

ENVIRONMENTAL IMPACT ASSESSMENT – EIA REPORT

FOR

"Manufacturing, Distribution and Sales of Various kinds of Paints"

Nippon Paint (Myanmar) Company Limited

**Plot No.(44) , Myay Taing Block No.(24), Ngwe Pin Lal Industrial Zone,
Hlaing Thar Yar Township, Yangon, Myanmar**



PROPONENT



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Table 4-7 Results of Workplace Air Quality measuring on 15.8.2022	4-35
Table 4-8 Results of Workplace Air Quality measuring on 27.4.2024	4-36
Table 4-9 Comparison Table of Workplace Air Quality at workplace on 15.8.2022 (Construction / Renovation) with that of 27.4.2024 (Operation phase)	4-37
Table 4-10 Results of Air Quality Measuring at Ah Lel Ywar on 2022.....	4-41
Table 4-11 Results of Air Quality Measuring at Ah Lel Ywar on 2024.....	4-43
Table 4-12 Comparison Table of Ah Lel Ywar Village, air quality on 16.8.2022	4-43
Table 4-13 Result of electric generator stack emission gases.....	4-45
Table 4-14 Equipment for Noise and its Measurable Parameter	4-50
Table 4-15 Noise Measuring Result on 2022	4-52
Table 4-16 Noise Measuring Results on 2024.....	4-53
Table 4-17 Comparison Table of Noise Level (Ambient) at site corner points at 2022 with those of 2024.....	4-54
Table 4-18 Workplace noise level location point on 2024	4-55
Table 4-19 Result of workplace Noise Level Measuring	4-55
Table 4-20 Location of Noise Level at Ah Lel Ywar on 2022	4-56
Table 4-21 Results of Noise level at Ah Lel Ywar on 2022	4-56
Table 4-22 Result of Noise level at Ah Lel Ywar Village on 2024.....	4-57
Table 4-23 Comparison table of noise level measurement at Ah Lel Ywar Village on 2022 with that of 2024	4-57
Table 4-24 Location of vibration measuring on 2022	4-59
Table 4-25 Vibration Measurement Result on 2022	4-59
Table 4-26 Location of vibration measurement on 2024.....	4-59
Table 4-27 Result of vibration measuring on 2024	4-60
Table 4-28 Vibration Measurement Record	4-60
Table 4-29 Comparison Table of Vibration Measurement Results at 2022 with that of 2024	4-61
Table 4-30 Results of Soil quality monitoring at site on 2022	4-62
Table 4-31 Results of Soil Quality monitoring at outside of the factory on 5.8.2024	4-66
Table 4-32 Comparison tables of soil analysis data at the outside of the factory on 2022 with those of on 2024.....	4-66
Table 4-33 Result of odor at Ah lel Ywar on 27-4-2024	4-68
Table 4-34 Location of Odor Measuring Point.....	4-69
Table 4-35 Results of odor measurement by ADM Odor Meter	4-70
Table 4-36 Results of Odor Measurement TDM Odor Meter	4-70
Table 4-37 Location of Surface Water sampling on 2022	4-71
Table 4-38 Analyzed results of surface water (Hlaing River) and Standard on 2022	4-72

Table 4-39 Location of surface water sampling at 2024.....	4-73
Table 4-40 The analyzed results of surface water (Hlaing River) and Standards on 2024 ..	4-74
Table 4-41 Comparison Table of Surface water Quality at 2022 with those of 2024. (Hlaing River- up, down and mid-stream)	4-75
Table 4-42 The analyzed results of surface water (Hlaing River) and Standards on 2025	4-77
Table 4-43 Laboratory analysis of Surface Pond water on 2025	4-79
Table 4-44 Coordinates of Groundwater Sampling location	4-79
Table 4-45 Laboratory analysis of groundwater samples	4-81
Table 4-46 Laboratory analysis of groundwater and Surface Pond water on 2024	4-83
Table 4-47 Comparison Table of Ground Water (tube well) Qualities at 2022 with those of 2024.....	4-84
Table 4-48 Analyzed results of wastewater outlet from wastewater treatment plant and comparison with NEQEG General Application.....	4-85
Table 4-49 Analyzed results of wastewater inlet and outlet from wastewater treatment plant and comparison with NEQEG General Application.....	4-90
Table 4-50 Representative GPS points of Biodiversity Survey	4-105
Table 4-51 Matrixes of respondent's clusters	4-125
Table 4-52 Jenks Natural Breaks optimization for proportion of working family-members	4-128
Table 4-53 Regression model for situation of working persons	4-130
Table 4-54 Summaries for sharing of major income sources	4-132
Table 4-55 Summary of income and expenditure	4-134
Table 4-56 Regression model for expenditure and family members	4-134
Table 4-57 Rental cost and its proportion	4-134
Table 4-58 Distance from project site to surrounding area	4-141
Table 4-59 Habit combinations according to the families	4-149
Table 4-60 Statistics for tobacco use	4-149
Table 4-61 Statistics for daily consumption of betel chewing	4-149
Table 4-62 Statistics for alcohol intake	4-150
Table 4-63 Individual opinions upon environmental conditions	4-152
Table 4-64 Statistics for streetwise respondents	4-153
Table 5-1 Possible Environmental Impact in Process	5-2
Table 5-2 Environmental Impacts and sources for construction/renovation phase	5-4
Table 5-3 Environmental Impacts and sources for Operation phase	5-6
Table 5-4 Environmental Impacts and Sources during Decommissioning phase	5-8

Table 5-5 Significance Evaluation.....	5-10
Table 5-6 Duration Classification.....	5-11
Table 5-7 Extent Classification.....	5-11
Table 5-8 Severity Classification.....	5-11
Table 5-9 Probability Classification	5-12
Table 5-10 Impact Significance of Construction/Renovation Phase before Mitigation ...	5-12
Table 5-11 Impact Significance of Operation Phase before Mitigation	5-12
Table 5-12 Impact Significance of Decommissioning Phase before Mitigation	5-13
Table 5-13 Impact Mitigation Measures of Construction/Renovation Phase	5-14
Table 5-14 Impacts Mitigation Measures of Operation Phase.....	5-17
Table 5-15 Impact Mitigation Measures of Decommissioning Phase	5-21
Table 5-16 Residual Impact Significance of Construction/Renovation Phase	5-24
Table 5-17 Residual Impact Significance of Operation Phase	5-25
Table 5-18 Residual Impact Significances of Decommissioning Phase.....	5-25
Table 5-19 Comparison Table of Impact Significance before and after Mitigation for the Construction/Renovation phase	5-26
Table 5-20 Comparison table of impact significance before and after mitigation for the Operation phase	5-26
Table 5-21 Comparison Table of Impact Significance before and after Mitigation for the Decommissioning phase	5-27
Table 5-22 Sources of waste material and Mitigation Measure	5-31
Table 5-23 Sources of Impact upon Biodiversity and Mitigation Measures	5-34
Table 5-24 Sources of impact upon Archaeology and Mitigation Measures.....	5-35
Table 5-25 Sources of Impact upon Socio Economic and Mitigation Measures.....	5-36
Table 5-26 Sources of Impacts upon Social Health and Mitigation Measures.....	5-37
Table 5-27 Risk Probability Table.....	5-40
Table 5-28 Risk Severity Table	5-40
Table 5-29 Risk Evaluation (Risk Probability x Severity)	5-40
Table 7-1 Representative person for Environmental and Social Management Plan	7-2
Table 7-2 Role and Responsibilities of Member of Organization	7-3
Table 7-3 Estimated Budget allocation for each sub-plan	7-5
Table 7-4 Emergency Response Team (ERT) and Responsibilities	7-80
Table 7-5 Monitoring Plan of Emergency Response Plan.....	7-90
Table 7-6 Environmental Monitoring Plan	7-96
Table 8-1 Description of closing speech (AD) and suggestion sheets from the Public consultation meeting	8-5

Table 8-2 Description of closing speech (AD) and suggestion sheets from the Public
consultation meeting 8-8

Table 8-3 List of donations 8-15

Table 8-4 Training and Knowledge Sharing plan 8-21

Table 8-5 Process Steps 8-26

Table 8-6 Grievance Handling Committee 8-31

LIST OF FIGURES

Figure 1-1 Project Background, History, Certificates and Products.....	1-15
Figure 2-1 Institutional Arrangement of the Factory	2-1
Figure 3-1 Geographical Co-ordinate of the Project Site	3-2
Figure 3-2 Overview of the Project Site	3-2
Figure 3-3 Project Boundaries	3-3
Figure 3-4 Emulsion paint raw material storage condition, attached SDS	3-13
Figure 3-5 Chemical storage condition, attached SDS	3-14
Figure 3-6 Pigments storage condition, attached SDS.....	3-14
Figure 3-7 Production Process Flow Chart.....	3-20
Figure 3-8 Variety of paint packing buckets.....	3-21
Figure 3-9 photograph of overhead water tank.....	3-23
Figure 3-10 photographs of water treatment plant.....	3-23
Figure 3-11 photograph of transformer; 537 H.P	3-25
Figure 3-12 photograph of generator, 250 KVA	3-25
Figure 3-13 Diesel storage condition	3-26
Figure 3-14 Microorganism used in wastewater treatment plant and photo of adding to treatment plant	3-29
Figure 3-15 Treatment System Flow Chart	3-31
Figure 3-16 Sludge dry tank	3-31
Figure 3-17 Measurement results of sludge.....	3-32
Figure 3-18 Structure of Dust Collector	3-34
Figure 3-19 Overall Layout Plan	3-1
Figure 3-20 Project Renovation layout plan	3-1
Figure 3-21 Emulsion Mixing and Packing Area	3-2
Figure 3-22 Drainage Channel Photo	3-3
Figure 3-23 Transportation network in Project Area.....	3-4
Figure 3-24 Photos of Waste Collection Bins, Temporary Storage Area and Invoice from Yangon City Development Committee and DOWA	3-7
Figure 3-25 Storm Water Drainage System.....	3-12
Figure 3-26 Water Distribution System	3-13
Figure 3-27 Photographs of installed Air Conditioners and Exhaust Fans.....	3-16
Figure 4-1 Overall Project Study Area	4-2
Figure 4-2 Four industrial plants as surroundings of project	4-4
Figure 4-3 Map of biological sampling sites in relation to some habitats	4-6
Figure 4-4 Wind Rose Diagram for 2021	4-7

Figure 4-5 Observation Map for Drain Flow	4-9
Figure 4-6 Elevation Map of the Project Area	4-11
Figure 4-7 Topographic Map of the Study Area	4-11
Figure 4-8 (30) Years monthly maximum of the Project Area	4-13
Figure 4-9 (30) Years monthly maximum of the Project Area	4-14
Figure 4-10 (30) Years Annual Precipitation of the Project Area (Ref: Department of Meteorology and Hydrology (DMH) Gaba Aye Station)	4-16
Figure 4-11 Generalized Geological Map of the Project Area (Project Area in Q-al) (Source: Soil and Rock Distribution of the Yangon Area (Win Naing, 1972)	4-17
Figure 4-12 Soil Map of the Project Area	4-18
Figure 4-13 Groundwater Bodies in Myanmar	4-19
Figure 4-14 Geomorphological Map of Yangon River in and around the Area	4-20
Figure 4-15 Seismic Zone Map of Myanmar	4-22
Figure 4-16 Recent Earthquake near Yangon Region	4-23
Figure 4-17 Instruments used for Surveying to Environmental baseline data	4-25
Figure 4-18 Air quality measuring Location point at 15.8.2022	4-27
Figure 4-19 Photograph of air quality measuring at 15.8.2022	4-28
Figure 4-20 Air quality measuring location point at 27.4.2024	4-29
Figure 4-21 Photograph of air quality measuring at 27.4.2024	4-29
Figure 4-22 Detail measurement information of ambient air of site on 2024	4-34
Figure 4-23 Workplace air quality measuring location point at 15.8.2022	4-35
Figure 4-24 Photograph of workplace air quality measuring at 15.8.2022	4-35
Figure 4-25 Workplace Air Quality measuring location point at 27.4.2024	4-36
Figure 4-26 Photograph of Workplace Air Quality measuring at 27.4.2024	4-36
Figure 4-27 Detail measurement information of Workplace Air at the site on 2024	4-40
Figure 4-28 Air Quality measuring location point at 2022	4-41
Figure 4-29 Photograph of Air Quality measuring at Ah Lel Ywar on 2022	4-41
Figure 4-30 Air Quality measuring location point at 2024	4-42
Figure 4-31 Photograph of Air Quality Measuring at Ah Lel Ywar on 2024	4-42
Figure 4-32 Location point of electric generator stack emission measuring	4-44
Figure 4-33 Photograph of electric generator stack emission	4-44
Figure 4-34 Location of Particulate Matter Measurement Point	4-47
Figure 4-35 Recorded Photo	4-48
Figure 4-36 Map of Noise Monitoring Locations	4-51
Figure 4-37 Photos of Noise Monitoring at 2022, Construction / Renovation	4-52
Figure 4-38 photos of noise measuring at 2024, operation phase	4-53
Figure 4-39 Photo of noise measuring at workplace on 2024	4-55

Figure 4-40 Noise Level monitoring location.....	4-56
Figure 4-41 Noise level monitoring location	4-57
Figure 4-42 Photograph of Noise level monitoring	4-57
Figure 4-43 Vibrating measured instrument	4-58
Figure 4-44 Locations of Vibration measuring at 2022	4-59
Figure 4-45 Location of Vibration Measurement Points	4-60
Figure 4-46 Location of soil sampling points on 2022	4-62
Figure 4-47 Record Photographs of Soil Sampling	4-62
Figure 4-48 Location of Soil Sampling Points on 5.8.2024	4-65
Figure 4-49 Record photo of Soil Sampling on 5.8.2024	4-65
Figure 4-50 Location map of odor measurement point	4-67
Figure 4-51 Photograph of odor measurement record	4-68
Figure 4-52 Photograph of ADM and ATM odor meter.....	4-68
Figure 4-53 Photograph of location of odor measuring points	4-69
Figure 4-54 Photograph of odor measurement	4-70
Figure 4-55 Location of Surface Water Sampling	4-71
Figure 4-56 Photograph of Surface water Sampling (Hlaing River)	4-72
Figure 4-57 Location of Surface Water Sampling on 2024	4-74
Figure 4-58 Location of Surface Water Sampling on 2024	4-74
Figure 4-59 Location of Surface Water Sampling on 2025	4-77
Figure 4-60 Photos of Surface Water Sampling on 2025	4-77
Figure 4-61 Location of Surface Pond Water Sampling on 2025	4-78
Figure 4-62 Location of Surface Pond Water Sampling on 2025.....	4-79
Figure 4-63 Map of Groundwater Sampling Locations	4-80
Figure 4-64 Photos of Groundwater Sampling on 2022	4-81
Figure 4-65 Photos of Groundwater Sampling on 2022	4-83
Figure 4-66 Location of wastewater outlet of treatment plant.....	4-85
Figure 4-67 photograph of wastewater sampling.....	4-85
Figure 4-68 Analyzed results of wastewater by various laboratories	4-89
Figure 4-69 Locations of wastewater inlet and outlet of treatment plant	4-90
Figure 4-70 photograph of wastewater sampling.....	4-90
Figure 4-71 Ecoregion in Myanmar.....	4-96
Figure 4-72 Location of the project site: (a) Yangon Region of Myanmar; (b) project site in Yangon Region; and (c) Detailed project site in Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon Region	4-98
Figure 4-73 Key Biodiversity Area in the region	4-99
Figure 4-74 Land Covers and Some Biological Habitats within the Study Area	4-100

Figure 4-75 Biological environments around the project area: (A) The project site (Nippon Paint Factory); (B-C) Roadside areas; (D) Hlaing River; (E) Riparian area of Hlaing River; (F) Plantation area of <i>Acacia auriculiformis</i> (Malaysia-padauk) and grassland; (G) Plantation area of <i>Acacia mangium</i> (Mangiumcia) and grassland; (H-I) Swamp and grassland areas; and (J) Cultivated land area	4-103
Figure 4-76 Map of biological sampling sites in relation to some habitats	4-104
Figure 4-77 Photos of Field activities	4-107
Figure 4-78 Species composition of riparian plants	4-109
Figure 4-79 Family composition of riparian species	4-109
Figure 4-80 some recorded photographs of riparian plant species (Figures 1 to 8):	4-115
Figure 4-81 some fauna recorded from survey area	4-118
Figure 4-82 Benthos sampling by use of grab sampler.....	4-119
Figure 4-83 Plankton sampling by use of plankton net	4-120
Figure 4-84 Observation Map to identify Study Area	4-122
Figure 4-85 Land of Occupation Ngwe Pin lae Industrial Zone.....	4-123
Figure 4-86 Five Areas of the Ah Lel Village	4-124
Figure 4-87 Calculation for survey quality	4-125
Figure 4-88 Age-ranges of respondents.....	4-126
Figure 4-89 Histogram for duration of continuous living.....	4-126
Figure 4-90 Column chart for reasons of settle	4-127
Figure 4-91: Box and Whisker chat for family members.	4-128
Figure 4-92 Population pyramid for respondent's families	4-128
Figure 4-93 100% Stacked Column chart for schooling of family members	4-129
Figure 4-94 Column chart for working territories	4-130
Figure 4-95 Treemap for working sectors.....	4-131
Figure 4-96 Treemap for working clusters according to the living patterns.....	4-131
Figure 4-97 Calculation for survey quality	4-132
Figure 4-98 Treemap for clusters of working persons patterns	4-133
Figure 4-99 Financial reserve of families	4-135
Figure 4-100 Items belonging by families	4-136
Figure 4-101 Energy sources for cooking.....	4-137
Figure 4-102 Expenditure for additional fuel	4-138
Figure 4-103 Domestic Water Sources	4-138
Figure 4-104 Expenditure for water uses.....	4-139
Figure 4-105 Conditions of Housing Units.....	4-140
Figure 4-106 Location of 4 townships and project	4-141
Figure 4-107 Aung Zayar Min Monastery	4-143

Figure 4-108 Sandamuni Aung Sat Kyar Pagoda	4-143
Figure 4-109 Mahar Tayzamuni (Ngwe Pin lal pagoda)	4-143
Figure 4-110 Christian Community	4-144
Figure 4-111 Comparison chart for area occupied by families.....	4-146
Figure 4-112 Types of toilets.....	4-147
Figure 4-113 Diagram for proximity of toilet to water-use space	4-148
Figure 4-114 Family ratio of substance use by category	4-149
Figure 4-115 Column chart for no. of windows	4-150
Figure 4-116 Ventilation components of housing units and living apartments	4-151
Figure 4-117 Kitchen condition and cooking practice.....	4-151
Figure 4-118 Response for air-pollutant sources	4-154
Figure 4-119 Air-pollutant sources described by respondents	4-154
Figure 4-120 Health-care facilities depended by respondents.	4-155
Figure 4-121 Birth Practice.....	4-155
Figure 4-122 Summary of symptoms linked to kitchen smoke.	4-156
Figure 5-1 Production Process Flow Chart.....	5-2
Figure 5-2 Risk Assessment.....	5-39
Figure 5-3 Hierarchy of Controls.....	5-41
Figure 5-4 Number of people affected by natural hazards by year from 1980 – 2020 in Myanmar	5-43
Figure 5-5 Townships Affected by Floods and Cyclone (2008 – 2024).....	5-44
Figure 5-6 Flood Risk Assessment (a) hazard, (b) exposure, (c) vulnerability, (d) risk classification	5-45
Figure 5-7 Storm Surge Hazard and Cyclone Risk.....	5-46
Figure 5-8 Disaster Management Cycle	5-47
Figure 6-1 Relevant Projects around the Project Site	6-2
Figure 7-1 Organization chart for Environmental and Social Management Plan.....	7-2
Figure 7-2 Ambient air quality measuring location point.....	7-7
Figure 7-3 Workplace air quality measuring location point	7-12
Figure 7-4 Location point of electric generator stack emission measuring.....	7-16
Figure 7-5 location of Boundary noise measurement point.....	7-20
Figure 7-6 location of workplace noise level monitoring point.....	7-24
Figure 7-7 location of vibration measuring point	7-28
Figure 7-8 location of underground water sampling points.....	7-32
Figure 7-9 location of Surface water sampling points	7-36
Figure 7-10 location of wastewater sampling points	7-40
Figure 7-11 location of soil sampling point.....	7-46

Figure 7-12 location of odor measurement points	7-48
Figure 7-13 Solid waste disposal Area	7-53
Figure 7-14 Administration office location point	7-56
Figure 7-15 Land covers and some biological habitats of the project site within a distance of 2-kilometer radius together with Hlaing River	7-59
Figure 7-16 Area for collection about the information of cultural heritage affairs	7-62
Figure 7-17 Area of interest for social economic affair probable.....	7-66
Figure 7-18 Area of interest for Social Health.....	7-70
Figure 7-19 Emergency Evacuation plan.....	7-82
Figure 7-20 Fire Hose Reel and Fire Extinguishers.....	7-83
Figure 7-21 Fire Hydrants and Water Tank for Firefighting	7-83
Figure 7-22 Guidelines for Fire Extinguishers	7-84
Figure 7-23 Description of Fire Extinguisher	7-85
Figure 7-24 Description of Fire Hose Reel.....	7-85
Figure 7-25 Explanation of Fire Hose Reel	7-86
Figure 7-26 Safety Procedures during Earthquake	7-87
Figure 8-1 Photos of First Public Consultation Meeting	8-3
Figure 8-2 Photos of Second Public Consultation Meeting.....	8-8
Figure 8-3 Photo of Third Public Consultation Meeting	8-11
Figure 8-4 Monsoon Gift to support basis food for staff.....	8-13
Figure 8-5 Personal Protective Equipment provide	8-13
Figure 8-6 Medical checkup for staff.....	8-15
Figure 8-7 Group Life insurances for staff	8-15
Figure 8-8 Photos of Donations	8-20
Figure 8-9 Training and Knowledge Sharing	8-24

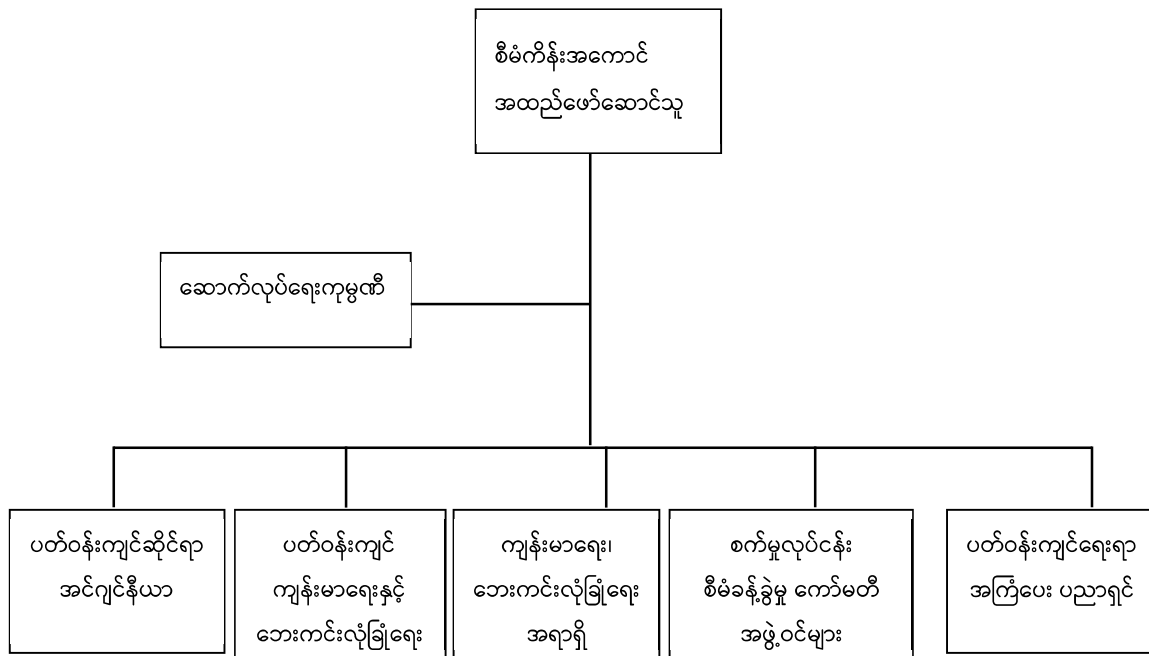
ACRONYMS

Co., Ltd.	Company Limited
CSR	Corporate Social Responsibility
CMP	Contract, Manufacturing and Processing
EIA	Environmental Impact Assessment
ECC	Environment Compliance Certificate
ECD	Environmental Conservation Department
EMP	Environmental Management Plan
EMoP	Environmental Monitoring Plan
GMES	Green Myanmar Environmental Services
IEE	Initial Environmental Examination
m.a.s.l	Meters Above Sea Level
MIC	Myanmar Investment Commission
MONREC	Ministry of Natural Resources and Environmental Conservation
NEQ(E)G	National Environmental Quality (Emission) Guidelines
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
PPV	Peak Particle Velocity
PVS	Peak Velocity Sum
QC	Quality Control
SDS	Safety Data Sheet
TDS	Total Dissolved Solids
TSP	Total Suspended Particles
TVOC	Total Volatile Organic Compound
USA	United States of America
USD	United States Dollar
UTM	Universal Transverse Mercator
WHO	World Health Organization
VMP	Vibration Measuring Point

Units

Al	Aluminum
As	Arsenic
dB (A)	weighted system (the decibel values of sounds at low frequencies)
CO	Carbon Monoxide
CO ₂	Carbon Dioxide

CN	Chloride Cyanide
m ³ /hr	Cubic Meter per hour
dB	Decibel
°C	Degree Celsius
°F	Degree Fahrenheit
gal	Gallons
gpm	Gallons Per Minute
hr	Hour
kVA	Kilo Volt Ampere
kg	Kilogram
l	Liter
l/s	Liter Per Second
Mn	Manganese
m	Meter
MMK	Myanmar kyats
NO	Nitrogen Oxide
NO ₂	Nitrogen Dioxide
O ₂	Oxygen
ppb	Part Per Billion
ppm	Part Per Million
PM	Particulate Matter
PM ₁₀	Particulate Matter 10 Micrometer or Less in Diameter
PM _{2.5}	Particulate Matter 2.5 Micrometer or Less in Diameter
pH	Power of Hydrogen, Hydrogen Ion Concentration
Qty	Quantity
Sr. No.	Serial Number
SO ₂	Sulfur Dioxide
W	Watt



စက်ရုံ၏ ပတ်ဝန်းကျင် အစီအစဉ်ဆောင်ရွက်မှု အဖွဲ့အစည်း

က-၂-၂။ မြန်မာ့စည်းမျဉ်းစည်းကမ်းဆိုင်ရာ ဖွဲ့စည်းမှုများ

ဤခေါင်းစဉ်အောက်တွင် ပတ်ဝန်းကျင် ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး လိုအပ်ချက် ကိစ္စရပ်များအား အဓိကဆက်စပ်ဆောင်ရွက်လျက်ရှိသည့် အဖွဲ့အစည်းများကို အောက်ပါအတိုင်း တင်ပြထားပါသည်။

- သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဝန်ကြီးဌာန
- ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဦးစီးဌာန
- မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှု ကော်မရှင်
- ပြည်သူ့ကျန်းမာရေးဦးစီးဌာန
- အလုပ်သမားဝန်ကြီးဌာန
- စက်မှုကြီးကြပ်ရေးနှင့် စစ်ဆေးရေးဦးစီးဌာန
- ဌာနဆိုင်ရာ ပူးပေါင်းဆောင်ရွက်ရေးအဖွဲ့

က-၂-၃။ စီမံကိန်းနှင့် ဆက်စပ်သည့် မြန်မာဥပဒေရေးရာများ

ဤခေါင်းစဉ်အောက်တွင် စီမံကိန်းနှင့် စပ်လျဉ်းသည့် ပတ်ဝန်းကျင်၊ လူမှုရေးရာနှင့် စပ်လျဉ်းသည့် မြန်မာ့နည်းဥပဒေ၊ ညွှန်ကြားချက် စသည်တို့ကို စုစည်းတင်ပြထားပြီး စုစုပေါင်း ၆၁ ခု ရှိပါသည်။ ယင်းတို့မှာ

- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာပေါ်လစီ (၂၀၁၉)
- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)

- ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး နည်းဥပဒေများ (၂၀၁၄)
- ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ (၂၀၁၅)
- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)
- အမျိုးသားမြေပေါ်ရေ အရည်အသွေးဆိုင်ရာ စံချိန်စံညွှန်း (၂၀၂၄)
- သစ်တောဥပဒေ (၂၀၁၈)
- ဇီဝမျိုးစုံမျိုးကွဲနှင့် သဘာဝထိန်းသိမ်းရေးနယ်မြေများ ကာကွယ်စောင့်ရှောက်ခြင်းဆိုင်ရာ ဥပဒေ (၂၀၁၈)
- မြေအောက်ရေ အက်ဥပဒေ (၁၉၃၀)
- ရေအရင်းအမြစ်နှင့် မြစ်ချောင်းများထိန်းသိမ်းရေး ဥပဒေ (၂၀၀၆) (ပြင်ဆင်ခြင်း ၂၀၁၇)
- ရေအရင်းအမြစ်နှင့် မြစ်ချောင်းများထိန်းသိမ်းရေး နည်းဥပဒေများ (၂၀၁၃)
- ယဉ်ကျေးမှုအမွေအနှစ်ဒေသများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၉)
- ရှေးဟောင်းဝတ္ထုပစ္စည်းများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)
- ရှေးဟောင်းအဆောက်အအုံများ ကာကွယ်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၅)
- တိုင်းရင်းသားလူမျိုးများ၏ အခွင့်အရေး ကာကွယ်စောင့်ရှောက်သည့် ဥပဒေ (၂၀၁၅)
- တိုင်းရင်းသားလူမျိုးများ၏ အခွင့်အရေးကာကွယ်စောင့်ရှောက်သည့် နည်းဥပဒေများ (၂၀၁၉)
- လျှပ်စစ် ဥပဒေ (၂၀၁၄)
- ဘို့လင်ဥပဒေ (၂၀၁၅)
- စက်မှုဇုန် ဥပဒေ (၂၀၂၀)
- စက်မှုဇုန်နည်းဥပဒေများ (၂၀၂၄)
- ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်းများအန္တရာယ်မှ တားဆီးကာကွယ်ရေး ဥပဒေ (၂၀၁၃)
- ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်းများအန္တရာယ်မှ တားဆီးကာကွယ်ရေး နည်းဥပဒေများ (၂၀၁၆)
- စက်မှုလုပ်ငန်းခွင်သုံး ပေါက်ကွဲစေတတ်သော ဝတ္ထုပစ္စည်းများဆိုင်ရာ ဥပဒေ (၂၀၁၈)
- ရေနံနှင့် ရေနံထွက်ပစ္စည်းများဆိုင်ရာ ဥပဒေ (၂၀၁၇)
- ရေနံ နည်းဥပဒေ (၁၉၃၇)၊ ပြင်ဆင်ခြင်း (၁၉၄၆)
- အလုပ်ရုံ အက်ဥပဒေ (၁၉၅၁)၊ ပြင်ဆင်ခြင်း (၂၀၁၆)
- ကူးစက်ရောဂါများ ကာကွယ်ထိန်းချုပ်ရေး ဥပဒေ (၁၉၉၅)၊ ပြင်ဆင်ခြင်း (၂၀၁၁)
- ဆေးလိပ်နှင့် ဆေးရွက်ကြီးထွက်ပစ္စည်း သောက်သုံးမှု ထိန်းချုပ်ရေး ဥပဒေ (၂၀၁၃)
- ခွင့်ရက်နှင့် အလုပ်ပိတ်ရက်နည်းဥပဒေများ (၁၉၅၁)၊ ပြင်ဆင်ခြင်း (၂၀၁၄)
- အလုပ်သမားအဖွဲ့အစည်း ဥပဒေ (၂၀၁၁)
- အနည်းဆုံး အခကြေးငွေ ဥပဒေ (၂၀၁၃)
- အခကြေးငွေ ပေးချေရေး ဥပဒေ (၂၀၁၆)

- အလုပ်သမားလျော်ကြေး အက်ဥပဒေ (၁၉၂၄)၊ ပြင်ဆင်ခြင်း (၂၀၀၅)
- လူမှုဖူလုံရေး ဥပဒေ (၂၀၁၂)
- လုပ်ငန်းခွင် ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့်သက်ဆိုင်သော ဥပဒေ (၂၀၁၉)
- မြန်မာ့အာမခံ ဥပဒေ (၁၉၉၃)
- အလုပ်သမားရေးရာ အငြင်းပွားမှု ဖြေရှင်းရေးဥပဒေ (ပြင်ဆင်ခြင်း ၂၀၁၉)
- မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ (၂၀၁၆)
- မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု နည်းဥပဒေများ (၂၀၁၇)
- ယာဉ်အန္တရာယ်ကင်းရှင်းရေးနှင့် မော်တော်ယာဉ်စီမံခန့်ခွဲမှု ဥပဒေ (၂၀၂၀)
- ယာဉ်အန္တရာယ်ကင်းရှင်းရေးနှင့် မော်တော်ယာဉ်စီမံခန့်ခွဲမှု နည်းဥပဒေများ (၂၀၂၂)
- အမြန်လမ်းမကြီးများ ဥပဒေ (၂၀၀၀)
- သဘာဝဘေးအန္တရာယ်ဆိုင်ရာ စီမံခန့်ခွဲမှု ဥပဒေ (၂၀၁၃)
- မြန်မာနိုင်ငံ အင်ဂျင်နီယာကောင်စီ ဥပဒေ (၂၀၁၃)
- မြန်မာနိုင်ငံ မီးသတ်တပ်ဖွဲ့ ဥပဒေ (၂၀၁၅)
- မြန်မာနိုင်ငံ လူဝင်မှုကြီးကြပ်ရေး (အရေးပေါ်စီမံချက်များ) အက်ဥပဒေ (၁၉၄၇) (ပြင်ဆင်ခြင်း ၁၉၉၀)
- ပုဂ္ဂလိကစက်မှု လုပ်ငန်းဥပဒေ (၁၉၉၀)
- ပြည်ထောင်စု မြန်မာနိုင်ငံ ပြည်သူ့ကျန်းမာရေး ဥပဒေ (၁၉၇၂)
- စံချိန်စံညွှန်းသတ်မှတ်ခြင်းဆိုင်ရာဥပဒေ (၂၀၁၄)
- ပေါက်ကွဲစေတတ်သော အရာဝတ္ထုများ အက်ဥပဒေ (၁၉၀၈)
- ပို့ကုန်သွင်းကုန်ဥပဒေ (၂၀၁၂)
- ငါးမွေးမြူခြင်းဆိုင် ရာဥပဒေ (၁၉၈၉)
- ရန်ကုန်စည်ပင်သာယာရေးဥပဒေ (၂၀၁၈)
- မြန်မာနိုင်ငံ ရာသီဥတုပြောင်းလဲမှုဆိုင်ရာမူဝါဒ (၂၀၁၉)
- မြန်မာနိုင်ငံ ရာသီဥတုပြောင်းလဲမှုဆိုင်ရာမဟာဗျူဟာ (၂၀၁၈-၂၀၃၀)
- မြန်မာနိုင်ငံ ရာသီဥတုပြောင်းလဲမှုဆိုင်ရာ ပင်မလုပ်ငန်းအစီအစဉ် (၂၀၁၈-၂၀၃၀)
- အမျိုးသားအဆင့် စွန့်ပစ်စွည်းစီမံခန့်ခွဲမှုမဟာဗျူဟာနှင့် ပင်မလုပ်ငန်းအစီအစဉ် (၂၀၁၈-၂၀၃၀)
- မြန်မာကုမ္ပဏီများဥပဒေ(၂၀၁၇)
- အိုဇုန်းလွှာထိခိုက်ပျက်စီးမှုကို ထိန်းချုပ်ကာကွယ်နိုင်ရန် ဟိုက်ဒရိုကလိုဖလိုကာဗွန် (HCFCs/ R-22) မြင်းကောင်ရေ ၂.၅ အောက် အင်အားရှိ လေအေးပေးစက် (HCFCs/ R-22 based split and window type air conditioner equipment) များ ပြည်တွင်းသို့ တင်သွင်းမှုကို တားမြစ်ခြင်း (အမိန့်ညွှန်ကြားချက် အမှတ် ၂၈/၂၀၂၀)

နီပွန်(မြန်မာ)သုတ်ဆေးကုမ္ပဏီလီမိတက်၏ ခွင့်ပြုချက်များ၊ လိုင်စင်များ၊ ညွှန်ကြားချက်များနှင့် EIA အတွက် တာဝန်ရှိပုဂ္ဂိုလ်များနှင့် ရန်ပုံငွေလျာထားမှုအစီအစဉ်များကို အပိုဒ် ၃-၁၈ တွင် တင်ပြထားပြီး ခွင့်ပြုချက်များ၊ လိုင်စင်များ၊ ညွှန်ကြားချက်များကို နောက်ဆက်တွဲ (၆)တွင် ဖော်ပြထားပါသည်။

က-၃-၁၉။ အခြားရွေးချယ်နိုင်မှုများ

နီပွန်(မြန်မာ)သုတ်ဆေးကုမ္ပဏီလီမိတက်၏ သုတ်ဆေးထုတ်လုပ်ခြင်းအတွက် အခြားရွေးချယ်နိုင်မှုများကို အပိုဒ် ၃-၁၉-၁ နှင့် အပိုဒ် ၃-၁၉-၁၀ တွင် ဖော်ပြထားပါသည်။

က-၄။ ပတ်ဝန်းကျင်အကြောင်းအရာဖော်ပြချက်

က-၄-၁။ နိဒါန်း

ဤအခန်းတွင် အဆိုပြုစီမံကိန်း၏ ပတ်ဝန်းကျင်၊ ပတ်ဝန်းကျင်ဆိုင်ရာ အချက်အလက်များနှင့် ဆင့်ပွားအချက်အလက်များအား ဖော်ပြထားပါသည်။ ဤအပိုဒ်တွင် လူမှုစီးပွား၊ ယဉ်ကျေးမှု၊ ရုပ်ပိုင်းဆိုင်ရာနှင့် ဇီဝဗေဒဆိုင်ရာ လက္ခဏာရပ်များကို လေ့လာမှုများ ပါဝင်ပါသည်။ ညစ်ညမ်းမှုအမျိုးမျိုး၏ သွင်ပြင်လက္ခဏာနှင့်အမျိုးအစားခွဲခြားနိုင်ရန် ရည်ရွယ်ချက်ဖြင့် အမျိုးအစားတစ်ခုချင်းစီအတွက် သွားရောက်ကြည့်ရှုပြီး အသေးစိတ် ကွင်းဆင်းလေ့လာမှုများ ပြုလုပ်ခဲ့ပါသည်။

က-၄-၂။ လေ့လာသည့်ကန့်သတ်ချက်သတ်မှတ်ခြင်း

လေ့လာသည့်စီမံကိန်း၏ ကန့်သတ်နယ်မြေသည် စီမံကိန်းကို ဗဟိုပြု၍ အချင်းဝက် ၂ ကီလိုမီတာကို သတ်မှတ်ထားပါသည်။ အဆိုပြုစီမံကိန်း၏ ပတ်ဝန်းကျင်အပေါ် အကျိုးသက်ရောက်မှုများရှိနိုင်သောကြောင့် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းပြုလုပ်ရာတွင် လေ့လာမှုနယ်ပယ်သတ်မှတ်ရန် အရေးကြီးပါသည်။ အဆိုပါစီမံကိန်း၏ လေ့လာသည့် ကန့်သတ်ချက်သတ်မှတ်ခြင်းနှင့် Sensitive Receptors များကို ဖော်ထုတ်ခြင်းကို အပိုဒ် ၄-၂ နှင့် ၄-၂-၁ တွင် ဖော်ပြထားပါသည်။

က-၄-၃။ လေ့လာမည့်ဧရိယာနှင့် သက်ရောက်မှုဧရိယာ (AOI)

သဘာဝပတ်ဝန်းကျင်၏ အစိတ်အပိုင်းများကို သက်ရောက်မှုများ ခန့်မှန်းသုံးသပ်ခြင်းမတိုင်မီ၊ ယင်းစီမံကိန်း၏ လုပ်ငန်းလက္ခဏာနှင့် ဖြစ်နိုင်ခြေရှိသော သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ ပြဿနာများကို ထည့်သွင်းစဉ်းစားခြင်းသည် အရေးကြီးပါသည်။ ထို့အတွက်အောက်ပါ အစိတ်အပိုင်းများကို ဦးစားပေးဖော်ပြပါမည် -

- ပထဝီဝင်ဆိုင်ရာအစိတ်အပိုင်းများ
- ဇီဝဆိုင်ရာအစိတ်အပိုင်းများ
- လူမှု-စီးပွားရေးဆိုင်ရာအစိတ်အပိုင်းများ
- ယဉ်ကျေးမှုဆိုင်ရာ အစိတ်အပိုင်းများ

စီမံကိန်းနှင့်ဆက်စပ်နေသော သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ အနေအထားအား စာတွေ့လေ့လာခြင်း၊ ပဏာမကွင်းဆင်းလေ့လာခြင်းကို 2022 ခုနှစ် ဩဂုတ်လမှ စက်တင်ဘာလအတွင်း ပြုလုပ်ခဲ့ပြီး 2022 ခုနှစ် နိုဝင်ဘာလတွင် နောက်ဆက်တွဲ ကွင်းဆင်းလေ့လာခြင်းတို့ဖြင့် အကဲဖြတ်ပါသည်။ လေ့လာမှုဧရိယာနှင့် သက်ရောက်မှုဧရိယာ (AOI) အသေးစိတ်ကို အပိုင်း ၄.၃.၁၊ ၄.၃.၂ နှင့် ၄.၃.၃ တွင် ဖော်ပြထားပါသည်။

က-၄-၄။ လေ့လာမည့်ဧရိယာနှင့် သက်ရောက်မှုဧရိယာ (AOI) သတ်မှတ်ခြင်းအတွက် နည်းလမ်း

ဤကဏ္ဍတွင်၊ ဧရိယာနှင့် သက်ရောက်မှုဧရိယာ (AOI) ကိုသတ်မှတ်ခြင်းအတွက် ဒေတာစုဆောင်းမှုကို နည်းစနစ်ကျနစွာ ဖော်ပြထားပါသည်။

က-၄-၅။ ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ဆင့်ပွားအချက်အလက်များနှင့် မူလအချက်အလက်များ)

က-၄-၅-၁။ ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး ဆင့်ပွားအချက်အလက်များ

အပိုဒ်၄-၅-၁အောက်တွင် စီမံကိန်းနေရာ၏ မြေမျက်နှာသွင်ပြင်၊ ရာသီဥတုနှင့် မိုးလေဝသ (အပူချိန်၊ နှစ်စဉ်မိုးရွာသွန်းမှု)၊ ဘူမိဗေဒ၊ ပထဝီဆိုင်ရာမြေထု၊ မြေပေါ်ရေ၊ မြေအောက်ရေ၊ ဆူညံသံနှင့် တုန်ခါမှု၊ လေအရည်အသွေး၊ မြေဆီလွှာအရည်အသွေး နှင့်ငလျင်လှုပ်ခတ်နိုင်ခြင်း စသည့် ခေါင်းစဉ်ခွဲများဖြင့် အပိုဒ် ၄-၅-၁-၁မှ ၄-၅-၁-၁၀ထိတင်ပြထားပါသည်။

ထို့ပြင်အပိုဒ်၄-၅-၁-၂နှင့် နောက်ဆက်တွဲ(၁၂)တွင် လေ့လာသည့်ဧရိယာ၏ ၁၉၉၄ မှ ၂၀၂၃ခုနှစ်အထိ နှစ်သုံးဆယ်စာရာသီဥတုကို တင်ပြထားပါသည်။

