel for continuous coordination. This backup control is equipped with Hotlines, Wireless communication, HAM Radio, Video Wall, ESF etc. similar to EOC at MHO. CIDM provides comprehensive training on disaster management and first responder to employee of Brihanmumbai Municipal Corporation/ Government/ Private companies, School and College students, Medical practitioners, Police etc to aware them about scientific methods of disaster management.

In case of any mishap happens at Brihanmumbai Municipal Corporation Head Office and Emergency Operations Center at 2nd Floor is not accessible or cannot be operated a backup control room has been setup at CIDM, Parel. This backup control is equipped with Hotlines, Wireless communication, HAM Radio, Video Wall, ESF etc. similar to EOC at MHO. CIDM provides comprehensive training on disaster management and first responder to employee of Brihanmumbai Municipal Corporation/ Government / Private companies, School and College students, Medical practitioners, Police etc to aware them about scientific methods of disaster management.

3D Auditorium and an Art gallery is developed to show realistic information about of various disasters. The major objective of these facilities is to make visitors aware of disaster and its preparedness. In this Art gallery has interactive dioramas, display, photographs and information boards for awareness generation of various disasters.

Post Graduate Diploma in Disaster, Fire and Industrial Safety Management (PGDDFISM):

Considering the importance of Disaster Management and ever increasing impacts of Disasters in future, CIDM has commenced a one year PGDDFISM course in coordination with GICED and Mumbai University. This course offers scientific learning of concepts of natural and manmade disaster and techniques of every stage in DM. The Primary aim of this course is to educate personal from Government agencies, industries regarding appropriate response to the impending disaster and reduce the impact on mortality and economy.

City Disaster Response Force (CDRF):

On the basis of National Disaster Response Force (NDRF) at National level and State Disaster Response Force (SDRF) at State level, a City Disaster Response Force (CDRF) is establish at City level for Mumbai. The objective of formulating CDRF for Mumbai is to develop self sustainability for responding disasters like major fire, collapse structure, Chemical-Biological-Radiological-Nuclear etc. The personnel appointed for

CDRF are from existing Security Force, Mumbai Fire Brigade, Doctors and Paramedics of BrihanMumbai Municipal Corporation are trained by National Disaster Response Force (NDRF).

Central Complaint Registration System (CCRS):

On-line complaint management system (CPWM Module) has been started from year 2000 to register civic complaints. Central Complaint Registration System is working 24X7. Civic Complaints pertains to Brihanmumbai Municipal Corporation are registered on phone no.1916 in the central control room and sent to the concerned department through online system. Citizen can lodged their complaints on line on Brihanmumbai Municipal Corporation portal **i.e. http://portal.mcgm.gov.in**

Un-attempted complaints are automatically escalated to higher authorities such as Assistant Commissioner- Dy. Municipal Commissioner to Additional Municipal Commissioner and finally to Municipal Commissioner in a time bound manner.

23. BRIHANMUMBAI MUNICIPAL CORPORATION PUBLIC RELATIONS DEPARTMENT

The Environment Status Report for the year 2022-23 highlights the efforts made by the Public Relation Department of the Brihanmumbai Municipal Corporation (BMC) in creating awareness and dissemination information about the corporation's activities, projects, and initiatives. The report showcases the department's role in promoting environmental awareness, addressing climate change and publicizing various campaigns and events related to the environment.

Throughout the year, the Public Relation Department utilized multiple media channels, including newspapers, social media platforms, and news channels to reach out to the public. The department successfully disseminated news about the corporation's functions, events, projects, initiatives and developments. This was achieved through interviews with officials, newspaper advertisements, announcements, press release, billboard advertisements and more.

The department actively worked towards raising awareness and engaging with the citizens of Mumbai on various environmental issues. It provided information on topics such as tidal movements, the state of the monsoon and attended environmental meeting on them through newspapers, news channels and social media. Campaigns and achievements by the Public Relations Department

Jal Shakti Abhiyan- Catch the Rain 2022:

The Central Government launched this campaign to increase groundwater levels by retaining rainwater in the soil. The Brihanmumbai Municipal Corporation officials and employees participated in the launch through a video conference and took the 'Water Pleadge.' The Public Relations Department ensured the circulation of information about the campaign through newspapers, news channels and social media.

Tree City Award:

The United Nations Organization recognized the conservation efforts of the Brihanmumbai Municipal Corporation by the awarding Mumbai the title of 'Tree City' consecutively for 2 years, 2021 and 2022. The Public Relation Department played a crucial role in disseminating this news through various media channels.

Tree Revival Drive:

The Brihanmumbai Municipal Corporation Garden Department conducted a Tree Revival Drive in April 2022, focusing on the protection and nurturing of trees in Mumbai. The campaign witness active participation from various environmental organizations, NGOs, social groups, schools and colleges. The Public Relations Department provided updates and information about the campaign to newspapers, news channels and other media outlets.

Ganeshotsav Awareness:

The Brihanmumbai Municipal Corporation made it mandatory to immerse 'plaster of paris' Ganesh idols in artificial ponds to raise awareness about the environmental impact. The Public Relation Department circulated press notes to generate public awarness during the fesrtival.

Clean Coast Safe Sea Campaign:

The Brihanmumbai Municipal Corporation actively participated in the 'Clean Coast Safe Sea' campaign in the guidance of Municipal Commissioner Dr. Iqbal Singh Chahal, This campaign was focused on the cleanliness of the city. The Public Relation Department ensured effective implementation of the campaign across seven major locations in the Brihanmumbai Municipal Corporation area including Girgaon, Dadar, Mahim, Juhu, Versova, Madh-Marve-Aksa, Gorai-Monori and provided updates and coverage through various media channels.

My Mubai-Clean Mumbai Campaign:

A special campaign called 'My Mumbai-Clean Mumbai' was launched in Mumbai from December 1 to December 31, 2022. The Public Relation Department played a vital role in giving publicity to this campaign through newspapers and other media outlets.

Public and Advertisements:

Throughout the year, the Public Relation Department published and disseminated 494 newsletters to provide updates and information about various activities. Additionally, the department provided 151 clarifications to counter criticism published in newspapers regarding civic services and facilities provided by the corporation, thus eliminating misunderstanding among the public.

