# Draft Initial Environmental Examination

October 2025
Loan 4106 - IND: IEE of Perundurai, Working Women's Hostel

# IND: Working Women Hostel, Erode by Tamil Nadu Working Women's Hostels Corporation Ltd, Tamil Nadu

Prepared by Tamil Nadu Infrastructure Fund Management Corporation (TNIFMC) for the Asian Development Bank.

**CURRENCY EQUIVALENTS**
(as of September 2025)

| | | |
|---|---|---|
| Currency Unit | – | Indian Rupees (INR) |
| INR1.00 | – | $0.012 |
| $1.00 | = | INR 86.12 |

## ABBREVIATIONS

| | | |
|---|---|---|
| ADB | : | Asian Development Bank |
| ASI | : | Archaeological Survey of India |
| CPCB | : | Central Pollution Control Board |
| CtE | : | Consent to Establish |
| CtO | : | Consent to Operate |
| EA | : | Executing Agency |
| EAC | : | Expert Appraisal Committee |
| EARF | : | Environmental Assessment and Review Framework |
| EC | : | Environmental Clearance |
| EHS | : | Environmental Health and Safety |
| EIA | : | Environmental Impact Assessment |
| EMP | : | Environmental Management Plan |
| ESS | : | Environmental and Social Safeguards |
| GOI | : | Government of India |
| GoTN | : | Government of Tamil Nadu |
| GHG | : | Greenhouse Gases |
| GRM | : | Grievance Redressal Mechanism |
| IA | : | Implementing Agency |
| IEE | : | Initial Environmental Examination |
| MOEFCC | : | Ministry of Environment, Forests and Climate Change |
| NOC | : | No Objection Certificate |
| PMU | : | Project Management Unit |
| PCR | : | Physical Cultural Resources |
| PMC | : | Project Implementation Division |
| PPE | : | Personal Protective Equipment |
| REA | : | Rapid Environmental Assessment |
| RF | : | Housing Framework |
| RoW | : | Right of Way |
| SEIAA | : | State Environmental Impact Assessment Authority |
| SPS | : | Safeguard Policy Statement |
| STP | : | Sewage Treatment Plant |
| TNPCB | : | Tamil Nadu Pollution Control Board |
| TNSCB | : | Tamil Nadu Slum Clearance Board |
| ULB | : | Urban Local Body |

**WEIGHTS AND MEASURES**

| | |
|---|---|
| °C | Degree Celsius |
| km | kilometre |
| lpcd | Litres per capita per day |
| m | metre |
| Mgd | Million gallons per day |
| Mld | Million Litres per day |
| mm | millimetre |
| Nos | Numbers |
| sq.km | Square Kilometre |
| dBA | A-weighted decibels |
| LAeq | Equivalent Continuous Sound Pressure Level |
| µg/m$^3$ | Micrograms Per Cubic Meter |
| KLD | Kilo Liters per Day |
| LPCD | Litre Per Capita Per Day |

**NOTES**

(i) The fiscal year (FY) of the Government of India and its agencies ends on 31 March.

(ii) In this report, "$" refers to US dollars.

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## EXECUTIVE SUMMARY

1. **Project Background**. The Tamil Nadu Infrastructure Fund Management Corporation Limited (hereafter referred to as TNIFMC), is an Asset Management Company (AMC) promoted by the Government of Tamil Nadu (GoTN) for the purpose of raising and managing alternative investment funds focused on sectors like infrastructure, affordable housing etc.

2. TNIFMC is managing Tamil Nadu Shelter Fund (TNSF) which is registered as a Category I (Social Venture) Alternative Investment Fund, with a mandate to invest in affordable housing projects in Tamil Nadu. TNSF invests in affordable housing projects in the private, PPP or Government and/or its agencies.

The primary focus of TNSF is:

- Affordable housing – with focus on housing for the economically weaker (EWS) and low-income groups (LIG),
- Hostels - for working women from all sections of the society.
- Industrial housing for workers in and around Industrial Complexes/ Parks/ Clusters
- Senior and assisted living
- Others – Rental housing for students, co-living spaces etc.

3. The proposed Working Women's Hostel at Perundurai, Erode will be developed by Tamil Nadu Working Women's Hostel Corporation Limited (TNWWHCL) within the Government Medical College campus. The land, owned by the Social Welfare and Women Empowerment (SW&WE) Department, will be leased to TNWWHCL for 28 years to support construction and operation. The project involves building a Ground + 3 floors structure on 897.40 sq.m (0.25 acres) of land, with 30 rooms designed to accommodate around 100 working women, students, and trainees from nearby areas.