က-၄-၅-၂။ ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေးမူလအချက်အလက်များ

က-၄-၅-၂-၁။ လေထုအရည်အသွေး

ဤအခန်းတွင်

- ပတ်ဝန်းကျင်ဆိုင်ရာအခြေခံအချက်အလက်များတိုင်းတာသည့် စက်ပစ္စည်းကိရိယာများ
- အသုံးပြုသည့် စက်ပစ္စည်းနှင့် နည်းစနစ်
- အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာစံနှုန်းများ
- နမူနာက ကောက်ယူခြင်းနှင့် ခွဲခြမ်းစိတ်ဖြာခြင်း
- လုပ်ငန်းခွင်နှင့်အနီးဆုံးကျေးရွာတွင်ရှိသော လေထုအရည်အသွေး(2022နှင့် 2024)၊
- တိုင်းတာရရှိသည့်ရလဒ်များကို စံနှုန်းများနှင့် နှိုင်းယှဉ်ဖော်ပြသည့် ဇယားများကို တင်ပြထားပါသည်။

လေထုအရည်အသွေးနှိုင်းယှဉ်ဖော်ပြသည့် ဇယားသုံးခုကို အောက်ပါအတိုင်း တင်ပြအပ်ပါသည်။

Comparison Table of Ambient Air Quality at site on 15.8.2022 (Construction/renovation) with that of 27.4.2024 (Operation phase)

No.	Parameters	Unit	Measurement Results at 15.8.2022	Measurement Result at 27.4.2024	More/Less
1	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	42.37(24 hr)	11.58 (24 hr)	-30.79
		$\mu\text{g}/\text{m}^3$	85.67 (1 hr)	19.54 (1 hr)	-66.13
2	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	0 (24 hr)	0 (24 hr)	-
3	Particulate matter, PM_{10}	$\mu\text{g}/\text{m}^3$	37.34 (24 hr)	28.51 (24 hr)	-8.33
4	Particulate matter, $\text{PM}_{2.5}$	$\mu\text{g}/\text{m}^3$	19.82 (24 hr)	16.97 (24 hr)	-3.01
5	Ozone	$\mu\text{g}/\text{m}^3$	0.83 (24 hr)	0.83 (24 hr)	-
		$\mu\text{g}/\text{m}^3$	0.84 (8 hr)	0.86 (8 hr)	+0.02

Comparison Table of Workplace Air Quality at workplace on 15.8.2022 (Construction/Renovation) with that of 27.4.2024 Operation phase

Sr. No.	Parameter	Unit	Measurement Result at 15.8.2022	Measurement Result at 27.4.2024	More/ Less
1	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	ND	18.55 (1 hr)	+18.55
			ND	2.95 (24 hr)	+2.95
2	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	ND	0 (24 hr)	+0
3	Particulate matter, PM_{10}	$\mu\text{g}/\text{m}^3$	17.46 (24hr)	19.75 (24 hr)	+2.29
4	Particulate matter, $\text{PM}_{2.5}$	$\mu\text{g}/\text{m}^3$	7.03 (24 hr)	9.91 (24 hr)	+2.88
5	Ozone	$\mu\text{g}/\text{m}^3$	ND	0.83 (1 hr)	+0.83
			ND	0.82 (24 hr)	+0.82

Comparison Table of Ah Lel Ywar Village, air quality on 16.8.2022 (Construction/Renovation) with that of 28.4.2024 Operation Phase

Sr. No.	Parameters	Unit	Measurement Result at 15.8.2022	Measurement Result at 27.4.2024	More/Less
1	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	14.34	7.44 (1 hr)	-6.9
			7.23	3.19 (24 hr)	-4.04
2	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	0.34	0 (24 hr)	-0.34
3	Particulate Matter PM_{10}	$\mu\text{g}/\text{m}^3$	39.1	29.48 (24 hr)	-9.62
4	Particulate Matter $\text{PM}_{2.5}$	$\mu\text{g}/\text{m}^3$	14.8	14.84 (24 hr)	+0.04

5	Ozone		0.79	0.89 (8hr)	+0.1
			0.8	0.91 (24 hr)	+0.11

တိုင်းတာမှုရလဒ်များအားလုံးသည် စံနှုန်းများတွင် ရှိနေသော်လည်း၊ ၂၀၂၄ အချို့သော တိုင်းတာမှုများ၏ တန်ဖိုးများသည် ၂၀၂၂ ထက်ပိုများနေပြီး အချို့သောတိုင်းတာမှုတန်ဖိုးများသည် နည်းပါးနေပါသည်။

က-၄-၅-၂-၃။ ခေါင်းတိုင်ထုတ်လွှတ်မှုအရည်အသွေးတိုင်းတာခြင်း

လျှပ်စစ်ထုတ်စက်အိပ်စောပိုက်ထုတ်လွှတ်မှု

**Comparison Table of Generator Stack Emission results with emission limits
(Calculate)**

Parameter	Unit	Result	Emission Limit (Calculation)	More/Less
O ₂	%	16.73	-	
CO	mg/m ³	280	-	
CO ₂	%	3.9	-	
NO ₂	mg/m ³	49	141.1	-92.1
SO ₂	mg/m ³	(ND)	72.6	-72.6

အမှုန်ဖမ်းစက် ထုတ်လွှတ်မှု

Dust Collector Measurement Results

Sampling ID: 01 (Dust Collector)

No.	Parameters	Dust Collector Measurement Results	Unit	NEQ(E)G Standard	Measuring Period
1.	PM ₁₀	20.88	μg/m ³	50	1 Hour
2.	PM _{2.5}	7.18	μg/m ³	25	1Hour

အထက်ဖော်ပြပါရလဒ်များမှ၊ ကန့်သတ်ချက်များအားလုံးသည် စံနှုန်းအတွင်းတွင်ရှိပါသည်။

က-၄-၅-၂-၄။ ဆူညံသံပတ်ဝန်းကျင်

ဆူညံသံအဆင့်ကို အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ စံနှုန်းဖြင့်တိုင်းတာခဲ့ပါသည်။ စီမံကိန်းနှင့် စီမံကိန်းနှင့်အနီးဆုံးရွာတွင် ဆူညံသံတိုင်းတာခြင်းဖြင့် အခြေခံအချက်အလက်ကို ရရှိပါသည်။ ရလဒ်များကို အောက်ပါအတိုင်းတင်ပြထားပါသည်။

Comparison Table of Noise Level (Ambient) at site corner points at 2022 with those of 2024

SR. No	Noise Level	Unit	Noise Level at 2022	Noise Level at 2024	More/Less
1	Noise Level at N 16° 55' 50.78" E 96° 3' 40.75"	dBA	50.60 day 56.36 night	58.53 day 47.55 night	+7.93 -8.81
2	Noise Level at N 16° 55' 51.81" E 96° 3' 39.00"	dBA	60.1 day 57.83 night	66.94 day 67.56 night	+6.84 +9.73
3	Noise Level at N 16° 55' 54.95" E 96° 3' 41.95"	dBA	64.84 day 62.46 night	69.39 day 48.85 night	+4.55 -13.61
4	Noise Level at N 16° 55' 53.78" E 96° 3' 43.14"	dBA	49.54 day 39.72 night	67.43 day 62.44 night	+17.89 +22.72

အထက်ဖော်ပြပါ နှိုင်းယှဉ်ဇယားမှာ ၂၀၂၂ နှင့် ၂၀၂၄ တွင် ဆူညံသံအဆင့်များအားလုံးသည် စံချိန်စံညွှန်းအတွင်းတွင်ရှိသော်လည်း ၂၀၂၄ ရလဒ်အချို့မှာ ၂၀၂၂ထက် များနေပြီး ၂၀၂၂ ရလဒ်အချို့သည် ၂၀၂၄ထက်ပိုများပါသည်။ လည်ပတ်ရေးအဆင့်တွင် ၂၀၂၂ ပြုပြင်မွမ်းမံမှုအဆင့်နှင့် နှိုင်းယှဉ်ပါက စက်ယန္တရားများနှင့် မော်တော်ယာဉ်များ လည်ပတ်နေခြင်းကြောင့် နေ့ခင်းဘက်ဆူညံသံများ ပိုများပါသည်။

၂၀၂၄ တွင်လုပ်ငန်းခွင်တွင်ဆူညံသံအဆင့်ကိုတိုင်းတာခြင်း

လုပ်ငန်းခွင်တွင်ဆူညံသံအဆင့်ကိုတိုင်းတာခြင်းကို ၂၀၂၄ ခုနှစ်တွင် လုပ်ဆောင်ခဲ့ပြီး ရလဒ်များကို အောက်တွင်ဖော်ပြထားပါသည်။

Result of workplace Noise Level Measuring

Point	Unit	Measurement	Result		
			Avg	Max	Min

N 16° 55' 53.44" E 96° 3' 41.12"	dBA	Day time	60.75	94.30	35.8
		Night time	57.13	101.3	47.6

အထက်ပါရလဒ်များအရ ပျမ်းမျှအသံဆူညံမှုအဆင့်မှာ စံနှုန်းအတွင်းတွင်ရှိပါသည်။

စီမံကိန်း၏အနီးဆုံးကျေးရွာတွင် ဆူညံသံအဆင့်တိုင်းတာခြင်း။

၂၀၂၂ခုနှစ်နိုဝင်ဘာလ၁၉ရက်နှင့် ၂၀၂၄ခုနှစ်ဧပြီလ၂၇ရက်နေ့တို့တွင် စီမံကိန်း၏ အနီးဆုံးဖြစ်သော အလယ်ရွာကျေးရွာ ဘုန်းတော်ကြီးကျောင်းတွင် ဆူညံသံအဆင့် စောင့်ကြည့်တိုင်းတာခြင်းအား ဆောင်ရွက်ခဲ့ပါသည်။ ၂၀၂၂ခုနှစ်နှင့် ၂၀၂၄ခုနှစ် ဆူညံသံအဆင့်တိုင်းတာမှုနှိုင်းယှဉ်ဇယားကို အောက်ပါအတိုင်း ဖော်ပြထားပါသည်။

Comparison table of noise level measurement at Ah Lel Ywar Village on 2022 with that of 2024

Description	Unit	Result (Aug)		More/Less	Remark
		at 2022	at 2024		
Day time	dBA	61.68	46.67	-15.01	
Night time	dBA	49.03	41.23	-7.80	

က-၄-၅-၂-၅။ တုန်ခါမှုတိုင်းတာခြင်း

ဤအခန်းတွင် တုန်ခါမှုတိုင်းတာခြင်းကို ၂၀၂၂ခုနှစ်တွင် အလယ်ရွာတွင် တိုင်းတာခဲ့ပြီး ၂၀၂၄ ခုနှစ်တွင် အလယ်ရွာနှင့် စက်ရုံ၏အဝင်ဝတွင် တိုင်းတာခဲ့ပါသည်။

- တုန်ခါမှုတိုင်းတာသည့် လတ္တီတွဒ်၊ လောင်ဂျီတွဒ် ဖော်ပြချက်
- တုန်ခါမှုတိုင်းတာသည့် နေရာဖော်ပြချက်ဓာတ်ပုံ
- တုန်ခါမှုရလဒ်များ နှင့်
- စံနှုန်းများကို တင်ပြထားပါသည်။

Comparison Table of Vibration Measurement Results at Ah Lel Ywar Village at 2022 with that of 2024

Particular	Unit	Measuring Result		More/Less	Remark
		2022	2024		
Vibration	mm/sec	0.59	ND	-0.59	

တိုင်းတာမှုရလဒ်များသည် စံနှုန်းအတွင်း ရှိကြောင်းတင်ပြထားပါသည်။

က-၄-၅-၂-၆။ မြေထုအရည်အသွေး

မြေထုအရည်အသွေးတိုင်းတာခြင်းကို ၂၀၂၂ခုနှစ်နှင့်၂၀၂၄ခုနှစ်တို့တွင် စက်ရုံအတွင်းတွင် ပြုလုပ်ခဲ့ပါသည်။ အပိုဒ် ၄.၅.၂.၆ ၊ ဇယား၄.၃၂တွင် ထိုနှစ်များ၏ မြေထုအရည်အသွေးတိုင်းတာမှုရလဒ်များ နှိုင်းယှဉ်မှုဇယားကို ဖော်ပြထားပါသည်။ ဤဇယားမှ Arsenic မှအပ၊ တိုင်းတာသည့် parameters များသည် 2022 ခုနှစ်ထက် 2024 တွင်ပိုများသည်။ ၎င်းကို မြေဆီလွှာသို့ စွန့်ပစ်မှုများကြောင့် ညစ်ညမ်းနိုင်ပြီး စက်ရုံနှင့် စက်မှုဇုန်ကော်မတီက ထိန်းချုပ်သင့်ပါသည်။

က-၄-၅-၂-၇။ အနံ့အရည်အသွေး

အနံ့အရည်အသွေးတိုင်းတာခြင်းကို ၂၀၂၄ခုနှစ်တွင် အလယ်ရွာနှင့် စက်ရုံတွင် တိုင်းတာခဲ့ပါသည်။ ရလဒ်များအရ အနံ့အရည်အသွေးမှာ စံနှုန်းအတွင်းတွင်ရှိပါသည်။

က-၄-၅-၂-၈။ ရေအရည်အသွေး

အပိုဒ်၄-၅-၂-၈တွင် မြေအောက်ရေ၊ ပတ်ဝန်းကျင်ရေနှင့် စွန့်ပစ်ရေတို့ကို ရေထုပတ်ဝန်းကျင်အဖြစ် ဆန်းစစ်ခဲ့ကြောင်းနှင့် ဆန်းစစ်ခြင်းကိစ္စရပ်များကို တင်ပြထားပါသည်။

က-၄-၃-၂-၈-၁။ မြေပေါ်ရေ (ပတ်ဝန်းကျင်ရေ) အရည်အသွေး

ဤခေါင်းစဉ်အောက်တွင် ၂၀၂၂နှင့်၂၀၂၄ခုနှစ်တွင် လှိုင်မြစ်အထက်ပိုင်း၊ မြစ်လယ်နှင့် မြစ်အောက်ပိုင်း စသည့် ရေမျက်နှာပြင် နမူနာ(၃)ခုကို ကောက်ယူဓာတ်ခွဲစမ်းသပ်ပြီး စံနှုန်းများဖြင့် နှိုင်းယှဉ်ဖော်ပြထားပါသည်။ ၂၀၂၂နှင့်၂၀၂၄ခုနှစ် မြေပေါ်ရေအရည်အသွေးတိုင်းတာမှုရလဒ်များ နှိုင်းယှဉ်မှုဇယားကို ဇယား ၄.၄၁ တွင် ဖော်ပြထားပါသည်။ ဤနှိုင်းယှဉ်ဇယားအရ pH နှင့် Total Suspended Solids သည် ၂၀၂၂ခုနှစ်နှင့် နှိုင်းယှဉ်ပါက၂၀၂၄တွင် နည်းပါးပါသည်။ လှိုင်မြစ်၏ အရည်အသွေး သတ်မှတ်ချက်များကို ရေမျက်နှာပြင် အရည်အသွေးစံနှုန်းများနှင့် စောင့်ကြည့်ရေးအစီအစဉ်တွင် နှိုင်းယှဉ်ခွင့်ပြုရန် တောင်းဆိုထားပါသည်။

၂၀၂၅ ခုနှစ် လှိုင်မြစ်မှ ရေအရည်အသွေး ခွဲခြမ်းစိတ်ဖြာမှု ရလဒ်များကို ဇယား ၄-၄၂ တွင် အမျိုးသား မြေပေါ်ရေ အရည်အသွေး စံနှုန်း (MM S 44: 2024) နှင့် နှိုင်းယှဉ်ပြီး ခွဲခြမ်းစိတ်ဖြာမှု ရလဒ်များ အားလုံး စံနှုန်းအတွင်းတွင်ရှိပါသည်။ ထို့ပြင် အလယ်ရွာသောက်သုံးရေကန်ကို ၂၀၂၅ ခုနှစ်တွင် စုဆောင်းခဲ့ပြီး ရေအရည်အသွေး ခွဲခြမ်းစိတ်ဖြာမှုရလဒ်များကို ဇယား၄-၄၅ ရှိ အမျိုးသား မြေပေါ်ရေ အရည်အသွေးစံနှုန်း (MM S 44:2024) နှင့် နှိုင်းယှဉ်ပြီး ခွဲခြမ်းစိတ်ဖြာမှုရလဒ်များအားလုံးသည် စံနှုန်းအတိုင်းဖြစ်သည်။

က-၄-၅-၂-၈-၁။ မြေအောက်ရေ အရည်အသွေး

မြေအောက်ရေနမူနာကောက်ယူမှုကို ၂၀၂၂ခုနှစ်တွင် စက်ရုံတွင်းနှင့် အလယ်ရွာရှိ နေရာ(၃)နေရာ တွင် ပြုလုပ်ခဲ့ပြီး ၂၀၂၄ခုနှစ်တွင် မြေအောက်ရေ(၃)ခုနှင့်ရေကန်တစ်ခုတို့မှ ရေနမူနာများကို ကောက်ယူခဲ့ပြီး ဓာတ်ခွဲခန်းအသီးသီးတွင် ဓာတ်ခွဲစမ်းသပ်ခဲ့ပါသည်။ ဓာတ်ခွဲစမ်းသပ်ပြီး ရလဒ်များကို အပိုဒ် ၄-၅-၂-၈-၂ တွင် ဖော်ပြထားသည်။

၂၀၂၂ ခုနှစ်နှင့် ၂၀၂၄ခုနှစ် မြေအောက်ရေ (စက်ရေတွင်း) အရည်အသွေး နှိုင်းယှဉ်ဇယားအရ စက်ရုံရှိ စက်ရေတွင်းတွင် အလူမီနီယမ် နှင့် မန်းဂန်စ်ကဲ့သို့ အရည်အသွေးများ များပြားနေပြီး လူဦးရေ ပိုများလာသည့်အတွက် စက်ရေတွင်းရေ သုံးစွဲမှု ပိုများလာခြင်းကြောင့်ဖြစ်သည်။ အလယ်ရွာဘုရားကျောင်းရှိ စက်ရေတွင်း၏ အရည်အသွေးများသည် ကွာခြားမှုမရှိပါ။ အလယ်ရွာဘုန်းတော်ကြီးကျောင်းရှိ စက်ရေတွင်းများ၏ အရည်အသွေးမှာ ၄၀၀ နှစ်နှစ်ခန့်တွင် အနည်းငယ်သာ ကွာခြားပြီး ထိုသို့ကွာခြားခြင်းမှာ လူဦးရေ ပိုများလာသည့်အတွက် အဝီစိတွင်းရေ သုံးစွဲမှု ပိုမိုများပြားလာခြင်းကြောင့် ပါသည်။

က-၄-၅-၂-၉။ စွန့်ပစ်ရေအရည်အသွေး

ဤကဏ္ဍတွင် ရေဆိုးသန့်စင်မှုစနစ်၏အသေးစိတ်အချက်အလက်များကိုဖော်ပြထားပြီး ၂၉.၇.၂၀၂၄ နေ့တွင် ရေဆိုးသန့်စင်ခြင်းစနစ်ရှိ ရေဆိုးထွက်ပေါက်မှ ရေနမူနာများကို စုဆောင်းခဲ့ပါသည်။ အောက်ပါဇယားတွင် ရေဆိုးသန့်စင်မှုစနစ်မှ သန့်စင်ပြီးထွက်ရှိလာသော ရေနမူနာရလဒ်များကို ဓာတ်ခွဲခန်းသပ်ပြီး NEQEG General Applicationနှင့် နှိုင်းယှဉ်ထားသည်။

Parameters	Unit	Analyzed value	NEQEG General Application	More/less
5-day Biochemical Oxygen Demand	mg/L	10	50	-40
Ammonia	mg/L	0.024	10	-9.976
Arsenic	mg/L	Nil	0.1	-0.1
Chemical Oxygen Demand	mg/L	32	250	-218
Chlorine (Total Residual)	mg/L	Nil	0.2	-0.2
Copper	mg/L	Nil	0.5	-0.5
Cyanide (Total)	mg/L	0.012	1	-0.988
Fluoride	mg/L	0.2	20	-19.8
Iron	mg/L	0.48	3.5	-3.02
Lead	mg/L	Nil	0.1	-0.1
pH	-	7.3	6-9	in standard
Temperature	°C	≤3	≤3	
Total Coliform bacteria	100 ml	30	400	-370
Total Suspended Solid	mg/L	19	50	-31
Zinc	mg/L	Nil	2	-2

အထက်ဖော်ပြပါရလဒ်များအရ Parameter အားလုံးသည် စံနှုန်းအတွင်းတွင်ရှိပါသည်။

စွန့်ပစ်ရေအရည်အသွေး(၂၀၂၅)

ရေဆိုးသန့်စင်စက်မှ စွန့်ပစ်ရေဝင်ပေါက်နှင့် ထွက်ပေါက်နမူနာများကို 3.3.2025 နေ့တွင် ကောက်ယူ၍ ခွဲခြမ်းစိတ်ဖြာခဲ့ပါသည်။ ခွဲခြမ်းစိတ်ဖြာမှုရလဒ်များကို အောက်ပါအတိုင်းပြသထားသည်။ ဓာတ်ခွဲခန်းများ၏ ရေဆိုးများကို ခွဲခြမ်းစိတ်ဖြာပြီး ရလဒ်များကို နောက်ဆက်တွဲ XIII တွင် ပြသထားသည်။

Analyzed results of wastewater inlet and outlet from wastewater treatment plant and comparison with NEQEG General Application

Parameters	Unit	Analyzed value		NEQEG General Application
		inlet	outlet	
5-day Biochemical Oxygen Demand	mg/L	40	20	50
Ammonia	mg/L	0.04	0.037	10
Arsenic	mg/L	Nil	Nil	0.1
Cadium	mg/L	ND	ND	0.1
Chemical Oxygen Demand	mg/L	200	32	250
Chlorine(Total Residual)	mg/L	Nil	Nil	0.2
Chromium (hexavalent)	mg/L	0.04	0.01	0.1
Chromium (total)	mg/L	0.1	0.01	0.5
Copper	mg/L	Nil	Nil	0.5
Cyanide (free)	mg/L	Nil	Nil	0.1
Cyanide (Total)	mg/L	-	-	1
Fluoride	mg/L	0.6	<0.02	20
Heavy Metals (total)	mg/L	-	-	10
Iron	mg/L	1.0	0.08	3.5
Lead	mg/L	0.05	0.05	0.1
Mercury	mg/L	0.006	0.001	0.01
Nickel	mg/L	0.4	0.2	0.5
Oil and Grease	mg/L	7	6	10
pH	-	8.1	7.1	6-9
Phenols	mg/L	0.1	<0.1	0.5
Selenium	mg/L	0.05	<0.1	0.1
Silver	mg/L	0.1	<0.02	0.5
Sulphide	mg/L	0.40	0.319	1
Temperature	°C	≤3	≤3	≤3
Total Coliform bacteria	100 ml	8	5	400
Total Phosphorus	mg/L	2.0	1.0	2
Total Suspended Solid	mg/L	10	5	50
Zinc	mg/L	Nil	Nil	2

က-၄-၆။ ဇီဝိသေသများ

ဤအခန်း ၄-၄ ဇီဝိသေသများတွင်

- ဇီဝမျိုးစုံမျိုးကွဲများ၏နိဒါန်း
- ဇီဝမျိုးစုံမျိုးကွဲများနှင့်ပတ်သက်သော ဥပဒေ၊ နည်းဥပဒေများ ခြုံငုံတင်ပြချက်
- Ecoregion ဖော်ပြချက်

- အဓိက ဇီဝမျိုးစုံမျိုးကွဲနယ်မြေ
- ကွင်းဆင်းလေ့လာမှုနည်းစဉ် နယ်ပယ်များကို ဖော်ပြထားပါသည်။

ဇီဝဗေဒဆိုင်ရာ စစ်တမ်းအချက်အလက်နှင့် အချက်အလက်များအပေါ် အခြေခံ၍ အထူးသဖြင့် လုပ်ငန်းလည်ပတ်ရေးအဆင့်တွင် လုပ်ဆောင်မှုများသည် ကုန်းနေသတ္တဝါများနှင့် သစ်ပင်ပန်းမန်များထက် ရေနေသတ္တဝါများနှင့် သစ်ပင်ပန်းမန်များအပေါ် ပိုမိုအကျိုးသက်ရောက်မှုရှိမည်ဖြစ်သည်။ သုတ်ဆေး ထုတ်လုပ်ခြင်းလုပ်ငန်းမှ သန့်စင်မှုမပြုရသေးသော သို့မဟုတ် ညစ်ညမ်းသော (effluent discharge) စွန့်ထုတ်မှုများနှင့် စက်ရုံမှလေထုညစ်ညမ်းမှုသည် ရေနေသတ္တဝါများနှင့် ကုန်းနေဇီဝမျိုးစုံမျိုးကွဲများအပေါ် သက်ရောက်မှုရှိပါသည်။

စစ်တမ်းကောက်ယူသည့်ဧရိယာတွင် မျိုးသုဉ်းလုနီးပါးမျိုးစိတ် သို့မဟုတ် အစုလိုက်မျိုးစိတ်များကို မတွေ့ရှိပါ။ ဇီဝမျိုးစုံမျိုးကွဲအတွက် ယေဘုယျအားဖြင့် စီမံကိန်းအတွက် သတ်မှတ်ထားသော စစ်တမ်းကောက်ဧရိယာနှင့် ကြားခံလွတ်လပ်ဧရိယာများတွင် သိသာထင်ရှားသော အရေးကြီးဇီဝမျိုးစုံမျိုးကွဲ များမရှိပါ။

သစ်ပင်ပန်းမန်များနှင့်တိရစ္ဆာန်များအတွက် စစ်တမ်းရလဒ်များအရ မျိုးတုန်းပျောက်ကွယ်မှု ခြိမ်းခြောက်ခံစားရင်းဝင် ဇီဝမျိုးစုံမျိုးကွဲမျိုးစိတ်များစာရင်းဖြစ်သည့် IUCN၏အနီရောင်စာရင်းဝင်များ မရှိကြောင်းနှင့် စီမံကိန်းနေရာသည် တိုးတက်ပြီးသား စက်မှုဇုန်တွင်ရှိနေပါသည်။ သာမန်ပေါစွာတွေ့ရသော ဇီဝမျိုးစုံမျိုးကွဲများသာရှိပါသည်။

စီမံကိန်းအဆိုပြုသူသည် အနုတ်သဘောဆောင်သောသက်ရောက်မှုများကို လျော့ချရန်နှင့် အပြုသဘောဆောင်သော သက်ရောက်မှုများကို တိုးမြှင့်ဆောင်ရွက်ရန် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ရည်ရွယ်ချက်များ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၊ ပတ်ဝန်းကျင် စောင့်ကြည့်ရေးအစီအစဉ်ဆိုင်ရာ အချက်အလက်များနှင့် သက်ဆိုင်ရာဥပဒေများ၊ စည်းမျဉ်းများနှင့် ညွှန်ကြားချက်များကို တင်းတင်းကျပ်ကျပ် လိုက်နာဆောင်ရွက်ရမည်။

က-၄-၇။ လူမှုစီးပွားရေးဆိုင်ရာဝိသေသများ

ဤအခန်းတွင်

- နိဒါန်း
 - လူမှုဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း၏ရည်ရွယ်ချက်များ
 - လူမှုဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းနယ်ပယ်ကန့်သတ်ခြင်း
 - လူမှုဝန်းကျင်အခြေခံအချက်အလက်များ
 - လူမှုဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဧရိယာ
 - နည်းစနစ်နှင့်ချဉ်းကပ်ပုံ
- (ပစ္စည်းနှင့်နည်းစနစ်၊ စားပွဲပိုင်းဆွေးနွေးခြင်း၊ ကွင်းဆင်းဆန်းစစ်ခြင်း)

- လူမှုစီးပွားအခြေခံအချက်အလက်များအခြေအနေ
(နည်းလမ်းနှင့်ချဉ်းကပ်မှု၊ မိသားစုများ၏အရည်အချင်းများ၊ တုံ့ပြန်သူ၏မိသားစုများ၏ စီးပွားရေးအခြေအနေများ၊ မိသားစုများ၏ဝင်ငွေနှင့်အသုံးစရိတ်ပုံစံ၊ ပိုင်ဆိုင်မှုများ၊ လောင်စာဆီနှင့်ရေအသုံးပြုမှု အခြေအနေများ၊ အိမ်ရာအဆောက်အအုံ အမျိုးအစား အခြေအနေများ)
- ဖြစ်နိုင်ချေရှိသော သက်ရောက်မှုဆန်းစစ်ခြင်းနှင့် လျော့ပါးရေးအစီအမံများ
 - သက်ရောက်မှုဆန်းစစ်သည့်နည်းစနစ် (မက်ထရစ်စနစ်)
 - သက်ရောက်မှုဆန်းစစ်ခြင်း
(အဓိကသက်ရောက်မှုအရင်းအမြစ်ကို သတ်မှတ်ဖော်ထုတ်ခြင်း၊
 - သက်ရောက်မှုများတွက်ချက်ခြင်း
 - လျော့နည်းစေရန်ဆောင်ရွက်ခြင်းများ တင်ပြထားပါသည်။

လူမှုပတ်ဝန်းကျင်ကို ထိခိုက်စေနိုင်သည့် အရင်းအမြစ်များမှာ လေတိုက်ခတ်ရာလမ်းကြောင်း ကြောင့်ဖြစ်ပေါ်လာနိုင်သည့် အနံ့နှင့် ဆူညံခြင်း တို့ဖြစ်သည်။ Nippon Paint နှင့် Ah Lel ကျေးရွာကြားတွင် အမျိုးမျိုးသော ကုန်ထုတ်လုပ်ငန်း စက်ရုံများစွာရှိပြီး ရွာတွင်းရှိ အနံ့နှင့်ဆူညံသံများ၏ အရင်းအမြစ်ကို ခြေရာခံ၍ မရနိုင်ပေ။

အနံ့ဆိုးနှင့်ဆူညံသက်ရောက်မှုကို လျော့နည်းစေရန် စီမံကိန်းအဆိုပြုသူသည် စက်ရုံဝင်းခြံစည်းရိုး တစ်လျှောက် ဒေသမျိုးရင်းအပင်များအား လေကာအပင်များအဖြစ် စိုက်ပျိုးသင့်ပြီး ပတ်ဝန်းကျင် စောင့်ကြပ်ကြည့်ရှုခြင်းနှင့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုလုပ်ငန်းစဉ်ကို ဆောင်ရွက်ရမည်။

က-၄-၈။ ယဉ်ကျေးမှုအမွေအနှစ် လက္ခဏာများ

လှိုင်သာယာမြို့နယ် အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာနမှ ပြုစုထားသော ဒေသဆိုင်ရာအချက် အလက်များအရ ထင်ရှားကျော်ကြားသည့် သမိုင်းဝင် အဆောက်အအုံများမရှိပါ။ စီမံကိန်း၏ အနီးဆုံးရှိ အလယ်ရွာတွင် ဘုန်းတော်ကြီးကျောင်း၊ ခရစ်ယာန်အသိုက်အဝန်းနှင့် ဘာသာရေးစေတီပုထိုးများရှိပါသည်။ အလယ်ကျေးရွာတွင် အောင်ဇေယျာမင်းဘုန်းတော်ကြီးကျောင်းနှင့် စန္ဒမုနိအောင်စကြာစေတီများရှိသည်။ ထင်ရှားသော သမိုင်းဝင်အဆောက်အအုံများ မရှိသော်လည်း အငွေ့ထုတ်လွှတ်မှု၊ ဆူညံသံနှင့် တုန်ခါမှုတို့ကဲ့သို့ အကျိုးသက်ရောက်မှုများ အလယ်ရွာကျေးရွာအတွက် ဖြစ်ပေါ်လာနိုင်သည်။

၂၀၂၄ တွင် စက်ရုံပတ်ဝန်းကျင်လေထုအရည်အသွေးရလဒ်များကို ရည်ညွှန်းခြင်းဖြင့်၊ ၂၀၂၄ တွင် အလယ်ကျေးရွာ၏လေထုအရည်အသွေး၊ ၂၀၂၄ ခုနှစ်တွင် အလယ်ရွာကျေးရွာရှိ ဆူညံသံအရည်အသွေးနှင့် တုန်ခါမှုရလဒ်များသည် ယဉ်ကျေးမှုအမွေအနှစ်ကဏ္ဍအပေါ် မျှော်မှန်းထားသော သက်ရောက်မှုများ အားလုံးမှာ သိသိသာသာနည်းပါးပါသည်။

က-၄-၉။ ကျန်းမာရေးထိခိုက်မှုဆန်းစစ်ခြင်း

ဤအခန်းတွင်

- ကျန်းမာရေးထိခိုက်မှုဆန်းစစ်ခြင်း လေ့လာမှုမူဘောင်
- ကျန်းမာရေးထိခိုက်မှုဆန်းစစ်ခြင်း နည်းလမ်းများ (မိသားစုအဆင့်အထိ စစ်တမ်းမေးခွန်းလွှာ)
- အချက်အလက်ခွဲခြမ်းစိတ်ဖြာခြင်း
- အလယ်ရွာ၏ ပတ်ဝန်းကျင်အခြေအနေ တို့ကို ပထမပိုင်းအဖြစ် ပြသထားသည်။

ဖြစ်နိုင်ချေရှိသော ကျန်းမာရေးဆိုင်ရာ ထိခိုက်မှုများနှင့် လျော့ပါးရေးအစီအမံများ

ယခင်အပိုင်းမှ ပတ်ဝန်းကျင်လေထု၊ ဆူညံသံ၊ တုန်ခါမှု၊ အနံ့အသက်နှင့် ရေဆိုးများကို စောင့်ကြည့်ခြင်းအချက်အလက်များသည် စံသတ်မှတ်ချက်အတွင်းတွင်ရှိပြီး ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများ၏ အရေးပါမှု အနည်းငယ်သာရှိပါသည်။

ဤအစီရင်ခံစာတွင် ဖော်ပြထားသော ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် လုပ်ထုံးလုပ်နည်းများ လုပ်ဆောင်ခြင်းနှင့် ပတ်ဝန်းကျင်စောင့်ကြည့်လေ့လာရေးစီမံချက်များကို လိုက်နာဆောင်ရွက်ခြင်းဖြင့် ပတ်ဝန်းကျင်လေထု၊ ဆူညံသံ၊ တုန်ခါမှု၊ အနံ့နှင့်ရေဆိုးများ၏ အရည်အသွေးများကို စံနှုန်းအတွင်းရှိစေရန် ဆောင်ရွက်သင့်ပါသည်။

က-၅။ အဓိက ပတ်ဝန်းကျင်ထိခိုက်မှုများနှင့် လျော့နည်းစေရန်ဆောင်ရွက်ခြင်းများ

ဤအခန်းတွင်

- ပတ်ဝန်းကျင်အပေါ်ကောင်းကျိုးဆိုးကျိုးဖြစ်နိုင်သည့် စီမံကိန်း၏ အချက်အလက်များ ရှာဖွေခြင်း
 - ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများကို ကြိုတင်မှန်းဆခြင်း၊ ဆန်းစစ်ခြင်း
 - သက်ရောက်မှုများ၏ အရေးပါမှုများကို အသေးစိတ်စစ်ဆေးခြင်း
 - သက်ရောက်မှုများကိုလျော့နည်းစေသည့် နည်းလမ်းများကို သတ်မှတ်ခြင်း
- လက်တွေ့လိုက်နာနိုင်သည့် နည်းလမ်းများကို အခြေခံပြီး ယင်းတို့မှ အသင့်တော်ဆုံး နည်းလမ်းများကို ရွေးချယ်ခြင်းတို့ဖြစ်ပါသည်။

က-၅-၁။ နည်းစနစ်နှင့် ချဉ်းကပ်ပုံ

က-၅-၁-၁။ နည်းစနစ်

အဓိက (၄) နည်းဖြင့် ဆောင်ရွက်ပါသည်-

- စီမံကိန်းစာရွက်စာတမ်းများ၊ အခြားသတင်းအချက်အလက်များရယူလေ့လာခြင်း
- စီမံကိန်းသို့သွားရောက်လေ့လာခြင်း
- အထူးအချက်အလက်များရယူခြင်း

- လူထုတွေ့ဆုံခြင်း (သုံးကြိမ်ပြုလုပ်ခဲ့ပါသည်)

က-၅-၁-၂။ ချဉ်းကပ်ပုံစံနစ်

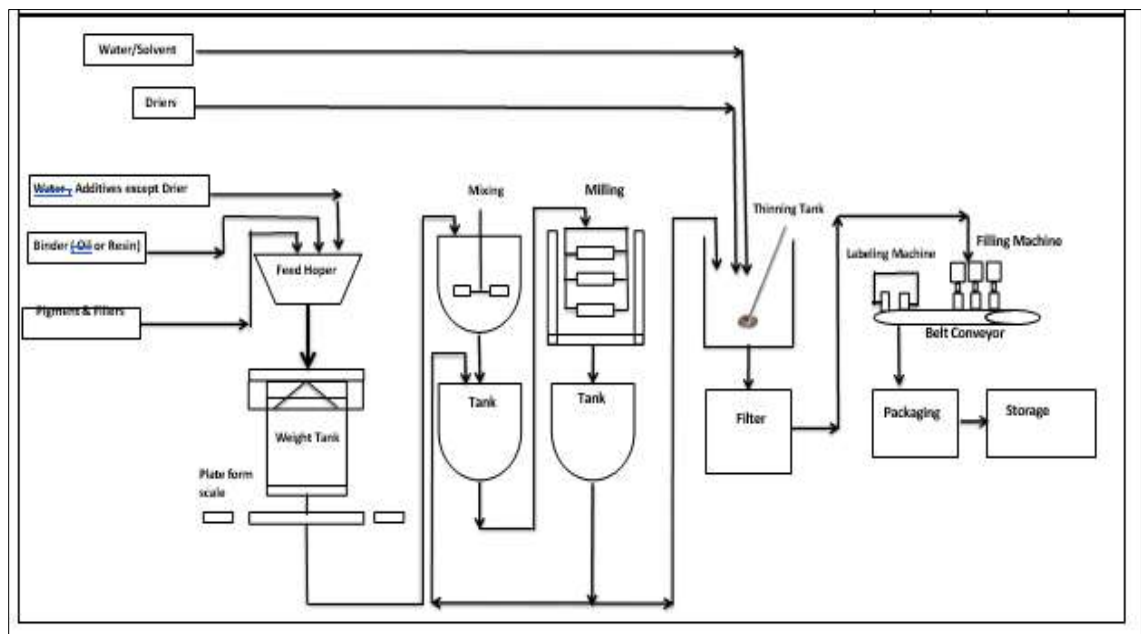
တည်ဆောက်ရေးလည်ပတ်ရေးနှင့် ပိတ်သိမ်းချိန်ကာလများ၏ သက်ရောက်မှုများနှင့် အသွင်သဏ္ဌာန်များကို ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်တို့တွင် သတ်မှတ်ပြီး သက်ဆိုင်ရာ ပညာရှင်များ၊ စိတ်ပါဝင်စားသူများတို့၏ အကြံဉာဏ်ဖြင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် ဆောင်ရွက်ခြင်းများကို ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်တွင် အစီရင်ခံတင်ပြထားပါသည်။

က-၅-၂။ ထုတ်လုပ်ပုံနည်းစဉ်အကျဉ်း

သုတ်ဆေးထုတ်လုပ်ခြင်းလုပ်ငန်းစဉ်ကို အပိုင်း-၃.၃.၈တွင် အသေးစိတ်ပြသခဲ့ပြီး အောက်တွင် အတိုချုံးတင်ပြထားပါသည်။

- ကြိုတင်အမှုန့်ပြုလုပ်ရောစပ်ခြင်း
- ရောစပ်ခြင်း၊ အမှုန့်ကြိတ်ခြင်းနှင့် ရောစပ်ခြင်း
- အပျစ်အကျဲ့ ပြုပြင်ခြင်း
- စစ်ယူခြင်း
- အရည်အသွေး စစ်ဆေးပြုပြင်ထိန်းသိမ်းခြင်း

သုတ်ဆေးထုတ်လုပ်ခြင်းနည်းစဉ်ပုံစံကို အပိုင်း ၃.၃.၈ တွင် အောက်ပါအတိုင်း တင်ပြထားပါသည်။



သုတ်ဆေးထုတ်လုပ်ခြင်းနည်းစဉ်ပုံစံ

က-၅-၃။ ဖြစ်ပေါ်နိုင်သော သက်ရောက်မှုများနှင့် ကြွင်းကျန်သက်ရောက်မှုများဖော်ပြခြင်း

ဤအခန်းတွင် ဆိုးကျိုးသက်ရောက်မှုများကို လျော့နည်းစေရန်နှင့် ကောင်းကျိုးသက်ရောက်မှုများ တိုးတက်အောင် ဆောင်ရွက်ရန်လိုအပ်ကြောင်းနှင့် လုပ်ငန်းစဉ်အတွက် သွင်းအားစုနှင့် ထုတ်လွှတ်မှုများကို ဖော်ပြထားပါသည်။

က-၅-၃-၁။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း

နီပွန်(မြန်မာ)သုတ်ဆေးကုမ္ပဏီလီမိတက်သည် "သုတ်ဆေးအမျိုးအစားအမျိုးမျိုးကို ထုတ်လုပ်ခြင်း၊ ဖြန့်ဖြူးရောင်းချခြင်း"ကို လုပ်ဆောင်သွားမည်ဖြစ်ပါသည်။ နီပွန်(မြန်မာ)သုတ်ဆေးကုမ္ပဏီလီမိတက်၏ စီမံကိန်းတည်ဆောက်ချိန်၊ စီမံကိန်းလည်ပတ်ချိန်နှင့် ပိတ်သိမ်းချိန်တို့တွင် ဖြစ်ပေါ်နိုင်သော သဘာဝ ပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက်မှုများနှင့် အဓိကအရင်းအမြစ်များကို အပိုင်း၅.၃.၁.၁တွင် အကျဉ်းချုပ် ဖော်ပြထားပါသည်။

က-၅-၃-၂။ ပတ်ဝန်းကျင်သက်ရောက်မှု အရေးပါမှုအဆင့်

သက်ရောက်မှုအရေးပါမှုတွက်ချက်သည့် မက်ထရစ်ကို အပိုင်း ၅-၃-၂ တွင် တင်ပြထားပါသည်။ ယင်းမှာ အောက်ပါအတိုင်းဖြစ်ပါသည်။

$$\text{အရေးပါမှု} = (\text{အချိန်ကာလ} + \text{နေရာဒေသ} + \text{ပမာဏ}) \times \text{ဖြစ်တန်ခွေ}$$

ထိုပြင် တစ်မျိုးခြင်းစီကို အမှတ်ပေးပုံနှင့် ရှင်းလင်းတင်ပြချက်ကိုလည်း တင်ပြထားပါသည်။

သက်ရောက်မှုအရေးပါမှုကို စီမံကိန်း Phase သုံးမျိုးအတွက် လျော့နည်းရန် မဆောင်ရွက်မီ တွက်ချက်မှုရလဒ်များကို အပိုင်း ၅-၃-၂-၁၊ ၅-၃-၂-၂နှင့် ၅-၃-၂-၃ တို့တွင် တင်ပြထားပါသည်။

က-၅-၃-၃။ သက်ရောက်မှုများနှင့် ယင်းတို့ကို လျော့နည်းစေရန် ဆောင်ရွက်ချက်များ

စီမံကိန်းကြောင့် ပတ်ဝန်းကျင်အပေါ်သက်ရောက်မှုများနှင့် လျော့နည်းစေရန် ဆောင်ရွက် ချက်များကို စီမံကိန်းအဆင့် သုံးဆင့်အတွက် အပိုင်း ၅-၃-၃-၁၊ ၅-၃-၃-၂ နှင့် ၅-၃-၃-၃ တို့တွင် တင်ပြထား ပါသည်။

က-၅-၃-၄။ ကြွင်းကျန်သက်ရောက်မှုများ၏ အရေးပါမှု တွက်ချက်ခြင်း

နီပွန်(မြန်မာ)သုတ်ဆေးကုမ္ပဏီလီမိတက်၏ ထုတ်လုပ်ဖြန့်ဖြူးမှုများကြောင့် ပတ်ဝန်းကျင် သက်ရောက်မှုများကို စီမံကိန်းအဆင့်သုံးဆင့်အလိုက် တွက်ချက်မှုများကို အပိုင်း ၅-၃-၄-၁၊ ၅-၃-၄-၂ နှင့် ၅-၃-၄-၃ တို့တွင် တင်ပြထားပါသည်။