Approximately 3271 advertisement related to different departments of the Brihanmumbai Municipal Corporation were published in various newspapers in different languages. These advertisements helped raise awareness about the corporation's initiatives and projects among the public.

24. THE ACTION PLAN FOR CONTROL OF AIR POLLUTION OF MUMBAI

According to Air Pollution (Control & Prevention) Act 1981 by Maharashtra Pollution Control Board (MPCB) and Central Pollution Control Board (CPCB) and to control the Air Pollution due to various changes in climate, The Municipl Corporation of Greater Mumbai has prepared the Action Plan for Control of Air Pollution of Mumbai, which is submitted to CPCB for approval. The said Action plan was sanctioned by CPCB with recommondations on 9th Oct 2019. For the execution of this Action Plan, the Environmental Deprtment of BrihanMumbai Municipal Corporation has informed to various departments of BrihanMumbai Municipal Corporation, State Government and Central Government.

Considering the source of pollutions and control measures accordingly, the responsible departments are decided by the committee. Ch. Eng. (Roads & Traffic), Ch. Eng. (S.W.M.), Ch. Eng (D.P.), Ch. Eng. (M&E), Executive Health officer, Garden Supritenden and Asst. Commissioner of all Wards of BrihanMumbai Municipal Corporation are included in the implementation of the plan. In addition to this RTO, Traffic Police, MMRDA, MPT, BEST, Railways, Metros, MSEDCL, Transport Ministry, Petrolium Ministry, Dept of Mines & Geology etc. these departments are also actively involved.