4. The hostel will offer 100 beds, arranged in 2-sharing and 4-sharing configurations, and will include essential amenities such as (i) Vehicle parking, (ii) Laundry facilities, (iii) Geysers in bathrooms, (iv) Reverse Osmosis (RO) drinking water system, (v) Balconies and (vi) On-site crèche facility. The project is currently at the pre-construction stage, and construction will commence upon receipt of the necessary statutory approvals.

5. **Project Categorization.** As per the ADB's Safeguard Policy Statement (SPS, 2009), this project is categorized as "B" (refer REA checklist in Appendix 1), for environmental safeguards. The categorization is based on the site visit observations, proposed construction activities, and anticipated environmental impacts at the time of construction in the project area and its surrounding environment. For Category B projects, the SPS 2009 mandates the preparation of an Initial Environmental Examination (IEE) and an Environmental Management Plan (EMP). Therefore, an IEE with an EMP has been prepared.

6. As per the Government of India's EIA Notification 2006 and its subsequent amendments, this project is exempt from obtaining Environmental Clearance (EC). The total built-up area is 897.40 sq.m, which includes a Ground + 3 floors structure with designated community space and parking over a land parcel of 0.25 acres. This is well below the minimum threshold of 20,000 sq.m required for Category B2 projects under Schedule 8(a) Building and Construction Projects.

7. **Project implementation arrangements.** Tamil Nadu Working Women Hostels Corporation Limited (TNWWHCL) will be responsible for the management, coordination and execution of project activities funded by TNIFMC. A PMC will be on-board to assist

TNWWHCL in the implementation of the environmental safeguard requirements in compliance with ADB SPS 2009, TNSF ESG and loan covenants. The Contractors will appoint a qualified and experienced Environment, Health and Safety (EHS) officer, who will be responsible for EMP implementation, health and safety related issues including environmental safeguards related grievances (if any), during the implementation of the project. The contractor will prepare the site specific EMP during the construction stage which will be approved by PMC/TNWWHCL and TNIFMC.

8. **Description of Project Location and Baseline Environment.** The proposed project is located in the Perundurai area, adjacent to the Kunnathur–Perundurai Road in Erode District, Tamil Nadu. Erode is classified as a Special Grade Municipality, as per G.O. (Ms) No. 270 issued by the Municipal Administration and Water Supply Department, dated 14.07.2006. Geographically, Erode lies at a latitude of 11° 20' 34.08" N and a longitude of 77° 43' 38.68" E, with an elevation of approximately 203 meters above mean sea level. The topography of Perundurai is predominantly plain, with low-lying hills towards the western region, particularly near the foothills of the Western Ghats. The geology of Erode District is characterized by diverse rock formations, including the Granulite Group, which consists of calc granulite, quartzite, charnockite, pyroxene granulite, and metagabbro, predominantly in the northern and southern regions. Perundurai falls under Seismic Zone II, indicating low seismic risk. The site is situated along the State Highways, connecting important cities in Tamil Nadu such as Chennai, Vellore, and Villupuram. The mean maximum and minimum temperatures during summer and winter range between 40°C and 15°C respectively. The highest temperature ever recorded is 37°C, and the lowest is 20°C. The humidity ranges from 40% to 70%. The maximum rainfall occurs during the Northeast monsoon (October to December), with significant rainfall also occurring during the Southwest monsoon and the hot weather season. The average annual rainfall in Perundurai is around 775 mm.

9. According to the secondary analysis, air quality in Perundurai generally falls in the Moderate range[1], with AQI levels around 56 (US AQI) and $PM_{2.5}$ concentrations averaging 11.7 µg/m³, exceeding WHO guidelines, while other pollutants like $O_3$, $NO_2$, and $SO_2$ remain within moderate limits[2]. Ecologically, the landscape around Perundurai features seasonal wetlands, tanks, and patches of tree cover, which support native flora, small mammals, pollinators, and birds. While the area lacks prominent rocky outcrops, its terrain is defined by State Highway 96 and the SIPCOT Industrial Estate, with urban greenery and roadside canopies providing crucial microhabitats and ecosystem services.