က-၅-၃-၅။ သက်ရောက်မှုများလျော့နည်းစေရန် မဆောင်ရွက်မီနှင့် ဆောင်ရွက်ပြီး သက်ရောက်မှု အရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်း

အဆိုပြုစီမံကိန်း၏ အဆင့်သုံးဆင့်အတွက် သက်ရောက်မှုများကို လျော့နည်းစေရန် မဆောင်ရွက်မီနှင့် လျော့နည်းရန်ဆောင်ရွက်ပြီး သက်ရောက်မှု အရေးပါမှုများကို အပိုင်း ၅-၃-၅ တွင် ဖော်ပြထားပြီး အောက်ပါအတိုင်းပူးတွဲတင်ပြထားပါသည်။

စီမံကိန်းတည်ဆောက်ချိန် သက်ရောက်မှုများကိုလျော့နည်းစေရန်
မဆောင်ရွက်မီနှင့်လျော့နည်းစေရန်ဆောင်ရွက်ပြီး သက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်းဇယား

Sr. No	Impact upon	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Level	Rating	Level		
1.	Air	66	Moderate	42	Minor	-24	
2.	Noise and Vibration	66	Moderate	42	Minor	-24	
3.	Water (Ground and Surface water)	48	Minor	42	Minor	-6	
4.	Soil	48	Minor	42	Minor	-6	
5.	Biodiversity	48	Minor	28	Minor	-20	
6.	Archaeology and Heritage	48	Minor	28	Minor	-20	
7.	Socio economic	48	Minor	28	Minor	-20	
8.	Socio Health	48	Minor	28	Minor	-20	

စီမံကိန်းလည်ပတ်ချိန် သက်ရောက်မှုများကို လျော့နည်းစေရန်
မဆောင်ရွက်မီနှင့်လျော့နည်းစေရန်ဆောင်ရွက်ပြီး သက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်းဇယား

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Level	Rating	Level		
1.	Air	72	Moderate	54	Minor	-18	
2.	Noise and Vibration	72	Moderate	54	Minor	-18	
3.	Water (Ground and Surface water)	66	Moderate	54	Minor	-12	
4.	Soil	60	Minor	54	Minor	-6	
5.	Biodiversity	66	Moderate	36	Minor	-30	
6.	Archaeology and Heritage	66	Moderate	36	Minor	-30	
7.	Socio economic	66	Moderate	36	Minor	-30	
8.	Socio Health	66	Moderate	36	Minor	-30	

စီမံကိန်းပိတ်သိမ်းချိန် သက်ရောက်မှုများကို လျော့နည်းစေရန်
မဆောင်ရွက်မီနှင့်လျော့နည်းစေရန်ဆောင်ရွက်ပြီး သက်ရောက်မှုအရေးပါမှုများ နှိုင်းယှဉ်ဖော်ပြခြင်းဇယား

Sr. No	Impact on	Significance before mitigation		Significance after mitigation		More / Less	Remark
		Rating	Level	Rating	Level		
1.	Air	66	Moderate	42	Minor	-24	
2.	Noise and Vibration	66	Moderate	42	Minor	-24	

3.	Water (Ground and Surface water)	48	Minor	42	Minor	-6	
4.	Soil	48	Minor	42	Minor	-6	
5.	Biodiversity	48	Minor	42	Minor	-6	
6.	Archaeology and Heritage	48	Minor	42	Minor	-6	
7.	Socio economic	48	Minor	42	Minor	-6	
8.	Socio Health	48	Minor	42	Minor	-6	

က-၅-၄။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် ပါဝင်မည့်အချက်အလက်များနှင့် လျော့နည်းစေရန် ဆောင်ရွက်သည့် နည်းလမ်းများဖော်ပြခြင်း

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် ပါဝင်မည့်အချက်အလက်များနှင့် လျော့နည်းစေရန် ဆောင်ရွက်သည့်နည်းလမ်းများကို အခန်း ၅-၄တွင် ဖော်ပြထားပြီး လေထုအရည်အသွေး၊ ဆူညံသံနှင့် တုန်ခါမှု၊ စွန့်ပစ်ရေနှင့်စွန့်ပစ်ပစ္စည်းများ၊ ဇီဝမျိုးစုံမျိုးကွဲ၊ ယဉ်ကျေးမှုအမွေအနှစ်များ၊ မြေပေါ်ရေ မြေအောက်ရေ၊ အနံ့၊ လူမှုစီးပွားနှင့်ကျန်းမာရေး၊ လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းရေး တို့အပေါ်တွင် သက်ရောက်မှုများနှင့် လျော့နည်းစေရန် ဆောင်ရွက်မှုများတို့ကို အပိုဒ် ၅-၄-၁၊ ၅-၄-၂၊ ၅-၄-၃၊ ၅-၄-၄၊ ၅-၄-၅၊ ၅-၄-၆၊ ၅-၄-၇၊ ၅-၄-၈၊ ၅-၄-၉၊ ၅-၄-၁၀၊ ၅-၄-၁၁ တို့တွင် တင်ပြထားပါသည်။

က-၅-၅။ အန္တရာယ်အကဲဖြတ်ခြင်းနှင့် လျော့ပါးရေးစီမံချက်

ဤကဏ္ဍတွင် အန္တရာယ်အကဲဖြတ်ခြင်းနှင့် လျော့ပါးသက်သာစေရေးအစီအစဉ်ကို အသေးစိတ်ထပ်မံဖော်ပြထားပါသည်။

က -၆။ တိုးပွားလာသော သက်ရောက်မှုများ

တိုးပွားလာသော သက်ရောက်မှုများ ဆန်းစစ်သည့်နည်းစဉ်နှင့် တိုးပွားလာသော သက်ရောက်မှုများ တို့ကို အခန်း ၆ တွင် တင်ပြထားပါသည်။

က-၇။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု(အီးအမ်ပီ) နှင့်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

အပိုဒ်၆-၁တွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၏ ရည်ရွယ်ချက်(၆)ရပ်ကို ဖော်ပြထားပြီး ယင်းသည်သက်ရောက်မှုများကို မှန်ကန်စွာစီမံခန့်ခွဲနိုင်သည့် နည်းလမ်းဖြစ်ကြောင်း ဖော်ပြထားပါသည်။

စီမံကိန်း၏အုပ်ချုပ်မှုဒါရိုက်တာသည် အဖွဲ့အစည်းဆိုင်ရာတာဝန်ရှိသူဖြစ်ပြီး ဌာနခွဲများမှ ခေါင်းဆောင်များသည် အဖွဲ့ဝင်များဖြစ်ကြပြီး ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့၏ ဖွဲ့စည်းပုံဇယားကို အပိုဒ် ၇-၂-၁ ဖော်ပြထားပါသည်။ အဖွဲ့ခေါင်းဆောင်နှင့်အဖွဲ့ဝင်များတို့၏ တာဝန်နှင့် ဝတ္တရားများကို အပိုဒ် ၇-၂-၂ တွင် တင်ပြထားပါသည်။

နိပွန်(မြန်မာ)သုတ်ဆေးကုမ္ပဏီလီမိတက်မှ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် အကောင်အထည် ဖော်ရန်အတွက် စုစုပေါင်းခန့်မှန်းဘတ်ဂျက်(ဆိုလိုသည်မှာ ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြပ်ကြည့်ရှုမှု အတွက် ခန့်မှန်းကုန်ကျစရိတ်အပါအဝင်)သည်(ကျပ်င25,700,000)ဖြစ်ပါသည်။ **နိပွန်(မြန်မာ)သုတ်ဆေး**

ကုမ္ပဏီလီမိတက်သည် သဘာဝပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်ကို လက်တွေ့ကျကျ အကောင်အထည် ဖော်သည့်အခါတွင် ခန့်မှန်းခြေဘတ်ဂျက် မလုံလောက်ပါက ထပ်လောင်းဘတ်ဂျက် ပေးအပ်မည်ဟု ကတိပြု ပါသည်။

စောင့်ကြည့်လေ့လာရေးအစီအစဉ်တွင် စောင့်ကြည့်ရမည့် တည်နေရာ၊ ကြာချိန်၊ တိုင်းတာမှုကြိမ်နှုန်းတို့ ပါဝင်ပြီး တိုင်းတာသည့် နည်းလမ်း၊ အချိန်ဇယားနှင့် စံညွှန်းများလည်း ပါဝင်မည်ဖြစ်သည်။

နီပွန်(မြန်မာ)သုတ်ဆေးကုမ္ပဏီလီမိတက်သည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအတွက် အောက်ဖော်ပြပါ သီးခြား အစီအစဉ်ခွဲများကို အကောင်အထည်ဖော်ဆောင်ရွက်သွားမည်။

- လေထုအရည်အသွေး စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- ဆူညံသံအဆင့်စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- တုန်ခါမှုစီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- မြေအောက်ရေအရည်အသွေးစီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- မြေပေါ်ရေ စီမံခန့်ခွဲရေးနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- စွန့်ပစ်ရေစီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- မြေဆီလွှာအရည်အသွေးစီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- အနံ့ရရှိမှု စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- အစိုင်အခဲစွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းရေးစီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- ဇီဝမျိုးစုံမျိုးကွဲ စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- ယာဉ်ကျေးမှုနှင့်အမွေအနှစ်များ စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်း အစီအစဉ်
- လူမှုစီးပွားစီမံခန့်ခွဲမှုနှင့် စောင့်ကြည့်လေ့လာရေး အစီအစဉ်
- လူမှုကျန်းမာရေး စီမံခန့်ခွဲမှုနှင့် စောင့်ကြည့်လေ့လာရေး အစီအစဉ်
- အန္တရာယ်ရှိသော ဓာတုပစ္စည်းများ စီမံခန့်ခွဲရေးနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်
- အရေးပေါ်တုံ့ပြန်ရေးနှင့် သဘာဝဘေးအန္တရာယ်ဆိုင်ရာ စီမံခန့်ခွဲမှုအစီအစဉ်

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့်စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်ကို ရည်ရွယ်ချက်များ၊ ဥပဒေဆိုင်ရာ လိုအပ်ချက်များ၊ လွှမ်းခြုံမြေပုံကြီးများ၊ လုပ်ငန်းခွင်အလိုက်မြေပုံများ၊ ဓာတ်ပုံများ၊ ကောင်းကင်ဓာတ်ပုံများ၊

ပြုလုပ်တိုင်းပုံများ၊ အကောင်အထည်ဖော်ဆောင်ရွက်မည့်အစီအစဉ်၊ စီမံခန့်ခွဲမှုဆောင်ရွက်ချက်များ၊ ရန်ပုံငွေလျာထားချက်နှင့် တာဝန်နှင့်ဝတ္တရားများ စသောခေါင်းစဉ်ခွဲများပါဝင်လျက် အပိုဒ်-၅တွင် တင်ပြထားပါသည်။

စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်

စီမံကိန်းအဆိုပြုသူသည် အောက်ဖော်ပြပါဇယားတွင် ဖော်ပြထားသည့်အတိုင်း တည်နေရာ၊ အချိန်ဇယားနှင့် တာဝန်ဝတ္တရားများဆိုင်ရာပတ်ဝန်းကျင် စောင့်ကြည့်ရေး ကန့်သတ်ချက်များကို လိုက်နာရန် ကတိပြုပါသည်။ စောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ်တင်ပြသည့်ပုံစံကို ပူးတွဲတင်ပြထားပါသည်။

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

စဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက်မှု အချက်များ	စောင့်ကြည့်ခြင်းနည်းလမ်း	စောင့်ကြပ်ကြည့်ရှုမည့်အရာများ	နေရာ	စောင့်ကြည့်ကြည့်ရှုမှု ပြုလုပ်ရန် အကြိမ်	တာဝန်ရှိသူ
၁	လေထုအရည်အသွေး	တိုင်းတာခြင်း	ပတ်ဝန်းကျင်လေထုအရည်အသွေး (SO ₂ , NO ₂ , Ozone , PM _{2.5} , PM ₁₀)	At Entrance Gate (16° 55' 51.23"N 96° 3' 40.16" E) Ah Lel Village Monastery (16° 55' 21.03"N 96° 3' 53.58" E)	တစ်နှစ်လျှင် ၂ ကြိမ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့
			လုပ်ငန်းခွင် (အတွင်း) လေအရည်အသွေး (PM ₁₀ , SO ₂ , NO ₂)	Production Area (16° 55' 53.44" N 96° 3' 41.12" E)	တစ်နှစ်လျှင် ၂ ကြိမ်	
			လျှပ်စစ်ထုတ်စက်များ မှ ထုတ်လွှတ်မှုများ၊ အမှုန်ဖမ်းစက်မှ ထုတ်လွှတ်မှုများ (PM ₁₀ , SO ₂ , NO ₂)	Electric generator exhaust pipe (16° 55' 51.70" N 96° 3' 39.25" E) Dust Collector 16°55'54.48"N, 96° 3'41.08"E	တစ်နှစ်လျှင် ၂ ကြိမ်	
၂	ဆူညံသံ	တိုင်းတာခြင်း	ပတ်ဝန်းကျင်ဆိုင်ရာဆူညံသံအဆင့် Leq [(dB(A)]	NMP-1 (16° 55' 50.78" N 96° 3' 40.75" E) NMP-2 (16° 55' 51.81" N 96° 3' 39.00" E) NMP-3 (16° 55' 54.95" N 96° 3' 41.95" E) NMP-4	တစ်နှစ်လျှင် ၂ ကြိမ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့

Environmental Impact Assessment (EIA) Report

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					လုပ်ငန်းခွင်ဆိုင်ရာဆူညံသံအဆင့် Leq [(dB(A)]		(16° 55' 53.78" N 96° 3' 43.14" E)	တစ်နှစ်လျှင် ၂ ကြိမ်	
							Production Area (16° 55' 53.44" N 96° 3' 41.12" E)		
၃.	တုန်ခါမှု	တိုင်းတာခြင်း	တုန်ခါမှုအဆင့် (Hz)				Near Security Gate of Project (16° 55' 51.24" N 96° 3' 40.12" E) Ah Lal Ywar Village Monastery (16° 55' 21.03" N 96° 3' 53.58" E)	တစ်နှစ်လျှင် ၂ ကြိမ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့.
၄.	ရေအရည်အသွေး	ဓာတ်ခွဲစမ်းသပ်ခြင်း	မြေအောက်ရေအရည်အသွေး (Aluminum, Arsenic, Chloride, Copper, Cyanide, Manganese, pH, Sulfate, Total Alkalinity as CaCO ₃ , Total Dissolved Solids, Total Hardness as CaCO ₃ , Total Iron, Turbidity)				Tube Well within the Project Site (16° 55' 51.04" N 96° 03' 40.17" E) Tube Well at Church, Ah Lal Ywar Village (16° 55' 21.31" N 96° 03' 53.32" E) Tube Well at Aung Zay Yar Min Monastery, Ah Lal Ywar Village (16° 55' 23.15" N 96° 03' 52.30" E)	တစ်နှစ်လျှင် ၂ ကြိမ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့.
			မြေ ပေါ်ရေအရည်အသွေး Total Suspended Solids, COD, 5 day BOD, Dissolved Oxygen (DO), pH, Ammonia Nitrogen, Oil and grease, Escherichia Coli (E.coli), Copper				Downstream of Hlaing River (16° 55' 40.81" N 96° 4' 15.57" E) Midstream of Hlaing River (near wastewater discharge point of Industria Compound) (16° 56' 04.86" N 96° 3' 45.99" E) Upstream of Hlaing River	တစ်နှစ်လျှင် ၂ ကြိမ်	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

				(16° 56' 11.30" N 96° 3' 40.69"E)		
			စွန့်ပစ်ရည်အရည်အသွေး (5 day Biochemical Oxygen Demand, Ammonia, Arsenic, Cadmium, Chemical Oxygen Demand, Chlorine (Total residual), Chromium (Hexavalent), Chromium (Total), Copper, Cyanide (Free), Cyanide (Total), Fluoride, Iron, Lead, Mercury, Nickel, Oil and Grease, pH, Phenols, Selenium, Silver, Sulfide, Temperature Increase, Total Coliform Bacteria, Total Phosphorous, Total Suspended Solids, Zinc)	Wastewater Treatment Inlet 16°55'54.70"N 96° 3'41.27"E wastewater treatment outlet 16°55'54.80"N 96° 3'41.46"E	တစ်နှစ်လျှင် ၂ ကြိမ်	
၅	မြေထုအရည်အသွေး	မတ်လွဲစမ်းသပ်ခြင်း	မြေ (pH, Chloride (Cl ⁻), Total Iron (Fe), Arsenic (As), Cyanide (CN), Aluminum (Al), Manganese (Mn), P – Alkalinity, Total Alkalinity, Extractable Acidity)	Outside the factory (16° 55' 51.50" N 96° 3' 39.09" E)	တစ်နှစ်လျှင် ၂ ကြိမ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့
၆	အနံ့	တိုင်းတာခြင်း	အနံ့ (အနံ့ယူနစ်)	Paint Mixing (Filling Area) (16° 55' 53.09" N, 96° 3' 40.8" E) and Finished Goods (Storage) (16° 55' 52.63" N, 96° 3' 41.46" E).	တစ်နှစ်လျှင် ၂ ကြိမ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့
၇	စွန့်ပစ်ပစ္စည်း	Audits, photographic documentation	အန္တရာယ်မရှိသောစွန့်ပစ်ပစ္စည်းစွန့်ပစ်မှု - မတူညီသော စွန့်ပစ်ပစ္စည်းများအလိုက် အမှိုက်ပုံးများ ခွဲခြား ထားခြင်း - စွန့်ပစ်ပစ္စည်းပမာဏကိုမှတ်တမ်းတင်ထားခြင်း - အမှိုက်စွန့်ပစ်မှုစနစ်ကိုစစ်ဆေးခြင်း	solid waste disposal (16° 55' 53.90" N 96° 3' 43.35" E)	လစဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့

Environmental Impact Assessment (EIA) Report

			- အမှိုက်သိုလှောင်မှုစနစ်ကိုစစ်ဆေးခြင်း - အန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်း စွန့်ပစ်မှု - မီးချောင်းများ၊ ဘက်ထရီများ၊ စက်ဆီခွက်များ စသည့် အန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းသိုလှောင်မှုပမာဏကို မှတ်တမ်းတင် ထားခြင်း - စွန့်ပစ်မှုစနစ်ကိုစစ်ဆေးခြင်း - အန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်းသိုလှောင်သည့်ဧရိယာကို စစ်ဆေး ခြင်း			
၈	လုပ်ငန်းခွင်ကျန်းမာရေး နှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး	မှတ်တမ်းထားရှိခြင်း နှင့် စီမံခန့်ခွဲခြင်း	- ဖျားနာခွင့် - ဝန်ထမ်းအတွက် ပျမ်းမျှအလုပ်ချိန် - လုပ်ငန်းခွင်ဖျားနာခြင်း။ - လုပ်ငန်းခွင်ဖျားနာမှုကြောင့် ပျက်ကွက်သည့်ရက် - မကျေနပ်ချက်များနှင့် တိုင်ကြားစာများ - ကျူးကျော်မျိုးစိတ်များဝင်ရောက်ခြင်း။	leave, record section of Administrative Department (16° 55' 52.36" N 96° 3' 39.73" E)	လစဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့
၉	ဇီဝမျိုးစုံမျိုးကွဲ	မှတ်တမ်းထားရှိခြင်း နှင့် စီမံခန့်ခွဲခြင်း		Office (16° 55' 52.36" N 96° 3' 39.73" E)	လစဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့
၁၀	အန္တရာယ်ရှိသော ဓာတုပစ္စည်း	မှတ်တမ်းထားရှိခြင်း နှင့် စီမံခန့်ခွဲခြင်း	- ဓာတုပစ္စည်းစာရင်း - အန္တရာယ်ရှိသော ဓာတုပစ္စည်းများ၏ အန္တရာယ် အကဲဖြတ်ခြင်း။ - အန္တရာယ်ထိန်းချုပ်ရေး ဆောင်ရွက်မှုများ - အရေးပေါ်ကြိုတင်ပြင်ဆင်မှု - သင်တန်းများပို့ချခြင်း	Office (16° 55' 52.36" N 96° 3' 39.73" E)	လစဉ်	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့
၁၁	အရေးပေါ်သဘာ	မှတ်တမ်းထားရှိခြင်း	- ဗီသတ်ပစ္စည်းများအားစစ်ဆေးခြင်း - သင်တန်းများနှင့်	Factory compound	လစဉ် သို့မဟုတ် လိုအပ်လျှင်	ပတ်ဝန်းကျင်ဆိုင်ရာ

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

ဝဘေး အန္တရာယ်များ	နှင့် စီမံခန့်ခွဲခြင်း	တက်ရောက်သူများစာရင်း အခြေအနေအား မှတ်တမ်းတင်ခြင်း	လိုအပ်သလို	စီမံခန့်ခွဲမှုအဖွဲ့
ရှေးဟောင်းသုတေသနနှင့် အမွေအနှစ်များ	သတင်းအချက်အလက်စုဆောင်းခြင်း	- အရေးပေါ်တုံ့ပြန်မှုလုပ်ငန်းများအား စစ်ဆေးခြင်းနှင့် မှတ်တမ်းတင်ခြင်း - စီမံကိန်းဧရိယာတစ်ဝိုက်ရှိမြောင်းများအား စစ်ဆေးခြင်းနှင့် မှတ်တမ်းတင်ခြင်း - အရေးပေါ်တုံ့ပြန်မှုအစီအစဉ်အား မှတ်တမ်းတင်ခြင်း - စစ်ဆေးမှုအချက်အလက်များအား မှတ်တမ်းတင်ခြင်း		
၁၂		ယဉ်ကျေးမှုအမွေအနှစ်ဆိုင်ရာ အချက်အလက်များ	တန့်ပတ်လုံး	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့
၁၃	မှတ်တမ်းထားရှိခြင်း	- အငြင်းပွားသူ၏မှတ်တမ်းထားရှိခြင်း - အဓိကရုဏ်းများအားမှတ်တမ်းထားရှိခြင်း - မကျေနပ်ချက် ဖြစ်စဉ် အချက်အလက်	တန့်ပတ်လုံး	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့
၁၄	မှတ်တမ်းထားရှိခြင်း	ကူးစက်ရောဂါများ	တန့်ပတ်လုံး	ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုအဖွဲ့

က-၈။ လူထုတွေ့ဆုံပွဲနှင့်ဖွံ့ဖြိုးမှုအစီအစဉ်

ဤအခန်းတွင် လူထုတွေ့ဆုံပွဲသုံးကြိမ်ကို ပထမအကြိမ်အတွက် နယ်ပယ်သတ်မှတ်ခြင်း၊ အစီရင်ခံစာအတွက် ဒုတိယအကြိမ်နှင့်တတိယအကြိမ် လူထုတွေ့ဆုံပွဲများကို နယ်ပယ်သတ်မှတ်ခြင်း အစီရင်ခံစာအတည်ပြုပြီး ဆောင်ရွက်ခဲ့ကြောင်းနှင့် ပထမအကြိမ်ကို နောက်ဆက်တွဲ (၃) တွင်လည်းကောင်း၊ ဒုတိယအကြိမ်နှင့်တတိယအကြိမ်တို့ကို နောက်ဆက်တွဲ(၉)နှင့်(၁၀)တို့တွင် အသီးသီးတင်ပြထားကြောင်း ဖော်ပြထားပါသည်။

လူမှုရေးတာဝန်သိမှု

ဤအခန်းတွင်

- ဝန်ထမ်းများအတွက်လူမှုရေးအစီအစဉ်များ
- ပြည်သူလူထုဖွံ့ဖြိုးရေးလုပ်ငန်းများနှင့်လှူဒါန်းမှုများနှင့်
- သင်တန်းများပို့ချခြင်း
- လူမှုရေးတာဝန်သိမှုအစီအစဉ်နှင့် ငွေကြေးလျာထားချက် တို့ကို တင်ပြထားပါသည်။

မကျေနပ်ချက်နှင့်လိုလားချက်များအစီအစဉ်

ဤအခန်းတွင်

- မကျေနပ်ချက်နှင့်လိုလားချက်များအစီအစဉ်၏အကြောင်းအရင်း
- GRM ၏ အခြေခံအချက်များ
- GRM အင်္ဂလိပ် မြန်မာ နှစ်ဘာသာပုံစံ
- GRM စည်းမျဉ်း
- မကျေနပ်ချက်နှင့်လိုလားချက်များဖြေရှင်းမည့်အဖွဲ့အစည်း
- မကျေနပ်ချက်နှင့်လိုလားချက်များစုစည်းခြင်း၊ ဖြေရှင်းခြင်းနှင့်ပြန်ကြားခြင်း
- ဖြေရှင်းရန်ကြာမြင့်မည့်အချိန်ခန့်မှန်းချက်များကို တင်ပြထားပါသည်။

က-၉။ နိဂုံး

နိပွန်(မြန်မာ)သုတ်ဆေးကုမ္ပဏီလီမိတက်သည် မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်၏ ၂၀၂၂ ခုနှစ် ဇူလိုင်လ ၁-ရက်စွဲပါ ခွင့်ပြုမိန့်အမှတ် ၀၆၉/ ၂၀၂၂ ဖြင့် "သုတ်ဆေးအမျိုးအစားအမျိုးမျိုးကို ထုတ်လုပ်ခြင်း၊ ဖြန့်ဖြူးရောင်းချခြင်း" လုပ်ငန်းကို ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်၊ ငွေပင်လယ်စက်မှုဇုန်၊ မြေတိုင်းအမှတ်၂၄-အကွက်၄၄၊ မြေဧရိယာ၂.၂၇၃ဧကအပေါ်တွင် တည်ထောင်ခဲ့ပါသည်။ အဆိုပါလုပ်ငန်း၏ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို စိမ်းလန်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှုကုမ္ပဏီ လီမိတက်နှင့် ၂၀၂၂ခုနှစ်ဇူလိုင်လတွင် စာချုပ်ချုပ်ဆိုဆောင်ရွက်ခဲ့ပါသည်။ စိမ်းလန်းမြန်မာပတ်ဝန်းကျင် ဆိုင်ရာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်က နယ်ပယ်တိုင်းတာမှုအစီရင်ခံစာကို ၂၀၂၃ ခုနှစ်မှ ၂၀၂၄ ခုနှစ် အတွင်း နှစ်ကြိမ်ရေးသားတင်ပြခဲ့ပြီး ၂၀၂၄ခုနှစ်ဧပြီလတွင် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆက်လက်

ဆောင်ရွက်ရန် ခွင့်ပြုမိန့်ရရှိခဲ့ပါသည်။ စက်ပစ္စည်းများတပ်ဆင်ခြင်းများ၊ စက်စမ်းသပ်လည်ပတ်ခြင်းများ ဆက်လက်လုပ်ကိုင်ခဲ့ရာ ၂၀၂၃ ခုနှစ် ဇွန်လတွင် စီးပွားဖြစ်ထုတ်လုပ်မှုစတင်လျက်ရှိပါသည်။

ဇီဝမျိုးစုံမျိုးကွဲများ ဆန်းစစ်ချက်အရ စစ်တမ်းကောက်ယူသည့်ဧရိယာတွင် မျိုးသုဉ်းလုနီးပါးမျိုးစိတ် သို့မဟုတ် အစုလိုက်မျိုးစိတ်များကို မတွေ့ရှိပါ။ သစ်ပင်ပန်းမန်များနှင့်တိရစ္ဆာန်များအတွက် စစ်တမ်းဧရိယာ များအရ မျိုးတုန်းပျောက်ကွယ်မှု ခြိမ်းခြောက်ခံစားရင်းဝင် ဇီဝမျိုးစုံမျိုးကွဲများစိတ်များ စာရင်းဖြစ်သည့် IUCN၏အနီရောင်စာရင်းဝင်များ မရှိကြောင်းနှင့် စီမံကိန်းနေရာသည် တိုးတက်ပြီးသား စက်မှုဇုန်တွင် ရှိနေပါသည်။ သာမန်ပေါစွာတွေ့ရသော ဇီဝမျိုးစုံမျိုးကွဲများသာရှိပါသည်။ လူမှုစီးပွား ဆန်းစစ်ချက်များအရ လူမှုစီးပွားလူမှုပတ်ဝန်းကျင်ကို ထိခိုက်စေနိုင်သည့် အရင်းအမြစ်များမှာ အနံ့နှင့် ဆူညံခြင်းတို့ဖြစ်သည်။ အနံ့ဆိုးနှင့်ဆူညံသက်ရောက်မှုကို လျော့နည်းစေရန် စီမံကိန်းအဆိုပြုသူသည် စက်ရုံဝင်းခြံစည်းရိုး တစ် လျှောက် လေကာအပင်များစိုက်ပျိုးသင့်ပြီး ပတ်ဝန်းကျင်စောင့်ကြပ်ကြည့်ရှုခြင်းနှင့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု လုပ်ငန်းစဉ်ကို ဆောင်ရွက်ရမည်။ ယဉ်ကျေးမှုအမွေအနှစ်များဆန်းစစ်ချက်အရ ထင်ရှားသော သမိုင်းဝင် အဆောက်အအုံများ မရှိသော်လည်း အချို့သော ရှေးဟောင်းသုတေသန အကြွင်းအကျန်များနှင့် ယဉ်ကျေးမှု ဆိုင်ရာ အရေးပါမှုများ ထွက်ပေါ်လာပါက သာသနာရေးနှင့် ယဉ်ကျေးမှုဝန်ကြီးဌာန၊ ရှေးဟောင်းသုတေသန နှင့် အမျိုးသားပြတိုက်ဦးစီးဌာနသို့ အစီရင်ခံတင်ပြ သင့်ကြောင်းဖော်ပြထားပါသည်။ ကျန်းမာရေးဆန်းစစ် ချက်များအရ ပတ်ဝန်းကျင်လေထု၊ ဆူညံသံ၊ တုန်ခါမှု၊ အနံ့အသက်နှင့် ရေဆိုးများကို စောင့်ကြည့် လေ့လာခြင်း အချက်အလက်များသည် စံနှုန်းအတွင်းရှိပြီး ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများ၏ အရေးပါမှု အနည်းငယ်သာရှိပါသည်။

အဆိုပါစီမံကိန်းတည်ဆောက်ရေးကာလနှင့် လည်ပတ်ချိန်ကာလများတွင် ပတ်ဝန်းကျင်လေ၊ လုပ်ငန်းခွင်လေ၊ ပတ်ဝန်းကျင်ဆူညံသံ၊ လုပ်ငန်းခွင်ဆူညံသံ၊ လျှပ်စစ်ထုတ် စက်အိပ်ဇောထုတ်လွှတ်မှု၊ တုန်ခါမှုများ၊ မြေအရည်အသွေး၊ အနံ့အရည်အသွေး၊ မြေပေါ်ရေ၊ မြေအောက်ရေ၊ စွန့်ပစ်ရေတို့ကို တိုင်းတာခြင်းများပြုလုပ်ခဲ့ရာတွင် တည်ဆောက်ချိန်စီမံကိန်းဧရိယာတွင် အဝီစိတွင်းရေတွင် total iron နှင့် turbidity တို့မှအပ ကျန်တိုင်းတာမှုများသည် NEQ(E)Gနှင့် ကျန်းမာရေးဝန်ကြီးဌာနသောက်ရေစံနှုန်းများ အတွင်းရှိကြပါသည်။

ဤအချက်များသည် ဇီဝမျိုးစုံမျိုးကွဲ၊ ယဉ်ကျေးမှုအမွေအနှစ်များ၊ ဟိုက်ဒြိုလော့ဂျီနှင့် ကျန်းမာရေး နှင့် လူမှုစီးပွားထိခိုက်မှုများအပေါ် သက်ရောက်နိုင်မှုအနည်းဆုံးအခြေအနေဖြစ်ကြောင်း ဖော်ပြနေပါသည်။ မြန်မာနိုင်ငံသည် အလုပ်အကိုင်များ တိုးမြှင့်လာခြင်း၊ ဝင်ငွေတိုးလာခြင်း၊ အခွန်များ တိုးလာခြင်း၊ နိုင်ငံခြား ရင်းနှီးမြှုပ်နှံမှုများတိုးလာခြင်းတို့မှ အကျိုးကျေးဇူးများ ရရှိမည်ဖြစ်သည်။ စီမံကိန်းသည် နိုင်ငံတော်နှင့် ဒေသအလိုက် စီးပွားရေးနှင့်ပတ်ဝန်းကျင်ဆိုင်ရာ တန်ဖိုးများ တိုးပွားစေပါသည်။ ယခုလက်ရှိအခြေ အနေများကို ဆက်လက်ထိန်းသိမ်းသွားမည်ဆိုပါက တနည်းပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့် ရှုခြင်းများဖြင့် ထိန်းကြောင်းသွားပါက ဆိုးကျိုးတရားများအနည်းဆုံးနှင့် ကောင်းကျိုး တရားများ တိုးပွားစေ မည့် စီမံကိန်းဖြစ်ကြောင်း မှတ်ယူနိုင်ပါသည်။

EXECUTIVE SUMMARY

A.1. Introduction

A.1.1. General Overview

This report identifies the proposed of the “**Environmental Impact Assessment (EIA)**” that will be undertaken in connection with the “**Manufacturing, Distribution and Sales the Various kinds of Paints**” project in Union of Myanmar. **Nippon Paint (Myanmar) Company limited** is going to manufacture, distribute and sale the paint at Plot No. (44), Myay Taing Block No. (24), Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon Region with the area of 2.273 acres.

Daily production capacity is about (10) tons and annual production form 2023–2024 to 2027-2028, are shown at this paragraph.

A.1.2. EIA Process

There are three phases for EIA process, as

- Application phase
- Scoping phase, and
- EIA phase

Application phase consists of completing the appropriate application from by the proponent and permission and instruction were accepted for further scoping process. They are summarized at **Appendix I**.

Concerning the **scoping phase**, two scoping reports were submitted and second was approved by ECD. The approved letter was shown at **Appendix II**. Moreover, structure of scoping report, methodology of scoping, setting the study limit, area of influence (AOI) for the project, key potential Impacts and proposed mitigation and public consultation for scoping report were stated. The attendance lists, discussions and suggestions of the public meeting were stated at **Appendix III**. The two public meetings were held in EIA phase and details of meeting were shown at **Chapter 8**.

About the **EIA - phase**, there were EIA working group; overall contents of the project, project proponent, project background, history, certificates and products, salient features of the project, term of reference for the EIA study, industry introduction, report structure of EIA, scope of work for primary baseline data. EIA working group was stated at **Appendix IV**.

Salient feature of the project was stated as following.

Salient Features of the Project

Project Name	“Manufacturing, Distribution and Sales of various kinds of Paints”
Project Proponent	Nippon Paint (Myanmar) Company Limited
Company Registration No	117934594
Office Address	Building 14, Ground Floor, MICT Park, Hlaing Township, Yangon Region, Myanmar.

1.2.2.1 Background of Scoping Report

There were two submissions of scoping reports to be approved. The brief information is as follows:

- The first scoping report of the proposed project (July, 2023) was submitted and it was instructed by ECD to revise.
- The first revised of scoping report, February 2024 was submitted and it was approved by ECD. The approved letter was shown at **Appendix II**.

1.2.2.2 Structure of Scoping Report

In exercise of the power conferred under article 51 of Environmental Impact Assessment Procedure, 2015. This Scoping Report presented the following information:

- (1) Introduction
- (2) Context of the Project
- (3) Overview of the Policy, Legal and Institutional Framework
- (4) Project Description and Alternatives
- (5) Description of the Environmental with maps in proper scale indicating all relevant features, images, aerial photos and satellite images
- (6) Key Potential Environmental Impacts and Mitigation Measures
- (7) Public Consultation and Disclosure
- (8) Terms of Reference for the EIA study
- (9) Conclusions and Recommendations.

1.2.2.3 Project Background, History

Nippon Paint, founded in 1881 in Tokyo by Mr. Moteki Jujiro under the name Komyosha (Yamato Jujiro Shoten). In 1898 the company was incorporated and renamed Nippon Paint Manufacturing, while in 1972 the company's name changed to Nippon Paint and now the largest coating manufacturer in Asia.

In 2017, Nippon Paint Holdings (NPHD) announced that Nippon Paint (Singapore), a joint venture of Nipsea Pte and NPHD, established Nippon Paint (Myanmar) Co., Ltd to develop a strong business foundation in Myanmar markets and registered in DICA as Foreign Company type.

1.2.2.4 Methodology of Scoping

The following methods were used to investigate the potential impacts on the social and natural environment due to the construction, operation and possible decommissioning of the plant:

1. Baseline information about the site and its surroundings was obtained from primary and secondary information as well as from a reconnaissance site visit.
2. As part of the scoping process to determine potential environmental impacts, Interested and Affected Parties (I & APs) were consulted about their views, comments and opinions and these are put forward in this report.

This report addresses the biophysical as well as the social-economic environments. The information was captured in the following manner:

- A site visit was conducted on August and September, 2022 to determine the setting, visual character and land-uses in the area;
- Site surveys to identify any plants and animals that could be impacted by the development;
- The project plans were superimposed onto the gathered baseline environmental information to identify possible impacts;
- Discussions were held with the clients to identify specific aspects of the development which could affect the environment;
- Interested and Affected Parties (I & APs) were informed and consulted by giving handouts to capture issues that could affect the environment;
- Identification of positive as well as negative issues;
- Making recommendations and presenting guidelines for the mitigation

The scoping report has been compiled by Green Myanmar Environmental Services Company Limited (GMES) with inputs from technical consultants identified later. GMES is an organization established to promote best practices in controlling and preventing environmental pollution and related disciplines.

1.2.2.5 Setting the Study Limit

Nippon Paint Factory is located at Plot No. (44), Myay Taing Block No. (24), Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon Region. The area is 2.273 acres.

About 1200 meters away from the factory is Hlaing Thar Yar Township, about 970 meters away is Shwe Pyi Thar Township and 3 Kilo meters away is Insein Township. The villages located near the factory are Rakhine Yoe Gyi Village, Pauk Kone Village and Ah Lel Village. Among them Ah Lel Village is the nearest one and Shwe Lin Ban Industrial Zone, that is located at the Hlaing Thar Yar Township is also nearest Industrial Zone.

The overall study area boundaries to be generally limited to within a 2 km radius of factory area(i.e. center of factory area).

1.2.2.6 Area of Influence (AOI) for the Project

The direct impacts on the existing environment might be defined within 1km distance from the project boundary, while the indirect impacts are anticipated to occur up to the township levels. Thus, direct impacts are within Ah Lel Village, while the indirect impacts within the AOI are defined at Shwe Pyi Thar and Hlaing Thar Yar Township level and also cover along the bank of Hlaing River.

1.2.2.7 Key Potential Impacts and Proposed Mitigation

The Scoping Report focused on the potential impacts associated with the construction/renovation and operation phases. Potential impacts during construction/renovation are likely to be temporary and localized to the study area. Potential impacts during operation phase include those related to air, water, soil, noise, vibration, biodiversity, community health and safety, public infrastructure and utilities, social economy and occupational health and safety. In the EIA report, these impacts are assessed in detail and appropriate mitigation measure was also provided.

1.2.2.8 Public Consultation for Scoping Report

The EIA regulations specify that a public participation process must be conducted as an integral part of the EIA. The public consultation is a process that is designed to provide information of the project to all interested and affective parties (I & AP) and receive feedback from them. I & AP include all interested stakeholders, technical specialists and the various relevant organizations of state that work together to produce better decisions. That feedback is in turn fed into the EIA process. This provides organizations and individuals with the opportunity to raise concerns and make comment and suggestions regarding the proposed activity. By being part of the assessment process, stakeholders have the opportunity to influence the project layout, design and study plan of the EIA.

Public Meeting for scoping proposed was held in 29th January 2023 at the office of Industrial Zone Management Committee, Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar (West) Township of Yangon Region. The consultation helped the Project to gather information on potentially affected people, and on potential data gaps and how these can be closed out in the EIA Report. Scoping consultation involved face to face meetings with a range of stakeholder in Yangon Region including;

- Yangon Region Environmental Conservation Department (ECD),
- District ECD Office,

- General Administrative Department (GAD) of Hlaing Thar Yar (West) Township,
- Hlaing Thar Yar (West) Township Development Committee,
- Department of Health, Hlaing Thar Yar (West) Township,
- Urban Health Center, Hlaing Thar Yar (West) Township,
- Village Tract Executive Officer, Ah Lel Village Tract
- Aung Zay Yar Min Monastery, Ah Lel Village
- Board of Trustees, Ngwe Pin Lae Pagoda
- Kayin Christian Community, Ah Lel Village
- Three folks from Ah Lel Village
- Factories from Ngwe Pin Lal Industrial Zone

There is no key question raised during the first PCM. There are five suggestions and concerns raised through the suggestion forms which are described in the following table with the Reference of Scoping Report.

Name	Suggestion/ Concern	Action Plan on Suggestion/Concern
Stakeholders		
U Kyaw Soe District ECD	▪ EIA Team must define sufficient Study Area for Scoping Process ▪ The wastewater from the factor operation must be treated prior the final effluent points according to the NEQEG standards	▪ For Scoping Process, the EIA team has identified an adequate study area. ▪ The Wastewater treatment system will be carried out in the factory and the wastewater will be discharged only after has been treated.
Daw Cho Wai Lwin District ECD	▪ EIA Team must define sufficient Study Area for EIA Process ▪ Ensure the waste disposal for preventing the pollutions of water, air, and environment	▪ For EIA Process, the EIA team has identified an adequate study area. ▪ Waste materials will be disposed carefully to avoid pollution of water, air and environment.
U Thein Lwin EO Office, Hlaingtharya (West) Township Development Committee	▪ Health & Safety due to chemical use ▪ Avoid direct effluent of wastewater into the drain and implement treatment system ▪ Wages and social welfare will	▪ Ensure that health and safety due to chemicals. ▪ Wastewater from the factory will be discharged into the drainage system after treatment in the wastewater treatment system. ▪ Procedure will be followed.

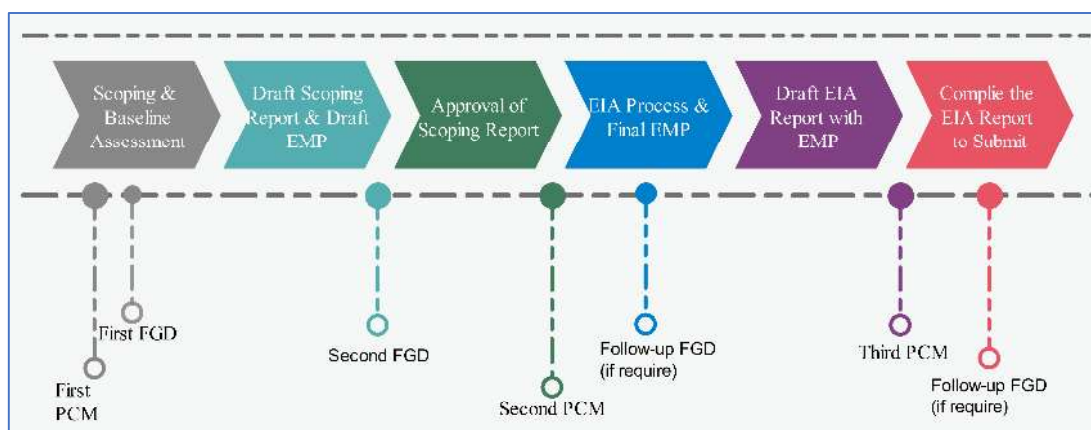
Name	Suggestion/ Concern	Action Plan on Suggestion/Concern
Stakeholders		
	be according to the regulatory requirements ▪ Apply legal license-to-operate from corresponding Development committee	▪ Suggestions will be accepted.
Project Affected People (PAP)		
U Zaw Ye Aung 10-Household Head Ah lel Village	▪ Implement adequate mitigation for bad odor to prevent the community health	▪ The factory implements adequate mitigation for bad odor to prevent the community health.
U Aung Zaw Moe 100-Household Head Ah Lel Village	▪ Take care on Community Health of villagers ▪ Create Job Opportunities for villagers	▪ Suggestions will be accepted and carried out.

On the public consultation meeting, there are 16 participants (13 males and 3 females). The copy of attendance list and suggestion letters of participants were attached at **Appendix III**.