In the said Action Plan of Mumbai the issues like controlling Air Pollution, Traffic jams and Noise Pollution are highlighted. In addition to this the issues like widening of the roads, maintenance of the roads, observing proper discipline for traffic,synchronising traffic controlling system and development of greenbelt along the roadside etc. The Action Plan for Control of Air Pollution of Mumbai the Stakeholders are requested to concentrate on the actions to be taken by respective department as mention in the following table.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
1. Source Group: Vehicle Emission				
1	(I)	Regular Checking of vehicular emission and issue of pollution under control (PUC) certificate.	RTO, Traffic Police	1. **PUC checking** in every 6 months for BEST buses. 2. RTO approved agency appointed for issuing the PUC certificate. Certificate displayed inside every bus 3. Random PUC check planned by RTO. 4. As per the provision of Motor Vehicle Act 1988, 1379 cases have been registered in year 2017 and 464 cases have been registered in year 2018 (up to 31st august) by the Traffic control Branch of Mumbai Police for non-compliance of PUC norms.
	(ii)	Promoting Green mode of transport by creating Cycle tracks.	BrihanMumbai Municipal Corporation	1. **Promoting Cycle tracks** -To promote the green mode of transport, 36 Km Cycle Track Works along with walkway and other infrastructure have been initiated in three Phases. Work of the Pilot project for 2 Kms has been completed in Mulund & from NITIE gate to Vijay Nagar Bridge in Marol.
	(iii)	Minimizing use of personal vehicles with promotion of public transport by bus fare reduction policy, GPS bus tracking mobile application development.	BEST	• BEST declared reduction in the bus fare to promote maximum use of public transport on 8th July, 2019. • Intelligent Traffic Management System (ITMS) program launched by BEST. Under this program Mobile Application development is in progress for passengers to get information related about expected arrival of buses, route. It enables GPS tracking of the buses.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	(iv)	Public awareness campaigns, workshops, VMS boards, Auto Expo for promoting Eco friendly Mobility	RTO, Traffic Police, MPCB	1. MPC Board has organized "Eco friendly Mobility for Clean Air" workshop in collaboration with NEERI, Mumbai first where innovative solutions like commuter's choice program, retro fitment, introduction of Metro,etc.were discussed. With stakeholders including other government agencies, NGOs, expert from Industries, research institutes, 2. Public Awareness message to observe lane discipline and air pollution control have been displayed on 36 VMS boards installed across the City. Similarly, various awareness programs are organized time to time especially during Road Safety Week.
	(v)	Providing pay & park, PPL (Public Private Lot), multilayer parking and amenity sites for parking of vehicles to avoid parking atNon designated areas	Ch.E.(Roads & Traffic)_MC GM, MMRDA, RTO, Traffic Police,	77 locations across Mumbai identified for Pay and Park. It may provide parking for around 15000 vehicles. Details of the identified locations, vehicle type, operating agecy provided in the Annexure B 1.8.• Also, 26 PPL (Public Private lot) and 29 amenity parking sites are identified. Hon'ble M.C. has approved the proposal for initiation of Mumbai Parking Authority by appointing Parking Commissioner ,Mumbai along with support staff to enable the Parking Commissioner to lead the process of formation & operationalization of Mumbai Parking Authority. The work is commenced under the guidance of Shri Ramakant Zhasir)OSD-MPA)• To tackle the parking issues, MMRDA has identified 11 multi level parking locations within BKC. • Traffic Control Branch of Mumbai has taken action against 2,99,721 and 3,23,324 vehicles in the year 2018 from (1st Sept. 2018 to Dec. 2018) and 2019 (upto 19th Aug.) respectively for traffic voilationregarding illegal parking.
	(vi)	Initiate steps for retrofitting of particulate filters in Diesel vehicles, when BS-VI fuels areavailable.	RTO, Vehicle Mfg. Industries	• Letter issued to NEERI for conducting feasibility study for retrofitement of ECD (Emission Control Devices) and to evaluate effect of temperature. Based on the outcome of the study, results will be implemented.
	(vii)	Checking fuel adulteration and random monitoring of fuel quality data	Ministry of Petroleum& Natural Gas & Oil marketing Companies	• Government of India has formed Anti- Adulteration Cell headed by Director General. Having four deputy directors for four Zones of India. The authority is responsible for Prevention of adulteration & other malpractices in the sale. In a Auto fuel Policy report, the problem of Fuel Adulteration is taken into consideration. Directions are given to oil companies.
	(viii)	Widening of road and improvement of Infrastructure for	Ch. Eng(DP)_ MCG M, Assistant	.•Widening and Improvement of existing road of 2.8 km.from Oberoi Mall to Film City and 2.5 km. of Tansa Pipe Widening and reconstruction of bridge across Mithi River at Mahim Causewayis awarded at the Contract Cost of ₹103.27 cr.•As a part of the Transportation network, the Draft DP 2034 has provided the following roads on therevised Draft DP sheets:I. Newly proposed DP roads not in existence earlier,II. Sanctioned Revised Development Plan 1991 (SRDP1991) DP roads not developed till date and hence shown as proposed DP roadsIII. SRDP1991 DP roads partly developed and hence shown as existing roads with widening as per SRDP1991 road width, andIV. New DP roads proposed in NDZ and salt pan lands for better connectivity and integrateddevelopment.The construction of bridges, subways, FOB's, ROB's, tunnels etc., are not shown separately in Draft DP.Any such road structures would be constructed wherever required by BrihanMumbai Municipal Corporation as per feasibility andtechnical requirement, and will automatically form part of DP.Apart from these roads shown in the Draft DP 2034, the MMC Act 1888 has robust provisions in regard to roads, the details of these roads are with Dy.Ch.E.(traffic).The above proposals are for the horizon period 2014-2034. The implementation of these proposals isto be carried out by Roads department after taking over the land from the landowners after paymentof compensation to the landowners.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	(ix)	Construction of expressways/byp ass road to avoid congestion : a. Coastal Roadb. Gurgaon-Mulund link road	MMRDA, MSRDC	• The Coastal Road is an under construction 8-lane, 29.2-km long freeway that would to run along Mumbai's western coastline connecting Marine Lines in the south to Kandivali in the north. The Coastal Road is projected to be used by 130,000 vehicles daily and is expected to reduce travel time between South Mumbai and the Western Suburbs from 2 hours to 40 minutes.• Goregaon-Mulund link road project work is in process
	(x)	Promoting Battery operated vehicles by addition of new buses for public transport and providing tax exemption for encouraging use of E-buses.	RTO, MMRDA, BrihanMumbai Municipal Corporation, BEST	• Currently 6 buses are operated by BEST. • Under FAME India program 80 new buses will be included. • To improve air quality further BEST undertaking has made efforts to introduce buses with no emissions. With help of MMRDA shortly 25 Hybrid electric buses will be inducted into BEST fleet (15 Nos. buses already received) 4 Nos. of electric buses with zero emission are already in operation and 2 Nos. additional buses will be inducted shortly.• To promote electric Vehicles 50% of
	(xi)	Installation of weigh in Motion bridges at the Mumbai-Gujrat State border to prevent overloading of vehicles.	RTO, Transport Ministry	1) There are 24 Check post with weigh bridges in Maharashtra. The eighteen (18) number are modernized & automated. The work of modernization of three is in process. •Out of 24 only one is in Mumbai at the border of Mumbai & Gujarat, located at Achad. It is automated & fully modernized.
	(xii)	Good traffic management with Synchronize Traffic movements by introducing Intelligent Traffic Management systems and installation of new signals.	Ch. E. (Roads and Traffic)_MC GM, Traffic Police, RTO	•Installation of new traffic signals (48 Nos.) 1. Appointed consultant for preparation of Compressive Mobility plan. 2. Currently, Mumbai Traffic control branch using 256 ATC signals and 371 non ATS for synchronized traffic movement.Installation of ATC (Area Traffic Control System) compatible signals planned (247 Nos.) 3. Proposal for Intelligent Management System (IMS) Implementations for the Mumbai city is sanctioned by GoM and procedure of selection of vendors for IMS installation is in process. •Addition of direction boards (70 Nos), Mandatory boards (11300 Nos)Mobility of vehicles increased by 20%. Thus resulting in reduced emission from vehicles.