10. Between 2011 and 2021, Perundurai experienced significant landuse change with agricultural areas being converted into industrial and residential uses, driven by the growth of the SIPCOT Industrial Estate. Commercial activity has expanded along State Highway 96 and arterial roads, with small trading hubs developing around the town. Perundurai's economy is anchored in textiles, food processing, leather, engineering, and agro-based industries, alongside a strong base of MSMEs supporting Erode district's textile and turmeric trade. The town also benefits from its proximity to Erode's agricultural hinterland, with paddy, sugarcane, turmeric, and coconut as key crops.

11. Water supply is managed by Perundurai Town Panchayat, which sources from a combined surface water scheme from Bhavani River, supplemented by borewells and local tanks, distributing around 3.2 MLD through a network of 70+ km pipelines and over 6,500

[1] https://aqicn.org/station/india-saralai-perundurai-sipcot-industrial-park/
[2] https://www.aqi.in/in/dashboard/india/tamil-nadu/erode/pm

household connections (Census 2011 & TN Govt data). Sanitation is primarily dependent on onsite systems (septic tanks and pits), with only partial coverage through underground drainage. Solid waste generation is estimated at 8–10 MT/day, collected through door-to-door services, though segregation at source is limited and disposal is carried out at designated dumping yards outside the town. The area is well connected by NH-544 (Salem–Kochi highway) and State Highway 96, with Erode Junction (~20 km) serving as the nearest major railway station.

12. As per the Census 2011, Perundurai Town Panchayat had a population of 29,664 (14,771 males and 14,893 females). In Perundurai Town Panchayat, Female Sex Ratio is of 1041, higher than the Tamil Nadu average of 996[3]. The literacy rate was 77.4%, with male literacy at 84.1% and female literacy at 70.9%. The work participation rate stood at 45.6%, with a significant proportion engaged in trade, industry, and agriculture-linked services. In-migration has increased over the past decade, driven by employment opportunities in SIPCOT industries and educational institutions.

13. Socio-cultural resources include temples, local shrines, schools, colleges, and hospitals within the town, with Erode city providing access to higher-order administrative and healthcare facilities. Historically, Perundurai has developed as a market and service town in Erode district, with growth accelerating after the establishment of the industrial estate and improved connectivity through NH-544. Its morphology reflects a transition from an agrarian base to a mixed industrial-commercial hub, shaping its current socio-economic identity.

14. **Potential environmental impacts and mitigation measures.** The project is unlikely to cause any significant adverse impacts that are irreversible, because: (i) there are no significant sensitive environmental features along the project site and (ii) predicted impacts are site-specific and likely to be associated with the construction process.

15. Pre-construction impacts are associated with (i) sourcing of construction materials. Construction materials must be identified before any construction commences and a proposed mitigation measure is to procure construction materials from government-authorized/permitted quarries and vendors in compliance with environmental regulations of the country; (ii) site selection of construction work camps, stockpile areas, storage areas, and disposal areas. These should be located 500 m away from the nearby settlements. Residential areas will not be considered for setting up construction camps to protect the human environment; (iii) Construction traffic will utilise existing roads, which may lead to increase in traffic, however most of the work areas are accessible from the existing roads, potential impacts will be of short duration, localized and can be mitigated.

16. Construction-related impacts are standard and site-specific to the construction activities and are not expected to be significant. Key impacts during construction are envisaged on the following aspects: (i) transportation of materials, (ii) dust generation, air and noise pollution from construction activities, (iii) sourcing of water for construction activities, (iv) handling of construction materials at site and, (v) adoption of safety measures during construction. There are no water bodies surrounding the site and hence impact due to runoff from the construction site is not envisaged.

17. Air quality impacts due to the construction activity on the site are not expected to have a major health impact to the surroundings, due to scattered habitations near the project site. However, the movement of vehicles transporting construction materials and debris will have

[3] https://www.census2011.co.in/data/town/803534-perundurai-tamil-nadu.html

minor impact on the roads due to the generation of dust, which is site-specific, low magnitude, short, and can be easily mitigated.

18. For noise impacts, most of the construction activities (including pre-construction site cleaning works) shall be done involving minimal heavy equipment usage and hence noise is not expected to be significant.

19. During the project construction and operation, a moderate negative impact is anticipated on the water resources. This is due to the utilisation of water for construction purposes and use of water for domestic purposes during operation, which will have a moderate stress on the available water resources. For construction and operation (estimated water demand is 15 KLD) purposes, the water shall be provided by the Tamil Nadu Water Supply and Drainage Board, Perundurai.