Future Public Consultation Meeting (PCMs)

GMES and project proponent desire to arrange three Public Consultation Meetings (PCMs) and Focal Group Discussions (FGDs) for this EIA process.

The schedule for Future Public Consultation Meetings is described in below.



The second Public Consultation Meeting was held on 29-5-2024 and it was stated in details at Chapter 10.

The third Public Consultation Meeting was held on 7-8-2024 and it was stated in details at Chapter 10.

1.2.3 EIA phase

During the EIA phase, a draft Environmental Impact Assessment Report, describing consideration of all the key issues and associated impacts identified from the scoping phase, together with a draft Environmental Management Plan for the proposed mitigation measures, is to be implemented. This draft report will be made available to proponent to review and verify. Then the final report will be submitted to Environmental Commination Department for consideration.

1.2.3.1 EIA Working Group

Company prepared the EIA report is shown the following tables and details of team members, certificate of company and members are attached at Appendix IV.

Organization Name	Green Myanmar Environmental Services Co., Ltd. (GMES)
Transitional Consultant Registration Number	0006
Company Registration Number	110299931
Office Address	No. 115, Kanaung Min Thar Gyi Road, Hlaing Thar Yar Industrial City, Industrial Zone (1), Hlaing Thar Yar Township, Yangon Region, Myanmar.
Telephone	+959-897 978 296
Email	info@gmes-mm.com , gmescompany@gmail.com

1.2.3.2 Overall Context of the Project

Nippon Paint (Myanmar) Company Limited is proposing to establish ‘Manufacturing, Distribution and Sales the Various Kinds of Paint’ project at plot Plot No. (44), Myay Taing Block No. (24), Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon Region with the area of 2.273 acres.

1.2.3.3 Project Background, History, Certificates and Products





Facts & Figures



Who we are – Nippon Paint (Myanmar) Co., Ltd

- 2017** We established in August 2017, including factory, warehouse, import, and delivery team.
- 2019** Introduce our new product Max & Atom
- 2020** Introduce our new product Sumolac Enamel
- 2021** We expended Magway sales office with warehouses.
- 2022** We got MIC approval and expended Taunggyi, Lashio & Bago sales office with warehouses.
- 2023** We expended Mawlamyine, Patheingyi sales office with warehouses.
- 2024** We expended Myittha, sales office with warehouses.



Main Sales Office in Yangon



❖ We have over 1,000 dealer shops all over the country in Myanmar supporting our customers.



Test Results

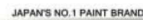


- ❖ Dangerous compounds found in a number of products including paints. Over time, significant exposure like that experienced by professional painters may cause **damage to the liver, kidneys or central nervous system or even cancer**.
- ❖ VOC-rich air in your home over the following years can put you or a family member at a **higher risk of developing asthma or allergies** [source: [Choi et al.](#)].
- ❖ Most of Nippon Paint's products have **low and no VOCs**.



[illegible]

JAPAN'S NO.1 PAINT BRAND



• **ಅಭಿವೃದ್ಧಿ ಪ್ರಯತ್ನಗಳು** - ೨೦೧೨ / ೨೦೧೩ / ೨೦೧೪



Available products in Myanmar – Internal Paint (Middle range)

EMULSION PAINT
MATEX



JAPAN'S NO.1 PAINT BRAND



Features

- Soft, boards : သစ်သား : သန့်ရှင်း ဖတ်သော : ဘီလပ်ဆွဲ
- ကျွန်းကျပ် နှင့် မျက်နှာကျက် လိုက် အသုံးပြုနိုင်
- စီးပွားရေးအရ လွတ်လပ်သော အသုံးပြုနိုင်
- အသုံးပြုရန် လွယ်ကူသည်
- ဖြူရှင်းသောအခါတွင် မရိပ်သာ ကွပ်ညွှန်း ခွာ အသုံးပြုနိုင်
- မိုး ရေ ချေညှိသောရုပ်ပုံ ကာကွယ် တားဆီးပေးသည်
- အဆုတ် - အမျှင်မပါ အဆုတ်မဲ့
- မျှော်လင့်သော ပုံစံအရပ်ရပ် - ၁ လီတာ : ၅ လီတာ : ၅ လီတာ : ၁၀ လီတာ : ၂၀ လီတာ

Application Methods

Brush, roller or spray
Application temperature : 5 to 35°C
No. of coats : 2 coats
Drying time : 2 hours at 25°C
Storage : 1 year in unopened container
Shelf life : 2 years at 25°C

NIPPON PAINT

Available products in Myanmar – Internal Paint (Premium)

EMULSION PAINT
VINILEX 5000



JAPAN'S NO.1 PAINT BRAND



အနံ့ မပြင်းမသာသမာ

- အသုံးပြုရန်အတွက် အဆုတ်မဲ့ Acrylic Polymer အသုံးပြု
- အဆုတ် မရှိ ဖတ်သောကျပ် : Soft Board : Gypsum : ဆုတ်
- ဖြူရှင်းသောအခါတွင် အသုံးပြုနိုင်
- မရိပ်သာ နှင့် မရိပ်သာ : အသုံးပြုရန် လွယ်ကူသည် : Low VOC
- ဖြူရှင်းသောအခါတွင် အဆုတ်မဲ့ အသုံးပြုနိုင်
- စီးပွားရေးအရ လွတ်လပ်သော အသုံးပြုနိုင်
- အသုံးပြုရန် လွယ်ကူသည်
- ဖြူရှင်းသောအခါတွင် မရိပ်သာ ကွပ်ညွှန်း ခွာ အသုံးပြုနိုင်
- မိုး ရေ ချေညှိသောရုပ်ပုံ ကာကွယ် တားဆီးပေးသည်
- အဆုတ် - အမျှင်မပါ အဆုတ်မဲ့
- မျှော်လင့်သော ပုံစံအရပ်ရပ် - ၁ လီတာ : ၅ လီတာ : ၅ လီတာ : ၁၀ လီတာ : ၂၀ လီတာ

Application Methods

Brush, roller or spray
Application temperature : 5 to 35°C
No. of coats : 2 coats
Drying time : 2 hours at 25°C
Storage : 1 year in unopened container
Shelf life : 2 years at 25°C

NIPPON PAINT

Available products in Myanmar – Internal Paint (Premium)

EMULSION PAINT
VINYL SILK



JAPAN'S NO.1 PAINT BRAND



ပိုးသားကဲ့သို့ စတက်ခြင်းလွယ်သော အတွင်းရောင်

- အဆုတ်မဲ့ Acrylic Polymer အသုံးပြု
- အဆုတ် မရှိ ဖတ်သောကျပ် : Soft Board : Gypsum : ဆုတ်
- ဖြူရှင်းသောအခါတွင် အသုံးပြုနိုင်
- မရိပ်သာ နှင့် မရိပ်သာ : အသုံးပြုရန် လွယ်ကူသည် : Low VOC
- ဖြူရှင်းသောအခါတွင် အဆုတ်မဲ့ အသုံးပြုနိုင်
- စီးပွားရေးအရ လွတ်လပ်သော အသုံးပြုနိုင်
- အသုံးပြုရန် လွယ်ကူသည်
- ဖြူရှင်းသောအခါတွင် မရိပ်သာ ကွပ်ညွှန်း ခွာ အသုံးပြုနိုင်
- မိုး ရေ ချေညှိသောရုပ်ပုံ ကာကွယ် တားဆီးပေးသည်
- အဆုတ် - အမျှင်မပါ အဆုတ်မဲ့
- မျှော်လင့်သော ပုံစံအရပ်ရပ် - ၁ လီတာ : ၅ လီတာ : ၅ လီတာ : ၁၀ လီတာ : ၂၀ လီတာ

Application Methods

Brush, roller or spray
Application temperature : 5 to 35°C
No. of coats : 2 coats
Drying time : 2 hours at 25°C
Storage : 1 year in unopened container
Shelf life : 2 years at 25°C

NIPPON PAINT

Available products in Myanmar – Internal Paint (Premium)

EMULSION PAINT
EASY WASH



JAPAN'S NO.1 PAINT BRAND



အသုံးပြုနိုင်သည့် အသေးစား အတွင်းခန်းများ

- Teflon TM နည်းပညာဖြင့် လုပ်ထုတ်ထားသည့်အတွက် အိမ်တွင်း အတွင်းခန်းများ အသုံးပြုနိုင်သည့် အတွင်းခန်းများ အတွက် အသုံးပြုနိုင်သည့် အတွင်းခန်းများ
- မိုး၊ ရေ၊ အိမ်နံရံ၊ မီးခိုးနှင့် ဆူညံသံတို့ကို အခက်အခဲမရှိဘဲ ရေဖြင့် ရှင်းဆေးနိုင်သည်
- မာကျောပြီး အခက်အခဲမရှိဘဲ အသုံးပြုနိုင်သည့် အတွင်းခန်းများ
- အိမ်ထောင် အတွင်းခန်းများတွင် မိုး၊ ရေ၊ အိမ်နံရံ၊ မီးခိုးနှင့် ဆူညံသံတို့ကို အခက်အခဲမရှိဘဲ ရေဖြင့် ရှင်းဆေးနိုင်သည်
- ချောမွေ့ပြီး မီးခိုးမရှိသည့် အတွင်းခန်းများ
- ချောမွေ့ပြီး မီးခိုးမရှိသည့် အတွင်းခန်းများ
- အသုံးပြုနိုင်သည့် အတွင်းခန်းများ
- အသုံးပြုနိုင်သည့် အတွင်းခန်းများ

Application Methods

• Brush or roller
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)

NIPPON PAINT

Available products in Myanmar – Internal Paint (Premium)

EMULSION PAINT
ODOUR-LESS



JAPAN'S NO.1 PAINT BRAND



အသုံးပြုနိုင်သည့် အသေးစား အတွင်းခန်းများ

- သဘာဝ ဟင်းခန်းနှင့် မီးခိုးမရှိသည့် အတွင်းခန်းများ
- လူသားအတွက် အသုံးပြုနိုင်သည့် အတွင်းခန်းများ
- အသုံးပြုနိုင်သည့် အတွင်းခန်းများ
- မိုး၊ ရေ၊ အိမ်နံရံ၊ မီးခိုးနှင့် ဆူညံသံတို့ကို အခက်အခဲမရှိဘဲ ရေဖြင့် ရှင်းဆေးနိုင်သည်
- မာကျောပြီး အခက်အခဲမရှိဘဲ အသုံးပြုနိုင်သည့် အတွင်းခန်းများ
- အိမ်ထောင် အတွင်းခန်းများတွင် မိုး၊ ရေ၊ အိမ်နံရံ၊ မီးခိုးနှင့် ဆူညံသံတို့ကို အခက်အခဲမရှိဘဲ ရေဖြင့် ရှင်းဆေးနိုင်သည်
- ချောမွေ့ပြီး မီးခိုးမရှိသည့် အတွင်းခန်းများ
- ချောမွေ့ပြီး မီးခိုးမရှိသည့် အတွင်းခန်းများ

Application Methods

• Brush or roller
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)

NIPPON PAINT

Available products in Myanmar – External Paint (Economy)

EMULSION PAINT
ATOM 2-IN-1



JAPAN'S NO.1 PAINT BRAND



အသုံးပြုနိုင်သည့် အသေးစား အပြင်ခန်းများ

- မိုး၊ ရေ၊ အိမ်နံရံ၊ မီးခိုးနှင့် ဆူညံသံတို့ကို အခက်အခဲမရှိဘဲ ရေဖြင့် ရှင်းဆေးနိုင်သည်
- မာကျောပြီး အခက်အခဲမရှိဘဲ အသုံးပြုနိုင်သည့် အပြင်ခန်းများ
- အသုံးပြုနိုင်သည့် အပြင်ခန်းများ
- မိုး၊ ရေ၊ အိမ်နံရံ၊ မီးခိုးနှင့် ဆူညံသံတို့ကို အခက်အခဲမရှိဘဲ ရေဖြင့် ရှင်းဆေးနိုင်သည်
- မာကျောပြီး အခက်အခဲမရှိဘဲ အသုံးပြုနိုင်သည့် အပြင်ခန်းများ
- အိမ်ထောင် အပြင်ခန်းများတွင် မိုး၊ ရေ၊ အိမ်နံရံ၊ မီးခိုးနှင့် ဆူညံသံတို့ကို အခက်အခဲမရှိဘဲ ရေဖြင့် ရှင်းဆေးနိုင်သည်
- ချောမွေ့ပြီး မီးခိုးမရှိသည့် အပြင်ခန်းများ
- ချောမွေ့ပြီး မီးခိုးမရှိသည့် အပြင်ခန်းများ

Application Methods

• Brush or roller
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)
• 10-15 m² per hour (at 25°C)

NIPPON PAINT

Available products in Myanmar – Enamel Paint (Economy)

ENAMEL PAINT

SUMOLAC

JAPAN NO.1 PAINT BRAND

သစ်သားနှင့် သံသတ္တုများတွင် အသုံးပြုနိုင်သော အတွင်းအပြင် မီးခံဆေး

- ဆေးရောင်၊ ဖျံ့သန့်စွာ အပြင်အဆင်အသုံး အသုံးပြုနိုင်သော အတွင်းအပြင် သုံး မီးခံဆေး
- မီးတိုက် အခြေခံ၍ ချစ်ပန်းရောင်သော သံသတ္တုနှင့် သေတ္တာသံသတ္တုနှင့် ကွန်ကရစ်စု၊
ချိုင်းကွေးခြင်း၊ သေတ္တာသံ၊ သံပြားနှင့် ခြံပြားများ၌ မီးခံဆေးလျက်တွင်
ညက်အညာမရှိနိုင်။ အစက်အိမ်အဆရာရွာများတွင် ခွံထားသော
အသုံးအဆောင်များ၌ မီးခံဆေး

- သစ်သားနှင့် သံသတ္တု အမျိုးမျိုးတွင် အတွင်းအပြင် အသုံးပြုနိုင်သည့်
- အဆေးပုံ - Colour Card မှိ အဆေးပုံများ
- (ရေဆေးသစ်ဆေး - သုံးပုံလုံး ၁ လုံး၊ ၅ လုံး)

Application Methods

Methods	Notes, brush and roller
Application Time, Conditions	At 25°C (77°F) and 60% RH
Application	1. Surface must be clean, dry, and free of oil
Application	2. Surface must be clean, dry, and free of oil
Application	3. Surface must be clean, dry, and free of oil
Application	4. Surface must be clean, dry, and free of oil
Application	5. Surface must be clean, dry, and free of oil
Application	6. Surface must be clean, dry, and free of oil
Application	7. Surface must be clean, dry, and free of oil
Application	8. Surface must be clean, dry, and free of oil
Application	9. Surface must be clean, dry, and free of oil
Application	10. Surface must be clean, dry, and free of oil

NIPPON
PAINT

2 OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

The following section presents the regulatory requirements that will be applicable to the project. These include local and international regulations, conventions and guidelines. Nippon Paint (Myanmar) Company Limited has undertaken with the EIA Procedure. Specifically, this section summarizes the following:

- Environmental policy of Nippon Paint (Myanmar) company Limited ;
- Overview of Myanmar Regulatory Framework;
- Myanmar Legislation Relevant to the Project;
- International Agreement and Conventions;
- Environmental Standards and Guidelines

2.1 Environmental policy of Nippon Paint (Myanmar) Company Limited

Nippon Paint (Myanmar) company Limited is fully committed to reduce the impact its operations might have on the environment. The paint production process is very clean, producing few solid or liquid wastes and all production facilities have effective waste control and handling systems. Nippon Paint's Responsible Care culture ensures that environmental regulatory compliance is considered to be a minimum standard and that much more is done to protect people, the environmental and the communities in which the firm operates.

The project proponent, Nippon Paint (Myanmar) Co., Ltd. is fully responsible for implementation of environmental management, mitigation and monitoring activities and submission of environmental monitoring report to Environmental Conservation Department (ECD), Yangon Region under MONREC. The proposed institutional arrangement to implement EMP during the through out of lifespan is shown as follow.

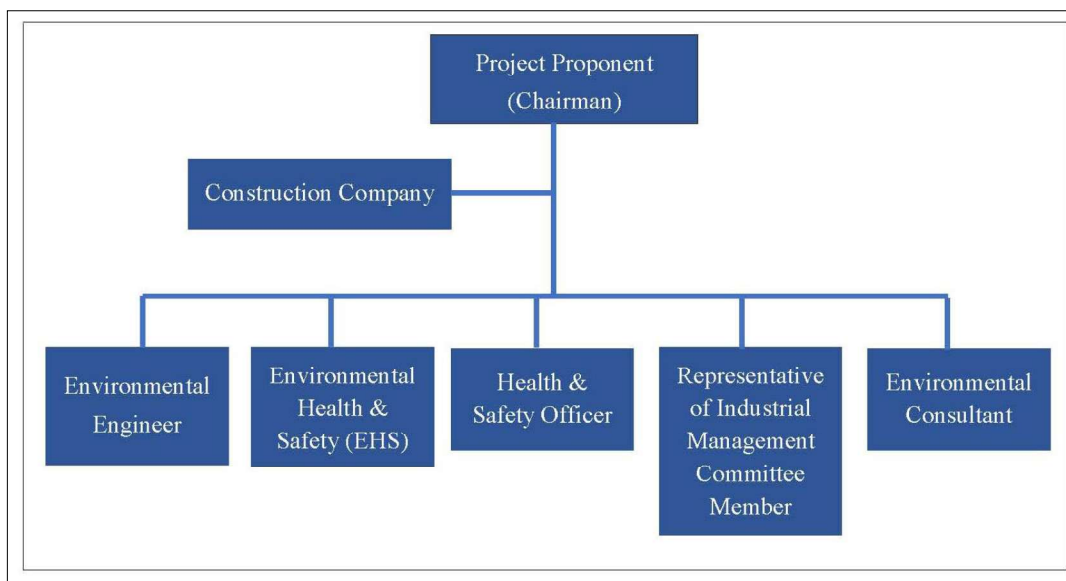


Figure 2-1 Institutional Arrangement of the Factory

Moreover, there are also Mission and Vision of the company and they are following.

Mission:

Nippon Paint's mission is to "Enrich human life by adding color to the world." This reflects their commitment to enhancing the quality of life through innovative and sustainable painting solutions that beautify and protect.

Vision:

Nippon Paint's vision is to be a leading global company in the paint and coatings industry, recognized for its quality, innovation, and commitment to sustainability. The company aims to achieve this by continuously improving its products, expanding its global footprint, and contributing to society through environmentally responsible practices.

2.2 Overview of Myanmar Regulatory Framework

Regarding to Health, Safety and Environment (HSE) requirements, Key Ministries and Departments are generally involved in the industrial sector as Table below.

Key Ministries and Departments in the industrial sectors

Ministry of Natural Resources and Environmental Conservation (MONREC)	Ministry of Natural Resources and Environmental Conservation (MONREC) is the focal ministry for environmental management and empowered to undertake a range of regulatory activities under the Environmental Conservation Law (ECL). The ECL gives MONREC mandate to implement the EIA-regime in Myanmar through the EIA Procedure.
The Environmental Conservation Department (ECD)	The Environmental Conservation Department (ECD) under MONREC has an executive role in environmental licensing, pollution control and monitoring of environmental impacts and a coordination and collaboration role for the integration of environmental issues into sectorial planning. ECD is creating sub-national offices, at the regional level, with further offices planned at the district and township levels. National Environmental Conservation and Climate Change Committee (NECCCC) has a coordinating role and a role in the approval of the EIAs.
Myanmar Investment Commission (MIC)	Myanmar Investment Commission (MIC) is the main administrative body for the granting of investment permits under the Myanmar Investment Law. Directorate of Investment and Company Administration (DICA) acts a

	secretariat to the MIC.
Department of Public Health	Department of Public Health within the Ministry of Health and Sports is responsible for occupational and health protection in Myanmar.
Ministry of Labour	Ministry of Labour also is responsible for labour and welfare administration. The Department of Factories and general labour laws inspection monitors and enforces safety and health standards in factories and disseminates industrial safety information.
Directorate of Industrial Supervision and Inspection (DISI)	Directorate of Industrial Supervision and Inspection (DISI) is responsible to inspect and register for boiler according to the boiler law (2012) and electrical system in factory according to the electrical power law (2014).
Departmental Cooperation Team	The Departmental Cooperation Team is organized for the field inspection of the operation of business in accordance with section 14 of the Foreign Investment Law. The Departmental Cooperation Team is responsible for coordination between business and government department and to guide to the business for the government department's requirements The Departmental Cooperation Team is organized by representatives from the governmental departments: (1) Directorate of Investment and Company Administration (2) Department of Customs (3) Department of Commerce (4) Directorate of Labor (5) Department of Immigration and National Registration (6) Ministry of Hotel and Tourism (7) Internal Revenue Department (8) Central Bank of Myanmar (9) Ministry of Electricity and Energy (10) Directorate of Industrial Supervision and Inspection (11) Ministry of Natural Resources and Environmental Conservation (12) Ministry of Agriculture, Livestock and

	Irrigation
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2.3 Myanmar Legislation Relevant to the Project;

The EIA study will cover for only the development of the “**Manufacturing, Distribution and Sales of Various kinds of Paints**” Project. The overview of the environmental and social related laws applicable to the construction and operation of the factory are as follows.

Legal Frameworks on Environmental and Social Considerations in Myanmar

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
Environmental Conservation and Management			
1.	National Environmental Policy (2019)	3. This policy builds on Myanmar's 1994 National Environmental Policy and reaffirms its core values: (a) The wealth of the nation is its people, its cultural heritage, its environment, and its natural resources. (b) It is the responsibility of the State and every citizen to preserve our natural resources in the interests of present and future generations. (c) Environmental protection should always be the primary objective in seeking development. 4. It also builds on the 1997 Myanmar agenda 21, the 2009 National Sustainable Development Strategy. It is grounded in the environmental responsibilities in the 2008 constitution of the Republic of the Union of Myanmar, the obligations contained in the 2012 Environmental Conservation Law. It also aligns with, and expands upon, the environmental considerations in the 2015 National Comprehensive Development Plan and the 2018 Myanmar Sustainable Development Plan. The policy recognizes and integrates Myanmar's commitments to Multilateral Environmental Agreements, including the 2015 Paris agreement. 5. The Government of the Republic of the Union of Myanmar recognises the fundamental links between environmental protection, economic and social development, and poverty alleviation. The principles outlined in this National Environmental Policy reflect these linkages. This approach is consistent with the 2030 Agenda for Sustainable Development which includes 17 SDGs to end poverty, fight inequality and injustice, and tackle climate change by 2030. Putting this Policy into action will also ensure that Myanmar makes significant progress in meeting the SDGs. 6. This National Environmental Policy will serve as a guide in mapping out detailed action plans for environmental protection and sustainable development, and set the direction for the on-going implementation and enhancement of relevant laws and policies. Further it will establish a foundation for mainstreaming environmental considerations into decision-making on economic and social development	The project proponent to uphold a clean environment, with healthy and functioning ecosystems in accordance with the long-term vision and mission of the National Environmental Policy.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		and activities by: (a) conceiving a long-term vision for environmental protection and sustainable development, supported by key national environmental policy principles; (b) providing a framework for incorporating environmental protection and sustainable development into all relevant sectoral policies; and (c) setting a basis for enhancing environmental governance in Myanmar. Vision: A clean environment, with healthy and functioning ecosystems, that ensures inclusive development and wellbeing for all people in Myanmar Mission: To establish national environmental policy principles for guiding environmental protection and sustainable development and for mainstreaming environmental considerations into all policies, laws, regulations, plans, strategies, programmes and projects in Myanmar	
2.	Environmental Conservation Law (2012)	7. (o) managing to cause the polluter to compensate for environmental impact, cause to contribute fund by the organizations which obtain benefit from the natural environmental service system, cause to contribute a part of the benefit from the businesses which explore, trade and use the natural resources in environmental conservation works; 14. A person causing a point source of pollution shall treat, emit, discharge and deposit the substances which cause pollution in the environment in accord with stipulated environmental quality standards. 15. The owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose the wastes in accord with environmentally sound methods. 24. The Ministry may, in issuing the prior permission, stipulate terms and conditions relating to environmental conservation. It may conduct inspection whether or not it is performed in conformity with such terms and conditions or inform the relevant Government departments, Government organizations to	The Project Proponent commits to comply with Section (7 (o)), Section (14), Section (15), Section (24) and Section (29) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		carry out inspections. 29. No one shall violate any prohibition contained in the rules, notifications, orders, directives and procedures issued under this Law.	
3.	Environmental Conservation Rules (2014)	69. (a) Any person shall not emit, cause to emit, dispose, cause to dispose, pile and cause to pile, by any means, the pollutants and the hazardous waste or hazardous material stipulated by notification under the Law and any of these rules at any place which may affect the public directly or indirectly. (b) Any person shall not carry out to damage the ecosystem and the natural environment which is changing due to such system, except for carrying out with the permission of the Ministry for the interest of the people.	The Project Proponent commits to manage any pollutants and hazardous waste or hazardous material by Environmental Management Plan and comply with Section(69(a) and (b)) of this law.
4.	Impact Assessment Procedures (2015)	102. The Project Proponent shall bear full legal and financial responsibility for: a. all of the Project Proponent's actions and omissions and those of its contractors, subcontractors, officers, employees, agents, representatives, and consultants employed, hired, or authorized by the Project acting for or on behalf of the Project, in carrying out work on the Project; and b. PAPs until they have achieved socio-economic stability at a level not lower than that in effect prior to the commencement of the Project, and shall support programs for livelihood restoration and resettlement in consultation with the PAPs, related government agencies, and organizations and other concerned persons for all Adverse Impacts. 103. The Project Proponent shall fully implement the EMP, all Project commitments, and conditions, and	The Project Proponent commits to comply with Section(102 (a,b)), Section (103), Section (104), and Section (105) and

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		is liable to ensure that all contractors and subcontractors of the Project comply fully with all applicable Laws, the Rules, this Procedure, the EMP, Project commitments and conditions when providing services to the Project. 104. The Project Proponent shall be responsible for, and shall fully and effectively implement, all requirements set forth in the ECC, applicable Laws, the Rules, this Procedure and standards. 105. The Project Proponent shall timely notify and identify in writing to the Ministry, providing detailed information as to the proposed Project's potential Adverse Impacts. 106. The Project Proponent shall, during all phases of the Project (pre-construction, construction, operation, decommissioning, closure and post-closure), engage in continuous, proactive and comprehensive self-monitoring of the Project and activities related thereto, all Adverse Impacts, and compliance with applicable laws, the Rules, this Procedure, standards, the ECC, and the EMP. 107. The Project Proponent shall notify and identify in writing to the Ministry any breaches of its obligations or other performance failures or violations of the ECC and the EMP as soon as reasonably possible and in any event, in respect of any breach which would have a serious impact or where the urgent attention of the Ministry is or may be required, within not later than twenty-four (24) hours, and in all other cases within seven (7) days of the Project Proponent becoming aware of such incident. 108. The Project Proponent shall submit monitoring reports to the Ministry not less frequently than every six (6) months, as provided in a schedule in the EMP, or periodically as prescribed by the Ministry. 109. The monitoring reports shall include: - documentation of compliance with all conditions; - progress made to date on implementation of the EMP against the submitted implementation schedule; - difficulties encountered in implementing the EMP and recommendations for remedying those difficulties and steps proposed to prevent or avoid similar future difficulties; - number and type of non-compliance with the EMP and proposed remedial measures and timelines	Section (106), Section (107), Section (108) , Section (109), Section (110), Section (113) , Section (115), and Section (117), of this law. The Project Proponent commits to follow with EIA Procedures and comply with ECC conditions.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		for completion of remediation; e. accidents or incidents relating to the occupational and community health and safety, and the environment; and \ f. monitoring data of environmental parameters and conditions as committed in the EMP or otherwise required. 110. Within ten (10) days of completing a monitoring report as contemplated in Article 108 and Article 109 in accordance with the EMP schedule, the Project Proponent shall make such report (except as may relate to National Security concerns) publicly available on the Project's website, at public meeting places (e.g. libraries, community halls) and at the Project offices. Any organization or person may request a digital copy of a monitoring report and the Project shall, within ten (10) days of receiving such request, submit a digital copy via email or as may otherwise be agreed upon with the requestor. 113. For purposes of monitoring and inspection, the Project Proponent: - shall grant to the Ministry and/or its representatives, at any time during normal working hours, access to the Project's offices and to the Project site and any other location at which the Project activities or activities related to the Project are performed; and - from time to time as and when the Ministry may reasonably require, shall grant the Ministry access to the Project's offices and to the Project site and any other location at which the Project activities or activities related to the Project are performed. 115. In the event of an emergency, or where, in the opinion of the Ministry, there is or may exist a violation or risk of violation of the compliance by the Project with all applicable environmental and social requirements, the Project shall grant full and immediate access to the Ministry at any time as may be required by the Ministry. 117. The Project Proponent shall further ensure that the Ministry's rights of access hereunder shall extend to access by the Ministry to the Project's contractors and subcontractors.	
5.	National	1. These national Environmental Quality (Emission) Guidelines (hereafter referred to as Guidelines)	The Project

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent								
	Environmental Quality (Emission) Guidelines (2015)	provide the basis for regulation and control of noise and vibration, air emissions, and liquid discharges from various sources in order to prevent pollution for purposes of protection of human and ecosystem health. 4. Unless otherwise indicated, these Guidelines refer to emission sources, and are intended to prevent or minimize adverse impacts to environmental quality or human health by ensuring that pollutant concentrations do not reach or exceed ambient guidelines and standards. The Guidelines apply to projects that generate noise or air emissions, and / or that have either direct or indirect discharge of process water, wastewater from utility operations or storm water to the environment. Air Emission Air Emissions Projects with significant sources of air emissions, and potential for significant impacts to ambient air quality, should prevent or minimize impacts by ensuring that: (i) emissions do not result in concentrations that reach or exceed national ambient quality guidelines and standards, or in their absence current World Health Organization (WHO) Air Quality Guidelines¹ for the most common pollutants as summarized below; and (ii) emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards (i.e. not exceeding 25 percent of the applicable air quality standards) to allow additional, future sustainable development in the same air shed. Industry-specific guidelines summarized hereinafter shall be applied by all projects to ensure that air emissions conform to good industry practice. Reference should be made to WHO's Air Quality Guidelines for Europe² for air pollutants not included in the following table. <table border="1"> <thead> <tr> <th>Sr</th><th>Parameter</th><th>Averaging Period</th><th>Guideline Value (µg/m³)</th></tr> </thead> <tbody> <tr> <td>1</td><td>Nitrogen dioxide</td><td>1-year 1-hour</td><td>40 200</td></tr> </tbody> </table>	Sr	Parameter	Averaging Period	Guideline Value (µg/m ³)	1	Nitrogen dioxide	1-year 1-hour	40 200	Proponent commits to comply with Section(1) and Section (4) of this law and comply and consider the prescription in all phases of the project.
Sr	Parameter	Averaging Period	Guideline Value (µg/m ³)								
1	Nitrogen dioxide	1-year 1-hour	40 200								

No.	Name of Law	Provision of Law relevant to the Project					Commitment of the Project Proponent																			
		2	Ozone	8-hour daily Maximum	100	Small Combustion Facilities Emission Guidelines The following small-combustion facilities emission guideline applies to project systems designed to deliver electrical or mechanical power, steam, heat, or any combination of these, regardless of fuel type, with a total, rated heat input capacity of 3-50 megawatt thermal. The industry-specific Thermal Power guideline applies to larger facilities exceeding 50 megawatt generation. <table><tr><th>Sr. No.</th><th>Combustion Technology /Fuel</th><th>Particulate Matter PM₁₀^a</th><th>Sulfur Dioxide</th><th>Nitrogen Oxides</th></tr><tr><td>1.</td><td>Gas</td><td>-</td><td>-</td><td>200^b mg/Nm^{3c} 400^d mg/Nm³ 1,600^e mg/Nm³</td></tr><tr><td>2.</td><td>Liquid</td><td>100</td><td>3</td><td></td></tr><tr><td>3.</td><td>Natural gas (3-<15 MW^g)</td><td>-</td><td>-</td><td>90^h mg1,600-1,850^f mg/Nm³/Nm³</td></tr></table>	Sr. No.	Combustion Technology /Fuel	Particulate Matter PM ₁₀ ^a	Sulfur Dioxide	Nitrogen Oxides	1.	Gas	-	-	200 ^b mg/Nm ^{3c} 400 ^d mg/Nm ³ 1,600 ^e mg/Nm ³	2.	Liquid	100	3		3.	Natural gas (3-<15 MW ^g)	-	-	90 ^h mg1,600-1,850 ^f mg/Nm ³ /Nm ³
Sr. No.	Combustion Technology /Fuel	Particulate Matter PM ₁₀ ^a	Sulfur Dioxide	Nitrogen Oxides																						
1.	Gas	-	-	200 ^b mg/Nm ^{3c} 400 ^d mg/Nm ³ 1,600 ^e mg/Nm ³																						
2.	Liquid	100	3																							
3.	Natural gas (3-<15 MW ^g)	-	-	90 ^h mg1,600-1,850 ^f mg/Nm ³ /Nm ³																						
		3	PM ₁₀	1-year 24-hour	20 50																					
		4	PM _{2.5}	1-year 14-hour	10 25																					
		5	Sulfur dioxide	24-hour 10-minute	20 500																					

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project					Commitment of the Project Proponent
		4.	Natural gas (15-<50 MW)	-	-	210 ⁱ mg/Nm ³	
		5.	Fuels other than natural gas (3-<15 MW)	-	0.5 % sulfur	50 mg/Nm ³ 200 ^h mg/Nm ³ 310 ^j mg/Nm ³	
		6.	Fuels other than natural gas (15-<50 MW)	-	0.5 % sulfur	150 mg/Nm ³	
		7.	Gas	-	-	320 mg/Nm ³	
		8.	Liquid	150 mg/Nm ³	2,000 mg/Nm ³	460 mg/Nm ³	
		9.	Solid ^j	150 mg/Nm ³	2,000 mg/Nm ³	650 mg/Nm ³	
		^a Particulate matter 10 micrometers or less in diameter, ^b Spark ignition, ^c Milligrams per normal cubic meter at specified temperature and pressure, ^d dual fuel, ^e compression ignition, ^f higher value applies if bore size > 400 m, ^g Megawatt, ^h Electric generation, ⁱ mechanical drive, ^j Includes biomass Wastewater Industry-specific guidelines apply during the operations phase of projects and cover direct or indirect discharge of wastewater to the environment. They are also applicable to industrial discharges to sanitary (domestic) sewers that discharge to the environment without any treatment. Wastewater generated from project operations includes process wastewater, wastewater from utility operations, runoff from process and storage areas, and miscellaneous activities including wastewater from laboratories, and equipment maintenance shops. Projects with the potential to generate process wastewater, sanitary sewage, or storm water should incorporate the necessary precautions to avoid, minimize, and control adverse impacts to human health, safety or the					

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent																																																												
		environment. Industry-specific guidelines summarized hereinafter shall be applied by all projects, where applicable, to ensure that effluent emissions conform to good industry practice. For project types where industry-specific guidelines are not set out in these Guidelines, the following general guideline values, or as stipulated on a case-by-case basis, apply during project operations. <table><tr><th>Sr.</th><th>Parameter</th><th>Unit</th><th>Guideline Value</th></tr><tr><td>1</td><td>5-day Biochemical oxygen demand</td><td>mg/l</td><td>50</td></tr><tr><td>2</td><td>Ammonia</td><td>mg/l</td><td>10</td></tr><tr><td>3</td><td>Arsenic</td><td>mg/l</td><td>0.1</td></tr><tr><td>4</td><td>Cadmium</td><td>S.U.^a</td><td>0.1</td></tr><tr><td>5</td><td>Chemical Oxygen Demand</td><td>100ml</td><td>250</td></tr><tr><td>6</td><td>Chlorine (total residual)</td><td>mg/l</td><td>0.2</td></tr><tr><td>7</td><td>Chromium (hexavalent)</td><td>mg/l</td><td>0.1</td></tr><tr><td>8</td><td>Chromium (total)</td><td>mg/l</td><td>0.5</td></tr><tr><td>9.</td><td>Copper</td><td></td><td>0.5</td></tr><tr><td>10.</td><td>Cyanide (free)</td><td></td><td>0.1</td></tr><tr><td>11.</td><td>Cyanide (total)</td><td></td><td>1</td></tr><tr><td>12.</td><td>Fluoride</td><td></td><td>20</td></tr><tr><td>13.</td><td>Heavy Metals (total)</td><td></td><td>10</td></tr><tr><td>14.</td><td>Iron</td><td></td><td>3.5</td></tr></table>	Sr.	Parameter	Unit	Guideline Value	1	5-day Biochemical oxygen demand	mg/l	50	2	Ammonia	mg/l	10	3	Arsenic	mg/l	0.1	4	Cadmium	S.U. ^a	0.1	5	Chemical Oxygen Demand	100ml	250	6	Chlorine (total residual)	mg/l	0.2	7	Chromium (hexavalent)	mg/l	0.1	8	Chromium (total)	mg/l	0.5	9.	Copper		0.5	10.	Cyanide (free)		0.1	11.	Cyanide (total)		1	12.	Fluoride		20	13.	Heavy Metals (total)		10	14.	Iron		3.5	
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Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project					Commitment of the Project Proponent
		15.	Lead			0.1	
		16.	Mercury			0.01	
		17.	Nickel			0.5	
		18.	Oil and Grease			10	
		19.	pH			6 – 9	
		20.	Phenols			0.5	
		21.	Selenium			0.1	
		22.	Silver			0.5	
		23.	Sulphide			1	
		24.	Temperature Increase			<3	
		25.	Total Coliform bacteria			400	
		26.	Total Phosphorus			2	
		27.	Total Suspended Solids			50	
		28.	Zinc			2	
		Noise Levels Noise prevention and mitigation measures should be taken by all projects where predicted or measured noise impacts from a project facility or operation exceed the applicable noise level guideline at the most sensitive point of reception. Noise impacts should not exceed the levels shown below, or result in a maximum increase in background levels of three decibels at the nearest receptor location off-site.					