	(xiii)	Installation of Remote Sensor based PUC systems	RTO	• The Transport Commissioner office vide its letter dated 20.03.2019 informed all the head of the offices to start the PUC checking of the vehicles electronically and online from 01.04.2019. However this order of Transport Commissioner is challenged in the High Court Bombay vide Writ Petition no 5704/2019, All PUC Owners Association V/s Union of India and ors. • In Mumbai total 20 PUC centers have been computerized
	(xiv)	Efforts for Sulphur reduction in diesel by providing low sulphur content Diesel.	Petroleum Industry, Transport Ministry	City is supplied with BS IV stage diesel which has low sulphur content.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	(xv)	Introduction of CNG, Hybrid Electric buses for public transport.Providi ng Metro and Monorail transport services.	RTO, Tranport Ministry, Chairman (BEST), Chairman (Railway Authority), MRTS, MMRDA,	· To improve the air quality BEST introduced CNG buses for the first time in India in 1997. The fleet of CNG was increased gradually and presently 62% of our fleet is operated on green fuel i.e. on CNGa) CNG buses of Nos. 1851 are already in BEST fleet since 1997. This technology has already established. b) Newly developed 25 Nos. of hybrid electric and 6 Nos. of pure electric is available.c) Commuter choice program is planned providing efficient public transport in the Mumbai City. To improve the air quality BEST Undertaking introduced CNG buses for the first time in India in 1997. The fleet of CNG was increased gradually and presently 62% of BEST fleet is operated on green fuel i.e. on CNG.d) To improve air quality further BEST Undertaking has made efforts to introduce buses with less / no emissions. With the help of MMRDA shortly 25 hybrid electric buses will be inducted into our fleet(15 buses already received)e) 4 nos. of electric buses with zero emission are already in operation and 2 nos. of more buses will be inducted shortly.f.) AC buses procured by MMRDA and operated by BEST are in service from Bandra/Kurla to BKC throughout the peak periodsg.) Metro system is designed to reduce traffic congestion in the city. Project is built in three phases over a 15-year period, with overall completion expected in 2025h.)Monorail of 20.21 kilometres line is fully elevated, and connects Jacob Circle in South Mumbai with Chembur in eastern Mumbai.i) MMRDA also decided to appoint Indian Port Rail and Ropeway Corporation Ltd to prepare a project report for ropeways from Malad to Marve and Gorai to Borivli, each of 4.5km. The projects can boost east-west connectivity, along with connectivity to Malad Metro station on Metro-2A corridor and Marve; and further, to Borivli station on Western Railway, Metro-2A and Gorai jetty.
	(xvi)	Implementing scrapping policy for old vehicles.	RTO, Transport Ministry,	•BS II and BS III bus scrapping policy developed. Currently 425 BS II vehicles will be scrapped by 2021.•As per Section 59 of the Motor Vehicle Act the Central Government empowered to fix the age limit of Motor Vehicles, having regard to public safety and convenience, after the expiry of which the registration is required to be cancelled. The Central Government has not issued any notification under this section till date.•However, The State Transport Authority vide its resolution no 7/2013 has taken decision to restrict the age of taxies plying in the MMR for 20 years and 16 years for Auto rickshaws.
	(xvii)	Installation of Waste to Energy projects and promiting Solar energy/ alternative energy sources in the Mumbai City.	RTO, Transport Ministry	• Development of 600 TPD Waste to Energy project at Deonar, Mumbai on DBO basis is proposed. a) Consultant is appointed for preparation of DPR and tender documents of Waste to Energy project. 2.5 MW Solar Energy Installation commissioned by H.E.department in Bhandup Complex ofBrihanMumbai Municipal Corporation & another 2.5mw is in process. Solar energy project executed by Building Construction department of BrihanMumbai Municipal Corporationis as follow 1) Cochin Street Award 25kw commissioned, Hawker Plaza Dadar-100kw commissioning awaited, Khataw Market Bldg.-25kw commissioning awaited, Engineering Hub Worli-360 kw work order issued. Byculla Fire Brigade 25KW in process for commissioning.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
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Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	(xviii)	Implementation of BS – VI norms for procurements of new buses	Transport Ministry	•Directly procuring BS VI vehicles. For new 1500 no. of buses with BS VI norms procurement tenders floated.•The Emission standards Bharat Stage VI will be applicable to passenger and goods vehicle having Gross Vehicle Weight not exceeding 3500 kgs, Two Wheelers, and Three Wheelers manufactured on or after 01.04.2020 for all models.• The Emission standards Bharat Stage-VI will be applicable to Two Wheelers Vehicle models manufactured on or after 01.04.2020 • The Emission standards Bharat Stage-VI will be applicable to Three Wheelers Vehicle models manufactured on or after 01.04.2020• New Motor vehicles conforming to Emission Standard Bharat Stage-IV, manufactured before the 01.04.2020 will not be registered after the 30.06.2020• New Passenger and Goods Motor vehicles conforming to Emission Standard Bharat Stage-IV, and sold in the form of Drive and Chassis will not be registered after 30.09.2020.
	(xix)	Providing good Inspection/ maintenance services to all BSII & BSIII commercial vehicles	RTO, Transport Ministry	•BEST having 27 Nos. of Depos and Central Workshops where high tech maintenance infra- structure is available.
2. Source Group: Re-Suspension Dust				
Sr.	Sub	Action	Responsibl eagency(ies)	Remarks
2	I	Creation of green buffers along the Traffic corridors & installation of WAYU (Wind Augmentation and Purifying Units) at urban traffic intersection.	Superinten dent of Garden_M CGM, Assistant Commissio ner (Wards)_M CGM, Ch. E. (Roads and Traffic)_MC GM, MMRDA, MSRDC Ch. E. (DP)_MCG M	• Garden Dept. has achieved the tree plantation target given by government time to time. In year 2016, 7800 trees have been planted in city and about 5000 sapling distributed free of cost. over 1000 garden, R.G. P.G. plots have been developed. • 12 no. of spaces below flyover have been cleared of encroachments and developed by providing greenery (6cr) • 23 number of spaces below flyover have been identified for beautification at the cost of ₹19 crore. This has resulted in providing additional area of around 35000 sq. Mtrs green space to Mumbai City • To mitigate the flood vulnerability of the city, the RDDP 2034, has demarcated buffers along rivers, creeks and nallas, on either side of the water courses, which are to be maintained as development free zones. This buffer zone will help reduce flooding risks by permitting water bodies to flood their banks without affecting people. These buffers, wherever possible, will be city wide open spaces that would be walkable along with their use for environment. • M.P.C.Board, IIT (B) and NEERI have come together to develop and install WAYU (Wind Augmentation and Purifying Units) to improve Ambient Air Quality at Urban traffic intersections. Initially, these (25 no) systems have been installed at 5 locations in Mumbai.
	II.	Maintain Pothole Free Roads for Free Flow Traffic by implementing Road Maintenance management system (RMMS)	Ch. E. (Roads and Traffic)_MC GM,MMRD A, MSRDC, Assistant Commissio ner(Wards) _BrihanMumbai Municipal	To ensure that the roads are regularly maintained and to achieve longevity of the roads with lesser expenditure, Road Maintenance Management System (RMMS) is implemented in BrihanMumbai Municipal Corporation where every road is numbered and a small group of these roads are formed. • Responsibility of each road is put under a Sub-Engineer designated as Road Engineer (RE). RE prepares estimates and look after the maintenance of each road under his jurisdiction. • Priority list of the roads to be repaired is prepared.1.City Division- No. of roads= 177, Cost 385.62Cr2. Eastern Suburb Division (E.S)- No. of roard=125, Cost 285.22Cr3. Western Suburb Division (W.S)- No. of roads=137, Cost 234.96Cr