20. Impact on the flora and fauna during the project construction and operation will be minimal. There is no forest around the project area, except for 10 trees and shrub coverage. Hence, tree cutting is envisaged in the project area with minimal impact to the natural environment in the area, Lastly, there are no protected areas or environmentally sensitive areas surrounding the project site.

21. Impact on Occupational, Health and Safety (OHS) including exposure to work-related chemical, physical, biological and social hazard is likely to occur during proposed construction works. Potential impacts are negative and short-term but reversible by mitigation measures including provision of PPE's, preparation of comprehensive site-specific health and safety (H&S) plan provided with management strategy (including training) and applying practices that are intended to eliminate, or reduce, fatalities, injuries and illnesses for workers.

22. Major post-construction impacts are specific to site clean-up activities including backfill of any excavation and trenches; reuse of topsoil; re-establishing the drain pattern if impacted; and removal of all tools, equipment, barricades, surplus materials, debris, and rubbish.

23. Major project operation impacts are specific to (i) municipal solid waste generation, (ii) wastewater generation . (iii) health and safety issues (including communicable diseases, fire hazards etc.) and (iv) operation of infrastructures/ amenities including rainwater harvesting structures, and maintenance of lawn/ green belt. The MSW generated within the project location will be handled by the operations and maintenance team appointed by TNWWHCL.

24. The main project risk is the low institutional capacity of the contractors. These risks will be mitigated by: (i) hiring a qualified and experienced environmental specialist at the PMC level; (ii) providing training and capacity building on environmental safeguards to the contractors and workers, (iii) developing and implementing site-specific EMPs (iv) following appropriate project implementation, mitigation, monitoring and reporting arrangements, and (iv) adequate site supervision including audits of contractor's Environmental, Health and Safety (EHS) performance. Monitoring parameters will be identified in the environmental monitoring plan to check the effectiveness of EMP measures and to ensure any unidentified impacts can be readily addressed. The project risks will also be mitigated through the inclusion of environmental specifications/EMP in the bid document and contractor's contract agreement.

25. For the identified impacts, mitigation measures have been provided (in the EMP) to reduce all negative impacts to acceptable levels during pre-construction, construction, and post-construction/ operation phases. The environmental monitoring program will ensure that all mitigation measures are implemented and will determine whether the environment is

protected as intended. It will include observations on- and off-site, document checks, and consultation with workers and beneficiaries. Any requirements for corrective action will be reported to the ADB.

26. **Environmental Management Plan**. The identified potential environmental impacts can be managed through effective implementation of the Environmental Management Plan (EMP). An EMP is included as part of this IEE, which has (i) mitigation measures for environmental impacts identified during the implementation and operation stages; (ii) an environmental monitoring program, and the responsible entities for mitigating, monitoring and reporting; (iii) public consultation and information disclosure procedure; and (iv) grievance redress mechanism. Several impacts and their significance have already been reduced by amending project design. The EMP will be included in the civil work bidding and contract documents. The EMP budget will be 7.5 Lakhs.

27. **Consultation, Disclosure, and Grievance Redress**. Whilst preparing IEE, meetings with the public and other relevant government stakeholders have been conducted. The project components and associated clearances/ permissions/ NoCs requirements as well as the way forward for the project were discussed. The feedback and suggestions from the consultations were collected and were utilized in the design of the project, and environmental assessment plan preparation. Consultations will continue throughout the project implementation period. This IEE report including EMP will be disclosed on TNIFMC and ADB websites.

28. A Grievance Redress Mechanism (GRM) is described within the IEE to ensure any public grievances are addressed quickly. The Tamil Nadu Working Women's Hostels Corporation Limited (TNWWHCL) will set up a 3-tier common GRM acceptable to ADB at project level to address any environmental and/or social issues that arise due to project activity. The GRM will constitute a suitable systematic process to receive, evaluate, and facilitate the resolution of affected persons and other stakeholder complaints and grievances about project environmental (and social) safeguards performance. It will aim to provide a time-bound, trusted, and transparent mechanism to voice and resolve issues and concerns associated with the project implementation. The GRM will address concerns and complaints promptly via a transparent process. Complaints and their resolution will be documented and reported in semi-annual safeguard reports submitted to ADB.