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project			Commitment of the Project Proponent
		Receptor	One Hour LAeq (dBA)		
			Daytime (7:00 - 22:00) (10:00 – 22:00 for public holidays)	Nighttime (22:00-7:00) (22:00-10:00 for public holidays)	
			Residential, institutional, educational	55	
		Industrial, commercial	70	70	
		Odor Levels Point and diffuse source odors from industries should be minimized using available prevention and control techniques as described in the IFC EHS industry-specific guidelines. Point source activities are those that involve stack emissions of odor and which generally can be controlled using waste reduction, waste minimization and cleaner production principles or conventional emission control equipment. Diffuse source activities are generally dominated by area or volume source emissions of odor (e.g. intensive agricultural activities) and which can be more difficult to control. Projects should control odors to ensure that odors that are offensive or unacceptable to neighbors do not occur. Generally, odor levels should not exceed five to ten odorant units ⁶ at the edge of populated areas in the vicinity of a project. Projects with multiple odororous point or diffuse releases, or emitting complex odors should conduct an odor impact assessment to determine ground-level maximum concentrations taking into account site-specific factors including proximity to populated areas.			
6	National Surface	Surface Water Quality Standard Criteria			

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
	Water Quality Standard MMS 44:2024	The standard shall apply to 36 parameters consisting of physical, chemical and biological parameters, as well as organics, heavy metals and pesticides. Those parameters fall under two categories such as priority parameters, there are (i) parameter for human health and (ii) parameters for environmental conservation. In term of priority parameters, regular monitoring should be carried out in order to attain the desirable achievements. Regular monitoring parameters include those which monitoring data is not sufficient or they are currently not analysed by most of public and private laboratories in the country. Monitoring parameters are subject to future review to consider their inclusion to priority parameters, as domestic analytical capacity advances and more data accumulates.	
Standard Values of Parameters for Human Health			
No	Parameter	Unit	Class I - V
Chemical Parameter			
1	Boron	mg/L	2.4
2	Cyanide	mg/L	0.07
3	Fluoride	mg/L	1.5
4	Nitrate nitrogen	mg/L	10
5	Nitrite nitrogen	mg/L	1
Organics			
6	Benzene	mg/L	0.01
7	Phenol	mg/L	0.05
8	Polychlorinated Biphenyls (PCB)	µg/L	0.5
Heavy Metals			
9	Arsenic	mg/L	0.05

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project							Commitment of the Project Proponent																																				
		<table><tr><td>10</td><td>Cadmium</td><td></td><td>mg/L</td><td></td><td>0.003</td></tr><tr><td>11</td><td>Chromium (Hexavalent)</td><td></td><td>mg/L</td><td></td><td>0.05</td></tr><tr><td>12</td><td>Lead</td><td></td><td>mg/L</td><td></td><td>0.01</td></tr><tr><td>13</td><td>Mercury</td><td></td><td>mg/L</td><td></td><td>0.001</td></tr><tr><td>14</td><td>Nickel</td><td></td><td>mg/L</td><td></td><td>0.07</td></tr><tr><td>15</td><td>Selenium</td><td></td><td>mg/L</td><td></td><td>0.04</td></tr></table>							10	Cadmium		mg/L		0.003	11	Chromium (Hexavalent)		mg/L		0.05	12	Lead		mg/L		0.01	13	Mercury		mg/L		0.001	14	Nickel		mg/L		0.07	15	Selenium		mg/L		0.04	
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Standard Values of Parameters for Environmental Conservation																																													
No	Parameter	Unit	Class I	Class II	Class III	Class IV	Class V																																						
Physical Parameter																																													
1	Total Suspended Solids	mg/L	25	50	75	100	150																																						
Chemical Parameter																																													
2	Biochemical Oxygen Demand (BOD)	mg/L	2	3	8	25	30																																						
3	Chemical Oxygen Demand (COD)	mg/L	5	8	13	50	100																																						
4	Dissolved Oxygen (DO)	mg/L	>6	>5	>4	>3	>2																																						
5	pH	S.U	6.5-8.5	6.5-8.5	6-9	5-9	-																																						
6	Ammonia nitrogen	mg/L	0.2	0.3	0.5	0.8	0.9																																						
7	Oil & Grease		No noticeably seen																																										
Biological Parameter																																													
8	Escherichia coil (E.coil)	MPN/100 mL (or)	20	300	1000	1000	-																																						

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project							Commitment of the Project Proponent
				CFU/100 mL					
		Heavy Metals							
		9	Copper	mg/L	0.1	0.3	0.5	-	
Biodiversity and Natural resources									
7.	The Forest Law (2018)	12. Whoever, within forest land and forest covered land at the disposal of the Government: (a) wishes to carry out any development work or economic scheme shall obtain prior approval of the Ministry;							The Project Proponent commits to comply with Section(12) of this law and the provisions of law relevant to the project.
8.	Conservation of Biodiversity and Protected Areas Law (2018)	29. With the approval of the Ministry, the Director General: (a) shall check whether the licence application for a zoological garden or botanical garden conforms with the specified terms and conditions, and issue a licence if the conditions are met; (b) may withdraw a licence within the prescribed period or cancel it if a person who receives a licence violates the prescribed terms and conditions. 30. A person who receives a licence for operating the zoological garden or botanical garden: (a) shall abide by the terms and conditions stipulated by the Director General for such licence; (b) shall pay any tax and fee relating to the operating licence in Myanmar currency or in foreign currency, in accordance with the prescribed manner. (c) In the case of a person who receives a licence for operating the zoological garden or botanical garden decreases before the expiry of the tenure of the licence, a legal successor shall apply to the Director							The Project Proponent commits to comply with Section (29(a,b)), Section (30 (a,b,c)), Section (35(a,c,d) and Section (39(d, e)) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		General in accordance with the prescribed manner. 35. A park warden may pass an administrative order against any person to pay a fine from a minimum kyats 30,000 to a maximum kyats 100,000 if he commits any of the following acts within a protected area or a zoological garden or botanical garden which is administered by the Government or in which the Government has subscribed share capital: (a) entering a prohibited area without permission; (c) digging on the land, cultivating or carrying out any activity; (d) extracting, collecting or destroying in any manner, any kind of wild flora or cultivated plant. 39. Whoever commits any of the following acts shall, on conviction, be punished with imprisonment for a term not exceeding 3 years or with a fine from a minimum of kyats 200,000 to a maximum of kyats 500,000, or with both: (d) intentionally polluting soil, water or air, damaging a water-course or poisoning or electrifying water, or using chemical or explosive materials in the water within the protected area; (e) intentionally polluting soil, water or air, damaging a water-course or poisoning or electrifying water, or using chemical or explosive materials in the water within the protected area;	
9.	Underground Water Act (1930)	3. In accordance with section 3, person shall, not sink a tube for the purpose of obtaining underground water except under and in accordance with the terms of a licence granted by the water officer and shall apply a license according to the Rule. In the Rule -16, the Water Officer, the Director of Public Health, Burma and any authorized assistant specially deputed by them, shall at all-time have access to.	The Project Proponent commits to comply with Section(3) of this law not to affect Underground Water due to the project activities.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
10.	The Conservation of Water Resources and Rivers Law (2006) (Amending 2017)	6. The powers of the Directorate are as follows: - granting permission after examining the application for permission to carry out the construction of switchback, dockyard, wet dockyard and water-tight dockyard, building of jetty and landing stage and vessel landing by drainage in the river-creek boundary, bank boundary and waterfront boundary; - permitting, after scrutiny, to pile sand, shingle and other heavy substances within the bank boundary and waterfront boundary; - issuing recommendation to the relevant government department and organization in respect of application for construction of buildings and bridges in the river-creek boundary, bank boundary and waterfront boundary; - determining of waterway grade, issuing information on opening and closing of waterway and warning on the use of waterway from time to time; - determining the size of vessel and number of barges to ply along each waterway, and determining of draught; - choosing site in the river for the inland vessels to dock, demarcating of port boundary, and opening and closing thereof; - issuing recommendation to the relevant government department and organization after scrutiny as to whether or not the waterways of the rivers/creeks can be affected adversely, on the application to grant permit for business of sand suction, sand dredging, sand excavating, rivers shingle suction, panning for gold, gold mineral dredging or extracting resources in river-creek boundary, bank boundary and waterfront boundary; - issuing notifications prescribing terms and conditions in accordance with the guidance of the Ministry in respect of the navigation of vessels in rivers and creeks for conservation of water resources, rivers and creeks. 8. No person shall: (a) carry out any act or channel shifting with the aim to ruin the water resources and rivers and creeks. 11. No person shall:	The Project Proponent commits to comply with Section(6(a,b,c,d, e,f,g,h)), Section (8), Section (11), Section (12), Section (15) Section (19), Section (21), Section (22), Section (23), Section (24) and Section (30) of this law not to affect Water Resources and Rivers due to the project activities.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(a) dispose of engine oil, chemical, poisonous material and other materials which may cause environmental damage, or dispose of explosives from the bank or from a vessel which is plying, vessel which has berthed, anchored, stranded or sunk. (c) dispose of disposal soil and other materials from panning for gold, gold mineral dredging or resource production in the river and creek, into the river and creek or into the water outlet gully which can flow into the river and creek. 12. No person shall carry out growing of garden, digging, filling, silt trapping, closing pond, dyke building or erecting spur in the river-creek boundary, bank boundary and waterfront boundary without the permission of the relevant government department and organization. 15. In the river-creek boundary, bank boundary and waterfront boundary, no person, without the permission of the Directorate, shall: (a) carry out the construction of waterway training structure, switchback, dockyard, wet dockyard, water-tight dockyard, building of jetty and pier, the construction of landing lane and landing stage, vessel landing by drainage, drainage, and the construction of temporary bridge of river and creek. (b) dig husbandry pond to carry out fish, prawn, crab, soft-shell crab and other husbandry works. 19. No one shall dispose of any substance into the river-creek that may cause damage to waterway or change of watercourse from the bank or vessel which is plying, vessel which has berthed, anchored, stranded or sunk. 21. No one shall: (a) build lavatories unsuitable to the urban and rural community lifestyle in the bank area and waterfront area. (b) drill well or pond or dig earth without the permission of the Directorate. 22. No one shall, without the permission of the directorate, pile sand, shingle and other heavy materials for business purposes in the bank area and waterfront area.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		23. No one shall: (b) without the permission of Directorate, carry out the construction of roads and bank protection structure, and river bank training work. 24. No one shall (b) violate the conditions prescribed by the Directorate so as not to cause water pollution and change of watercourse in rivers and creeks. 30. Any government department and organization or any person desirous of constructing drainage, utilizing river water intake, constructing bridges spanning rivers, connecting underground pipe, connecting underground electric power cable, connecting underground telecom cable or digging in rivers and creeks, bank boundary and waterfront boundary, under the requirement of work, shall in order not to adversely affect the water resources and rivers and creeks, carry out only after obtaining the approval of the Ministry of Transport.	
11.	The Conservation of Water Resources and Rivers Rules (2013)	47. Any relevant ministry, government department, organization, or individual wishing to excavate a canal within a river area, riverbank zone, or riverside area for operational needs, construct and operate hydropower plants, or implement river water utilization projects must specify the project location, scale, and duration. They are required to seek approval from the Ministry of Transport. 84. Anyone wishing to excavate a well, pond, or undertake any form of digging surrounding the river areas must apply for permission to the relevant department using Form 11, providing the following information: (a) Location of the operation site and rough map (b) Location of Construction site (c) Dimensions of the construction (length, width, depth) 85. The department, in accordance with Regulation 84, shall examine the application for permission to determine whether the proposed activity may impact water resources and river conservation. If a potential	The Project Proponent commits to comply with Section 47, Section 84(a, b, c)) and Section 85 of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		impact is identified, the application may be rejected. If no significant impact is found, the department may issue the permission with specified conditions using Form 12.	
Cultural and Heritage Sector			
12.	The Protection and Preservation of Cultural Heritage Regions Law (2019)	21. A person who wishes to carry out any of the following undertakings shall adhere to the provisions of the existing laws, and apply to the Region or State Preservation Committee if it is within the world heritage region or national level cultural heritage region, and apply to the Regional Preservation Committee if it is within the respective cultural heritage region apart from the world heritage region or national level cultural heritage region for obtaining the prior permission that there is no impact on cultural heritages in accordance with the stipulations: (b) in the buffer area: i. constructing roads, renovating and extending wharfs, parking lots, rail tracks, railway station, stadium, sports grounds, buildings and bridges; ii. conducting and erecting pylons, underground works, underground electric power lines, high voltage power lines, transformer stations, lamp posts and gas pipelines; iii. arranging the flights of helicopter, hot air balloons and gliders; iv. constructing theatres such as the entertainment building, accommodation facilities, recreation centers, riding and race camps and infrastructures.	The Project Proponent commits to comply with Section(21(b)) of this law.
13.	The Protection and Preservation of Antique Objects Law (2015)	12. The person who finds any object which has no owner or custodian, he shall promptly inform the relevant Ward or Village-Tract Administrator if he knows or it seems reasonable to assume that the said object is an antique object.	The Project Proponent commits to comply with Section(12) of this law.
14.	The Protection and Preservation	12. If a person who finds an ancient monument of over one hundred years old and above or under the ground or above or under the water which has no owner or custodian knows or it seems reasonable to	The Project Proponent

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
	of Ancient Monuments Law (2015)	assume that the said monument is an ancient monument, he shall promptly inform the relevant Ward or Village-Tract Administrative Office. 15. A person desirous of any of the followings within the specified area of an ancient monument shall apply to get prior permission to the Department: - extending towns, wards and villages; - constructing or extending or repairing new buildings including hotels, factories and residential buildings or fencing or extending a fence - digging to search petroleum, natural gas, gem or mineral, piping petroleum and natural gas, constructing factories, connecting national grid, constructing communication tower, constructing or extending infrastructures such as road, bridge, airport, irrigation and embankment; - connecting underground electric cable, communication cable and other underground works; - digging or extending wells, lakes, canals and ponds; - gold sieving, digging, burning bricks, digging well, lake, creek, ditch, gully, pit digging, refilling, levelling, mining, quarry, gravel digging and unearthing sand, removing the mounds and hills which can damage the physical feature of the land - placing and fencing ancient monuments in a private compound and area; - constructing a building which is not consistent with the terms and conditions stipulated according to the region by the Ministry near and at the surrounding of an ancient monument. 20. No one shall carry out any of the following acts which is assumed to cause damage to an ancient monument within the specified area of an ancient monument or of a listed ancient monument without a written prior permission: - discarding chemical substance and rubbish which can affect an ancient monument and the environment.	to comply with Section(12), Section(15(a,b,c,d, e,f,g,h)) and Section(20(f)) of this law.
15.	The Ethnic Rights Protection Law (2015)	5. The matters of projects shall completely be informed, coordinated and performed with the relevant local ethnic groups in the case of development works, major projects, businesses and extraction of natural resources will be implemented within the area of ethnic groups.	The Project Proponent commits to

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		22. No one shall prohibit the rights and privileges of the ethnic groups without credible reasons. 23. No one shall misuse the provision of this law for political purposes. 24. No one shall behave any act which is intended or is likely to promote feelings of hatred, enmity and discord among the ethnic groups. 25. Whoever violates the prohibition in section 22 shall, on conviction, be punished with imprisonment for a term not exceeding one year or with a fine not exceeding one hundred thousand kyats or with both.	comply with Section(5), Section (22), Section (23), Section (24) and Section (25) of this law.
16.	The Ethnic Rights Protection Rules (2019)	(20) The Person proposing the project in relation to the project to be developed in the area inhabited by ethnic peoples. The Project Proponent - i. In order for the local ethnic groups to know and understand the benefits and harms of the project and the contents of the project must be fully and accurately explained in advance, using their language and methods that the local ethnic groups whom can understand. ii. The project must be carried out in accordance with the procedures, policies, and strategies of the Myanmar Sustainable Development Plan (MSDP). iii. To find out whether or not it affects on the environmental and socio-economic development in this area, environmental impact assessment and socio-economic development impact assessment shall be carried out in accordance with the guidelines of the relevant department. iv. Consultations with indigenous peoples must be carried out in an open and transparent manner at all stages of the environmental impact assessment and socio-economic development impact assessment processes. (21) The project proponent – i. According to Rules 20, before starting the project, a complete report must be submitted to the ministry and an agreement must be obtained. ii. Upon completion of the project implementation activities, pre-planned activities and completion conditions must be submitted to the Ministry.	The Project Proponent commits to comply with Section(20) and Section(21) of this law.
Industrial Sector			

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
17.	The Electricity Law (2014)	20. The permit holder shall abide by the rules, regulations, bye-laws, notifications, orders, directives and procedures issued by the Ministry in carrying out the electrical business contained in the permit. 21. (a) The permit holder shall, if causes damages and losses to any person and entity for failing to abide by this laws, rules, procedures, regulations, bye-laws, order and directives and failing to abide by the prescribed qualities and standardization, be liable according to law. 24. If damages or losses arise to any other electric power user or any electrical business due to negligence of any electric power user, the calculated compensation in accord with the method prescribed by the Ministry for the value of damage or loss shall be paid. 27. In the event of electricity hazard occurs in respect of generation, transmission, distribution and utilization of electric power, the permit holder and the electrical authorized person shall report to the Chief Inspector and incharge of the relevant department as soon as possible. 29. The Ministry shall inspect the specification of quality and standardizations in respect of the factories, equipments installed to them, business buildings, and electrical equipment which are manufactured, imported and sold from the local and foreign country. 33. The Chief Inspector, Inspectors and persons conferred duty by them have the right to enter and inspect any place or building to perform their duties in accord with stipulations. 40. The permit holders shall carry out in accord with the rules, standardizations and procedures issued by the Ministry and shall be subjected to necessary inspection of relevant Government department and organizations. 44. No person shall operate the electrical business without permit. 46. No person shall operate the electrical installation and repair without obtaining the electrical professional certificate. 47. No person shall operate the generation, transmission, connection of electric power without obtaining the electrical safety certificate.	The Project Proponent commits to comply with Section(20), Section (21(a)), Section(24), Section (27), Section (29), Section(33), Section(40), Section(44), Section(46), Section(47), Section(67) and Section(68(a,b)) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		67. Whoever acts to cut off the transmission and distribution of electric power, shall pay damages the amount calculated equal to the loss amount of electric power as the means prescribed by the Ministry. 68. If a person is injured, or disabled or killed by the electric shock or outbreak of fire due to negligence or default of the permit holder or the person designated by him, the aggrieved person shall have the right to claim for compensation from the permit holder as follows: (a) if the aggrieved person is applied to the existing Workmen's Compensation Act, the compensation prescribed under such law; (b) if the aggrieved person is not applied to the existing Workmen's Compensation Act, the compensation prescribed by the rules issued under this Law.	
18.	The Boiler Law (2015)	12. The owner shall: (a) apply to the respective inspector to obtain certificate in accord with the prescribed manner; (b) apply to register only for the boiler constructed in accord with Myanmar standards or international standards; (c) the prescribed fee shall be paid when the application is made under sub-section (a). 14. The owner shall apply to the respective inspector in advance in order to obtain permission though he or she has obtained the certificate or the provisional order if desirous to carry out any of the following matters: (a) using of the boiler at more than allowable pressure; (b) repairing, altering, adding or renewing any steam-pipe, feed-pipe or any mounting or other fitting attached to such steam pipe, feed-pipe or mounting or other fitting attached to the boiler. 18. The owner shall inform immediately to the inspector if any accident occurs. 19. The owner shall not: (a) use a boiler at a pressure higher than allowable pressure; (b) repair and alter or force to repair and alter the safety valve to exceed allowable pressure;	The Project Proponent commits to comply with Section(12(a,b,c)), Section (14(a,b)), Section (18), Section (19(a,b,c)), Section (20 (a,b,c)), Section(21), Section(24(a,b)), Section(29(b)) and Section(31) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(c) do any act contained in sub-section (b) of section 14 without permission. 20. The owner shall not use the following boiler: (a) boiler without certificate or provisional order; (b) boiler of which certificate or provisional order is void; (c) boiler of which certificate or provisional order is revoked. 21. The owner shall engrave the register number specified by the chief inspector in accord with the prescribed manner. 24. The owner shall not: (a) carry out with the person who has not boiler repairer certificate on the receipt of notice to repair, alter, add or renew any boiler, steam-pipe, feed-pipe or any mounting or other fitting attached to such boiler, steam-pipe and feed-pipe; (b) assign any person to charge the boiler used in the work except the person who operates and maintains the boiler. 29. (b) A boiler attendant shall comply with the terms and conditions contained in boiler attendant certificate. 31. The boiler attendant shall not use the boiler at more than allowable pressure.	
19.	The Industrial Zone Law (2020)	24. The investor is entitled to operate the following investment enterprises within the industrial zone in accordance with the stipulations: (a) manufacture of finished goods, manufacture of related products, manufacture of packaging and value-added products; (b) transportation and distribution of raw materials and finished goods, road maintenance and upgrade; (c) other services related to the investment enterprises; (d) trading the products from the investment enterprises to the country and abroad in accordance with the stipulations.	The Project Proponent commits to comply with Section (24 (a,b,c,d)), Section (25), Section (26), Section (27)

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		25. The investor shall, in accordance with the rules, regulations and by-laws issued under this Law, apply to the Regional Committee through the Management Committee for obtaining the investment enterprise licence. 26. Each construction project in the relevant industrial zone shall be completed within the proposed period. If the construction is incomplete within the proposed period, the sufficient reason shall be submitted to the Regional Committee with remarks of the Management Committee for obtaining the decision. If it is found that it is the insufficient reason, the licence shall be revoked in accordance with the regulations and by-laws. 27. The investor shall: (a) register in accordance with the existing laws in the relevant departments; (b) operate the enterprises in accordance with the stipulations of the relevant departments and organizations; (c) submit the situation of the implementation of his or her investment enterprises to the Management Committee in accordance with the stipulations; (d) manage the raw materials and substandard products which are perished and harmful to the public in the industrial zone in accordance with the relevant laws, rules, orders, and directives; (e) carry out to obtain the benefits of workers, including the appointment of staff, salary and overtime pay, leave, holiday, occupational safety and health in accordance with the provisions of the existing laws and rules. 28. The investor shall abide by the standardization contained in the Environmental Conservation Law, and carry out not to affect the occupational safety and health in accordance with the existing laws. 29. If the investor wants to start, close or liquidate his or her enterprises, he or she shall notify the relevant departments and Management Committee in advance, and carry out it in accordance with the stipulations. 30. When the investor transfers the whole or part of shares of his or her enterprise, company or	(a,b,c,d,e)), Section(28), Section (29), Section(30), Section(31), Section(34(a,b,c,d)), Section(35), Section((37), Section(39), Section(41), Section(42), Section(43) and Section(44) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		organization, he or she shall notify the relevant departments and the Management Committee, and carry out it in accordance with the existing laws. 31. The investor shall submit the appointment status of the local and foreign staff to the Management Committee. 34. The investor or developer shall: (a) use the permitted land in accordance with the prescribed conditions; (b) submit the work plan and completion period within six months from the date of designation and declaration of the plots of land which are not operated acquiring in the industrial zone, established industrial zone as the industrial zone, and obtain the approval of the Regional Committee. If the approved project is incomplete within the prescribed period, 10 percent of the value of the land prescribed by the relevant Regional Committee shall be paid annually as a fine to the relevant Regional Committee. The land use permit or grant shall be revoked when the fine is not paid; (c) not modify or alter significantly the natural topography or the land elevation of the permitted land without the permission of the relevant Management Committee; (d) lease the land or sell, lease, exchange or offer the right of land use and buildings to any other person or other organizations enabling to operate the enterprises within the permitted period in accordance with the regulations and by-laws after submitting to the Regional Committee through the relevant Management Committee. 35. The investor or developer shall report immediately to the Management Committee if the natural mineral resources or antiques or treasure not related to the permitted investment enterprises which are not included in the original contract are found above or under the permitted land. If the Management Committee submits it to the Nay Pyi Taw Council, the relevant Region or State Government, and obtains the permission, the investor or developer may continue to operate on such land. If the permission is not obtained, he shall move it to the area arranged by the Regional Committee.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		37. The environmental conservation shall be carried out in accordance with the existing laws in establishing the industrial zone or operating the industrial enterprises. 39. The investor shall carry out the Pollution Control Management and Energy Management in accordance with the procedures issued by the relevant Ministries. 41. The investors shall incur the reasonable rate specified by the Management committee for expenditures of storage, treatment and safe disposal of waste by the collective system in the industrial zone according to the amount of waste generated. 42. The investors in the established industrial zones who cannot use the system of storage, treatment and safe disposal of waste by the collective system shall install and use the system of storage, treatment and safe disposal of waste by their own arrangements within the prescribed period. 43. The investor making payment to the non-resident foreigner who has not established the enterprises in Myanmar but is allowed to operate the enterprises in the industrial zone under any own property and intellectual property enterprises shall deduct the income tax at the rate prescribed by the Ministry in accordance with the provisions of the Income Tax Law. 44. The relevant investor shall collect and pay the income tax in accordance with the provisions of the Income Tax Law on the income from salary of the local and foreign staff and workers working in the industrial zones.	
20.	The Industrial Zone Rules (2024)	32. The following investment businesses shall not be allowed in an Industrial Zone: (a) Businesses that may harm national defence and security; (b) businesses consisting in the manufacturing, possession, storage and distribution and sale of narcotics and psychoactive drugs; (c) businesses consisting in the manufacturing, packaging, storage and distribution and sale of toxic chemicals, agricultural pesticides and other products containing chemicals banned by international regulations or the World Health Organization for harming public health and the environment;	Proponent commits to comply with Section 32 (a, b, c, d, e, f), Section 33 (a, b, c, d, e, f, g, h, I, j, k, l),

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(d) businesses consisting in the recycling, storage, treatment and distribution and sale of waste products that do not comply with international standards and the law in force; (e) non-manufacturing businesses such as the erection of residential houses, hotels and guesthouses and the establishment of karaoke shops, restaurants and theatres, cinemas, and nightclubs; (f) other businesses that may not be carried out according to a Regional Committee notification. 33. The following investment businesses may be carried out according to the Law: (a) Value-added production of agricultural and livestock goods; (b) manufacturing from raw materials to finished goods, high-tech manufacturing, manufacturing based on natural resources and labour-based manufacturing; (c) types of investment businesses that have obtained a permit or endorsement under the Myanmar Investment Law and may be carried out within an Industrial Zone; (d) commercial infrastructure (including trade centres) development businesses; (e) warehouse systems and logistics businesses; (f) research and development services; (g) health services; (h) training and related services; (i) other services including consulting; (j) environmental protection and waste treatment services; (k) micro, small and medium businesses; (l) other businesses that may be carried out according to a Regional Committee notification. 34. To establish a new Industrial Zone, the Nay Pyi Taw Council or a Regional or State Government or a Developer shall fill in proposal form A completely and apply to the Regional Committee with the necessary documents. 45. The Developer shall use the land allowed to be used as an Industrial Zone subject to the following	34, Section 45 (a, b, c, d), Section 48 (a, b, c, d, e, f, g), Section 49 (a, b, c), Section 50 (a, b, c, d), Section 51, Section 52 (a, b, c, d, e, f), Section 53, Section 54, Section 55, Section 56, Section 68, Section 69, Section 70, Section 71 (a, b, c, d, e, f, g) and Section 72 of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		conditions: (a) 60% to 70% of the land area shall be designated as industrial area and only industrial manufacturing businesses may be carried out in this area. (b) 1% to 5% of the land area shall be designated as commercial area, and in this area, parking stations, warehouses, machine spare parts shops, shopping centres, offices and bonded warehouses shall be built and transportation businesses shall be carried out. (c) 20% to 25% of the land area shall be designated as public utilities and assistance area, and in this area, restaurants, parks, banks, technical and training institutes, machinery repair businesses, service businesses, news publication businesses, research and laboratories and petrol stations shall be operated. (d) 9% to 10% of the land area shall be designated as green belt, and when demarcating land areas for this area, there shall be a continuous stretch on the left and right sides of the roads and around the Industrial Zone. 48. The Investor shall, when submitting the business plan and land use, submit them with form D to the Management Committee, and if he receives permission to use the land, comply with the following: (a) Approval from the relevant municipal development committee or municipal development organisation shall be obtained for a building permit and for business licenses regarding water supply, waste management and drainage management. (b) The relevant type of registered engineer licensed by the Myanmar Engineering Council shall certify the following engineering matters and the Department's approval shall be obtained: (1) Civil and construction works for the factory or workshop; (2) positioning plan for machines; (3) boiler design; (4) electrical wiring and installation plan; (5) type of factory and production method;	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(6) other necessary matters. (c) The following documents shall be submitted to the Department for prior approval: (1) Standards to be followed; (2) List of machinery and status of their useful life; (3) raw materials to be used; (4) methods to ensure absence of environmental pollution; (5) organisational structure and workforce; (6) company's certificate of incorporation; (7) other necessary documents. (d) Comments from the Fire Department shall be obtained. (e) Comments from the Factories and Labour Law Inspection Department shall be obtained for occupational health and safety. (f) Approval from the Management Committee shall be obtained for the expansion or addition of buildings. (g) Compliance with environmental conservation matters is required according to sections 39, 41 and 42 of the Law. 49. A Developer: (a) Shall enable the allocation of space to groups of businesses of the same type as included in the approved Industrial Zone implementation master plan. (b) Shall obtain the approval of the Regional Committee if he wishes to change the allocation of space to groups of businesses of the same type in the master plan. (c) Shall comply with environmental conservation matters according to section 38 of the Law. 50. An Investor: (a) Has the right to operate according to the terms and conditions set for the groups of businesses of the	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		same type that are included in the master plan. (b) Shall have paid the land use fee to the Developer according to the contract concluded with the Developer when operating according to sub-rule (a). (c) May on the permitted land only engage in businesses related to the specified business type. May not switch to other businesses. (d) Shall, if desirous of changing his business, submit the matter to the Regional Committee through the Management Committee to be able to change his business to a [different] group of businesses of the same type. 51. If the Investor or Developer wishes to let the land with the right to use to another person or organisation according to the terms of the land lease contract, or wishes to sell, let, exchange or donate the land use rights and buildings, he shall submit the matter to the Regional Committee through the Management Committee. 52. The Regional Committee shall, if there is a submission under rule 51, allow the matter if the following conditions are met: (a) The person seeking permission is a person who is currently building or investing in the relevant Industrial Zone; (b) it is land for which the person seeking permission has actually obtained use rights; (c) the matter for which permission is sought is clearly stated in the contract; (d) absence of any dispute in relation to the matter for which permission is sought; (e) after obtaining permission, the person or organisation receiving the transfer will continue the business of the original Developer or Investor according to the law in force; (f) business plans for continuing the business and corresponding acknowledgment. 53. After the declaration as an Industrial Zone, the Regional Committee shall direct the relevant departments to demarcate and map the boundaries of the Industrial Zone area according to the laws in	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		force to develop the land situated in the Industrial Zone as an Industrial Zone. 54. If the Investor does not complete the work within the approved project timeline, he shall pay a fine according to section 34 (b) of the law, and if he cannot pay the fine, the land use contract shall be revoked if this is the opinion of the relevant department. 55. If the Developer applies for Industrial Zone land according to the terms and conditions, the Regional Committee shall coordinate with the relevant departments. 56. The Regional Committee shall direct the Developer and the Investor to pay the land rent and land use fee approved by the Central Committee. 68. According to section 37 of the Law, a Developer shall, when developing an Industrial Zone, and an Investor shall, when carrying out industrial businesses, carry out environmental conservation matters according to the laws in force. 69. Investors may dispose of non-hazardous solid waste according to their own arrangements or through storage and disposal in coordination with the relevant municipal committee or municipal organisation. 70. If investors are engaged in businesses related to chemicals and related products that are permitted by the relevant law, they shall comply with the laws, rules and procedures in force to ensure that there is no harm to the environment. 71. Business operators in an Industrial Zone shall comply with the following particulars regarding the efficient use of energy: (a) Prevention of thermal energy leaks and other energy losses in manufacturing processes; minimising, fixing and replacing thermal energy losses; (b) acting to reuse waste heat; (c) systematically and efficiently using energy and further improving energy efficiency in fuel combustion processes, heating and cooling processes and conversion processes from one form of energy to another (processes that convert thermal energy to mechanical energy or electrical energy, or electrical energy to	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		mechanical energy or thermal energy); (d) integrating the energy management system into the operational control system for efficient use of energy; (e) promoting the exchange of machinery that are slightly energy efficient with machinery that are highly energy efficient and the use of the latter; (f) using modern technologies and manufacturing methods to use energy efficiently; (g) keeping monthly and yearly records of energy consumption and production, and sending necessary information if so requested. 72. Factories and workshops that mainly use energy (energy intensive industries) shall comply with the laws, rules, orders, directives and procedures in force.	
21.	Prevention of Hazard from Chemical and Related Substances Law (2013)	15. A person who has obtained a licence, before starting the respective chemical and related substances business:- (a) shall be inspected for the safety and the power of resistance of the machinery and equipment by the respective Supervisory Board and Board of Inspection; (b) shall be attended the person who serve in the work to the respective foreign trainings or the trainings and the expert trainings on prevention of hazard from the chemical and related substances opened by the government department and the government organizations. 16. A person who has obtained a licence:- (b) shall perform to abide strictly the instructions for being safety in using the chemical and related substances by himself and also the persons who serve the work, (c) shall keep the required safety equipments enough in the chemical and related substances businesses, furthermore shall grant the personal protection equipments and dresses free of charge to the working persons; (d) shall make the course of training and study and instruction if necessary to the working persons for	The Project Proponent commits to comply with Section(15(a,b)), Section (16(b,c,d,e,f,g,h,i,j)), Section (17), Section (22) and Section (27(a,b,c,d)) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		using the occupational safety equipment, the personal protection equipment and the dresses systematically in the chemical and related substances business; (e) shall be inspected by the respective Supervisory Board and Boards of Inspection in respect of whether or not the hazard may impact on the Human Being and Animals' health and the environment; (f) shall make medical check up the working persons who will work in the chemical and related substances business and shall permit to serve in that work after obtaining the recommendation that his health is suitable for that work. This medical check up records shall be kept systematically; (g) shall send the copy of informative letter of the permission to the respective Department of Township Administration, if the hazardous chemical or related substances are permitted to store; (h) shall acquire in advance the guidance and agreement of the respective Department of Fire Brigade, if the business that is worried to fire hazard is operated by using the fire hazard substances or the explosive substances; (i) shall transport only the permitted amount of the chemical and related substances in accordance with the prescriptive stipulations, if they are transported in local; (j) shall take the permission from the Central Supervisory Board if the chemical and related substance is altered and transferred from one place to any other place which contained in the licence; 17. A person who has obtained a licence, shall put the insurance in accordance with the prescriptive stipulations to be able to pay the compensation, if the impact and damage is occurred on the Human Being and Animals or the environment in respect of the chemical and related substances businesses. 22. A person who has obtained the registration certificate shall abide the regulations consisted in the registration certificate furthermore shall also abide the order and instructions issued occasionally by the Central Supervisory Board. 27. A person who has obtained the licence to be compiled the following matters to control and decrease the hazard of the chemical and related substances:-	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(a) classifying the hazard level to protect in advance the hazard according to the properties of the chemical and related substances; (b) expressing the Material Safety Data Sheet and Pictogram; (c) providing the safety equipments, the personal protection equipments to protect and decrease the accident and attending to the training to be used systematically; (d) performing in accordance with the stipulations in respect of transporting, possessing, storing, using, discharging the chemical and related substances;	
22.	Prevention of Hazard from Chemical and Related Substances Rules (2016)	17. A person who wants to apply the licence for the business of chemical and related substances shall apply to the Central Supervisory Board after filling up in Form (1) with necessary facts and documents completely. 24. A licence holder shall: (a) operate only chemical and related substances business which is permitted in licence; (b) operate it in accordance with the licence duration of registered substances; (c) pay the prescriptive fees for renewal of licence; (d) not make the incorrect advertising and selling the chemical and related substances in respect of their potency, quality and standard; (e) hang the licence at a conspicuous place in the occupational area; (f) hang the certificates and recommendation letters that the employees in chemical and related substances business have attended the training on prevention of hazard from chemical and related substances and systematic use of them at a conspicuous place; (g) hang distinctly the caution letter or pictogram which shows the hazard information at the storehouse where the chemical and related substances are stored and at the relevant occupational area; (h) store the chemical and related substances only at the place and types of building that are prescribed and allowed by the Central Supervisory Board;	The Project Proponent commits to comply with Section 17, Section 24(a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s), Section 25, Section 26(a, b, c, d, e, f), Section 28(a, b, c, d), Section 54 (a, b, c, d, e, f, g), Section 55, Section 56 (a, b, c, d, e, f, g, h), Section 57,

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(i) carry out the required safety measures at the occupational area and building where the chemical and related substances are stored in accordance with the stipulations of the Central Supervisory Board; (j) pack the chemical and related substances safely and carry out the sticking of pictogram on the package in accordance with the stipulations; (k) carry out the safety measure for the chemical and related substances, equipment and machineries which are used in the occupational area; (l) instruct the name of hazardous chemical and related substances, maximum contact amount and other required information to the persons who contact and use chemical and related substances and practise for emergency situations; (m) do regular medical check up for working people according to the timetable which is prescribed by the respective doctor, and keep these medical check up records; (n) make the special treatment after being medical check up by the respective doctor if the working people happen the suffering of hazard and the bad health by contacting the chemical and related substances; (o) allow the respective doctor to inspect at any place and any record in the occupational area in respect of health condition. The suitable health care shall be made according to the doctor's suggestions; (p) hang distinctly the caution letter or pictogram which shows the hazard information at the storehouse where the chemical and related substances are stored and at the relevant occupational area; (h) (i) (j) (k) (l) store the chemical and related substances only at the place and types of building that are prescribed and allowed by the Central Supervisory Board; carry out the required safety measures at the occupational area and building where the chemical and related substances are stored in accordance with the stipulations of the Central Supervisory Board; pack the chemical and related substances safely and carry out the sticking of pictogram on the package in accordance with the stipulations; carry out the safety measure for the chemical and related substances, equipment and machineries which are used in the occupational area; instruct the name of hazardous chemical and related substances, maximum contact amount and other	Section 58(a, b, c, d, e, f, g, i, j), Section 59(a, b, c, d, e, f, g, h, i, j, k, l, m), Section 60 (a, b, c), Section 61 (a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r), Section 62(a, b, c, d, e, g, f, g, h, i, j), Section 63(a, b, c, d) and Section 64 (a, b) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		required information to the persons who contact and use chemical and related substances and practise for emergency situations; (m) do regular medical check up for working people according to the timetable which is prescribed by the respective doctor, and keep these medical check up records; (n) make the special treatment after being medical check up by the respective doctor if the working people happen the suffering of hazard and the bad health by contacting the chemical and related substances; (o) allow the respective doctor to inspect at any place and any record in the occupational area in respect of health condition. The suitable health care shall be made according to the doctor's suggestions; (p) abide by and perform in accordance with provisions in existing laws in respect of working people's health in operating the chemical and related substances business; (q) allow the Boards of Inspection to enter and inspect at any place concerning with the chemical and related substances business and assist for requirements; (r) abide by systematically and carry out the prescriptive provisions related to fire safety of the Department of Fire Brigade in storing the chemical and related substances; (s) abide by the orders, notifications and directives issued by the Central Supervisory Board from time to time. 25. A licence holder shall apply the registration certificate for chemical and related substances by filling up completely in Form (7) with attached document of supportive facts on required technique to the Central Supervisory Board. 26. A person who applies the registration certificate shall submit the following facts in advance to the Central Supervisory Board to be able to store the chemicals and related substances: (a) place, region and complete address for storing; (b) type of building for storing (roof, wall, floor); (c) area of building for storing (length, width, height);	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(d) name and complete address of a person, organizations which store and keep the chemical and related substances; (e) recommendation after inspection by the Department of Fire Brigade in respect of place and building to be stored in accordance with prescriptive provisions related to fire safety; (f) other facts which are to be submitted (if any). 28. If the registration certificate holder needs to use the chemical and related substances which are not included in the registered list, or occur any of following facts, he shall apply again the registration certificate to the Central Supervisory Board: (a) changing the trade mark or identity of the registered chemical and related substances; (b) changing the amount of content of the registered chemical and related substances; (c) changing the registered quality assurances and standards; (d) using the new kinds of chemicals which are not included in the national chemical and related substances profile. 54. The licence holders shall comply with specifications and standards of the Globally Harmonized System (GHS) in labelling to chemical and related substances. The following facts shall be included in labelling: (a) Product identifier (b) Pictogram (Annex (a)) (c) Signal word (d) Hazard statement (e) Precautionary statement (f) Supplier identification (g) Supplementary information The labelling as describing sample in Annex (c) shall stick on every packing material such as box,	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		bottle and cardboard, etc., in which the chemical and related substances are contained. 55. If the chemical and related substances are transported, the pictograms described in Annex (b) according to the hazard class of chemical and related substances shall be used and described on the transported vehicles and containers in accordance with the United Nations Recommendation of Transport and Dangerous Goods (UNRTDG). 56. The licence holder shall provide the following equipment and materials which may prevent the hazard from chemical and related substances for the working people in the occupational area and they shall be attended to the trainings to be able to use the equipment and materials systematically: (a) Respirator (b) Fire safety equipment (c) Laboratory coats and dresses used in the occupational area (d) Goggles (e) Face shields (f) Safety boots (g) Gloves (h) Other necessary hazard protection materials according to the business condition. 57. The licence holder shall, in order not to happen burning and explosion of the chemical and related substances and dispersion of environmental contamination, supervise and carry out by instructing as necessary for safety if it happens. 58. The licence holder shall manage to prevent and decrease the accident for the working people in the occupational area as follows: (a) specifying exactly to work with minimum numbers of worker by making effective control for protecting from health impact and safety of working people and to be minimum the necessary time in case of the unavoidable contact and to be minimum amount of the hazardous substances which shall be	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		contacted; (b) supervising and cooperating closely with working people in respect of safety for using chemical and related substances at the occupational area; (c) preparing in advance for easy, quick and effective communication systems and plans to be able to manage immediately for accident and emergency conditions; (d) supporting the first-aid kits and the necessary supporting materials which are soap, liquid detergent, cleaning liquid and air shower etc., for cleaning the bodies of working people; (e) using rightly the personal protection equipment and dresses in the occupational area after supporting them to working people adequately and making practice to be able to use them; (f) warning consistently to the working people, besides training and practicing the facts to be followed for safety in the occupational area as well in using the chemical and related substances; (g) hanging the pictograms of hazardous substances at conspicuous places; (h) placing separately the chemical and related substances which may cause the hazard according to the hazard class; (i) managing to be the occupational area where is free from hazardous materials and the sufficient area where the working people are able to operate and pass through freely; (j) supporting the precaution system, fire extinguishing system and equipments sufficiently, and the emergency exits for fire safety. 59. To be safe, the organizations and licence holders who transport the chemical and related substances shall: (a) have the transportation licence issued under the Road and Inland Water Transport Law, if the transportation business of the restricted chemical or restricted related substance is worked; (b) transport the restricted chemical and related substances only when getting the recommendation letter of transport permission issued by the relevant District Supervisory Board. In transporting so, there shall	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		be prior informed and submitted to the District Supervisory Boards along the transportation route; (c) carry out by coordination and supervision of the relevant Supervisory Board in transporting the restricted chemical and related substances; (d) perform systematically the packing of the chemical and related substances to be safe in transporting, and perform by prescriptive packing system depending on the type of substance; (e) transport by the tanker or cylinder which may resist to the prescriptive pressure, if the chemical or related substance which is only as gas state in normal temperature and pressure is converted to liquid by increasing the pressure; (f) have the import licence or import permit and import declaration (return) if the chemical and related substances are imported, and transport them only to the allowed place and quantity in accordance with disciplines in permission; (g) prepare in advance for the decrease and being free from accident in transporting; (h) change for the transportation of chemical and related substances from one place described in licence to another place after taking permission from the Central Supervisory Board; (i) perform the vehicles which the chemical and related substances are to be transported in line with prescriptive transportation means, rules and regulations; (j) not transport the chemical and related substances by the public vehicle in local transporting, and transport it only by the specific vehicle according to the requirement of business; (k) bring the life safety equipment, extinguishers, personal protection equipment and dresses on the transportation vehicle of the restricted chemical and related substances to be able to use in emergency case if necessary; (l) be the driver who holds the driving licence and works in the licensed transportation business has been attended for training on prevention of hazard from the chemical and related substances; (m) be same the Material Safety Data Sheet and instructions on the boxes and bottles in which the	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		chemical and related substances are put, and on the packing container in which these boxes and bottles are put. 60. The licence holder or transporter shall comply with the instructions in order not to occur the accident which causes pollution to environment or hazard to the health of any living beings during the transporting of chemical and related substances. If the accident occurs, the licence holder or transporter shall take the responsibility for this matter as well as the following facts shall also be performed: (a) using the personal protection equipment and dress immediately; (b) reporting the emergency condition to the Board of Inspection immediately; (c) submitting the report to the Board of Inspection immediately after cleaning the accidental place quickly to be free from hazard. 61. The organizations and licence holders who store the chemical and related substances shall abide by the following facts for safety: (a) installing the fire protection system in building to be stored in accordance with prescribed provisions of the Department of Fire Brigade and being the building which is constructed to correspond for storing the chemical and related substances; (b) sticking the warning sign according to hazard class, and keeping the safety equipment at the stored places; (c) storing only after checking certainly to the chemical and related substances which are kept completely with the pictogram, and packing system by the importers and possessors; (d) storing only the substances which are contained in the issued national chemical and related substances profile; (e) keeping the chemical and related substances according to the hazard class; (f) separating the chemical and related substances which may react and be hazardous if they are closely kept;	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(g) making the stored place to be cool, dry and good in ventilation and not to have the direct contact of sunlight on the stored substances; (h) not storing the chemical and related substances near the place where releases the heat energy; (i) not storing and eating the food near the place where the chemical and related substances are stored; (j) using the gas cylinders with pressure gauge and not keeping them at place where may easily collapse; (k) making strong and resistant to corrosion of the boxes and bottles which are put the chemical and related substances and the shelves which are kept them. (l) placing and storing the corrosive chemical and related substances on the nearest stage to the floor; (m) providing fire prevention equipment and fire extinguishing equipment which are required for fire safety depending on the categories of chemical and related substance sufficiently, at the nearest to entrances and exits to be able to use them easily; (n) supervising closely the storehouse or storeroom by experts or persons who have attended to the training; (o) allowing only for the responsible person for entering into the storehouse or storeroom; (p) storing the gas as the commercial purpose only by a person who knows and understands the using way of the gas and about dangers arisen by gas; (q) separating the gas-cylinders depending on categories of gas, and the empty and full gas-cylinders in storing of them; (r) abiding by with the provisions contained in existing laws in storing of the chemical and related substances. 62. To be safe, the user of chemical and related substances shall: (a) use only the registered restricted or conditional chemical and related substances; (b) not use the unregistered, without labeled, unknown, damaged or expired chemical and related substances; (c) wear the personal protection equipment and dresses which are suitable for handling and using;	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(d) comply with the issued directives not for occurring hazard and for decreasing of hazard if it happens; (e) not use beyond the prescribed amount of the hazardous chemical and related substances; (f) allow to take the prescribed amount of the chemical and related substances by free of charge in taking sample with Form (10) to be able to inspect the quality of them by the Board of Inspection; (g) participate the practice in advance for prevention from the hazard; (h) perform to get the enough light and ventilation in the occupational area; (i) provide the emergency exit and telephone for communication to be able to use in the occupational area if the emergency condition happens; (j) inform in advance the side effects which shall be obtained by using chemicals and health impact to the working persons in the occupational area. 63. The licence holders and organizations that operate the chemical and related substances business and the users of them shall comply with the following facts in discharging the wastes to be free from the hazard: (a) carrying out the discharging in accordance with these rules, rules relating to water distribution and sewage sanitation prescribed by the City Development Committee, and the Environmental Conservation Law and Rules; (b) discharging only after making the suitable treatment to the wastes and waste water; (c) carrying out in accordance with the techniques in order not to pollute to the natural environment and to protect from the depletion of ozone layer due to the wastes; (d) reducing the amount of wastes released from using the chemicals, reusing and recycling them as energy. 64. A licence holder shall: (a) accept the regular inspection, surprise check, and inspection due to information on the treatment systems of wastes for being free hazard, and furthermore keep the inspection records of them.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(b) take the responsibility on happening if it happens the hazard due to not complying with the disciplines in respect of discharging the wastes.	
23.	The Industrial Explosive Materials Law (2018)	6. (c) On receipt of the direction from the Ministry under sub-section (b), the Chief Inspector shall notify the applicant to construct a magazine with specified features on the approved plot. 7. (c) If the Office of the Commander-in-Chief (Army) found that the finding and remark of the sub-committee for procurement, provision, storage and distribution of explosives is in conformity with the specifications, the office shall grant permission to the applicant to carry out any one or more of import, transport, store, manufacture, use, process or transfer of industrial explosive materials. A copy of permission shall be sent to the Ministry. 11. . When the application for a licence under section 10 is received, the Chief Inspector shall inspect whether the magazine is constructed in specified features and: - instruct the applicant to alter or add the requirements if the magazine is not constructed in specified features; - grant a licence to the applicant with the approval of the Ministry if the magazine is constructed in specified features. 13. The licensee shall apply to renew the licence, 30 days before expiration to the Chief Inspector in accordance with the stipulations if he wishes to continue to store industrial explosive materials. 14.(b) may renew the licence with the approval of the Ministry if the magazine is constructed in specified features. 15. A licensee shall: - systematically store industrial explosive materials without exceeding the permitted amount in accordance with the specifications; - accept the inspection of the Chief Inspector or an inspector from time to time; - if damage to property, injury to or death of people occurs due to loss, burning or explosion of industrial explosive materials, inform about it to the nearest police station immediately, and report	The Project Proponent commits to comply with Section(6(c)), Section (7(c)), Section (11(a,b)), Section (13), Section (14(b)), Section(15(a,b,c,d)), Section(16), Section(18), Section(20(a,b)) and Section(21(a,b,c)) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		it to the Chief Inspector timely; d. pay licence fees stipulated by the Ministry to the Department. 16. A permission holder shall: a. store industrial explosive materials only in the licensed magazine; b. take necessary preventive measures in accordance with the specifications to avoid harm in transport, manufacture, use or possession of industrial explosive materials. 18. Any licensee or permission holder shall not refuse inspection of the Chief Inspector or an inspector. 20. No one, in an unlicensed magazine, shall: a. accept to store industrial explosive materials; b. deliver to store industrial explosive materials. 21. No licensee shall: a. accept to store industrial explosive materials more than the limited amount mentioned in the licence issued by the Ministry; b. fail to inform the nearest police station immediately and to report the Chief Inspector timely if anything mentioned in sub-section (c) of section 15 occurs due to industrial explosive materials; c. continue to store industrial explosive materials without renewal after expiration of the licence.	
24.	The Petroleum and Petroleum Product Law (2017)	(8.) The Ministry shall carry out the following functions relating to any petroleum and petroleum product: a. issuing licences relating to refining, transit, transport by pipeline, sale and distribution, inspection, and testing; issuing joint licence or compound licence for carrying out more than a type of business activities; c. determining procedures and conditions relating to refining, transit, transport by pipeline, sale and distribution, inspection and testing; (9.) The Ministry of Transport and Communications shall carry out the following functions relating to any petroleum and petroleum product: a. issuing licence to vehicles, vessels and barges that carry any petroleum and petroleum product; e. determining procedures and conditions to be abided by in carrying out transport business except	The Project Proponent commits to comply with Section(8(a,c)), Section 9(a,e)), Section (10(a,b,d,e)), Section (11),

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		transport by pipeline. (10.) The Ministry of Natural Resources and Environmental Conservation shall carry out the following functions relating to any petroleum and petroleum product: a. issuing licence for the right to store for the storage tanks and warehouses; b. issuing transport permit for the vehicles, vessels and barges that shall carry any petroleum and petroleum product; d. if it occurs environmental impacts in carrying out petroleum and petroleum product business activities, taking action, as necessary, in accordance with the existing laws of on-site inspection; e. determining, in coordination with ministries concerned, procedures and conditions relating to standard and quality of storage tanks and warehouse, and tanks of vehicles, vessels and barges that carry any petroleum and petroleum product. (11) On all receptacles containing any dangerous petroleum and petroleum product, the warning sign of danger by stamping, embossing, painting, printing or any other means shall be expressed. If it is impossible to express as such, similar warning signs of the nature of danger of gasoline, spirit or petroleum shall be expressed in writing at the ostensible place in salient words or signs near to the receptacle. (12) The provisions contained in section 11 shall not apply to any following receptacles: (a) any glass, stone or metal receptacle in which the dangerous petroleum lesser than two gallons is put with secure cap; (b) a tank attached to machine-powered vehicle or machinery that uses any petroleum and petroleum product; (c) a storage tank absolutely buried underground; (d) any class of receptacles, by notification, exempted from the application of this section by the Ministry. (15) Any person desirous to transport or store non-dangerous petroleum and petroleum products locally, shall obtain license if it is more than 500 gallons. However, in storing 500 gallons and less, receptacle not exceeding 200 gallons shall be used. (16) Any person may, without obtaining license, store, import or transport any dangerous petroleum and	Section (12), Section(15), Section(16) and Section(17) of this law..