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	III	Introduce water fountains at Major Traffic intersection, wherever feasible by establishing Garden Infrasture Cell (GIC).	Ch. E. (Roads and Traffic)_MC GM,MMRD A, MSRDC, Assistant Commissio ner (Wards)_M CGM, Superinten dent of Garden_M CGM	Regarding installation of fountains; Garden Infrastructure Cell (GIC) of BrihanMumbai Municipal Corporation is established. However, it is to state that it is not feasible as it could need additional area which may result in reduction of space for vehicles.
	IV	Greening of open areas, garden, community places, schools and housing societies	Ch. E. (DP)_MCG M, Assistant Commissio ner (Wards)_M CGM, Ch. E. (Roads and Traffic)_MC GM, MMRDA, MSRDC	An area of 300 acres at Cuff Parade is being developed as Green Park for which Tata Consultancy Engineering (TCE) has been appointed as Consultants • Special emphasis been paid to implementation of D.P.under which 29 plots have been developed as garden and parks at the cost of ₹11 crore.•The Draft DP 2034 has proposed following to be counted as Public Open Spaces viz. RGs, PGs, public/semi- community spaces, layout RGs, designated public open spaces, open spaces in educational institutions and other public institutions. The quantum of existing open spaces and proposed open spaces proposed in the Draft DP 2034 is as follows:- Reservations of PG/Garden/Green Belt etc. 1892.22 Designations of RG/PG/Garden etc. 1633.67 Layout RG's which will be available after development of lands under layout. 964.78 NDZ +Tourism Development Area +Salt Pan 850 Aarey POS 800 Sanjay Gandhi National Park RG 588 Buffer for the Rivers/nallas 472.05 Open Spaces in the jurisdiction of Special Planning Authorities Viz. MIDC/MMRDA 428.05Out of proposed Conversion of Industrial lands 117.64Proposed Coastal Road Promenade 88
	V	Blacktopping of metaled Roads including pavement of Road shoulders	Blacktopping of metaled Roads including pavement of Road shoulders	•Asphalt and resurfacing of roads of 98 km. has beencompleted at the cost of ₹1148 crore•In the year 2019-20 about 370 kms roads are proposed to be improved. Of this, about 106 kms roads are proposed in CC and 172 kms in Asphalt and resurfacing of about 92 kms roads is proposed.
	VI	Providing Wall to wall paving (brick) by finalizing footpath improvement policy under which footpaths will be improved with Stencil Concrete, CC with marble chips finishing or Plain CC instead of Paver Blocks	Ch. E. (Roads and Traffic), MMRDA, MSRDC	• New footpath improvement policy has now been finalized with the aim to avoid illegal digging, focus on improvement of quality of footpath and increase their lifespan. Now onwards, all the footpaths will be improved with Stencil Concrete, CC with marble chips finishing or Plain CC instead of Paver Blocks. • To minimize excavation of footpath, carriage way for maintaining underground utilities. The necessary actions for the same is made by providing online trenching permissions and adopting advance machinery and technology.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	VII	Road design improvement by using C & D waste, fly ash in road construction.	Ch. E. (Roads and Traffic)_MC GM, MMRDA, MSRDC	• Use of C & D waste, fly ash in road construction project is under evaluatation. The policy of resurfacing, change in design, change in tender condition and registration rules has resulted in a major improvement in road conditions.
3. Source Group: Biomass/trash burning, landfill waste burning				
3	(I)	Launch extensive drive against open burning of biomas,s crop residue, garbage, leaves by appointing Nuisance Detectors and Clean-up Marshals are appointed.	Ch. E. (SWM)_MC GM	• As majorly Door to Door collection is being practiced, no occurrences are reported. Moreover to monitor and control these kinds of lapses, Nuisance Detectors and Clean-up Marshals are appointed.
	(ii)	Providing Organic Waste Compost machines , decentralization of processing of Waste, dry waste collection centers.	Ch. E. (SWM)_MC GM	The system of separate collection is in place. Organic Waste Compost machines are proposed to be installed in all Municipal markets. • Efforts are being taken to motivate decentralization of processing of waste.Dry waste is segregated at 32 dry waste centers operated by NGOs. • Bulk waste Generators are encouraged to install compost pits/OWC machines. Total 247 compost pits are developed all over Mumbai.• Nuisance Detectors and Clean-up Marshals are appointed.
	(iii)	Proper collection of Horticulture waste and its disposal following composting – cum –gardening approach	Ch. E. (SWM)_MC GM	The horticultural waste generated at plots with garden department is collected regularly and converted into compost within plot or nearby plot. The compost generated through this is utilized as manure in BrihanMumbai Municipal Corporation gardens. Total 247 compost pits are developed all over Mumbai. • Development of 600 TPD Waste to Energy project at Deonar, Mumbai on DBO basis. • Tenders are floated for installing OWC machines in Markets. Composting pits are being erected in Gardens.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	(iv)	Strict compliance of ban on open burning	Ch. E. (SWM)_MC GM	▪ Ban on burning of waste on land, littering/throwing of waste is imposed in BrihanMumbai Municipal Corporation limits and the provisions are enforced through Bye-Laws and Nuisance detectors, clean-Up Marshals appointed specially for that • Burning of garbage is prohibited in the jurisdiction of BrihanMumbai Municipal Corporation, as per provisions of Greater Mumbai Cleanliness and Sanitation Bye- Laws, 2006 under clause no. 5.10. For violation of above clause, the fine upto Rs. 100/- is imposed against the nuisance creators/defaulters • For effective implementation of Greater Mumbai Cleanliness and Sanitation BrihanMumbai Municipal Corporation has also authorized the section Junior Overseer to impose the fine for nuisance creators/defaulters.
4. Source Group:				
	I	MPC Board has issued appropriate direction to the defaulting industries time to time for non complying industrial units. Regular survilance performed based on randomized sampling plan.	MPCB	Board has issued appropriate direction to the defaulting industries time to time.
	ii	Sulphur reduction in fuel by using low sulhur content Imported coal in Thermal Power plant. Installation of FGD to reduce SO2 emission from TPP.	Industry (Thermal Power Plant), MPCB	Already FGD were provided at M/s. TATA power company ltd. For reduction of sulphur as well as they are using 100% imported coal with 0.15 % of sulphur and 5% ash contain.
	iii	Improved Combustion technology	Industry (Thermal Power Plant), MPCB	M/s. TATA power company installed and operated a state of art technology for coal handling i.e. Screw conveyer with closed the pipeline system.
	iv	Alternate fuel- Hotel industry directed to change fuel patten from HSD to Natural Gas.	Industry (Hotels), MPCB	Most of the Hotel industry change fuel pattern from HSD to Natural Gas.
	v	Promoting cleaner industries	MPCB, Industries Dept	MPCB promoting use cleaner fuel in various hotel industries. Accordingly consents to be prescribed with condition to change to cleaner fuel pattern to industries & new proposed industries to opt cleaner fuel.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	vi	Location specific Emission reduction. Petrochemical Industries are directed for VOC emission control.	Industry (Petroleum Refinery), MPCB	MPCB directed to all industries in Mahul area to provide continuous VOC monitoring stations as well as provider advance VOC control measures.Refer Annexure A for details.
	vii	RMC indusries directed for Fugitive emission control	Industry (Petroleum Refinery, RMC), MPCB	Industries allowed with stringent Environmental norms only.
	ix	Installation/ up gradation of air pollution control systems in Thermal and Petrochemical industries.	Industry (Thermal Power Plant, Petroleum Industry, Hotels,etc.) , MPCB	1. MPCB had issued gazette notification regarding guidelines for RMC 2. M/s. TATA power company installed and operated a state of art technology for coal handling i.e. Screw conveyer with closed the pipeline system. 3. Already FGD were provided at M/s. TATA power company ltd. For reduction of sulphur as well as they are using 100% imported coal with 0.15 % of sulphur and 5% ash contain. 4. All refinery and petrochemical handling industries in Mahul area had improved there VOC handling process with necessary control measures to reduce VOC. 5. Most of the Hotel industry change fuel pattern from HSD to Natural Gas.
	x	Use of high grade coal made compulsory in Tata thermal power plant.	Industry (Thermal Power Plant), MPCB	M/s. TATA power company installed and operated a state of art technology for coal handling i.e. screw conveyer with closed the pipeline system.
	xi	Regular audit of stack emissions for QA/QC	MPCB	All 17 category industries in suburban area has provided continues source monitoring and ambient air monitoring system. Real time data conceded to MPCB & CPCB server.The Maharashtra Pollution Control Board (MPCB) launched India's first star-rating programme for industries in 2017. The Star-rating programme is a distinctive transparency initiative which leverages existing regulatory data on emissions to increase industrial compliance towards norms. At least one stack monitoring performed per quarter.
5. Source Group: Construction and Demolition Activities				
	(I)	Enforcement of construction & demolition rules. Setting up of C&D Waste processing facility.	Ch. E. (SWM)_MCGM	• BrihanMumbai Municipal Corporation is already implementing C&D(M&H) Rules,2016 in city. Also C& D Rules 2016 is being complied w.r.t. provision of separate facilty for collection and storage, payment of charges. • A processing facility is to be set up. Tenders are invited. 1) C & D transport NOC is issued by Auto-DCR (web based system developed under Ease of Doing Business scheme). As regards to the Dust mitigation, the condition is incorporated in I. O. D. conditions, while approving the building construction permissions. As per the condition, the 'Debris Management Plan' shall not be get approval from Zonal Executive Engineer (SWM) if the conditions therein is not complied with.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	ii)	Control measures for fugitive emissions from material handling, conveying and screening operations through water sprinkling, curtains, barriers and suppression units	Ch. E. (SWM)_MC GM	BrihanMumbai Municipal Corporation is already implementing C&D(M&H) Rules,2016 in city, which insists on control measures at site, before work commences. The approved Debris Management Plan includes such control measures.•The construction permit is granted only after teh builder/developer obtains valid C & D waste management permission from Solid Waste Management department. The whole process is ONLINE, on 'Auto-DCR' portal.•Wheel washing facility has been provided for cleaning of vehicle tyres before entry and exit at various construction work sites except at few sites•Regular washing of carriageway, footpath within the construction sites and vicinity of the work area is being carried through the water sprinkling. •All soil and mucktransportation trucks/dumpers covered by tarpaulin sheet during transportation.
	iii	Better construction practices with PM reduction for MMRCL construction.	Ch. E. (DP)_MCG M, Ch.E(Road s and Traffic)_MC GM, MMRDA, MSRDC, MPCB, SIC_MCG M	MMRCL Construction Policy:•Regular water sprinkling carried out at all raw material /muck storage and on internal/ affected public roads at all construction work sites (1Cr)•Storage silo of cement are equipped with dust catcher (0.5 CR)•Raw material storage at the batching plant covered by close shed and provided with roof top sprinkling and fogging system. (0.6 CR)•All conveyer belts at batching plant covered with claddings. Material transfer points are covered with GI tin sheets and water sprinkling arrangement. (0.3 CR)•Strengthening of water sprinkling system for control of air pollution control. (0.2 CR)Regular air monitoring of RSPM, PM2.5, NOx, SOx and CO is being carried out by MoEF and NABL approved third party at construction and RMC/ casting yard sites as per CPCB guidelines. •The Draft Development Promotion & Control Regulation 2034 has proposed that the DCRs should grant permissions consistent with the policies and objectives of the Draft DP.
	iv	Ensure carriage of construction material in closed /covered Vessels	Ch. E. (SWM)_MC GM	BrihanMumbai Municipal Corporation is already implementing C&D(M&H) Rules,2016 in city, which insists on control measures at site, before work commences. The approved Debris Management Plan includes such control measures.
6. Source Group: Domestic fuel burning				
	I	Shift to LPG from solid fuel & kerosene for domestic applications	Petroleum Ministry, MNGL, BrihanMumbai Municipal Corporation	• Pradhan Mantri Ujjwala Yojana was launched in Mumbai, Maharashtra • 10 Lakh LPG connections will be released in Mumbai covering all APL/BPL families in the State
7. Source Group: DG Sets				
	(I)	Monitoring of DG sets and action against violations	MPCB	• As mumbai and mumbai suburban city very rare electricity interruption due to which very rare use of DG set as well as most of the DG set as provided with necessary control equipment and enclosures.
	(ii)	Reduction in DG set operation/ Un-interrupted power supply	Power Generation and Supply Companies -Reliance, BEST	• As mumbai and mumbai suburban city very rare electricity interruption due to which very rare use of DG set as well as most of the DG set as provided with necessary and enclosures.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
8. Source Group:				
	I	Use of LPG in Hotels and "dhabas"	Petroleum Ministry, Ch. E. (M & E)_BrihanMumbai Municipal Corporation, EHO_MCG M, MPCB	• Commonly used fuel is either LPG gas or Electricity for preparation of eatable, which does not create much air pollution
	ii	Use of LPG in Bakeries	Petroleum Ministry, Ch. E. (M & E)_BrihanMumbai Municipal Corporation, EHO_MCG M, MPCB	• Fuel such as LPG gas, Electricity, diesel is used for preparation of bakery products. There is no air pollution due to use of LPG gas or Electricity. • As per the DC Regulation 1991 vide sr. no. 55 named as "Services Industries Zone (I-1 Zone)" vide Table 23 - Manufacture of bakery products the special conditions mentioned are : (i) Fuel used for bakery products shall be electricity, gas or smokeless fuel. (ii) No floor above the furnace portion (iii) Where only electric oven is used, an additional heating load of 24 KVA permitted per establishment.
	iii	Use of Piped Natural Gas (PNG) for Human cremation.	Chief Engineer (Mechanical & Electrical)_ BrihanMumbai Municipal Corporation	Present Scenario: 1) Total Number of Electric furnaces with Air Pollution control Mechanism = 23 Nos.; 2) Number of Electric furnaces proposed for PNG conversion = 8 Nos. ; 3) New PNG Furnaces Proposed = 12 Nos.; 4) Total No. Of Wood Pyres= 196 Nos.; 5) Total Pyres with Air Pollution control mechanism installed = 167 Nos.Phase - I = March 2018 (08 Electric Furnaces to be converted in to PNG Furnace and 06 New PNG furnaces to be Installed at three New Locations)Phase - II = March 2019 (05 Electric Furnaces to be converted in to PNG Furnace and 06 New PNG furnaces to be Installed at three New Locations)Phase - III = March 2020 (10 Electric Furnaces to be converted in to PNG
9. Source Group: Other (City Specific)				
	(I)	Sampling at many more locations on grid pattern Study and analysis of hourly data to understand contribution of different pollutants	BrihanMumbai Municipal Corporation, MPCB	• Forming joint committee with concerned stakeholders for combined action plan. • Monitoring and review mechanism at every quarter to decide modifications in the monitoring mechanism. ▪ All planning to install monitoring stations and data to be forwarded fortnightly to BrihanMumbai Municipal Corporation for consolidation and analysis in joint committee which is expected to meet monthly. • At present there are SAFAR stations and BrihanMumbai Municipal Corporation is monitoring at 5 stations. MPCB already provided 11 CAAQMS station and proposal for additional 4 CAAQMS stations.