29. **Monitoring and Reporting**. The key institutions involved in the IEE and EMP implementation will be the TNWWHCL and PMC. To ensure effective implementation of environmental safeguards procedures, the PMC will include designated and trained staff and focal point persons. The TNWWHCL will be responsible for the overall supervision and compliance with (i) environmental safeguards requirements including resubmission of revised documentation (for any location/design changes) for ADB concurrence, (ii) coordinate the project GRM, (iii) coordinate with line departments to ensure smooth implementation of the project, (iv) supervise the procurement process, and (v) report to the ADB. In particular, the TNWWHCL will ensure consistency of safeguard documents with government policy, legal and administrative framework across all jurisdictions national, state and local level. The PMC will be responsible for day-to-day activity and compliance with safeguards during project implementation in the field including engaging in project GRM, meaningful consultations, and oversight of the contractors or any third-party consultants.

30. The TNWWHCL/ PMC will be responsible for overall safeguards reporting and monitoring, including final approval of the site-specific environmental management plan (SEMP) prepared by the contractors. The contractor will conduct environmental monitoring for

the project and provide the environmental input into reporting based on on-site inspections, and compliance checks. Based on the information shared by the contractor, the PMC will cross-verify the site information (shared by the contractor) and prepare the Semi-annual Environmental Monitoring Report (SEMR) for submission to the TNWWHCL. Further, the PMC/TNWWHCL will submit the revised/approved semi-annual EMR to TNIFMC and ADB for review and clearance. During the operation and maintenance period, the EMR shall be submitted by the TNWWHCL/TNIFMC to ADB on an annual basis till issuance of project completion report (PCR) by ADB. Environmental monitoring reports will be required to be submitted to ADB within 30 days from the end of the relevant period. The ADB-cleared SEMRs will be disclosed on the ADB and TNIFMC website.

31. The PMC will be responsible for environmental safeguards related issues during implementation of the Project. Further, PMC will support in preparation of contractor's site-specific EMP before submission to the TNWWHCL for final approval. The TNWWHCL will coordinate and interact with the TNIFMC on compliance with ADB's safeguards requirements and with relevant government agencies and local authorities on permits and clearances. During the project implementation, the PMC will conduct regular field visits to ensure EMP implementation, to avoid noncompliance, and prepare a suitable Action Taken Report (ATR) with a time-bound corrective action plan, if non-compliance pertaining to EMP implementation is noticed during execution of the Project. The ATR will be shared with the Contractor for effective implementation of the EMP and included in the quarterly and semi-annual monitoring reports.

32. On completion of the construction stage/operation stage, the TNWWHCL / contractor will continue to submit annual EMR to TNIFMC and subsequently it shall be submitted to ADB till issuance of PCR by ADB.

33. **Conclusions and Recommendations.** The project is currently in pre-construction phase and will be divided into two phases: construction phase and operational phase. There are few impacts anticipated during the construction phase i.e. water consumption, waste disposal, health, and safety of workers. However, there are no major impacts anticipated during operational phase. With analysis conducted during this study, it was clearly observed that potential impacts during the construction and operational phase of the project are very much understood and manageable i.e. impacts can be avoided or minimized

34. The Initial Environmental Examination (IEE) report, including the Environmental Management Plan (EMP), has been prepared based on the Detailed Project Report (DPR). As per the DPR, the proposed project is unlikely to result in any significant adverse environmental impacts. A site-specific EMP will be developed by the contractor during the construction phase, and potential impacts related to design, construction, and operation can be effectively mitigated through sound engineering practices and the implementation of recommended mitigation measures.

35. Based on the findings of the IEE, no significant environmental impacts have been identified, and the project's classification as Category "B" is confirmed. In the event of any change in project scope, the draft IEE will be updated to reflect associated impacts and mitigation measures, and prior clearance shall be obtained from ADB before proceeding with implementation. No further study or detailed Environmental Impact Assessment (EIA) is required to comply with ADB's Safeguard Policy Statement (SPS), 2009, or the Government of India's EIA Notification, 2006.

# I. INTRODUCTION

## A. Background

36. Tamil Nadu is among India's large states having an acute housing shortage. Issues affecting the demand for housing include (i) lack of access by the poor to existing housing programs because these are unaffordable and have stringent qualification requirements; (ii) designs are not gender-sensitive; and (iii) housing projects experience low demand and occupancy because they are located far from the city centers.