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		petroleum product not exceeding six gallons not intended for sale. (17) If it is desirable to store any dangerous petroleum and petroleum product according to section 16, the product shall be put and stored in the glass, stone or metal receptacle with secure cap. If it is desirable to store in the glass or stone receptacle, the volume shall not exceed 0.25 gallon. If it is desirable to store in metal receptacle, the volume shall not exceed 5 gallons.	
25.	The Petroleum Rules (1937 – Amended up to 1946)	51. Application.- 1. The rules in this part apply only to the transport coastwise of dangerous petroleum otherwise than in bulk. 2. Unless otherwise expressly provided in this part nothing contained in Part II of this Chapter, except Rule 39, shall apply to any petroleum transported in accordance with this part. 52. Maximum quantity allowed to be carried. – Dangerous petroleum may be transported otherwise than in bulk by country craft or steam or motor vessels other than unberthed passenger ships as defined in the Indian Merchant Shipping Act, 1923, subject to the provisions of Rules 53 to 62 inclusive, if the quantity of petroleum does not exceed- a. in the case of country craft, the licensed carrying capacity of the vessel after taking into account the weight of the barrels or tins in which the petroleum is carried; or b. in the case of steam or motor-vessels, 15 tons. 53. Loading of barrels and drums.- Barrels and drums shall be loaded with the bungs upwards. 54. Carriage below decks.- Dangerous petroleum shall not be carried below decks in decked vessels unless the hold is properly ventilated. 55. Provision of bulkhead.- In all vessels other than country craft a solid gas-tight bulkhead without openings, and in country craft a solid bulkhead without openings, shall be fitted between the hold and the afterdeck where the crew are accommodated; and in vessels fitted with a poop the bulkhead shall be placed immediately in front of the poop. In decked vessels the bulkhead shall reach up to the deck; in all other vessels it shall reach to within six inches of the gunwhale.	The Project Proponent commits to comply with Section(51), Section (52(a,b)), Section (53), Section (54), Section (55), Section(56), Section(57), Section(58), Section(59), Section(60(a,b,c,d)), Section(61(a,b,c,d)), Section(62(a,b,c)), Section(63),

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		56. Fire, lights and smoking.- 1. No fire, naked light of any description, and no smoking, shall be allowed on any part of a vessel transporting dangerous petroleum except abaft the solid bulkhead. 2. The navigation lights on any such vessel shall be carried abaft the bulkhead. 57. Carriage of other inflammable cargo.- No inflammable cargo other than dangerous petroleum or other petroleum products or the dunnage used for packing purposes shall be carried on a vessel transporting petroleum. 58. Fire buckets.- Buckets containing dry sand shall be placed at convenient points on a vessel transporting petroleum. Not less than two such buckets shall be placed on the after-deck. 59. Construction of steam or motor-vessels.- Steam or motor-vessels not specially constructed for the carriage of petroleum shall not carry petroleum unless they are constructed only of iron or steel. 60. Transport in steam or motor-vessels.- On steam or motor vessels not specially constructed for the carriage of petroleum- a. any petroleum shall either be carried in separate compartments which shall be gas-tight and shall be efficiently sealed, or in a hold in which there are efficient ventilators in accordance with clause (b), or on deck in accordance with Rule 61; b. half of the ventilators provided in accordance with clause (a) shall extend to the bottom of the space, and the other half only a short distance, below the deck; the short ventilators shall be labelled "Outlet or to Leeward" and the long "Inlet or to Windward"; such ventilators shall have large cowl heads, the openings being covered with double fine brass wire gauze; c. dangerous petroleum shall be contained in receptacles complying with the provisions of Rule 27; and d. special precautions shall be taken against smoking and the use of lights or fire of any kind while the cargo is being loaded or unloaded, or while the hatches are off, or any deck openings are uncovered; before any lights are used in a compartment which contains petroleum precautions shall be taken to ensure that the space is clear of vapour; all empty receptacles which have contained dangerous petroleum shall be kept securely closed.	Section(64), Section(65), Section(66), Section(67), Section(68), Section(69), Section(70), Section(71), Section(72), Section(73), Section(74), Section(75), Section(76), Section(77), Section(78), Section(79), Section(80), Section(81) and Section(82) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		61. Transport on deck.- Petroleum may be carried on deck in steam or motor-vessels not specially built for the carriage of petroleum, subject to the following conditions;- - In cargo ships dangerous petroleum shall not occupy more than 50 per cent of the open deck area and shall be so stowed as not to interfere with the navigation of the ship, or make it unseaworthy; - In passenger ships a limited quantity of dangerous petroleum may be carried provided proper precautions are taken regarding stowage and keeping the packages away from passenger's promenade or deck space; - The petroleum shall be protected from the direct rays of the sun by the use of a canvas awning or otherwise; and - Conspicuous notices shall be posted up drawing attention to the danger arising from smoking or striking matches near the deck cargo. 62. Conditions of transport by country craft.- No dangerous petroleum shall be transported in country craft except subject to the following conditions:- - Subject to the provisions of Rule 27, the petroleum shall be carried- - in 40/65 gallon steel barrels the screw bungs of such barrels being well-fitting and sealed; or - in 4-gallon sealed steel drums, not more than three tiers of which may be carried on any single vessel; or - in 2-gallon sealed steel tins, not more than six tiers of which may be carried on any single vessel; - all barrels or tins shall be carefully examined and no leaky barrels or tins shall be taken on board the craft; and - no barrels, drums or tins shall be placed within four feet of the after-deck where the crew are accommodated in the case of a undecked vessel or on deck in the case of a decked vessel. 63. Prohibition of fires and smoking.- - No fire or other artificial light capable of igniting inflammable vapour shall be allowed on any vehicle containing petroleum in bulk. - No person shall smoke while on or attending such a vehicle.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		3. No article or substance capable of causing fire or explosion shall be carried on such a vehicle. Explanation.- For the purposes of this rule any tank or other receptacle which has contained petroleum and which has not been thoroughly cleaned and freed from inflammable vapour shall be deemed to contain petroleum. 64. Filling and discharge of tanks.- 1. Tank-wagons lorries or carts transporting petroleum shall only be filled or discharged by means of metal pipes or armoured hose in which the armouring is electrically continuous throughout. 2. Tanks, other than fuel tanks on vehicles, containing dangerous petroleum shall not be filled or discharged- i. within 100 feet of any fire, furnace or artificial light capable of igniting inflammable vapour; or ii. at any place where the lorry, wagon or cart is exposed to sparks: Provided that the distance specified in clause (i) may be reduced to 30 feet when the petroleum is filled or discharged under seal and closed vapour return pipe lines are provided: Provided further that the distance specified in clause (i) may be reduced to the figure prescribed in the licence in Form K where the petroleum is filled, stored and discharged into a tank in any premises licensed in that Form. Explanation. - A pipe supplying liquid to a tank is “under seal” to that tank if it is screwed to the tank or otherwise attached so that no liquid or vapour can escape into the air except through an approved vent. 65. Means of extinguishing fire to be carried.- An adequate supply of dry sand or other efficient means of extinguishing fire shall be carried in an easily accessible position on every vehicle transporting petroleum in bulk by road. 66. Prohibition as to public service vehicles.- Petroleum shall not be transported on any public vehicle which is carrying passengers.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		67. Vehicles to be constantly attended. – 1. Every vehicle while engaged in the transport of petroleum by road shall be constantly attended by at least one person: Provided that such vehicles may be left unattended in places previously approved by the Chief Inspector. 2. Every vehicle on which more than 1,000 gallons of petroleum is being transported by road, or which, while transporting any petroleum by road is being trailed by another vehicle, shall so long as it is in motion, be attended by at least two persons. 68. Trailers attached to vehicles transporting petroleum by road.- 1. A trailer not exclusively used for transporting petroleum shall not be attached to any vehicle transporting petroleum. 2. A trailer transporting petroleum shall not be attached to any vehicle other than a vehicle used for transporting petroleum, and not more than one trailer shall be so attached. 3. A trailer shall have two axles. 4. When a trailer is attached to a vehicle, the total quantity of petroleum transported on the trailer and the vehicle combined shall not exceed 2,000 gallons. 5. If a trailer transporting dangerous petroleum is attached to a vehicle transporting non-dangerous petroleum, the vehicle shall comply with all the provisions of these rules relating to vehicles transporting dangerous petroleum. 6. A trailer other than a tank trailer shall not be attached to a tank-wagon. The capacity of a tank trailer shall not exceed 500 gallons, and no trailer shall be attached to a tank-wagon of greater capacity than 1,500 gallons. 7. No trailer attached to a tank-wagon shall be employed within any thickly populated area without the permission in writing of the District Authority. 69. Tank capacity.- In these rules the tank forming part of a tank-wagon or tank trailer shall be deemed to include any number of tanks on the same chassis and any limitation herein prescribed on the capacity of a tank shall be construed so as to permit of the tank containing the amount specified under varying degrees of temperature.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		70. Employment of electric light. – If electric lighting is employed on any vehicle, including a trailer, used in the transport of petroleum other than heavy petroleum by road, the following conditions shall be complied with – - the pressure shall not exceed sixteen volts; - the circuit shall be heavily insulated and shall be independent of the chassis, and the wiring shall be so fixed and protected as to reduce as far as possible the risk of damage; - the generator, battery, switches and fuses shall be carried in front of the fire-resisting screen and battery shall be in an easily accessible position; and - means of cutting off the current close to the battery by a double-pole switch or other suitable method shall be provided. 71. Fuelling from vehicles.- - No motor conveyance other than aircraft shall fill or replenish its fuel tanks with petroleum other than heavy petroleum directly from vehicles carrying petroleum in bulk. - Aircraft may receive fuel by means of specially constructed tank lorries or wagons only if these are of a type approved by the Chief Inspector for this purpose. - During the fuelling of aircraft used for the conveyance of passengers no passenger shall be allowed to remain in the machine. - No person shall be allowed to smoke within 100 feet of any aircraft while it is being, or is about to be, fuelled. - All aircraft engines within the distance specified in sub-rule (4) shall be stopped so long as fuelling is in progress. - Nothing in sub-rules (2) and (5) shall apply to military aircraft fuelling on military aerodromes. 72. Owner responsible for observance of rules.- The owner of a vehicle used for the transport of petroleum who employs any person in connection with such transport, shall be responsible that all necessary measures have been taken ensure that such person is acquainted with and carries out the provisions of these rules.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		73. Precautions to be observed during filling or emptying tank-wagons.- During the filling, discharging or emptying of any tank-wagon or trailer transporting petroleum in bulk other than heavy petroleum the following precautions shall be observed:- i. If the vehicle is mechanically-driven the engine shall be stopped so long as the filling, discharging or emptying is in progress and shall not be restarted until all tanks and valves have been securely closed: Provided that the condition may be dispensed with in the case of vehicles approved under sub-rule (2) of Rule 71, which are supplying aircraft; ii. Adequate provision shall be made to prevent the accumulation of a dangerous static charge of electricity; iii. If the wagon is drawn by an animal or animals, they shall be removed from the wagon and the wheels securely scotched before the filling, discharging or emptying of any dangerous petroleum is begun; and iv. The vehicle shall be constantly attended by a competent person. 74. Composite vehicles.- Petroleum in cans or other receptacles shall not be transported by road on any tank-wagons used for the transport of petroleum unless the wagon is so constructed as to comply with the conditions applicable to transport on wagons other than tank wagons as well as with the conditions applicable to transport on tank-wagons. 75. Filling and dipping pipes to be kept closed.- Except during the operations of filling or emptying a tank-wagon the filling and dipping pipes shall be kept securely closed. Where the filling pipes are not provided with a liquid seal, the covers shall be kept locked or properly sealed except during the operation of filling a tank-wagon, and the keys shall not be carried on the wagon. 76. Filling and emptying by night.- Except where approved electric lighting as specified in Rule 105 is exclusively used, the filling, discharging and emptying of tank-wagons shall be performed between the hours of sunrise and sunset. 77. Approval of vehicles for transport in bulk necessary.- 1. Petroleum in bulk shall not be transported by land except in a vehicle of a type approved in writing	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		by the Chief Inspector. 2. All such vehicles other than those exclusively used for the transport of heavy petroleum shall have a stamped, embossed, painted or printed warning exhibiting in conspicuous characters the words “Petrol,” “Motor Spirit” “Kerosene” or an equivalent warning of the nature of the contents. 3. Every such vehicle and its fittings shall be maintained in good condition. 78. Vehicles for transport other than in bulk, - 1. Every vehicle on which petroleum not in bulk is transported shall be strongly constructed and with sides and back of adequate height and shall be maintained in good condition. 2. In the case of an animal-drawn vehicle the requirement in sub-rule (1) regarding the sides and back of the vehicle shall not apply if the load is securely fastened to the vehicle. 3. All receptacles shall be so packed as not to project beyond the sides or back of the vehicle. 79. Engines of mechanically-driven vehicles.- 1. In every mechanically-driven vehicle used for the transport by road of petroleum other than non-dangerous petroleum not in bulk or heavy petroleum- a. the engine shall be of an internal combustion type; b. the engine fuel tank and electric batteries shall be effectively screened from the body of the vehicle by a fire-resisting shield carried up above the height of the load and down to within twelve inches of the ground; and c. the exhaust shall be wholly in front of the fire-resisting shield. 2. If windows are provided in the fire-resisting shield they shall be fitted with wired glass. 3. The fuel tank of every such vehicle other than an articulated vehicle may be behind the fire-resisting shield if – a. a fuel feed apparatus placed in front of the shield, is used to lift the contents from the fuel tank ; and b. the fuel tank is protected from blows by the frame or by stout steel guards, and the filling hole cover is provided with a lock. 4. The fuel tank of any vehicle may be behind the fire-resisting shield if the fuel used in the engine is	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		heavy petroleum. 5. A quick action cut-off valve shall be fitted to the fuel feed pipe of every such vehicle in an easily accessible position, which shall be clearly marked. 80. Speed limit for vehicles.- Without prejudice to the operation of any other provision of law for the time being in force whereby a lower limit of speed is imposed, the speed of a motor tank-wagon, or a motor lorry transporting petroleum in receptacles shall not exceed 30 miles per hour if fitted with pneumatic tyres and 15 miles per hour if fitted with solid tyres. 81. Exemptions.- 1. If the Chief Inspector is satisfied that in respect of any class of vehicle any of the requirements of Rule 68, 70, 78, and 79 may be safely suspended or relaxed, he may authorize such suspension or relaxation for such period and under such conditions as he may think fit. 2. Nothing in Rules 68, 70, 77, 78 and 79 shall apply to vehicles and trailers in the possession of Union of Burma forces. 82. Special provision for motor conveyances.- 1. Rules 63 to 80 shall not apply to the conveyance of petroleum in any motor vehicle for use only in the propulsion of such vehicle. 2. No motor conveyance carrying passengers on hire shall carry any petroleum other than- i. petroleum in the fuel tank incorporated in the conveyance, and ii. petroleum not exceeding 20 gallons in quantity intended to be used to generate motive power for the conveyance and kept in the manner provided in sub-section (2) of section 8 of the Act. 3. During the filling or replenishment of the fuel tank of a vehicle licensed for the conveyance of more than six passengers on hire, no passengers shall be allowed to remain in the vehicle. 4. All petroleum tins carried in a vehicle carrying passengers for hire shall be securely closed and shall be carried in a specially prepared receptacle which is not accessible to passengers in the vehicle, and is not on the roof.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
26.	The Factories Act (1951) (Amendment 2016)	Provisions related to prohibitions for the proper disposal of waste and effluents in factories; treatment of wastewater; regulations for health and cleanliness in factories, and the prevention of hazards.	The Project Proponent commits to comply the law.
Public Health and Labour			
27.	The Prevention and Control of Communicable Diseases Law (1995-Amending 2011)	3. In order to prevent the outbreak of Communicable Diseases, the Department of Health shall implement the following project activities:- (a) immunization of children by injection or orally; 4. When a Principal Epidemic Disease or a Notifiable Disease occurs:- (a) immunization and other necessary measures shall be undertaken by the Department, of Health, in order to control the spread thereof; (b) the public shall abide by the measures undertaken by the Department of Health under sub-section (a). 9. The head of the household or any member of the household shall report immediately to the nearest health department or hospital when any of the following events occurs:- (a) rat fall (b) outbreak of a Principal Epidemic Disease; 11. In order to prevent and control the spread of a Principal Epidemic Disease, the Health Officer may undertake the following measures:- (a) investigation of a patient or any other person required; (b) medical examination; (c) causing laboratory investigation of stool, urine, sputum and blood samples to be carried out; (d) causing investigation by injection to be carried out; (e) carrying out other necessary investigations.	The Project Proponent commits to comply with Section(3(a)), Section (4(a,b)), Section (9) and Section (11) of this law.The Project Proponent commits to coordinate with the nearest Health Officer in order to control communicable disease.
28.	The Control of Smoking and	7. Places to which the public have access in the following buildings, vehicles and crafts are non-smoking areas except the private offices and rooms. However, specific places where smoking is allowed shall be	The Project Proponent

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
	Consumption of Tobacco Product Law (2006)	arranged in such areas: a. buildings of offices and departments; b. buildings of factories and workshops; g. other public buildings, rooms and places prescribed through notification by the Ministry of Health. 9. The person-in-charge shall: b. arrange the specific place where smoking is allowed as mentioned in section 7 and keep the caption and mark also referring that it is a specific place where smoking is allowed, in accordance with the stipulations; c. supervise and carry out measures so that no one shall smoke at the non-smoking area; d. accept the inspection when the supervisory body comes to the place for which he is responsible. 12. Whoever commits any of the following acts shall, on conviction, be punished with imprisonment for a term which may extend to two years or with fine or with both: a. obstruction, disturbance, prohibition or commission of assault to any member of Supervisory Body who comes and inspects under this Law; b. obstruction, disturbance, prohibition or commission of assault on the person-in-charge who supervises to prevent smoking at the non- smoking area.	to comply with Section(7(a,b,g)), Section (9(b,c,d)) and Section (12(a,b)) of this law.
29.	The Employment and Skill Development Law (2013)	(5) (a) (i) The employer shall conclude an employment agreement within thirty days after appointing a worker to do any work. However, it does not concern with appointment of permanent staff at the Government department, Government organization; (ii) If the pre-orientation period and probation period are prescribed before the appointment, such trainee shall not concern with stipulation in sub-section (1). a. The employment agreement shall include the followings: i. category of employment; ii. period of probation; iii. wage, salary; iv. place of employment;	The Project Proponent commits to comply with Section(5(a,b,c,d,e ,f,g)), Section (14) and Section (30(a,b)) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		v. term of agreement; vi. working hour; vii. holiday, day-off and leave; viii. over-time; ix. messing arrangement during working hour; x. accommodation; xi. medical treatment; xii. arrangement for ferry and travelling; xiii. terms and conditions to be abided by the workers; xiv. term of period agreed by the worker to continue to work after attending the training if the worker has to attend the training sent by the employer; xv. resignation from work and termination of work; xvi. termination of agreement; xvii. obligation from work and termination of work; - xviii. termination of employment agreement by mutual consent of employer and worker; xix. other matters; xx. prescribing, amending and adding the terms and condition of the agreement; xxi. miscellaneous. b. Workplace terms and conditions included in the employment agreement shall be in conformity with any existing law and benefits of the worker shall not be less than benefits contained in any existing law; c. The Ministry shall issue notification to pay stipulated compensation to worker by the employer if the work is completed earlier than the period concluded in the employment agreement or if all or any part of the work is terminated due to unexpected cause or if a matter to terminate the work arises for any other cause; d. The employment agreement concluded under sub-section (a) shall apply to daily wage earners and pieceworkers temporarily at the Government organization; e. The employer and the worker or workers may amend, by mutual agreement, conditions and	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
30.		benefits contained in the employment agreement as may be necessary in accord with the existing law; f. The copy of employment agreement concluded between the employer and worker shall be sent to the relevant labour exchange office by the employer within the stipulated time and obtain approval; g. The employment agreements concluded before coming into force of this Law shall be valid until the original term terminates. (14) The employer shall carry out training programmes for increasing employment skill of the workers who are intended to appoint or who are working presently in his work in accord with the policy of the Skill Development Body according to the requirement of the work. (30) (a) The employer of the industry and service shall pay money not less below 0.5% of salary, total wages paid to the level of worker supervisor and the workers below such level in such work monthly without fail as the contribution to the fund. (b) The contribution paid under sub-section (a) shall not be deducted from the wage or salary of the workers.	
30.	The Leave and Public Holidays Act (1951) (Amendment 2014)	3. (2) If any public holiday falls on any weekly day of rest or on any other holiday, an alternative holiday shall not be allowed, but that weekly day of rest or holiday (as the case may be) on which the public holiday incidentally falls shall be regarded as a public holiday. If however, an employee is required to work on a public holiday, he shall be paid basic wages or pay (as the case may be) at double the usual rate, as well as the cost of living allowance, if admissible, at the ordinary single rate. (3) A holiday without wages or pay may be granted on the occasion of religious festivals to non-Buddhist employees by mutual agreement between employers and employees. (4) The employer shall determine and allow at least a day in a week as the holiday on Full wage or pay. 4. (1) Every employee who has completed a period of 12 months' continuous service shall be granted by	The Project Proponent commits to comply with Section(3(2,3,4)), Section(4(1,3,6)) and Section(11) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		his employer during the subsequent period of 12 months – a. In the case of employees over 15 years of age, earned leave with average wages or average pay (as the case may be) for a period of ten consecutive days; and b. In the case of employees under 15 years of age, earned leave with a average wages or average pay as the case may be for a period of 14 consecutive days. (3) An employer shall fix the time at which earned leave may be taken by his employee within three months from the last date of the period of 12 months in respect of which the earned leave is to be granted. Accumulated earned leave admissible may, however, by mutual agreement between the employer and the employee concerned be granted to the employee at any time during any period not exceeding three years. (6) (1) An employee shall be admissible to leave on medical certificat with wages or pay (as the case may be) not exceeding 30 days in a year. <i>(Provided that leave on medical certificate shall not be admissible to an employee until he has benn in service for at least six months, and that grant of such leave shall be subject to a waiting period of three days for which he shall be paid half his usual pay or wages (as the case may be). If, however, an employee has not been in service for at least six months, he shall be admissible to leave on medical certificate without pay.</i> (2) Leave on medical certificate shall be granted on production of a certificate (in order of priority) from the medical officer of the trade, industry or establishment concerned, or a registered doctor, from a government medical officer in the case of government employees, or from the railway medical officer in the case of railway employees or from any other registered doctor. 11 Every employer shall keep and maintain such registers and records as may be prescribed.	
31.	The Labour Organization	(18) The labour organization has the right to demand the relevant employer to re-appoint a worker if such worker is dismissed by the employer and if there is cause to believe that the reasons of such dismissal	The Project Proponent

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
	Law (2011)	were based on labour organization membership or activities, or were not in conformity with the labour laws. (19) The labour organizations have the right to send representatives to the Conciliation Body in settling a dispute between the employer and the worker. Similarly, they have the right to send representatives to the Conciliation Tribunals formed with the representatives from the various levels of labour organizations. (20) In discussing with the Government, the employer and the complaining workers in respect of worker's rights or interests contained in the labour laws, the representatives of the labour organization also have the right to participate and discuss. (21) The labour organizations have the right to participate in solving the collective bargains of the workers in accord with the labour laws. (22) The labour organizations shall carry out peacefully in carrying out holding of meetings, going on strike and carrying out other collective activities in accord with their procedures, regulations, by-laws and any directives prescribed by the relevant Labour Federation.	to comply with Section(18), Section (19), Section (20), Section (21) and Section (22) of this law.
32.	The Minimum Wage Law (2013)	(12.) The employer: a. shall not pay wage to the worker less than the minimum wage stipulated under this Law; b. may pay more than the minimum wage stipulated under this Law; c. shall not have the right to deduct any other wage except the wage for which it has the right to deduct as stipulated in the notification issued under this Law; d. shall pay the minimum wage to the workers working in the commerce, production business and service in cash. Moreover, if the specific benefits, interests or opportunities are to be paid, it may be paid in cash in accord with the stipulations or jointly in some cash and in some produce prescribed in local price according to the desire of the worker; e. may pay jointly in some cash and some produce prescribed in local price according to the local custom or desire of the majority of workers or collective agreement in paying the minimum wage to the workers and working in the agriculture and livestock breeding business. Such payment shall	The Project Proponent commits to comply with Section(12(a,b,c,d,e)) and Section (13(a,b,c,d,e,f,g) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		be for any personal use and benefit of the worker and his family and the value shall also be considerable and fair. (13) The employer: - shall inform the workers the rates of minimum wage relating to the business among the rates of minimum wage stipulated under this Law and advertise it at the workplace to enable to be seen by the relevant workers; - shall record the lists, schedules, documents and wages of the workers correctly in accord with the stipulation; - shall report the lists, schedules and documents recorded under sub-section (b) to the relevant department in accord with the stipulations; - shall accept the inspection when summoned by the inspection. Moreover, he shall produce the said lists and documents when so required; - shall allow the entry and inspection of the inspector workplaces of commerce, production and service, agriculture and livestock breeding and give necessary assistances; - shall give them holiday for medical treatment in accord with the stipulations if the workers cannot work due to sickness; - shall give holiday without deducting from the minimum wage, in accord with the stipulations if the funeral matter of the family of worker or his parent occurs.	
33.	The Payment of Wages Law (2016)	(3) The employer: - shall pay wages to the worker employing in his business in local currency or foreign currencies stipulated by the Central Bank of Myanmar. Such payment may be paid in cash or cheque or deposit into the bank account of the worker with the agreement between the employer and the worker. - In paying such wages; - if it is necessary to pay particular benefit, profits and opportunities for workers working in commerce, production and service businesses, it may be paid in cash or some in cash and some in things set up by local price on own volition of workers in accordance with the	The Project Proponent commits to comply with Section(3(a,b,c)), Section (4(a,b,c,d,e,f,g)), Section (5),

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		stipulations. ii. for workers employing in agriculture and livestock breeding business, it may be paid some wage in cash and something set up by local price according to custom, or on the volition of majority of worker or by collective agreement. In paying so, it shall be for personal use and the interest of his family, and shall be appropriate and equitable. c. If any worker is conscripted under the Public Military Service Law, the (60) days of wages shall be paid as a special right (4) The employer: a. shall pay wages at the end of the work or at the time agreed to pay to the worker for hourly, daily, weekly or other part time work, or temporary or piece work; b. shall not exceed one month than the period agreed with the worker under sub-section (a) to pay wages; c. shall pay the wages for the permanent work monthly. In making such payment: i. if workers are not more than 100, wages shall be paid at the end of the period for payment of wage ii. if workers are more than 100, it shall be paid no later than five days after the end of the period for payment of wage; d. shall pay the due wages within two working days from the date of termination, if a worker is terminated; e. shall pay the wages at the end of the period for payment of wages, if a worker resigns on his own volition by sending prior written notice of resignation. f. shall pay the due wages to a legal heir within two working days after the decease, if a worker is deceases. g. shall pay all wages on a working day. (5.) If an employer encounters difficulties to make payment under sub-section (c) of the Section 4 due to any unexpected condition, including natural disaster, the employer shall submit that which date has been altered for the payment of wages with the consent of the workers to the Department on reasonable ground.	Section (7(b,c,d)), Section (8), Section(9), Section(10(a,b,c,d,e,f,g,h)), Section(11(a,b)), Section(12(a,b)), Section(13(a,b,c,d)) and Section(14) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(7.) The Department may, with the approval of the Ministry, allow the employers to postpone payment within the appropriate time under stipulated conditions, if it is scrutinized that the submission under Section 5 should be allowed. b. may deduct expenses which are allowance for accommodation and ferry service arranged by the employer, meal allowance, electricity charges, water service charges and income taxes liable to be paid by worker and cash paid in excess under a mistake, which are not included in the expression of wages under this Law; c. may deduct advance payment or reimburse or savings for the worker or any contribution under any law demanded by a worker from wages; d. may deduct from the wages of the worker under a decision of a Court or Arbitration Council or Arbitration Body. (8.) The employer shall not deduct from the wages of the worker except deduction from wages in accordance with provisions of Section 7 and Section 11. (9.) In deducting from wages under Section 7, all deductions made by the employer shall not exceed 50 percent of the wages of a worker except deduction from wages for the failure of a worker to perform his duty. (10.) The employer: a. shall obtain prior approval of the Department for what deduction can be made from wage and how much can be deducted before deducting anything stipulated as a fine under section 11. b. shall post the approval contained in sub-section (a) in conspicuous places at relevant factory and work; c. shall not exceed fine deducted for compensation than the value of damage or loss by action or omission of a worker; d. in deducting from wages under Section 11: i. shall not deduct from wages without giving right to defence of the worker; ii. shall not deduct more than 5 percent of the monthly wages of the worker;	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		e. shall not absolutely deduct as the fine from a worker under 16 years of age; f. may carry out the date of payment of passing fine in accordance with the agreement between the employer and the worker; g. shall deduct from wages for compensation due to loss of property within a limited period by an agreement of the relevant Township Conciliation Body; h. shall enter the deducting cash from wages into the register and systematically maintain it; i. shall submit a report of the deduction from wages to the Department; shall use fines of deduction from wages under sub-section (b) of Section 11 for the worker benefit in coordination with legally registered Labour Organization in the factory. (11.) The employer may designate as fine to compensate for the following acts and omissions of a worker and deduct from his wages: a. any loss of property and cash expressly entrusted to the worker by the employer due to intentional negligence and carelessness or dishonest acts or omissions of the worker, which is caused directly by the carelessness and mistake of such worker; b. violation of any terms or conditions stipulated as fines in the employment agreement. (12.) The worker: a. may request to the employer to be settled by himself or legally registered labour organization or the Workplace Coordination Committee in the factory if the following conditions occur: i. deduction from wages obtainable without credible reason; ii. failure to pay overdue payment of wages. b. may submit to the inspector to solve the problem, if the employer fails to solve the problem asked under sub-section (a), within six months from the date of deduction or failure to pay. (13.) (a) The inspector may scrutinize such submission under sub-section (b) of the Section 12 and, if necessary, interrogate the relevant persons and make an appropriate order. (b) The worker or employer may file an appeal to the chief inspector, if he does not satisfy the order made under sub-Section (a), within 30 days from the date of such order.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(c) The chief inspector may make an appropriate order after scrutinizing the appeal under sub-section (b) and hearing the employer and the worker. (d) The order of the Chief Inspector is final. (14.) The worker has the right to enjoy overtime wages stipulated by the law if he works over time.	
34.	The Workmen's Compensation Act (1924-Amendment 2005)	Employer's liability for compensation 3. (1) If personal injury is caused to a workman by accident arising out of and in the course of his employment, his employer shall be liable to pay compensation in accordance with the provisions of this Chapter: Provided that the employer shall not be so liable in respect of any injury, not resulting in death, caused by an accident which is directly attributable to- (i) the workman having been at the time thereof under the influence of drink or drugs, or (ii) the willful disobedience of the workman to an order expressly given, or to a rule expressly framed, for the purpose of securing the safety of workmen, or (iii) the willful removal or disregard by the workman of any safety guard or other device which he knew to have been provided for the purpose of securing the safety of workmen. (2) If a workman, whilst in the service of an employer in whose service he has been employed for a continuous period of not less than six months in any employment specified in [List A of] Schedule III, contracts any disease specified therein as an occupational disease peculiar to that employment, the contracting of the disease shall be deemed to be an injury by accident within the meaning of this section and, unless the employer proves the contrary, the accident shall be deemed to have arisen out of and in the course of the employment. Explanation.-For the purposes of this sub-section a period of service shall be deemed to be continuous which has not included a period of service under any other employer.	The Project Proponent commits to comply with Section(3(1,2)) of this law.
35.	The Social Security Law (2012)	11. (a) The following establishments shall be applied with the provisions for compulsory registration for social security system and benefits contained in this Law if they employ minimum number of workers and above determined by the Ministry of Labour in co-ordination with the Social Security Board:	The Project Proponent commits to

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		i. industries which carry out business whether or not they utilize mechanical power or a certain kind of power, businesses of manufacturing, repairing and servicing, or engineering businesses, factories, warehouse- es and establishments; ii. Government departments, Government organizations and regional administrative organizations which carry out business; iii. development organizations; iv. financial organizations; v. companies, associations, organizations, and their subordinate departments and branch offices which carry out business; vi. shops, commercial establishments, public entertaining establishments; vii. Government departments and Government organizations which carry out business or transport businesses owned by regional administrative body, and transport businesses carried out with the permission of such department, body or in joint venture with such department or body; viii. constructions carried out for a period of one year and above under employment agreement; ix. businesses carried out with foreign investment or citizen investment or joint ventured businesses; x. businesses relating to mining and gem contained in any existing law; xi. businesses relating to petroleum and natural gas contained in any existing law; xii. ports and out-ports contained in any existing law; xiii. businesses and organizations carried out with freight handling workers; xiv. Ministry of Labour and its subordinate departments and organizations; xv. establishments determined by the Ministry of Labour, from time to time, that they shall be applied with the provisions of compulsory registration for Social Security System and benefits contained in this Law in co-ordination with the Social Security Board and with the approval of the Union Government. 15. (a) The following funds are included in the Social Security Fund: i. health and social care fund; ii. family assistance fund;	comply with Section(11(a)), Section (15(a,b)), Section (18(b)), Section (49(b)) and Section (75(a,b,c)) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		iii. invalidity benefit, superannuation benefit, and survivors' benefit fund; iv. unemployment benefit fund; v. other social security fund for social security system of compulsory registration and contribution stipulated by the Ministry of Labour, in co-ordination with the Social Security Board, under clause (ii) of sub-section (e) of section 13; vi. other social security fund stipulated that contribution may be paid after voluntary registration under clause (ii) of sub-section (e) of section 13; vii. Social Security Housing Plan fund. (b) The employers and workers of establishments shall pay contributions after effecting compulsory registration to the fund contained in clauses (i), (iii),(iv) and (v) of sub-section 18. (b) The employer shall deduct contributions to be paid by worker from his wages together with contribution to be paid by him and pay to the social security fund. The employer shall also incur the expense for such contribution. 49. (b) The insured who has effected insurance for employment injury benefit under sub-sections (a) and (b) of section 48 shall only be entitled to employment injury benefits contained in this Law. 75. The employers of establishments applied by this Law: a. shall prepare and keep the following records and lists correctly and submit to the relevant township social security office in accord with the stipulations: i. records and lists of workers' daily attendance; ii. records on appointment of new workers, employing worker by changing of work, termination, dismissal and resignation; iii. records on promotion and paying remuneration ; iv. records and lists of employer, manager, and administrator and records on change of them; b. shall inform the relevant township social security office if the following matters arise: i. changes in number of workers and address of establishment; ii. change of employer, change of business, suspension of work, and close-down of work;	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		iii. employment injury, disease and contracting diseases; c. shall submit records of work and lists if requested by inspectorate or official assigned by the Social Security Head Office and various levels of Regional Social Security Office under this Law.	
36.	The Occupational Safety and Health Law (2019)	(12) The employer shall: (a) appoint a person in-charge for occupational safety and health according to the type of industries to closely supervise the safety and health of the workers in accordance with the specifications of the Ministry; (b) establish each Occupational Safety and Health Committee comprising equal number of employers and workers' representatives according to the types of industry without lessening the number of workers prescribed by the Ministry to be safe and healthy workplace, in accordance with the specifications of the Ministry. In establishing the Committee, occupational safety and health matters for female workers shall be considered according to the nature of work. (14) The person's in-charge for occupational safety and health shall comply with this Law, and rules, orders, directives and, procedures issued under this Law to be safe and healthy workplace. (16) The inspectors shall inspect the workplace under this Law for occupational safety and health, instructs the respective employer on the facts to be observed, and report to the chief inspector. (17.) For the purposes of occupational safety and health in line with the code of conduct, inspectors are entitled to: (a) enter, inspect and examine any workplace applicable to this Law without a warrant by showing their identity cards at any time; (b) inspect and copy all records, books, and documents relating to the workplace and process, and seize any of them as exhibits, if necessary; (c) take photographs and video records of the workplace situations and processes which may be harmful to the occupational safety and health;	The Project Proponent commits to comply with Section(12(a,b)), Section (14), Section (16), Section(17(a,b,c,d,e,f)), Section(18(a,b,c,d)), Section(26(a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r)), Section(27(a,b,c,d)), Section(34(a,b)) and Section(36(b)) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(d) assess and record the amount of impact and time on the workplace environment, due to noise, illumination, temperature, dust, fume and hazardous materials, with the assistance of an expert on the respective subjects, if necessary; (e) inquire any person working at the workplace during working hours about contracting occupational diseases or potential situations with the assistance of a certified doctor; (f) ask the responsible person from hospitals and medical clinics to confidentially send the medical report of a worker who is receiving medical treatment for injuring in a workplace accident or suffering from an occupational disease or information about death or the autopsy report requested with the form prescribed by the Department. (18.) The inspectors shall issue a temporary order to the employer for work stoppage partially or wholly with the approval of the chief inspector and inform the relevant departments, if necessary, if any occupational accident, disease, dangerous occurrence or major accident happens or is likely to happen due to any of the following facts: (a) impropriety to work continuously due to the unsafe workplace conditions, unsafe acts of workers, the existence of hazardous material and machinery at the workplace, or parts of machinery or laying out of machinery at the workplace, and working practices; (b) impropriety to work continuously due to violation of or failure to comply with any provision of this Law; (c) assumption to be harmful to workers at the workplace due to any act of negligence and carelessness or omission by any person; (d) necessity to evacuate workers for safety due to the imminent danger situation of the occupational injury; (26) Any employer shall: (a) arrange to assess the risk severity of material and machinery used in the workplace and process, if	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		necessary; (b) arrange to assess the risk of occupational factors, if necessary; (c) arrange to conduct medical examination for workers by the certified doctor in accordance with the specifications whether occupational diseases are contracted; (d) arrange to be safe and healthy workplace based on the findings of subsections (a), (b) and (c); (e) provide the suitable personal protective equipment, things and facilities adequately prescribed and allowed by the Department to the workers with free of charge, and make sure them to wear at the workplace; (f) take the preventive measures and emergency response preparedness; (g) establish dispensary, appoint registered doctors and nurses, and provide necessary medicines and facilities at the workplace where the workers are not less than the number of workers prescribed by the Ministry; (h) cause to attend the training on occupational safety and health prescribed by the Ministry to the managers and workers from the respective type of work or branch including himself and members of the Occupational Safety and Health Committee; (i) arrange to give information immediately to the person in-charge for occupational safety and health or managers if any worker faces the situation which is likely to happen occupational injury or harm his life and health; (j) arrange to be safe and healthy for persons at the work place due to material and machinery used in the workplace or process, or wastes; (k) arrange to stop the process immediately, remove the workers from the workplace, and perform necessary evacuation and rescue procedures in case of imminent danger. If possible, workers are transferred to and worked at other suitable safety workplaces; (l) have instructions, warning signs, notices, posters and signage regarding occupational safety and	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		health in accordance with the specifications; (m) arrange to follow the precautions in accessing to the restricted workplaces where may be harmful; (n) arrange to distribute or disseminate the manual and guidance regarding the occupational safety and health issued by respective Ministries to workers and persons related to the workplace for acquiring knowledge, technology and skills; (o) design the fire security plan and organize the fire-drills, and train to use systematically fire extinguishers and devices; (p) allow the chief inspector and inspectors to inspect the workplace, inquire, ask for documents or seize exhibits; (q) employ workers within the prescribed working hours at hazardous work and workplaces; (r) bear any expenditure regarding occupational safety and health measures. (27) No employer shall dismiss or suspend any worker due to one of the following reasons: (a) before obtaining the medical report of a registered doctor for being injury in the workplace or the medical report of a certified doctor for contracting occupational disease; (b) complaint about a matter of unsafe or health risk; (c) undertaking the functions and duties of the Occupational Safety and Health Committee; (d) no longer working at the imminent danger situation or situation to be contracted the occupational disease. 34. An employer, in accordance with the specifications, is liable to: (a) inform the Department in case of an occupational accident, dangerous occurrence and major accident; (b) submit a report with the medical report of the certified doctor to the Department, in case of any worker contracted any of the prescribed occupational diseases or being or likely to be occupational poisoning due to any material or process.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		36. (b) No person shall, without the permission of the chief inspector, remove, destroy, add or alter the whole or part of material, machinery, equipment, layouts, and documents related to the occupational accidents, dangerous occurrences, occupational diseases and occupational poisoning.	
37.	The Myanmar Insurance Law (1993)	(15). Owners of motor vehicles shall affect compulsory Third Party Liability Insurance with Myanmar Insurance. (16) An entrepreneur or an organization operating an enterprise which may cause loss to State-owned property or which may cause damage to the life and property of the public or which may cause pollution to the environment shall effect compulsory General Liability Insurance with the Myanmar Insurance.	The Project Proponent commits to comply with Section (15) and Section (16) of this law.
38.	The Settlement of Labour Dispute Law (2012) (Amendment 2019)	38. No employer shall fail to negotiate and coordinate in respect of the complaint within the prescribed period without sufficient cause. 39. No employer shall alter the conditions of service relating to workers concerned in such dispute at the consecutive period before commencing the dispute within the period under investigation of the dispute before the Arbitration Body or Tribunal, to affect the interest of such workers immediately. 40. No party shall proceed to lock-out or strike without accepting negotiation, conciliation and arbitration by Arbitration Body in accord with this law in respect of a dispute. 51. If any employer, in the course of settlement of dispute, commits any act or omission, without sufficient cause, which by causing a reduction in production resulting so as to reduce the workers' benefits shall be liable to pay full compensation in the amount determined by the Arbitration Body or Tribunal. Such money shall be recovered as the arrear of land revenue.	The Project Proponent commits to comply with Section(38), Section (39), Section (40) and Section (51) of this law.
Finance and Revenue Sector			
39.	Myanmar Investment Law	36. The investor shall submit a proposal to the Commission and invest after receiving the Permit for the following businesses stipulated in the rules;	The Project Proponent