Sr. No.	Sub No.	Action	Responsible agency (ies)	Remarks
	(ii)	Source Identifications per emission inventory the percent emission contribution is around 33% from Industrial sector to the whole of Mumbai.	BrihanMumbai Municipal Corporation, MPCB	• MPCB awarded work order to IIT(B) and NEERI. Work is in final stage of completion. As per emission inventory the percent emission contribution is around 33% from Industrial sector to the whole of Mumbai. • Among the industries Tata power fuel contribution of PM is about 22.84% the Red LSI i.e. refineries, chemical and fertilizer companies are shares 3.53% • All MSI & SSI (R, O, G) adds 6.6% of PM to the city
	(iii)	Action plan to address large industries (e.g. oil refinery and fertilizer)	Petroleum Industry, MPCB	enclosed ANNEXURE-A
	(iv)	Source Apportionment (SA) and Emission Inventory (EI) MPCB awarded work order to IIT(B) and NEERI.	MPCB, BrihanMumbai Municipal Corporation	•MPCB awarded work order to IIT(B) and NEERI. Work is in final stage of completion.•As per emission inventory other area sources though called area sources, are limited to small regions (viz. Open eat outs, bakeries, crematoria and hotels) and therefore, their impact does not seem to be wide ranging and across the city.•Emission from Metro line development is time bound activity for at least 5 years. For point source, outcome of EI and SA study explained in above pt. 9(2)•For line source i.e. Vehicular pollution, study presented for emission load reduction based on emission factor calculation. Reduction in emission load predicted due to proposed metro rail.
	(v)	Public Awarness and Complaint Redressal Mechanism developed by respective stakeholders.	MPCB, BrihanMumbai Municipal Corporation	• Concerned stakeholders will be informed to take care of public awareness and to establish Complaint Redressal Mechanism for the complaints under their control. • Complaint Redressal Mechanism for the complaints under control of BrihanMumbai Municipal Corporation is already in operation on BrihanMumbai Municipal Corporation portal (https://portal.mcgm.gov.in) under Complaint • Complaint Registration for receiving all types of complaints.•MPCB has conducted awareness program above mitigation of NOx and particular matter and SO2 at Bandra while installing WAYU (Air purification machine at heavy traffic signals like bandra area).
	(Vi)	Citizen Access toTransportation(CAT), School Zone Traffic Improvment Programmee (szTIP), Quite KEM(Q KEM), Monitoring of air pollution byplanning authority in their jurisdiction	BrihanMumbai Municipal Corporation	• This is the proposed special initiative of BrihanMumbai Municipal Corporation. The one of the reason for the traffic jam is the stopping of the vehicles for dropping and pick up of the passengers outside malls, multiplex schools etc • The School bus should allowed to drops the children inside the school ground if the school ground is located inside the school.•Parking should be on the nearby ground in consultation with local authorities i.e. Ward and Traffic Police. Parking of school buses on roads should not be allowed.

25. MUMBAI CLIMATE ACTION PLAN

Mumbai is the capital of Maharashtra and also financial capital of the country. The various developments taking place in this metropolis have a direct impact not only on the economy of the state but also on the economy of the country. This coastal metropolis is currently facing many problems due to climate change. Unseasonal rain, heavy rainfall, precipitation, heat waves, urban pollution etc. against this backdrop, the 'Mumbai Environment Action Plan' prepared by the Brihanmumbai Municipal Corporation is the first step taken to curb environmental change and its possible side effects. Brihanmumbai Municipal Corporation is the first municipal corporation in the country to prepare such an Environmental Action Plan.

Concept of Planning :

Government of Maharashtra and Mumbai Municipal Corporation started preparation of Environment Action Plan on August 2021. This plan was prepared in collaboration with 'C40 Cities Network' and 'World Resources Institute of India'. Environmental thinkers, Academic Institution, Professional Consultants also have a valuable contribution in the planning process.

The launch ceremony of the ambitious initiative of the Mumbai Climate Action Plan (MCAP) concluded on 13th March 2022. The MCAP is committed to a net zero emission by 2050. The 'Mumbai Environment Action Plan' is a comprehensive strategy to address the impacts of climate change in Mumbai Metropolitan Region , focusing on mitigation measures and climate change adaptation.