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
	(2016)	a. investment businesses that are essential to the Union strategy; b. large capital intensive investment projects; c. projects which are likely to cause a large impact on the environment and the local community; d. investment businesses which use state-owned land and building e. investment businesses which are designated by the government to require the submission of a proposal to the Commission. 41. The following investments businesses shall be stipulated as the prohibited investment: a. investment businesses which may bring or cause the hazardous or poisonous wastes into the Union; b. investment businesses which may bring technologies, medicines, flora and fauna and instruments which are still being tested abroad or which have not been obtained approvals to use, plant and cultivate, except the investments which made for the purpose of research and development; c. investment businesses which may affect the traditional culture and customs of the ethnic groups within the Union; d. investment businesses which may affect the public; e. investment businesses which may cause an enormous impact to the natural environment and ecosystem; f. investment businesses which manufacture goods or provide services that are prohibited under the applicable laws. 50. (a) An Investor who obtains permit or endorsement under this Law has the right to obtain a long-term lease of land or building from the owner if it is private land or building, or from the relevant government departments or government organization if it is land managed by the government, or land or building owned by the Union in accordance with the stipulations in order to do investment. Citizen investors may invest in their own land or building in accordance with relevant laws. (d) The investor shall register the land lease contract at the Office of Registry of Deeds in accordance with the Registration Act.	to comply with Section(36(a, b, c, d, e)), Section (41(a, b, c, d, e, f)), Section (50(a, d)), Section (51(a, b, c, d, e, f)), Section(65(a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q)), Section(66) and Section (73) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		51. The Investor: (a) may appoint of any citizen who is a qualified person as senior manager, technical and operational expert, and advisor in his investment within the Union in accordance with the Laws; (b) shall appoint them to replace, after providing for capacity building programs in order to be able to appoint citizens to different level positions of management, technical and operational experts, and advisors; (c) shall appoint only citizens for works which does not require skill; (d) shall appoint skilled citizen and foreign workers, technicians, and staff by signing an employment contract between employer and employee in accordance with the labor laws and rules; (e) shall ensure to obtain the entitlements and rights in the labor laws and rules, including minimum wages and salary, leave, holiday, overtime fee, damages, compensation of the workman, social welfare, and other insurance relating to workers in stipulating the rights and duties of employers and employees and occupational terms and conditions in the employment contract; (f) shall settle disputes arising among employers, among workers, between employers and workers, and technicians or staff in the investment in accordance with the applicable laws. 65. The investor: (a) shall respect and comply with the customs, traditions and traditional culture of the ethnic groups in the Union; (b) shall establish and register a company or sole proprietorship or legal entities or branches of such entities under the Laws in order to invest; (c) shall abide by the terms and conditions, stipulations of special licenses, permits, and business operation certificates issued to them, including the rules, notifications, orders, and directives and procedures issued by this Law and the applicable laws, terms and conditions of	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		contract and tax obligations; (d) shall carry out in accordance with the stipulations of the relevant department if it is, by the nature of business or by other need, required to obtain any license or permit from the relevant Union Ministries, government departments and government organizations, or to carry out registration; (e) shall immediately inform to the Commission if it is found that natural mineral resources or antique objects and treasure trove are not related to the investment permitted above and under the land on which the investor is entitled to lease or use and not included in the original contracts. If the Commission allows, the investor shall continue to carry out the investment in such land, and if not allowed, the investor shall transfer and carry out, by obtaining the permission, at the substituted place which is selected and submitted by him; (f) shall not make any significant alteration of topography or elevation of the land on which he is entitled to lease or to use, without the approval of the Commission; (g) shall abide by applicable laws, rules, procedures and best standards practiced internationally for this investment so as not to cause damage, pollution, and loss to the natural and social environment and not to cause damage to cultural heritage; (h) shall list and keep proper records of books of account and annual financial statement, and necessary financial matters relating to the investments performed by permit or endorsement in accordance with internationally and locally recognized accounting standards; (i) shall close and discontinue the investment only after payment of compensation to employees in accordance with applicable laws for any breach of employment contracts, closure of investment, sale and transfer of investment, discontinuation of investment, or reduction of workforce; (j) shall pay wages and salaries to employees in accordance with applicable laws, rules,	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		procedures, directives and so forth during the period of suspension of investment for a credible reason; (k) shall pay compensation and indemnification in accordance with applicable laws to the relevant employee or his successor for injury, disability, disease and death due to the work; (l) shall supervise foreign experts, supervisors and their families, who employ in their investment, to abide by the applicable laws, rules, orders and directives, and the culture and traditions of Myanmar; (m) shall respect and comply with the labor laws; (n) shall have the right to sue and to be sued in accordance with the laws; (o) shall pay effective compensation for loss incurred to the victim, if there are damage to the natural environment and socioeconomic losses caused by logging or extraction of natural resources which are not related to the scope of the permissible investment, except from carrying out the activities required to conduct investment in a permit or an endorsement. (p) shall allow the Commission to inspect in any places, when the Commission informs the prior notice to inspect the investment; (q) shall take in advance permit or endorsement of the Commission for the investments which need to obtain prior approval under the Environmental Conservation Law and the procedures of environmental impact assessment, before undertaking the assessment, and shall submit the situation of environmental and social impact assessment to the Commission along the period of activities of the investments which obtained permit or endorsement of the Commission. 66. Subject to the assessment under section 65 (q), the Commission may administer the investments to carry out necessary, including to conduct or suspend. 73. The investor shall insure the types of insurance stipulated in the provision of the rules at any insurance enterprise which is entitled to carry out insurance businesses within the Union.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
40.	Myanmar Investment Rule (2017)	190. An Investor to whom section 65(q) of the Law applies shall Submit confirmation of its compliance with the applicable requirements of the Environmental Conservation Law, rules and environmental impact assessment procedures to undertake, obtain and implement an initial environmental examination, assessment, certificate and management plan as those requirements are met. The approval of the Commission for continuation of the Investment shall base on its compliance. 202. The investor shall comply with all terms and conditions in the permit and other applicable laws when the investment is carried out. 203. The investor shall fully assist the negotiating processes with the relevant government departments and government organizations for the affected persons due to investment plans. 206. If the investor desires to appoint expert foreigner as senior manager, technical and operational expert or advisor according to subsection (a) of the section 51 of the Law, he shall submit the application attached with passport, expertise evidence or degree certificate and summary of biography of such foreigner to the Commission and obtain the approval. 212. The investor obtained the permit or tax exemption or relief shall insure the relevant insurance out of the following types of the insurance at any insurance business entitled to carry out insurance business within the Union based on the nature of the business: (a) Property and Business Interruption Insurance; (b) Engineering Insurance; (c) Professional Liability Insurance; (d) Bodily Injury Insurance; (e) Marine Insurance; or (f) Workmen Compensation Insurance.	The Project Proponent commits to comply with Section (190), Section (202), Section (203), Section (206) and Section (212(a, b, c, d, e, f)) of this law.
Transportation Sector			
41.	The Vehicle	(9) The Ministry shall, with the approval of the Union Government: (a) specify the accessible and	The Project

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
	Safety and Motor Vehicle Management Law (2020)	restricted places for motor vehicles for local use. (12) The Ministry (c) shall approve and specify conditions, standard and formulate specifications relating to safety and environmental conservation for initial motor vehicle registration. (14) The powers and functions of the Department are as follows: (r) prescribing the speed limits of motor vehicles on public roads; (18) An owner of a motor vehicle shall: (a) repair and maintain his or her motor vehicle to meet the standards specified by the department in order to drive safely: (81) In a public place, no person shall: (g) load or transport dangerous goods in a motor vehicle in conformity with the stipulations.	Proponent commits to comply with Section(9), Section (12), Section (14), Section (18) and Section(81) of this law.
42.	The Vehicle Safety and Motor Vehicle Management Rules (2022)	(252) Any motor vehicle shall not be used as a commercial motor vehicle unless it has been registered as a rental vehicle and has obtained a relevant business license issued under the road transport business law. (253) Commercial vehicles must not carry more passengers or cargo weight than the limits specified by the department. (254) Commercial Motor Vehicles must comply with the following point : (a) must operate only according to the terms and conditions contained in the relevant business license issued under the road transport business law. (256) In cargo trucks (heavy trucks), passenger vehicles, and taxis, the names and license numbers of the driver or both the driver and the assistant must be clearly displayed in the driver's cabin. (261) (a) Goods must be loaded inside the cargo vehicle. Loading or hanging goods on the exterior front, rear, or both sides of the vehicle is prohibited. (b) Goods transported in the cargo vehicle must not spill onto public roads. 262. Motor vehicles transporting hazardous goods must: (a) The transportation of chemical and related hazardous materials must comply with the provisions of relevant safety prevention laws and regulations.	The Project Proponent commits to comply with Section (252), Section (253), Section (254), Section (256), Section (261 (a, b)), Section (262 (a, b, c, d)), Section (263), Section (269), Section (271), Section (279 (a))

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(b) In addition to possessing valid rental motor vehicle registration documents and the necessary business license issued under the Road Transport Business Law, vehicles transporting hazardous goods must also carry all required permits and endorsements issued by the relevant government departments or organizations. (c) To ensure clear identification of vehicles transporting hazardous goods, vehicle markings, container markings, and tank markings must be displayed as specified. Additionally, packaging, labeling, loading, and unloading of goods must be carried out in accordance with the guidelines set by the department to ensure safety based on the type of goods. (d) During the transportation of hazardous goods, emergency response plans and necessary safety equipment must be fully prepared in advance in accordance with the requirements set by the department to ensure safety in case of an accident. (263) The department may establish and issue directives for motor vehicles transporting hazardous goods by road, as well as for the goods being transported and the drivers and assistants accompanying the vehicle. (269) Commercial vehicles must be equipped with a spare tire, a toolbox for vehicle repairs, a fire extinguisher, an emergency exit tool (such as a hammer or crowbar), a jack, wheel chocks, and a first aid kit. (271) If the name or residential address of the registered owner of a commercial vehicle changes, the vehicle owner must notify the relevant regional registration officer and the respective department responsible for issuing business licenses under the Road Transport Business Law at the state, regional, or district authority. (279)-(a) Road users must follow the signals of specified guides, road markings to supervise and maintain traffic. (283) Any motor vehicle drivers must drive and follow the road signs, markings and traffic lights. When	and Section (283) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		the person in charge of supervising the traffic on the road is supervising the traffic, any motor vehicle drivers must follow the directions given by them.	
43.	The Highway Law (2000)	8. Whoever commits any of the following acts shall, on conviction, be punished with imprisonment for a term which may extend to months or with fine or with both:- (a) disturbing or obstruction the work of constructing, extension, repairing and maintenance of highway; (b) driving a vehicle the traffic of which and the type of the wheel of which is prohibited and a vehicle with a laden weight or using an iron rim of cart wheel on highways; (c) planting, cutting or destroying tree or crops within the boundary of the highway without permission of Public Works; (d) disturbing or obstructing public works in clearing of trees which cause danger	The Project Proponent commits to comply with Section 8 (a, b, c, d) of this law.
Disaster Sector			
44.	Natural Disaster Management Law (2013)	14. Preparatory measures for natural disaster risk reduction before natural disaster include the following: (a) prioritization of the natural disaster risk reduction by the National Committee and the Local Body respectively; (b) carrying out better improvement on early warning system of natural disaster; (c) applying knowledge and innovation to be a habit of safety and resilience at every level from the National Level to the ward or village tract level; (d) carrying out together with the measures of natural disaster risk reduction in development plans of the State; (e) establishing sound preparations to resolve the natural disaster at every level from the National Level to the ward or village tract level. 17. When the natural disaster strikes, emergency responses including search and rescue include the following: (a) emergency search and rescue of missing persons due to natural disaster;	The Project Proponent commits to comply with Section 14 (a, b, c, d, e), Section 17 (a, b, c, d, e, f, g, i) and Section 18 (a, b, c, d, e, f, g, h, i, j, k,) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(b) evacuation of the victims to the safety area and providing accommodation in temporary shelters; (c) emergency supporting of food and relief items; (d) clearance of damage and collecting preliminary data on losses and making examinations for necessities to provide; (e) opening an emergency management centre and closely supervised the natural disaster; (f) providing emergency health care to the local people and prevention of the outbreak of contagious diseases by forming mobile healthcare teams; (g) providing medical treatment to the injured and the sick by opening temporary clinics and hospitals; (h) conducting emergency responses including search and rescue according to the type of natural disaster; (i) performing other duties assigned by this Law in respect of emergency responses including search and rescue. 18. Rehabilitation and reconstruction activities to be carried out after disaster include the following: (a) data collection and confirmation of damage and losses due to natural disaster; (b) providing the continuation of sufficient food, relief and rehabilitation items, appropriate and financial assistance from the allotted funds to the victims; (c) laying down the plan for rehabilitation and reconstruction on the situation of damage and losses; (d) reconstruction of buildings and houses damaged by the natural disaster in an appropriate area as disaster-resilient buildings; (e) rehabilitation in order to restore agriculture, livestock breedings and other vocations required for victims; (f) establishment of reintegration into society by uplifting to the mental affected person due to natural disaster; (g) providing medical treatment to the victims and taking preventive measures against the contagious disease that is likely to cause as supplementary;	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(h) taking measures for the continuation of students' studies out of the victims and reconstruction of schools; (i) taking measures for the safety of the victims and rule of law in the disaster affected area; (j) coordination with the relevant body of the prevention against human trafficking for the prevention against human trafficking to the victims; (k) performing other duties assigned by this Law in respect of rehabilitation and reconstruction activities	
Other Laws			
45.	The Myanmar Engineering Council Law (2013)	34. The Executive Committee may, if it finds the violation of any of the provisions of this Law, or any prohibition of rules, orders and directives issued under this Law, or any condition mentioned in the register certificate by any person who has obtained the register certificate, impose any of the following administrative penalties against him/her: (a) warning; (b) causing to pay the stipulated fine; (c) suspending the register certificate for a limited period; (d) cancelling the register certificate 37. Any person without the register certificate issued by the Council, except engineering civil service personnel appointed at the Government departments and Government organizations carrying out the public works, shall not practice engineering and technical works which may endanger the public safety and which are stipulated under the rules made under this Law.	The Project Proponent commits to comply with Section(34(a,b,c,d)) and Section (37) of this law.
46.	Myanmar Fire Brigade Law (2015)	25. The owner or manager of the factory, workshop, bus terminal, airport, port, hotel, motel, lodgings, condominium, market, department, organization or business exposed to fire hazard shall, in accord with the directive of the Department of Fire Services: a. Not fail to form the Reserve fire Brigade; b. Not fail to provide fire safety equipment.	The Project Proponent commits to comply the law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
47.	The Burma Immigration (Emergency Provisions) Act, 1947 (Amendment 1990)	3. No person shall enter Burma without an immigration permit issued by the Controller or a valid passport duly visaed or endorsed by or on behalf of the Governor: Provided that nothing in this section shall apply to a British subject domiciled in the United Kingdom so long as British subjects domiciled in Burma are not by or under the law of the United Kingdom subject to any restriction in respect of their entry into the United Kingdom. 4. (1) Permits and passport visas and endorsements shall be subject to such conditions as may be prescribed and also to such conditions as may be set out in the permit visa or endorsement. (2) All such conditions shall be deemed to be conditions for allowing the holder of such permit, visa or endorsements to enter Burma and a breach of any of these shall render the holder to deportation from Burma if the Governor so directs. 6(1) No person shall enter Burma by any means except at such seaports, airports or land stations prescribed by the Governor. 12. Any person who has been brought into a seaport or airport in Burma on any vessel or aircraft and who is not entitled to enter Burma under the provisions of this Act, shall be detained by the master of the vessel or the captain of the aircraft pending a report to the Controller, and the master or captain shall, if required by the Controller, remove him from Burma. Such detention on board a ship or aircraft shall be deemed to be legal custody.	The Project Proponent commits to comply with Section 3, Section 4 (1) (2), Section 6 (1) and Section 12 of this law.
48.	The Private Industrial Enterprise Law (1990)	13. The duties of the entrepreneur are as follows:- (a) shall pay the registration fees, fees for the renewal of registration and other payable duties and taxes prescribed by the Directorate; (b) shall abide by the terms and conditions of the registration certificate; (c) shall conduct the enterprise by opening an account with the relevant bank in the name of its registered enterprise; (d) shall maintain systematically and fully as prescribed by the Directorate, the statement of accounts	The Project Proponent commits to comply with Section 13 and Section 27 (a,b,c) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		relating to the registered private industrial enterprise and shall submit the same to the relevant Government department, organization or Supervisory Body when required to do so; (e) shall submit to the inspection of the person or inspection body assigned by the Directorate or Supervisory Body; (f) shall shift the place of enterprise, change the nature of enterprise, amalgamate enterprises and split up enterprises only with the approval of the Directorate; (g) shall abide by the orders and directives issued from time to time by the Ministry and the Directorate; (h) shall also abide by the existing laws. 27. An entrepreneur: - (a) in distributing and selling the goods he has produced shall not sell without a trade mark; (b) shall not violate any provision of section 13; (c) shall not fail to comply with any order or decision passed by the Minister and the Director General;	
49.	Public Health Law of the Union of Myanmar (1972)	3. Regardless of what is stipulated in other existing laws, the government shall undertake advisory, inspection, supervision, rectification, and prohibition activities regarding the following health-related matters to enhance and safeguard the health of workers and the general public. (1) Environmental Health Measures: (a) Collection and disposal of waste and pollutants in public living areas. (b) Ensuring that drinking water for public consumption meets international standards and maintaining its quality. (c) Preventing air pollution in residential areas caused by harmful fumes, odors, dust particles, noise pollution, and radiation. (d) Implementing measures to maintain public sanitation, urban planning, housing construction, and the hygiene of buildings and premises used by workers and the public. 5. Private Healthcare Facilities:	The Project Proponent commits to comply with Section 3 (1) (a, b, c) and Section 5 (a, b) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
50.	The Standardization Law (2014)	(a) Establishing necessary regulations for private healthcare facilities. (b) Registering, cancelling, and re-registering all private healthcare facilities. 17. A person desirous of obtaining quality recommendation shall apply to the department and organization which have obtained the accreditation certificate from the Department. 18. The department and organization which have obtained the accreditation certificate are, after examining in accord with the stipulations, entitled to issue the following categories of quality recommendation with terms and conditions: (a) product quality recommendation; (b) production process quality recommendation; (c) service quality recommendation	The Project Proponent commits to comply with Section 17 and Section 18 (a, b, c) of this law.
51.	The Explosive Substances Act (1908)	3. Punishment for causing explosion likely to endanger life or property.- Any person who unlawfully and maliciously causes by any explosive substance and explosion of a nature likely to endanger life or to cause serious injury to property shall, whether any injury to person or property has been actually caused or not, be punished with transportation for life or any shorter term, to which fine may be added, or with imprisonment for a term which may extend to ten years, to which fine may be added. 4. Punishment for attempt to cause explosion, or for making or keeping explosive with intent to endanger life or property.- Any person who unlawfully and maliciously— (a) does any act with intent to cause by an explosive substance, or conspires to cause by an explosive substance, an explosion in 1*[India] of a nature likely to endanger life or to cause serious injury to property; or (b) makes or has in his possession or under his control any explosive substance with intent by means thereof to endanger life, or cause serious injury to property in 1*[India], or to enable any other person by means thereof to endanger life or cause serious injury to property in 1*[India]; shall, whether any explosion does or does not take place and whether any injury to person or property has been actually caused or not, be punished with transportation for a term which may extend to twenty	The Project Proponent commits to comply with Section 3, Section 4 (a, b) and Section 5 of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		years, to which fine may be added, or with imprisonment for a term which may extend to seven years, to which fine may be added. 5. Punishment for making or possessing explosives under suspicious circumstances.- Any person who makes or knowingly has in his possession or under his control any explosive substance, under such circumstances as to give rise to a reasonable suspicion that he is not making it or does not have it in his possession or under his control for a lawful object, shall, unless he can show that he made it or had it in his possession or under his control for a lawful object, be punishable with transportation for a term which may extend to fourteen years, to which fine may be added, or with imprisonment for a term which may extend to five years, to which fine may be added. 2*	
52.	The Export and Import Law (2012)	5. No person shall export or import restricted, prohibited and banned goods. 6. Without obtaining license, no person shall export or import the specified goods which is to obtain permission. 7. A person who obtained any license shall not violate the conditions contained in the license.	The Project Proponent commits to comply with Section 5, Section 6 and Section 7 of this law.
53.	The Law relating to Aquaculture (1989)	29. No person shall do the following:- (b) obstructing navigation and flowing of water or polluting the water within the fisheries waters or abetting such acts;	The Project Proponent commits to comply with Section 29 (b) of this law.
54.	Yangon Municipal Law	97. (a) The committee shall collect the following taxes and duties in accordance with the tax laws and regulations of Yangon Region within the boundaries of the Yangon Municipality.	The Project Proponent

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
	(2018)	(1) Goods tax, land tax, land use fees, and ownership taxes. (2) Water Tax, Water Usage Fee, Land Tax, Land Fee, Garbage and Waste Tax, Public Toilet Tax, Public Toilet Tax, General Taxes (5) Factories and Workshops, Industrial Enterprises (or Industrial Businesses), Shopping Centers (or Malls), Warehouses 156. The committee shall carry out the following activities related to land and wastewater collection, treatment, and disposal within the municipal boundary. (a) Ensuring the provision and management of facilities such as flush toilets, pour-flush toilets, sewer pipes, wastewater pipes, septic tanks, and wastewater treatment tanks in factories, workshops, buildings, and land. (b) Closing, demolishing, or modifying flush toilets, pour-flush toilets, sewer pipes, wastewater pipes, septic tanks, and wastewater treatment tanks that have been constructed without permission or do not comply with the specified requirements, even if permission was granted. 281. The relevant responsible organization or department may impose any of the following administrative penalties if a license holder, registration certificate holder, or any person granted a permit by the committee violates any prescribed regulation under this law. (a) Imposition of a fine (b) Temporary suspension of a business license, registration certificate, or permit (c) Revocation of a business license, registration certificate, or permit 310. (a) No person shall construct residential buildings, operate industrial businesses, engage in agricultural or livestock activities, or carry out any other business within the municipal boundary without obtaining a land lease agreement, license, permit, or approval in accordance with the council's regulations. (b) No person shall continue to operate the business activities under Section (A) within the municipal boundary after the expiration of the land lease agreement, license, or permit granted by the council,	to comply with Section 97 (a (1,2,5), Section 156 (a, b), Section 281 (a, b, c), Section 310 (a, b) and Section 322 (a, b, c, d, f, g, h, n, p) of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		without reapplying for and obtaining new approval. 322 (a) No person shall engage in any business activities within the municipal boundary that may cause environmental damage, such as soil pollution, air pollution, water pollution, or noise pollution. (b) No person shall dispose of hazardous materials, chemicals, poisons, radioactive substances, or electronic waste within the municipal boundary, except in locations designated by the committee and in accordance with the prescribed regulations. (c) No person, whether a business owner, factory operator, workshop operator, or hospital owner, shall discharge, release, accumulate, distribute, spread, or dispose of dangerous liquids, hazardous substances, or hospital waste in public or relevant areas within the municipal boundary. (d) No person, whether a business owner, factory operator, or workshop operator, shall fail to implement the necessary plans and measures to prevent environmental pollution caused by their construction, business, or industrial activities within the municipal boundary. (f) No person, whether a business owner, factory operator, or workshop operator, shall fail to take necessary actions to prevent the pollution of surrounding water bodies, including lakes, ponds, rivers, streams, and groundwater, due to the discharge of waste or wastewater, either through surface runoff or infiltration, within the municipal boundary. (g) No person shall establish a business, factory, or workshop within the municipal boundary without complying with the prescribed environmental protection regulations. (h) No person shall dispose of waste at any location other than those designated by the committee, such as designated garbage pits, garbage tanks, or waste disposal areas, within the municipal boundary. (n) No person shall discharge or allow the wastewater discharged from a factory, workshop, or any business enterprise into rivers, streams, or water channels without treating it in accordance with the prescribed standards and regulations. (p) No person shall discharge exhaust gases that may cause air pollution from any factory, workshop, or	

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
55.	Myanmar Climate Change Policy (2019)	business enterprise into the atmosphere without treating them in accordance with the prescribed standards. The Myanmar Climate Change Policy was developed with the vision of Myanmar becoming a sustainable, prosperous, inclusive, climate resilient and low-carbon society for the well-being of present and future generations. The purpose of this Policy is to provide long term direction and guidance to: (a) Take and promote climate change action on adaptation and mitigation in Myanmar; (b) Integrate climate adaptation and mitigation considerations into Myanmar's national priorities and across all levels and sectors in an iterative and progressive manner; and (c) Take decisions to create and maximise opportunities for sustainable, low carbon, climate resilient development, ensuring benefits for all.	The Project Proponent commits to ensuring that carbon emissions do not cause climate change, in line with the vision and purpose of Myanmar's climate change policy.
56.	Myanmar Climate Change Master Plan (MCCMP) 2018 – 2030	The Myanmar Climate Change Master Plan (MCCMP) (2018–2030) aims to integrate climate resilience into Myanmar's economic growth by focusing on sustainable development across key sectors. The plan outlines goals for climate-resilient economic development, infrastructure, and natural resource management, prioritizing adaptation to climate impacts in agriculture, energy, and urban planning. The MCCMP emphasizes human health and education, aiming to strengthen health systems against climate risks and increase climate awareness through public education. The plan also focuses on capacity-building within institutions to enhance Myanmar's ability to respond to climate change effectively. Collaboration across sectors and community involvement are essential components of the MCCMP's approach to a resilient, low-carbon future.	The project proponent commits to prevent climate change caused by emissions due to the manufacturing activities of the factory in accordance with

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
			the aim of the Myanmar Climate Change Master Plan (MCCMP).
57.	Myanmar Climate Change Strategy (MCCS) 2018 – 2030	The Myanmar Climate Change Strategy (MCCS) (2018–2030) outlines Myanmar’s commitment to a climate-resilient future by 2030. It sets six strategic outcomes, emphasizing climate-smart agriculture, resilient infrastructure, biodiversity conservation, and sustainable energy. This strategy encourages the adoption of renewable energy, energy efficiency, and climate-adaptive practices in critical sectors to reduce Myanmar’s carbon footprint. The MCCS also strengthens public health and community awareness to address climate-related health risks, while supporting education and capacity development to build a climate-conscious society. Through coordinated efforts across government, civil society, and local communities, the MCCS aims to foster a sustainable and climate-resilient Myanmar.	The project proponent commits to prevent climate change caused by emissions due to the manufacturing activities of the factory in accordance with the aim of the Myanmar Climate Change Strategy (MCCS).
58.	National Waste Management Strategy and Master Plan for Myanmar (2018 – 2030)	This rapid economic growth with urbanization and industrialization has led to significant challenges with the management of waste. Daily waste generation, especially in three of the largest cities in the country (Yangon, Mandalay and Nay Pyi Taw), have increased dramatically, which in turn is leading to a number of public health and environmental pollutions. Typically, between one to two-thirds of generated waste in many townships is not properly collected, and uncollected waste is often dumped on open land, in the streets and in water bodies, or burned in the open, causing pollution to both surface and	The project proponent commits to take action to prevent air, water and soil pollution caused

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		ground water. In addition, the volume of industrial and other hazardous waste is also growing rapidly in Myanmar, emphasizing the importance of an integrated approach to manage all waste. In this regard, the ECD of the MONREC has been actively working with the International Environmental Technology Centre of the UN Environment and other relevant ministries, departments, institutions, state/regional governments, townships and all other relevant stakeholders to develop a National Waste Management Strategy and Master Plan for Myanmar.	by factory waste in accordance with the National Waste Management Strategy and Master Plan for Myanmar (2018 – 2030)
59.	The Myanmar Companies Law (2017)	6. (a) Any person or persons in association may apply to the registrar to incorporate and register a company under this law: (i) a company having the liability of its members limited by the constitution to the amount, if any, unpaid on the shares respectively held by them in a company limited by shares; or (ii) a company having the liability of its members limited by the constitution to such amount as the members may respectively thereby undertake to contribute to the assets of the company in the event of its being wound up in a company limited by guarantee; or (iii) a company not having any limit on the liability of its members in an unlimited company. (b) The application to the registrar for the registration of any company under this law shall be made in the prescribed form and shall state the following facts: (i) the proposed name of the company; (ii) the proposed type of the company; (iii) the full name and address of each applicant; (iv) the full name, date of birth, gender, nationality and address of every director and any secretary of the proposed company;	The Project Proponent commits to comply with Section 6(a, b, c, d, e), Section 9 and Section 10 of this law.

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(v) that each individual named as a director or secretary of the proposed company has given their written consent to act as a director or secretary of the proposed company; (vi) the address of the registered office of the proposed company, which in the absence of any other notice will be taken to be the address for service of documents to the proposed company; (vii) the address of the company's principal place of business if different to the registered office; and (viii) in the case of a private, public or unlimited company: (aa) the full name and address of every member of the proposed company; (bb) that each member of the proposed company has given their written consent to be a member and subscribe for the shares to be allotted to them; (cc) the number and class of shares to be issued to each member; (dd) the currency in which the company's share capital is to be denominated; (ee) the amount that each member agrees to pay for each share; (ff) whether these shares will be fully paid on registration; (gg) whether the proposed company has an ultimate holding company; (hh) whether the proposed company will, on incorporation, be a foreign company; (ix) in the case of a company limited by guarantee: (aa) the full name and address of every member of the proposed company; (bb) that each member of the proposed company has given their written consent to be a member; (cc) the proposed amount of the guarantee that each member agrees to provide; (dd) if the company have a share capital: (i) the number and class of shares to be issued; (ii) the currency in which the company's share capital is to be denominated; (iii) the amount (if any) each member agrees to pay for each share; and (iv) whether these shares will be fully paid on registration.	

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
		(c) An application for registration shall: (i) be signed by each applicant; (ii) include a declaration by each applicant that all matters stated in the application are correct; and (iii) where the company proposes to use a constitution which differs in any substantive way from the model constitution, be accompanied by a copy of the proposed company's constitution certified by at least one applicant, otherwise a statement that the company proposes to use the model constitution. (d) The prescribed fee shall be paid to the registrar when filing the application. (e) Duplicate originals of the application and all documents accompanying it shall be kept by the applicants together with the originals of the consents referred to in sub-sections (b)(v), (viii) 9. From the date of registration mentioned in the certificate of incorporation, the members named in the application shall become members of the company having a separate legal personality and the name contained in the certificate of incorporation. Without limiting section 5 or any other provision of this law, the company will be capable forthwith of exercising all the functions of an incorporated company, and have perpetual succession. Conclusiveness of certificate of incorporation 10. A certificate of incorporation given by the registrar under section 8 shall be conclusive evidence that all the requirements of this law in respect of registration have been complied with, and that from the date of incorporation stated in the certificate the company is incorporated and duly registered under this law.	
60.	Banning the import of HCFCs/R-22 based split and window type air conditioner	The Government of the Republic of the Union of Myanmar, Ministry of Natural Resources and Environmental Conservation, in exercise of the powers conferred by Section 42, Sub-section (b) of the Environmental Conservation Law, hereby issues this notification. According to the Hydrochlorofluorocarbons (HCFCs/R-22) Phase-out Management Plan, which is being implemented with the approval of the Union Government Meeting No. (9/2013), in order to control and prevent ozone layer damage, the import of air conditioners (HCFCs/R-22 based split and window	The project proponent commits to use air conditioners that are prohibited

Environmental Impact Assessment (EIA) Report

Nippon Paint (Myanmar) Company Limited

No.	Name of Law	Provision of Law relevant to the Project	Commitment of the Project Proponent
	equipment with a capacity of less than 2.5 horsepower to control and prevent ozone layer depletion Notification No. 28/2020	type air conditioner equipment) with a capacity of less than 2.5 horsepower using Hydrochlorofluorocarbons (HCFCs/R-22), a major ozone depleting substance, into the country is prohibited from July 1, 2020: 1. 1 horse power = 8000-9000 BTU/hr 2. 1.5 horsepower = 11000-12000 BTU/hr 3. 2 horsepower = 17000-18000 BTU/hr 4. 2.5 horsepower = 20000-21000 BTU/hr	under the Notification in order to help protect the ozone layer.
61.	Notification No. 71/2024 concerning the prohibition to import air conditioners and large scale equipment such as Commercial Refrigerator, Cold Storage and Chiller	In exercise of the powers conferred by Article 42(b) of the Environmental Conservation Law, the Ministry of Natural Resources and Environmental Conservation issued the Notification No. 71/2024 on 9 August 2024. This notification provides the prohibition to import of large-scale air conditioner with a capacity of 2.5 horsepower (21000 BTU/hr) or more, commercial refrigerator, cold storage and chiller starting from 6 November, 2024.	The project proponent commits not to use the large-scale air conditioner and refrigerator that has been prohibited under Notification No. 71/2024.

2.4 International Conventions, Treaties and Agreements by Myanmar Government

Myanmar has signed a number of international treaties related to the environment which may have implications for the project. These include:

- Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)
- Montreal Protocol on Substances that Deplete the Ozone Layer & all amendments (1990)
- Stockholm Convention on Persistent Organic Pollutants (POPs) (2014)
- Convention on Biological Diversity (CBD) (1992)
- The Cartagena Protocol on Biosafety (2011)
- The International Tropical Timber Agreement (ITTA) (1983)
- Ramsar Convention on Wetlands (2005)
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1973)
- ASEAN Agreement on the Conservation of Nature and Natural Resources (1985)
- The United Nations Convention to Combat Desertification (1994)
- The United Nations Framework Convention on Climate Change (UNFCCC) (1992) and Kyoto Protocol (1997)
- ASEAN Agreement on Trans-boundary Haze Pollution (2002)
- Global Tiger Forum, India in August 1994.

2.5 Environmental Standards referring in this report

In this report, most of the environmental standards were quoted NEQ (E) G and MMS 44:2024 as;

- air emission
- small combustion facilities emission guidelines
- wastewater (general application)
- noise level
- odor level and
- surface water quality.

They were mentioned at Section 2-3 and additional referring were standards for drinking water, OHS noise level, vibration and soil. They were summarized as follow.

Drinking Water Standards of WHO, EPA and India Specification

No.	Parameters	Unit	WHO (2011)	EPA (Spring 2012)	Indian Specification (IS: 10500, 2012)
1.	Aluminum	mg/l	0.2	0.2	0.03

No.	Parameters	Unit	WHO (2011)	EPA (Spring 2012)	Indian Specification (IS: 10500, 2012)
2.	Chloride	mg/l	250	250	250
3.	Copper	mg/l	2	1	0.05
4.	Cyanide	mg/l	0.07	0.2	0.05
5.	Manganese	mg/l	0.4	0.05	0.1
6.	pH	-	6.5~8.5	6.5~8.5	6.5~8.5
7.	Sulfate	mg/l	250	250	200
8.	Total Alkalinity as CaCO ₃	mg/l	-	-	200
9.	Total Dissolved Solids	mg/l	600	500	500
10.	Total Hardness as CaCO ₃	mg/l	500	-	200
11.	Total Iron	mg/l	0.3	0.3	0.3
12.	Turbidity	NTU	5	-	1

National Drinking Water Standard of 2019

No	Parameters	Unit	National Drinking Water Standard of 2019
1.	Aluminum	mg/l	0.2
2.	Arsenic	mg/l	0.05
3.	Chloride	mg/l	250
4.	Copper	mg/l	2
5.	Cyanide	mg/l	0.07
6.	Manganese	mg/l	0.4
7.	pH	-	6.5 – 8.5
8.	Sulfate	mg/l	250
9.	Total Alkalinity as CaCO ₃	mg/l	-
10.	Total Dissolved Solids	mg/l	1000
11.	Total Hardness as CaCO ₃	mg/l	500
12.	Total Iron	mg/l	1.0
13.	Turbidity	NTU	5

OHS Noise Exposure Limits for the Work Environment (Noise Exposures in dBA)

Noise (dBA)	Permissible Exposure Noise (hours and minutes)
85	16 hrs
87	12 hrs 6 min
90	8 hrs
93	5 hrs 18 min
96	3 hrs 30 min
99	2 hrs 18 min
102	1 hrs 30 min

Noise (dBA)	Permissible Exposure Noise (hours and minutes)
105	1 hr
108	40 min
111	26 min
114	17 min
115	15 min
118	10 min
121	6.6 min
124	4 min
127	3 min
130	1 min

Note: Exposures above or below the 90 dB limit have been "time weighted" to give what OSHA believes are equivalent risks to a 90 dB eight-hour exposure. [Source: Marsh (9)]

Vibration level Guideline

Reference source is from DIN 4150: Part 3 "Structural Vibration in Buildings" Guideline on limit of vibration.

DIN 4150			
Type of Structure	Peak Particle Velocity (mm/sec)		
Frequency	1~10 Hz	10~50 Hz	50~100 Hz
Commercial and Industrial Building (Type 1)	20	20~40	40~50
Dwelling (Type 2)	5	5~15	15~20
Ancient and Historic Buildings (Type 3)	3	3~8	8~10

Soil Standards of Industrial Guideline

By literature, survey environmental quality standard for soil pollution issued by Japan Government was shown as attached here.



Ministry of the Environment
Government of Japan

Environmental Quality Standards for Soil Pollution

Environmental Quality Standards (EQS) for soil pollution were issued in August 1991. As a result of additions made in February 1994, the EQS now regulate 25 substances. Guidelines for Investigation and Countermeasures for Soil and Groundwater Pollution were established in November 1994, to ensure smooth implementation of surveys and countermeasures based on the EQS and Evaluation Standards Relevant to Soil and Groundwater. Administrative guidance is provided to polluters to urge them to clean up polluted soil voluntarily under these guidelines.

Environmental Quality Standards for Soil Pollution

Substance	Target level of soil quality examined through leaching and content tests
cadmium	0.01 mg/l in sample solution and less than 0.4mg/kg in rice for agricultural land
total cyanide	not detectable in sample solution
organic phosphorus	not detectable in sample solution
lead	0.01 mg/l or less in sample solution
chromium (VI)	0.05 mg/l or less in sample solution
arsenic	0.01 mg/l or less in sample solution, and less than 15 mg/kg in soil for agricultural land (paddy fields only)
total mercury	0.0005 mg/l or less in sample solution
alkyl mercury	not detectable in sample solution
PCBs	not detectable in sample solution
copper	less than 125 mg/kg in soil for agricultural land (paddy fields only)
dichloromethane	0.02 mg/l or less in sample solution
carbon tetrachloride	0.002 mg/l or less in sample solution
1,2-dichloroethane	0.004 mg/l or less in sample solution
1,1-dichloroethylene	0.02 mg/l or less in sample solution
cis-1,2-dichloroethylene	0.04 mg/l or less in sample solution
1,1,1-trichloroethane	1 mg/l or less in sample solution

1,1,2-trichloroethane	0.006 mg/l or less in sample solution
trichloroethylene	0.03 mg/l or less in sample solution
tetrachloroethylene	0.01 mg/l or less in sample solution
1,3-dichloropropene	0.002 mg/l or less in sample solution
thiuram	0.006 mg/l or less in sample solution
simazine	0.003 mg/l or less in sample solution
thiobencarb	0.02 mg/l or less in sample solution
benzene	0.01 mg/l or less in sample solution
selenium	0.01 mg/l or less in sample solution

The above standards are not applicable to:

- 1) Places where natural toxic substances exist such as near mineral veins, and
- 2) Places designated for storage of toxic materials such as waste disposal sites.

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<http://www.env.go.jp/en/water/soil/sp.html>

The soil quality standard mentioned above is for the polluted soil and the soil from Nippon Paint Factory is industrial soil. So, the analysis results of soil quality should not compared with soil quality standards and it should be compared with latter with current value as base line data. There is submission to report ECD to allow this comparison.

EHS Guideline for Air Quality

General EHS Guidelines [Complete version] at: www.ifc.org/ehsguidelines

Environmental, Health, and Safety Guidelines
 GENERAL EHS GUIDELINES: ENVIRONMENTAL
 AIR EMISSIONS AND AMBIENT AIR QUALITY



1.0 Environmental

1.1 Air Emissions and Ambient Air Quality

Applicability and Approach	3
Ambient Air Quality	4
General Approach	4
Projects Located in Degraded Airsheds or Ecologically Sensitive Areas	5
Point Sources	5
Stack Height	5
Small Combustion Facilities Emissions Guidelines	6
Fugitive Sources	8
Volatile Organic Compounds (VOCs)	8
Particulate Matter (PM)	8
Ozone Depleting Substances (ODS)	9
Mobile Sources – Land-based	9
Greenhouse Gases (GHGs)	9
Monitoring	10
Monitoring of Small Combustion Plants Emissions	11

the spatial characteristic of the source including point sources, fugitive sources, and mobile sources and, further, by process, such as combustion, materials storage, or other industry sector-specific processes.

Where possible, facilities and projects should avoid, minimize, and control adverse impacts to human health, safety, and the environment from emissions to air. Where this is not possible, the generation and release of emissions of any type should be managed through a combination of:

- Energy use efficiency
- Process modification
- Selection of fuels or other materials, the processing of which may result in less polluting emissions
- Application of emissions control techniques

Applicability and Approach

This guideline applies to facilities or projects that generate emissions to air at any stage of the project life-cycle. It complements the industry-specific emissions guidance presented in the Industry Sector Environmental, Health, and Safety (EHS) Guidelines by providing information about common techniques for emissions management that may be applied to a range of industry sectors. This guideline provides an approach to the management of significant sources of emissions, including specific guidance for assessment and monitoring of impacts. It is also intended to provide additional information on approaches to emissions management in projects located in areas of poor air quality, where it may be necessary to establish project-specific emissions standards.

Emissions of air pollutants can occur from a wide variety of activities during the construction, operation, and decommissioning phases of a project. These activities can be categorized based on

The selected prevention and control techniques may include one or more methods of treatment depending on:

- Regulatory requirements
- Significance of the source
- Location of the emitting facility relative to other sources
- Location of sensitive receptors
- Existing ambient air quality, and potential for degradation of the airshed from a proposed project
- Technical feasibility and cost effectiveness of the available options for prevention, control, and release of emissions

APRIL 30, 2007

3



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



Ambient Air Quality

General Approach

Projects with significant^{5,6} sources of air emissions, and potential for significant impacts to ambient air quality, should prevent or minimize impacts by ensuring that:

- Emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards⁹ by applying national legislated standards, or in their absence, the current WHO Air Quality Guidelines¹⁰ (see Table 1.1.1), or other internationally recognized sources¹¹;
- Emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards. As a general rule, this Guideline suggests 25 percent of the applicable air quality standards to allow

additional, future sustainable development in the same airshed.¹²

At facility level, impacts should be estimated through qualitative or quantitative assessments by the use of baseline air quality assessments and atmospheric dispersion models to assess potential ground level concentrations. Local atmospheric, climatic, and air quality data should be applied when modeling dispersion, protection against atmospheric downwash, wakes, or eddy effects of the source, nearby¹³ structures, and terrain features. The dispersion model applied should be internationally recognized, or comparable. Examples of acceptable emission estimation and dispersion modeling approaches for point and fugitive sources are

Table 1.1.1: WHO Ambient Air Quality Guidelines^{7,8}

	Averaging Period	Guideline value in $\mu\text{g}/\text{m}^3$
Sulfur dioxide (SO_2)	24-hour	125 (Interim target-1) 50 (Interim target-2) 20 (guideline)
	10 minute	500 (guideline)
Nitrogen dioxide (NO_2)	1-year	40 (guideline)
	1-hour	200 (guideline)
Particulate Matter PM_{10}	1-year	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)
	24-hour	150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)
Particulate Matter $\text{PM}_{2.5}$	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)
	24-hour	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim target-1) 100 (guideline)

⁵ Significant sources of point and fugitive emissions are considered to be general sources which, for example, can contribute a net emissions increase of one or more of the following pollutants within a given airshed: PM_{10} : 50 tons per year (tpy); NO_x : 500 tpy; SO_2 : 500 tpy; or as established through national legislation; and combustion sources with an equivalent heat input of 50 MWh or greater. The significance of emissions of inorganic and organic pollutants should be established on a project-specific basis taking into account toxic and other properties of the pollutant.