Objective of Planning :

The 'Mumbai Environment Action Plan sets short-term and long-term environmental objectives for the city. Accordingly, considering the base year 2019, the target has been set to reduce carbon emissions in Mumbai by 30 percent by 2030 and 44 percent by 2040. Ultimately, carbon emissions are expected to drop to zero by 2050. Coal-based power generation is the largest source of carbon emissions. Therefore, by the year 2030, 50 percent of the total energy generation will be generated from sustainable sources. This ratio will be increased to 90 percent by the year 2050.

In the Mumbai Climate Action Plan, future emissions have been analysed on the basis of the following three scenarios.

1. Emissions will be around 64.8 million tons per year by 2050 if current day-to-day environmental conditions are not improved.
2. Existing and planned scenarios include local, regional or national measures policies and programs to reduce emissions. Accordingly, emissions are expected to be 51.3 million tonnes per year by 2050. It represents an increase of 119.4% over base year (2019) emissions.
3. While implementing the Mumbai Climate Action Plan, targets have been set to reduce emissions by

27% by 2030 and 72% by 2050.

The Mumbai Climate Action Plan aims to focus on six key actions.

1. **Electricity and Buildings :** To build energy and power generation climate-friendly infrastructure with minimal carbon emissions.
2. **Sustainable Transport :** Increasing the use of public transport and promoting zero carbon sustainable transport.
3. **Sustainable Waste Management :** Minimizing use of landfills emphasis on decentralized waste management solutions schemes. Also scientific management of landfill site .
4. **Urban Greening and Biodiversity :** Increasing urban green cover and permeable land cover to reduce urban atmospheric heat. Making green spaces available to all. To restore and conserve biodiversity.
5. **Air Quality :** Controlling on increase pollution. Enhancement of Air Monitoring System and Emphasis on Data Collection. Decentralization of planning as well as increasing public awareness on health.
6. **Floods and Water Resource Management:** Build mechanisms and infrastructure to cope with floods, increase water storage capacity, reduce pollution and restore aquatic ecosystems. Supply clean drinking water at affordable rates. Increasing availability of clean and safe sanitation and managing emergency risk.

Establishment of Special Cell to deal with Climate Change:

Dealing with the issue of climate change requires coordination between different departments. Mumbai's Climate Action Plan hasexpressed Strict implementation of the plan The need to have a designated authority for identification of carbon emission sources and their assessment etc. in. In this background, it is aimed to expand the scope of work of the BriahnMumbai Municipal Corporation's Environment Department and transform it into the 'Environment and Climate Change' Department. Additional Municipal Commissioner (City) will be entrusted with the role of coordinating officer of this department. Objectives of the newly established Department of Environment and Climate Change are;

1. Coordinating tools and using state-of-the-art technology across all departments to achieve climate goals.
2. Develop guidelines for new infrastructure and building projects.
3. Focusing on strict implementation of Mumbai Environment Action Plan.

The Department of 'Environment and Climate Change' will be divided into the following three sub-

divisions.

1. Monitoring, Assessment, Report Sub Division: Coordinating with all Departments and Circle Offices of Brihanmumbai Municipal Corporation and implementation of Action Plan and Information on Greenhouse gas Emission Sources.
2. Remedial Planning Sub Section: Remedial Planning on Climate Change Issues.
3. Building and Transport Sub-Division: Efforts to reduce carbon emissions from buildings and transport sectors.

The Mumbai Climate Action Plan will submit a report every six months to the 'Maharashtra Council for Climate Change' to periodically ensure that the plan is being strictly implemented.

'Mumbai Climate Action Plan' is available in detail at http://masap.masigm.goa.in.

SALIENT FEATURES OF ENVIRONMENT STATUS REPORT

1. Establishment of a special department 'Mumbai Mangroves Conservation Unit' in view of the increasing environmental pollution threats such as encroachment, pollution, urbanization, industrialization and solid waste pollution on mangroves in Mumbai area.

2. In year 2022-23, 6214 trees are planted by traditional method and 69975 by miyawaki method on Brihanmumbai Municipal Corporation roads and available open spaces. Plantation of more than 4 lakh trees by Miyawaki method has been done till date.

3. Posters, local newspaper advertisements, banners, street dramas etc. campaign has been undertaken by Rain Water Harvesting Cell of Brihanmumbai Municipal Corporation to create water saving and water conservation structures under the Central Government's nationwide campaign 'Jalshakti Abhiyan : Catch the Rain 2022 – Whenever and where it falls'.

4. To bring the increasing air pollution in Mumbai city under immediate control, 'Mumbai Air Pollution Mitigation Plan - 2023' has been prepared and the plan is being implemented from 1st April 2023.

5. Due to various projects and programs arranged by Brihanmumbai Municipal Corporation in the last 5 years of the quantum of waste collected in the year 2022 has been approx 6300 MT per day. Of the 6300 MT transported to disposal sites by vehicles in over 921 trips/day,

6. 'Swachh Bharat Abhiyan 2.0' - Include segregation of waste at household level, scientific treatment of old accumulated waste (legacy waste), Aspirational toilets, 100% sewage management – collection/ disposal/ processing etc.

7. Mumbai Coastal Road (South) Project – The project will speed up travel time, save fuel and reduce traffic congestion in Mumbai and its suburbs.

8. For the academic year 2022-23, a campaign 'Mission Admission' was implemented by the Department of Education, Brihanmumbai Municipal Corporation under the initiative 'Ekach Lakshya – Ek Laksha'. Through this campaign, Brihanmumbai Municipal Corporation was successful in bringing maximum school age, out of school children in main stream of education..

9. Establishment of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) at various 5 locations within Brihanmumbai Municipal Corporation during the year 2022-23 through Environment Department. Air Quality Levels of present status through these Stations. Also information available through Digital Display Board.

10. Education on health effects of air pollution and remedial measures is provided to asthma patients through 'Health Education Initiative' by Environmental Pollution and Research Center (KEM Hospital).

11. Quick and effective response to citizens in emergency situations, coordination among all systems, availability of information at speed, promoting at all levels, immediate assistance to disaster victims, always alert information etc. services available through the Department of Disaster Management.

12. As per the Energy Saving Policy of Government of India, replacement of existing HPSV / MH lamps in the city of Mumbai with energy efficient LED lamps resulted in a total energy saving of 47% in various departments of the Brihanmumbai Municipal Corporation.

Andheri Sports Complex

Students Pyramid


Mankhurd Ghatkopar Link Road