⁶ United States Environmental Protection Agency, Prevention of Significant Deterioration of Air Quality, 40 CFR Ch. 1 Part 52.21. Other references for establishing significant emissions include the European Commission, 2000. "Guidance Document for EPER implementation." <http://ec.europa.eu/environment/ppc/eper/index.htm>; and Australian Government, 2004. "National Pollutant Inventory Guide." <http://www.npi.gov.au/handbooks/pubs/hpiguide.pdf>

⁷ World Health Organization (WHO). Air Quality Guidelines Global Update, 2005. $\text{PM}_{2.5}$ 24-hour value is the 99th percentile.

⁸ Interim targets are provided in recognition of the need for a staged approach to achieving the recommended guidelines.

⁹ Ambient air quality standards are ambient air quality levels established and published through national legislative and regulatory processes, and ambient quality guidelines refer to ambient quality levels primarily developed through clinical, toxicological, and epidemiological evidence (such as those published by the World Health Organization).

¹⁰ Available at World Health Organization (WHO). <http://www.who.int/en>

¹¹ For example the United States National Ambient Air Quality Standards (NAAQS) (<http://www.epa.gov/air/criteria.html>) and the relevant European Council Directives (Council Directive 1999/30/EC of 22 April 1999 / Council Directive 2002/3/EC of February 12 2002).

¹² US EPA Prevention of Significant Deterioration Increments Limits applicable to non-degraded airsheds.



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



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included in Annex 1.1.1. These approaches include screening models for single source evaluations (SCREEN3 or AIRSCREEN), as well as more complex and refined models (AERMOD OR ADMS). Model selection is dependent on the complexity and geomorphology of the project site (e.g. mountainous terrain, urban or rural area).

Projects Located in Degraded Airsheds or Ecologically Sensitive Areas

Facilities or projects located within poor quality airsheds¹⁴, and within or next to areas established as ecologically sensitive (e.g. national parks), should ensure that any increase in pollution levels is as small as feasible, and amounts to a fraction of the applicable short-term and annual average air quality guidelines or standards as established in the project-specific environmental assessment. Suitable mitigation measures may also include the relocation of significant sources of emissions outside the airshed in question, use of cleaner fuels or technologies, application of comprehensive pollution control measures, offset activities at installations controlled by the project sponsor or other facilities within the same airshed, and buy-down of emissions within the same airshed.

Specific provisions for minimizing emissions and their impacts in poor air quality or ecologically sensitive airsheds should be established on a project-by-project or industry-specific basis. Offset provisions outside the immediate control of the project sponsor or buy-downs should be monitored and enforced by the local agency responsible for granting and monitoring emission permits. Such provisions should be in place prior to final commissioning of the facility / project.

¹³ "Nearby" generally considers an area within a radius of up to 20 times the stack height.

¹⁴ An airshed should be considered as having poor air quality if nationally legislated air quality standards or WHO Air Quality Guidelines are exceeded significantly.

Point Sources

Point sources are discrete, stationary, identifiable sources of emissions that release pollutants to the atmosphere. They are typically located in manufacturing or production plants. Within a given point source, there may be several individual 'emission points' that comprise the point source.¹⁵

Point sources are characterized by the release of air pollutants typically associated with the combustion of fossil fuels, such as nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), and particulate matter (PM), as well as other air pollutants including certain volatile organic compounds (VOCs) and metals that may also be associated with a wide range of industrial activities.

Emissions from point sources should be avoided and controlled according to good international industry practice (GIIP) applicable to the relevant industry sector, depending on ambient conditions, through the combined application of process modifications and emissions controls, examples of which are provided in Annex 1.1.2. Additional recommendations regarding stack height and emissions from small combustion facilities are provided below.

Stack Height

The stack height for all point sources of emissions, whether 'significant' or not, should be designed according to GIIP (see Annex 1.1.3) to avoid excessive ground level concentrations due to downwash, wakes, and eddy effects, and to ensure reasonable diffusion to minimize impacts. For projects where there are multiple sources of emissions, stack heights should be established with due consideration to emissions from all other project sources, both point and fugitive. Non-significant sources of emissions,

¹⁵ Emission points refer to a specific stack, vent, or other discrete point of pollution release. This term should not be confused with point source, which is a regulatory distinction from area and mobile sources. The characterization of point sources into multiple emissions points is useful for allowing more detailed reporting of emissions information.



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



including small combustion sources,¹⁶ should also use GLIP in stack design.

Small Combustion Facilities Emissions Guidelines

Small combustion processes are systems designed to deliver electrical or mechanical power, steam, heat, or any combination of these, regardless of the fuel type, with a total, rated heat input capacity of between three Megawatt thermal (MWth) and 50 MWth.

The emissions guidelines in Table 1.1.2 are applicable to small combustion process installations operating more than 500 hours per year, and those with an annual capacity utilization of more than 30 percent. Plants firing a mixture of fuels should compare emissions performance with these guidelines based on the sum of the relative contribution of each applied fuel¹⁷. Lower emission values may apply if the proposed facility is located in an ecologically sensitive airshed, or airshed with poor air quality, in order to address potential cumulative impacts from the installation of more than one small combustion plant as part of a distributed generation project.

¹⁶ Small combustion sources are those with a total rated heat input capacity of 50MWth or less.

¹⁷ The contribution of a fuel is the percentage of heat input (LHV) provided by this fuel multiplied by its limit value.



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



Table 1.12 - Small Combustion Facilities Emissions Guidelines (3MWth – 50MWth) – (in mg/Nm ³ or as indicated)				
Combustion Technology / Fuel	Particulate Matter (PM)	Sulfur Dioxide (SO ₂)	Nitrogen Oxides (NO _x)	Dry Gas, Excess O ₂ Content (%)
Engine				
Gas	N/A	N/A	200 (Spark Ignition) 400 (Dual Fuel) 1,600 (Compression Ignition)	15
Liquid	50 or up to 100 if justified by project specific considerations (e.g. Economic feasibility of using lower ash content fuel, or adding secondary treatment to meet 50, and available environmental capacity of the site)	1.5 percent Sulfur or up to 3.0 percent Sulfur if justified by project specific considerations (e.g. Economic feasibility of using lower S content fuel, or adding secondary treatment to meet levels of using 1.5 percent Sulfur, and available environmental capacity of the site)	If bore size diameter [mm] < 400: 1,460 (or up to 1,600 if justified to maintain high energy efficiency.) If bore size diameter [mm] > or = 400: 1,850	15
Turbine				
Natural Gas = 3MWth to < 15MWth	N/A	N/A	42 ppm (Electric generation) 100 ppm (Mechanical drive)	15
Natural Gas = 15MWth to < 50MWth	N/A	N/A	25 ppm	15
Fuels other than Natural Gas = 3MWth to < 15MWth	N/A	0.5 percent Sulfur or lower percent Sulfur (e.g. 0.2 percent Sulfur) if commercially available without significant excess fuel cost	96 ppm (Electric generation) 150 ppm (Mechanical drive)	15
Fuels other than Natural Gas = 15MWth to < 50MWth	N/A	0.5% S or lower % S (0.2% S) if commercially available without significant excess fuel cost	74 ppm	15
Boiler				
Gas	N/A	N/A	320	3
Liquid	50 or up to 150 if justified by environmental assessment	2000	460	3
Solid	50 or up to 150 if justified by environmental assessment	2000	650	6

Notes: N/A - no emissions guideline; Higher performance levels than those in the Table should be applicable to facilities located in urban / industrial areas with degraded airsheds or close to ecologically sensitive areas where more stringent emissions controls may be needed; MWth is heat input on HHV basis; Solid fuels include biomass; Nm³ is at one atmosphere pressure, 0°C; MWth category is to apply to the entire facility consisting of multiple units that are reasonably considered to be emitted from a common stack except for NO_x and PM limits for turbines and boilers. Guidelines values apply to facilities operating more than 500 hours per year with an annual capacity utilization factor of more than 30 percent.

APRIL 30, 2007

7



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



Fugitive Sources

Fugitive source air emissions refer to emissions that are distributed spatially over a wide area and not confined to a specific discharge point. They originate in operations where exhausts are not captured and passed through a stack. Fugitive emissions have the potential for much greater ground-level impacts per unit than stationary source emissions, since they are discharged and dispersed close to the ground. The two main types of fugitive emissions are Volatile Organic Compounds (VOCs) and particulate matter (PM). Other contaminants (NO_x, SO₂ and CO) are mainly associated with combustion processes, as described above. Projects with potentially significant fugitive sources of emissions should establish the need for ambient quality assessment and monitoring practices.

Open burning of solid wastes, whether hazardous or non-hazardous, is not considered good practice and should be avoided, as the generation of polluting emissions from this type of source cannot be controlled effectively.

Volatile Organic Compounds (VOCs)

The most common sources of fugitive VOC emissions are associated with industrial activities that produce, store, and use VOC-containing liquids or gases where the material is under pressure, exposed to a lower vapor pressure, or displaced from an enclosed space. Typical sources include equipment leaks, open vats and mixing tanks, storage tanks, unit operations in wastewater treatment systems, and accidental releases. Equipment leaks include valves, fittings, and elbows which are subject to leaks under pressure. The recommended prevention and control techniques for VOC emissions associated with equipment leaks include:

- Equipment modifications, examples of which are presented in Annex 1.1.4;

- Implementing a leak detection and repair (LDAR) program that controls fugitive emissions by regularly monitoring to detect leaks, and implementing repairs within a predefined time period¹⁸

For VOC emissions associated with handling of chemicals in open vats and mixing processes, the recommended prevention and control techniques include:

- Substitution of less volatile substances, such as aqueous solvents;
- Collection of vapors through air extractors and subsequent treatment of gas stream by removing VOCs with control devices such as condensers or activated carbon absorption;
- Collection of vapors through air extractors and subsequent treatment with destructive control devices such as:
 - Catalytic Incinerators: Used to reduce VOCs from process exhaust gases exiting paint spray booths, ovens, and other process operations
 - Thermal Incinerators: Used to control VOC levels in a gas stream by passing the stream through a combustion chamber where the VOCs are burned in air at temperatures between 700° C to 1,300° C
 - Enclosed Oxidizing Flares: Used to convert VOCs into CO₂ and H₂O by way of direct combustion
- Use of floating roofs on storage tanks to reduce the opportunity for volatilization by eliminating the headspace present in conventional storage tanks.

Particulate Matter (PM)

The most common pollutant involved in fugitive emissions is dust or particulate matter (PM). This is released during certain operations, such as transport and open storage of solid materials, and from exposed soil surfaces, including unpaved roads.

¹⁸ For more information, see Leak Detection and Repair Program (LDAR), at: <http://www.ldar.net>



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



Recommended prevention and control of these emissions sources include:

- Use of dust control methods, such as covers, water suppression, or increased moisture content for open materials storage piles, or controls, including air extraction and treatment through a baghouse or cyclone for material handling sources, such as conveyors and bins;
- Use of water suppression for control of loose materials on paved or unpaved road surfaces. Oil and oil by-products is not a recommended method to control road dust. Examples of additional control options for unpaved roads include those summarized in Annex 1.1.5.

Ozone Depleting Substances (ODS)

Several chemicals are classified as ozone depleting substances (ODSs) and are scheduled for phase-out under the Montreal Protocol on Substances that Deplete the Ozone Layer.¹⁹ No new systems or processes should be installed using CFCs, halons, 1,1,1-trichloroethane, carbon tetrachloride, methyl bromide or HBFCs. HCFCs should only be considered as interim / bridging alternatives as determined by the host country commitments and regulations.²⁰

Mobile Sources – Land-based

Similar to other combustion processes, emissions from vehicles include CO, NO_x, SO₂, PM and VOCs. Emissions from on-road and off-road vehicles should comply with national or regional

programs. In the absence of these, the following approach should be considered:

- Regardless of the size or type of vehicle, fleet owners / operators should implement the manufacturer recommended engine maintenance programs;
- Drivers should be instructed on the benefits of driving practices that reduce both the risk of accidents and fuel consumption, including measured acceleration and driving within safe speed limits;
- Operators with fleets of 120 or more units of heavy duty vehicles (buses and trucks), or 540 or more light duty vehicles²¹ (cars and light trucks) within an airshed should consider additional ways to reduce potential impacts including:
 - Replacing older vehicles with newer, more fuel efficient alternatives
 - Converting high-use vehicles to cleaner fuels, where feasible
 - Installing and maintaining emissions control devices, such as catalytic converters
 - Implementing a regular vehicle maintenance and repair program

Greenhouse Gases (GHGs)

Sectors that may have potentially significant emissions of greenhouse gases (GHGs)²² include energy, transport, heavy industry (e.g. cement production, iron / steel manufacturing, aluminum smelting, petrochemical industries, petroleum refining, fertilizer manufacturing), agriculture, forestry and waste management. GHGs may be generated from direct emissions

¹⁹ Examples include: chlorofluorocarbons (CFCs); halons; 1,1,1-trichloroethane (methyl chloroform); carbon tetrachloride; hydrochlorofluorocarbons (HCFCs); hydrobromofluorocarbons (HBFCs); and methyl bromide. They are currently used in a variety of applications including: domestic, commercial, and process refrigeration (CFCs and HCFCs); domestic, commercial, and motor vehicle air conditioning (CFCs and HCFCs); for manufacturing foam products (CFCs); for solvent cleaning applications (CFCs, HCFCs, methyl chloroform, and carbon tetrachloride); as aerosol propellants (CFCs); in fire protection systems (halons and HBFCs); and as crop fumigants (methyl bromide).

²⁰ Additional information is available through the Montreal Protocol Secretariat web site available at: <http://ozone.unep.org/>

²¹ The selected fleet size thresholds are assumed to represent potentially significant sources of emissions based on individual vehicles traveling 100,000 km / yr using average emission factors.

²² The six greenhouse gases that form part of the Kyoto Protocol to the United Nations Framework Convention on Climate Change include carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulfur hexafluoride (SF₆).



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



from facilities within the physical project boundary and indirect emissions associated with the off-site production of power used by the project.

Recommendations for reduction and control of greenhouse gases include:

- Carbon financing;²³
- Enhancement of energy efficiency (see section on 'Energy Conservation');
- Protection and enhancement of sinks and reservoirs of greenhouse gases;
- Promotion of sustainable forms of agriculture and forestry;
- Promotion, development and increased use of renewable forms of energy;
- Carbon capture and storage technologies;²⁴
- Limitation and / or reduction of methane emissions through recovery and use in waste management, as well as in the production, transport and distribution of energy (coal, oil, and gas).

Monitoring

Emissions and air quality monitoring programs provide information that can be used to assess the effectiveness of emissions management strategies. A systematic planning process is recommended to ensure that the data collected are adequate for their intended purposes (and to avoid collecting unnecessary data). This process, sometimes referred to as a data quality objectives process, defines the purpose of collecting the data, the

decisions to be made based on the data and the consequences of making an incorrect decision, the time and geographic boundaries, and the quality of data needed to make a correct decision.²⁵ The air quality monitoring program should consider the following elements:

- *Monitoring parameters.* The monitoring parameters selected should reflect the pollutants of concern associated with project processes. For combustion processes, indicator parameters typically include the quality of inputs, such as the sulfur content of fuel.
- *Baseline calculations.* Before a project is developed, baseline air quality monitoring at and in the vicinity of the site should be undertaken to assess background levels of key pollutants, in order to differentiate between existing ambient conditions and project-related impacts.
- *Monitoring type and frequency.* Data on emissions and ambient air quality generated through the monitoring program should be representative of the emissions discharged by the project over time. Examples of time-dependent variations in the manufacturing process include batch process manufacturing and seasonal process variations. Emissions from highly variable processes may need to be sampled more frequently or through composite methods. Emissions monitoring frequency and duration may also range from continuous for some combustion process operating parameters or inputs (e.g. the quality of fuel) to less frequent, monthly, quarterly or yearly stack tests.
- *Monitoring locations.* Ambient air quality monitoring may consist of off-site or fence line monitoring either by the project sponsor, the competent government agency, or by collaboration between both. The location of ambient air

²³ Carbon financing as a carbon emissions reduction strategy may include the host government-endorsed Clean Development Mechanism or Joint Implementation of the United Nations Framework Convention on Climate Change.

²⁴ Carbon dioxide capture and storage (CCS) is a process consisting of the separation of CO₂ from industrial and energy-related sources; transport to a storage location; and long-term isolation from the atmosphere, for example in geological formations, in the ocean, or in mineral carbonates (reaction of CO₂ with metal oxides in silicate minerals to produce stable carbonates). It is the object of intensive research worldwide (Intergovernmental Panel on Climate Change (IPCC), Special Report, Carbon Dioxide Capture and Storage (2006)).

²⁵ See, for example, United States Environmental Protection Agency, Guidance on Systematic Planning Using the Data Quality Objectives Process EPA QA/G-4, EPA/240/B-06/001 February 2006.



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



quality monitoring stations should be established based on the results of scientific methods and mathematical models to estimate potential impact to the receiving airshed from an emissions source taking into consideration such aspects as the location of potentially affected communities and prevailing wind directions.

- *Sampling and analysis methods:* Monitoring programs should apply national or international methods for sample collection and analysis, such as those published by the International Organization for Standardization,²⁶ the European Committee for Standardization,²⁷ or the U.S. Environmental Protection Agency.²⁸ Sampling should be conducted by, or under, the supervision of trained individuals. Analysis should be conducted by entities permitted or certified for this purpose. Sampling and analysis Quality Assurance / Quality Control (QA/QC) plans should be applied and documented to ensure that data quality is adequate for the intended data use (e.g., method detection limits are below levels of concern). Monitoring reports should include QA/QC documentation.

Monitoring of Small Combustion Plants Emissions

- Additional recommended monitoring approaches for **boilers**:

Boilers with capacities between ≈3 MWth and < 20 MWth:

- Annual Stack Emission Testing: SO₂, NO_x and PM. For gaseous fuel-fired boilers, only NO_x. SO₂ can be calculated based on fuel quality certification if no SO₂ control equipment is used.

²⁶ An on-line catalogue of ISO standards relating to the environment, health protection, and safety is available at: <http://www.iso.org/iso/en/CatalogueList?ICS1=13&ICS2=&ICS3=&scopelist=>

²⁷ An on-line catalogue of European Standards is available at: <http://www.cen.eu/catweb/cwen.htm>.

²⁸ The National Environmental Methods Index provides a searchable clearinghouse of U.S. methods and procedures for both regulatory and non-regulatory monitoring purposes for water, sediment, air and tissues, and is available at <http://www.nemi.gov/>.

- If Annual Stack Emission Testing demonstrates results consistently and significantly better than the required levels, frequency of Annual Stack Emission Testing can be reduced from annual to every two or three years.
- Emission Monitoring: None

Boilers with capacities between ≈20 MWth and < 50 MWth

- Annual Stack Emission Testing: SO₂, NO_x and PM. For gaseous fuel-fired boilers, only NO_x. SO₂ can be calculated based on fuel quality certification (if no SO₂ control equipment is used)
- Emission Monitoring: SO₂: Plants with SO₂ control equipment: Continuous. NO_x: Continuous monitoring of either NO_x emissions or indicative NO_x emissions using combustion parameters. PM: Continuous monitoring of either PM emissions, opacity, or indicative PM emissions using combustion parameters / visual monitoring.

- Additional recommended monitoring approaches for **turbines**:

- Annual Stack Emission Testing: NO_x and SO₂ (NO_x only for gaseous fuel-fired turbines).
- If Annual Stack Emission Testing results show constantly (3 consecutive years) and significantly (e.g. less than 75 percent) better than the required levels, frequency of Annual Stack Emission Testing can be reduced from annual to every two or three years.
- Emission Monitoring: NO_x: Continuous monitoring of either NO_x emissions or indicative NO_x emissions using combustion parameters. SO₂: Continuous monitoring if SO₂ control equipment is used.

- Additional recommended monitoring approaches for **engines**:

- Annual Stack Emission Testing: NO_x, SO₂ and PM (NO_x only for gaseous fuel-fired diesel engines).



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



- If Annual Stack Emission Testing results show constantly (3 consecutive years) and significantly (e.g. less than 75 percent) better than the required levels, frequency of Annual Stack Emission Testing can be reduced from annual to every two or three years.
- Emission Monitoring: NO_x: Continuous monitoring of either NO_x emissions or indicative NO_x emissions using combustion parameters. SO₂: Continuous monitoring if SO₂ control equipment is used. PM: Continuous monitoring of either PM emissions or indicative PM emissions using operating parameters.



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



Annex 1.1.1 – Air Emissions Estimation and Dispersion

Modeling Methods

The following is a partial list of documents to aid in the estimation of air emissions from various processes and air dispersion models:

Australian Emission Estimation Technique Manuals
<http://www.npi.gov.au/handbooks/>

Atmospheric Emission Inventory Guidebook, UN / ECE / EMEP and the European Environment Agency
<http://www.aeat.co.uk/netcen/airqual/TFEI/unece.htm>

Emission factors and emission estimation methods, US EPA Office of Air Quality Planning & Standards
<http://www.epa.gov/ttn/chief>

Guidelines on Air Quality Models (Revised), US Environmental Protection Agency (EPA), 2005
http://www.epa.gov/scram001/guidance/guide/appw_05.pdf

Frequently Asked Questions, Air Quality Modeling and Assessment Unit (AQMAU), UK Environment Agency
http://www.environment-agency.gov.uk/subjects/airquality/236092/?version=1&lang=_e

OECD Database on Use and Release of Industrial Chemicals
<http://www.oilis.oecd.org/ehs/urchem.nsf/>



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



Annex 1.1.2 – Illustrative Point Source Air Emissions Prevention and Control Technologies

Principal Sources and Issues	General Prevention / Process Modification Approach	Control Options	Reduction Efficiency (%)	Gas Condition	Comments
Particulate Matter (PM)					
Main sources are the combustion of fossil fuels and numerous manufacturing processes that collect PM through air extraction and ventilation systems. Volcanoes, ocean spray, forest fires and blowing dust (most prevalent in dry and semiarid climates) contribute to background levels.	Fuel switching (e.g. selection of lower sulfur fuels) or reducing the amount of fine particulates added to a process.	Fabric Filters	99 - 99.7%	Dry gas, temp <400F	Applicability depends on flue gas properties including temperature, chemical properties, abrasion and load. Typical air to cloth ratio range of 2.0 to 3.5 cfm/ft ² . Achievable outlet concentrations of 23 mg/Nm ³
		Electrostatic Precipitator (ESP)	97 - 99%	Varies depending of particle type	Precondition gas to remove large particles. Efficiency dependent on resistivity of particle. Achievable outlet concentration of 23 mg/Nm ³
		Cyclone	74 - 95%	None	Most efficient for large particles. Achievable outlet concentrations of 30 - 40 mg/Nm ³
		Wet Scrubber	93 - 95%	None	Wet sludge may be a disposal problem depending on local infrastructure. Achievable outlet concentrations of 30 - 40 mg/Nm ³
Sulfur Dioxide (SO ₂)					
Mainly produced by the combustion of fuels such as oil and coal and as a by-product from some chemical production or wastewater treatment processes.	Control system selection is heavily dependent on the inlet concentration. For SO ₂ concentrations in excess of 10%, the stream is passed through an acid plant not only to lower the SO ₂ emissions but also to generate high grade sulfur for sale. Levels below 10% are not rich enough for this process and should therefore utilize absorption or 'scrubbing,' where SO ₂ molecules are captured into a liquid phase or adsorption, where SO ₂ molecules are captured on the surface of a solid adsorbent.	Fuel Switching	>90%		Alternate fuels may include low sulfur coal, light diesel or natural gas with consequent reduction in particulate emissions related to sulfur in the fuel. Fuel cleaning or beneficiation of fuels prior to combustion is another viable option but may have economic consequences.
		Sorbent Injection	30% - 70%		Calcium or lime is injected into the flue gas and the SO ₂ is adsorbed onto the sorbent
		Dry Flue Gas Desulfurization	70%-90%		Can be regenerable or throwaway.
		Wet Flue Gas Desulfurization	>90%		Produces gypsum as a by-product

APRIL 30, 2007

14



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



Annex 1.1.2: Illustrative Point Source Air Emissions Prevention and Control Technologies (continued)

Oxides of Nitrogen (NO _x)		Percent Reduction by Fuel Type			Comments
		Coal	Oil	Gas	
Associated with combustion of fuel. May occur in several forms of nitrogen oxide; namely nitric oxide (NO), nitrogen dioxide (NO₂) and nitrous oxide (N₂O), which is also a greenhouse gas. The term NO_x serves as a composite between NO and NO₂ and emissions are usually reported as NO_x. Here the NO is multiplied by the ratio of molecular weights of NO₂ to NO and added to the NO₂ emissions. Means of reducing NO_x emissions are based on the modification of operating conditions such as minimizing the resident time at peak temperatures, reducing the peak temperatures by increasing heat transfer rates or minimizing the availability of oxygen.	Combustion modification (Illustrative of boilers)				These modifications are capable of reducing NO _x emissions by 50 to 95%. The method of combustion control used depends on the type of boiler and the method of firing fuel.
	Low-excess-air firing	10–30	10–30	10–30	
	Staged Combustion	20–50	20–50	20–50	
	Flue Gas Recirculation	N/A	20–50	20–50	
	Water/Steam Injection	N/A	10–50	N/A	
	Low-NO _x Burners	30–40	30–40	30–40	Flue gas treatment is more effective in reducing NO _x emissions than are combustion controls. Techniques can be classified as SCR, SNCR, and adsorption. SCR involves the injection of ammonia as a reducing agent to convert NO _x to nitrogen in the presence of a catalyst in a converter upstream of the air heater. Generally, some ammonia slips through and is part of the emissions. SNCR also involves the injection of ammonia or urea based products without the presence of a catalyst.
	Flue Gas Treatment	Coal	Oil	Gas	
	Selective Catalytic Reduction (SCR)	60–90	60–90	60–90	
	Selective Non-Catalytic Reduction (SNCR)	N/A	30–70	30–70	

Note: Compiled by IFC based on inputs from technical experts.



Environmental, Health, and Safety Guidelines
GENERAL EHS GUIDELINES: ENVIRONMENTAL
AIR EMISSIONS AND AMBIENT AIR QUALITY



Annex 1.1.3 - Good International Industry Practice (GIIP)

Stack Height

(Based on United States 40 CFR, part 51.100 (ii)).

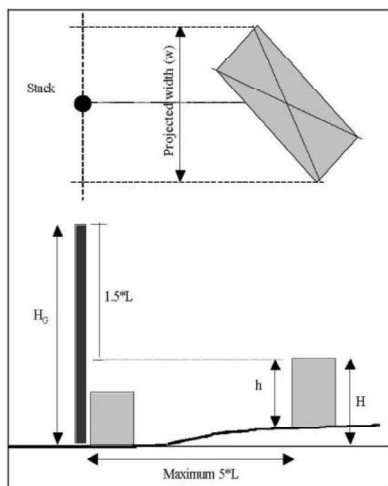
$H_0 = H + 1.5L$; where

H_0 = GEP stack height measured from the ground level elevation at the base of the stack

H = Height of nearby structure(s) above the base of the stack.

L = Lesser dimension, height (h) or width (w), of nearby structures

"Nearby structures" = Structures within/touching a radius of $5L$ but less than 800 m.



Annex 1.1.4 - Examples of VOC Emissions Controls

Equipment Type	Modification	Approximate Control Efficiency (%)
Pumps	Seal-less design	100 ²⁹
	Closed-vent system	90 ³⁰
	Dual mechanical seal with barrier fluid maintained at a higher pressure than the pumped fluid	100
Compressors	Closed-vent system	90
	Dual mechanical seal with barrier fluid maintained at a higher pressure than the compressed gas	100
Pressure Relief Devices	Closed-vent system	Variable ³¹
	Rupture disk assembly	100
Valves	Seal-less design	100
Connectors	Weld together	100
Open-ended Lines	Blind, cap, plug, or second valve	100
Sampling Connections	Closed-loop sampling	100

Note: Examples of technologies are provided for illustrative purposes. The availability and applicability of any particular technology will vary depending on manufacturer specifications.

²⁹ Seal-less equipment can be a large source of emissions in the event of equipment failure.

³⁰ Actual efficiency of a closed-vent system depends on percentage of vapors collected and efficiency of control device to which the vapors are routed.

³¹ Control efficiency of closed vent-systems installed on a pressure relief device may be lower than other closed-vent systems.



Environmental, Health, and Safety Guidelines
 GENERAL EHS GUIDELINES: ENVIRONMENTAL
 AIR EMISSIONS AND AMBIENT AIR QUALITY



Annex 1.1.5 - Fugitive PM Emissions Controls

Control Type	Control Efficiency
Chemical Stabilization	0% - 98%
Hygroscopic salts	60% - 96%
Bitumens/adhesives	
Surfactants	0% - 68%
Wet Suppression – Watering	12% - 98%
Speed Reduction	0% - 80%
Traffic Reduction	Not quantified
Paving (Asphalt / Concrete)	85% - 99%
Covering with Gravel, Slag, or "Road Carpet"	30% - 50%
Vacuum Sweeping	0% - 58%
Water Flushing/Broom Sweeping	0% - 96%

WHO Standard for Air Quality

Table 3.24. Summary of recommended long- and short-term AQG levels and interim targets

Pollutant	Averaging time	Interim target				AQG level
		1	2	3	4	
PM _{2.5} , µg/m ³	Annual	35	25	15	10	5
	24-hour ^a	75	50	37.5	25	15
PM ₁₀ , µg/m ³	Annual	70	50	30	20	15
	24-hour ^a	150	100	75	50	45
O ₃ , µg/m ³	Peak season ^b	100	70	–	–	60
	8-hour ^a	160	120	–	–	100
NO ₂ , µg/m ³	Annual	40	30	20	–	10
	24-hour ^a	120	50	–	–	25
SO ₂ , µg/m ³	24-hour ^a	125	50	–	–	40
CO, mg/m ³	24-hour ^a	7	–	–	–	4

^a 98th percentile (i.e. 3–4 exceedance days per year).

^b Average of daily maximum 8-hour mean O₃ concentration in the six consecutive months with the highest six-month running-average O₃ concentration.

Table 3.25. Air quality guidelines for nitrogen dioxide, sulfur dioxide and carbon monoxide (for short averaging times) that remain valid

Pollutant	Averaging time	Air quality guideline that remain valid
NO ₂ , µg/m ³	1-hour	200
SO ₂ , µg/m ³	10-minute	500
CO, mg/m ³	8-hour	10
	1-hour	35
	15-minute	100

Table 3.26 shows a side-by-side comparison of the 2005 air quality guidelines and the 2021 AQG levels.

Table 3.26. Recommended 2021 AQG levels and 2005 air quality guidelines

Pollutant	Averaging time	2005 air quality guideline	2021 AQG level
PM _{2.5} , µg/m ³	Annual	10	5
	24-hour ^a	25	15
PM ₁₀ , µg/m ³	Annual	20	15
	24-hour ^a	50	45
O ₃ , µg/m ³	Peak season ^b	–	60
	8-hour ^a	100	100
NO ₂ , µg/m ³	Annual	40	10
	24-hour ^a	–	25
SO ₂ , µg/m ³	24-hour ^a	20	40
CO, mg/m ³	24-hour ^a	–	4

^a 99th percentile (i.e. 3–4 exceedance days per year).

^b Average of daily maximum 8-hour mean O₃ concentration in the six consecutive months with the highest six-month running-average O₃ concentration.

3.8.1 Important AQG level updates to *Global update 2005*

The most important updates in these guidelines are listed below.

1. The PM_{2.5} annual AQG level has been lowered from 10 µg/m³ to 5 µg/m³. This reflects the new evidence of effects on mortality occurring at concentrations below 10 µg/m³. In this update of the air quality guidelines, an analysis was introduced to identify the most appropriate level of the long-term air quality guidelines that is more formalized than what was used in 2005. However, the change from 10 µg/m³ to 5 µg/m³ primarily reflects the new evidence about effects occurring at low levels of exposure.
2. The 24-hour AQG level for PM_{2.5} changed from 25 µg/m³ to 15 µg/m³. In 2005 a ratio of 2.5 was assumed between the 99th percentile of 24-hour average concentrations and annual averages. This ratio was changed to 3 based on empirical data from the very large MCC Collaborative Research Network (A. Gasparrini, London School of Hygiene and Tropical Medicine, unpublished data, 23 June 2020; Liu et al., 2019).

3 PROJECT DESCRIPTION AND ALTERNATIVES

This chapter provides an overview of the proposed Nippon Paint (Myanmar) Manufacturing Factory Project and requirements for the construction, operation and decommissioning phase are discussed in this section as well as the alternatives considered.

To identify the issues that will need to be addressed by the EIA, it is necessary to understand the characteristics of the site and the surrounding area that may be affected by the proposed development. The following section describes the location of the proposed development and summarizes the existing environmental features/conditions of the site and the surrounding area.

The proposed factory area is already constructed and some facilities are including such as Main Factory, Office Room, Warehouse and other facility buildings. Only re-construction and installation activities will focus on the paint manufacturing area, various raw materials area and finished goods area be restored for construction phase. The two main manufacturing processes on site will be water-based paint manufacturing and solvent based paint manufacturing.

There are layout plan of rented building area that of after renovation and installation of the machineries at current condition shown at Section (3-4) as Figure 3.16 and 3.17.

3.1 The Project Location and Area

Nippon Paint Factory is located at Plot No. (44), Myay Taing Block No. (24), Ngwe Pin Lal Industrial Zone, Hlaing Thar Yar Township, Yangon Region (See Figure 3-1). The proposed project is 2.273 acres. The Geographical Co-ordinates of the project site are in Table 3-1 below:

Table 3-1 Geographical Co-ordinates of the project site

Point	Latitude (N)	Longitude (E)
A	16°55'51.77"	96° 3'39.06"
B	16°55'55.18"	96° 3'41.65"
C	16°55'53.86"	96° 3'43.48"
D	16°55'50.52"	96° 3'40.76"

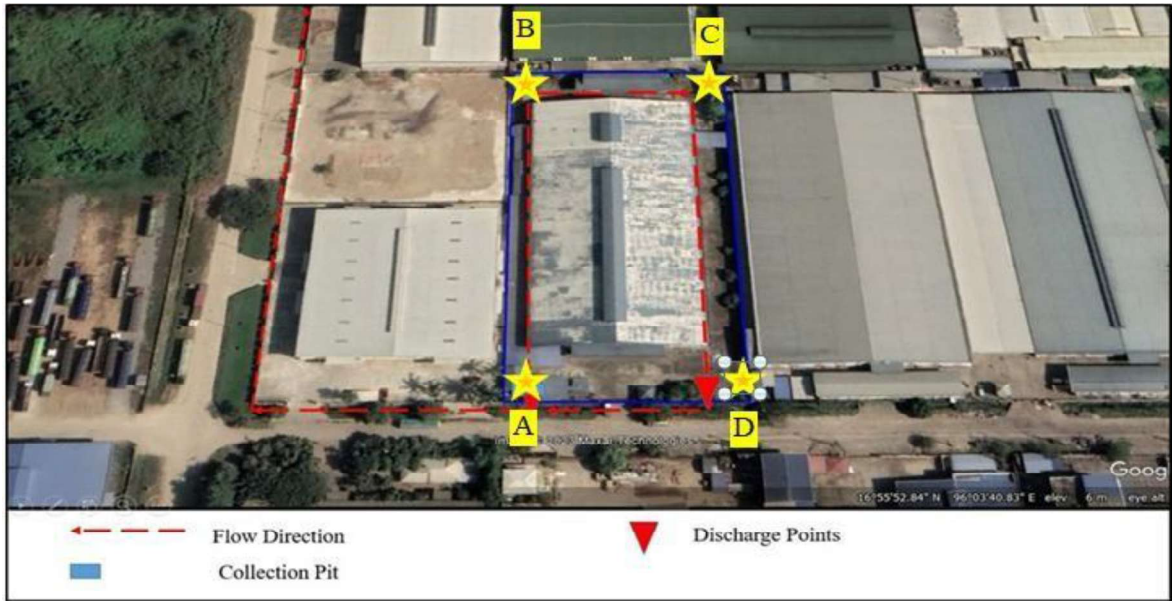


Figure 3-1 Geographical Co-ordinate of the Project Site

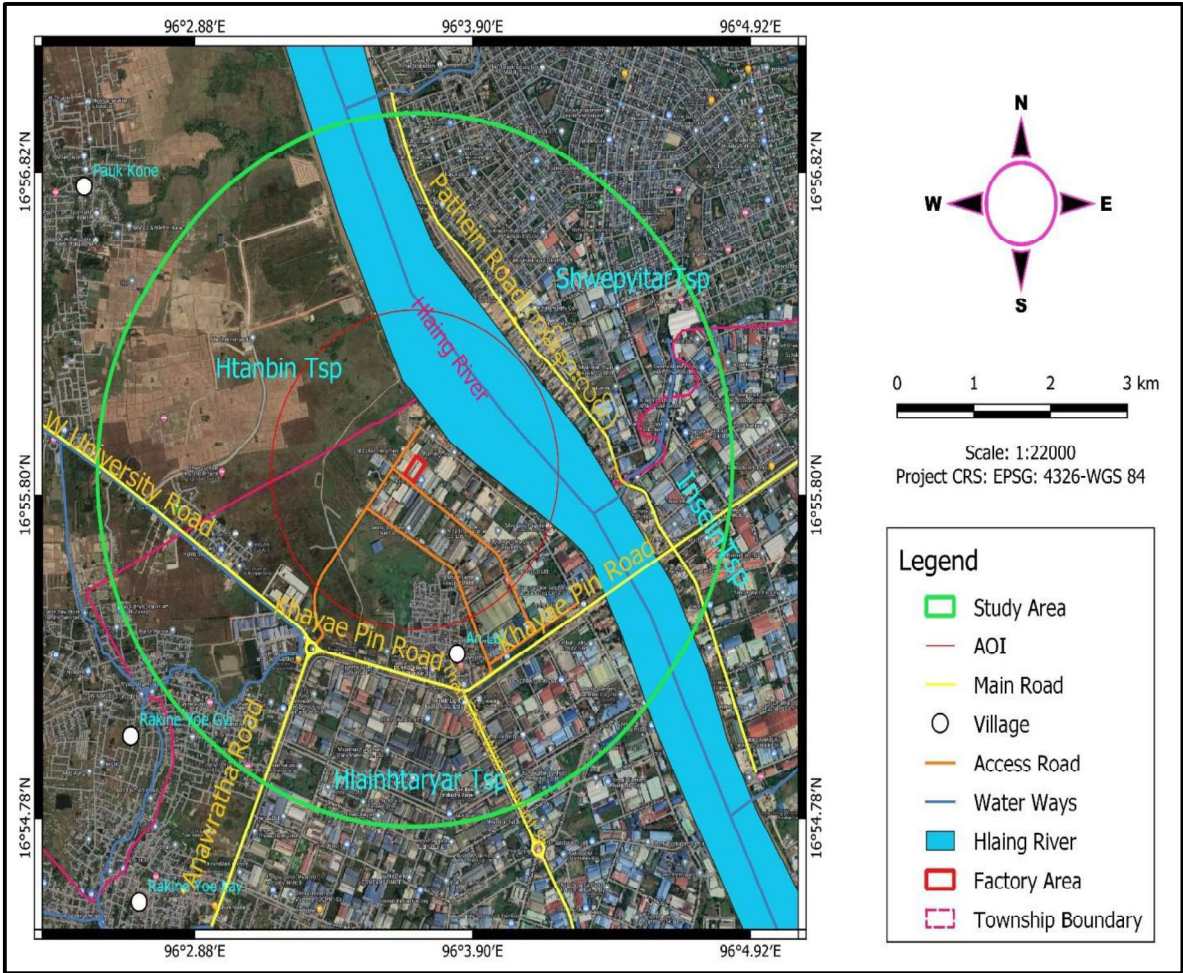


Figure 3-2 Overview of the Project Site

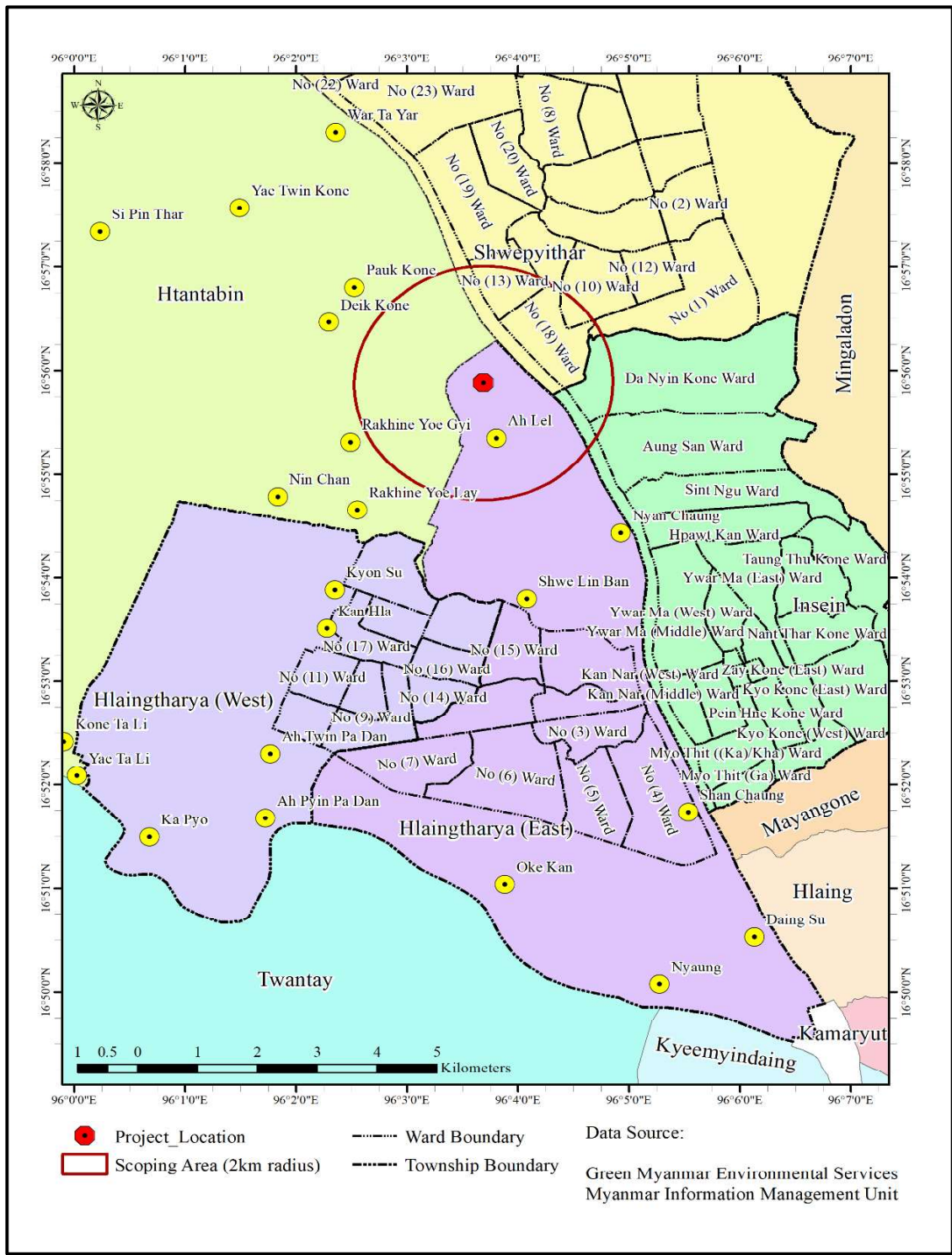


Figure 3-3 Project Boundaries