37. Factors affecting the housing supply include (i) inadequate public resources for urban housing, (ii) difficulty in attracting private investment because of low investment returns and lack of incentives, (iii) mismatch between housing policies and procedures of central and state government and capacity of the poor, and (iv) weaknesses in regional planning resulting in areas that are strong economically but lacking a supply of affordable housing.

38. The state's housing deficit accounts for 6.66% of the national housing shortfall. National data shows that, when the housing shortage is mapped against income levels, EWS households account for 56% of the total shortage, and LIG households account for 39%. Only 4% of the national housing shortage is borne by households in the middle-income group or those with higher income, as current housing stocks cater to middle- and higher-income groups.

39. Tamil Nadu is the sixth most populous state in India with a population of over 72 million. The state contributes 8.54% of India's gross domestic product, with strong economic growth accompanied by increased rural-urban migration. Tamil Nadu has one of the highest rates of urbanization in India with 48% of the population living in urban areas. The supply of urban infrastructure and services does not meet high and sharply increasing demand.

40. As per the National Urban Housing and Habitat Policy (NUHHP), several comprehensive urban initiatives have been undertaken. The most recent being the Pradhan Mantri Awas Yojana- Housing for All (PMAY-HFA). Affordable housing also needs to be made accessible to low-income migrant workers, working women, and female-headed low-income households to ensure sustainable urban development.

41. The project will promote access to inclusive, resilient, and sustainable housing and urban development in Tamil Nadu by supporting the state in; (i) mobilizing private sector financing to construct affordable housing units for urban poor households, migrant workers from the economically weaker section (EWS) and lower-income group (LIG) and other populations that are underserved by the housing market.

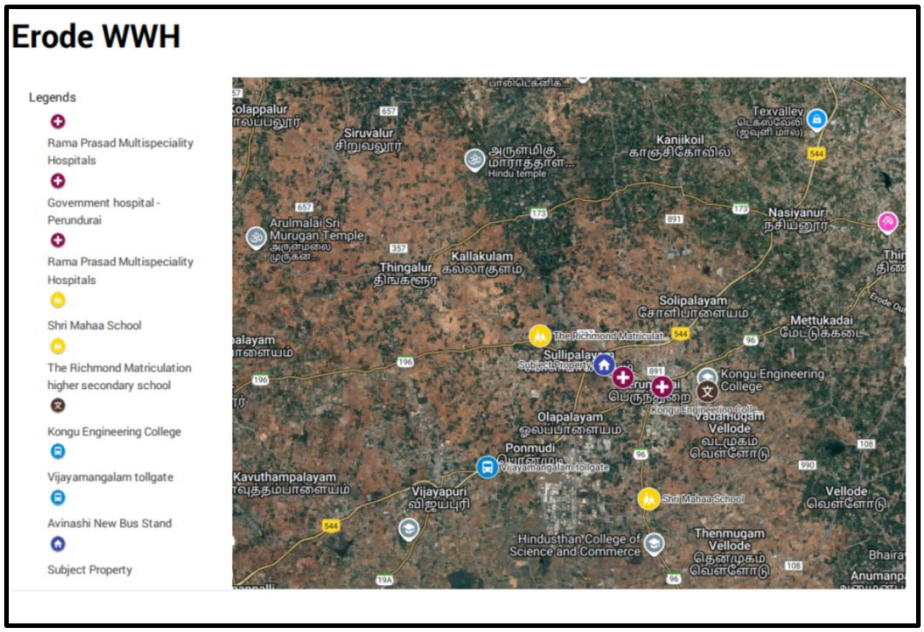
## B. Project location and Outputs of the project

42. Based on the land availability, the TNWWHCL has selected the Perundurai site (Geo-coordinates 11°17'02.8"N and 77°33'54.1"E) as a potential Working Women's Hostel site (Refer figure 1).

43. **Project Selection Criteria**. As per the Asian Development Bank (ADB) Safeguard Policy Statement (SPS) 2009 and prevailing rules and regulations, the project selection criteria have been prepared and included in the TNSF ESGMS which shall act as a guideline for project selection.

**Figure 1: Map Showing Project Site**


**Figure 2: Sensitive Receptors near Project site**




44. The project involves the construction of a G+3 floor structure over a land of 897.40 sq. m. (0.25 acres). The figure 3 highlights the land parcel in which the project is going to be built.

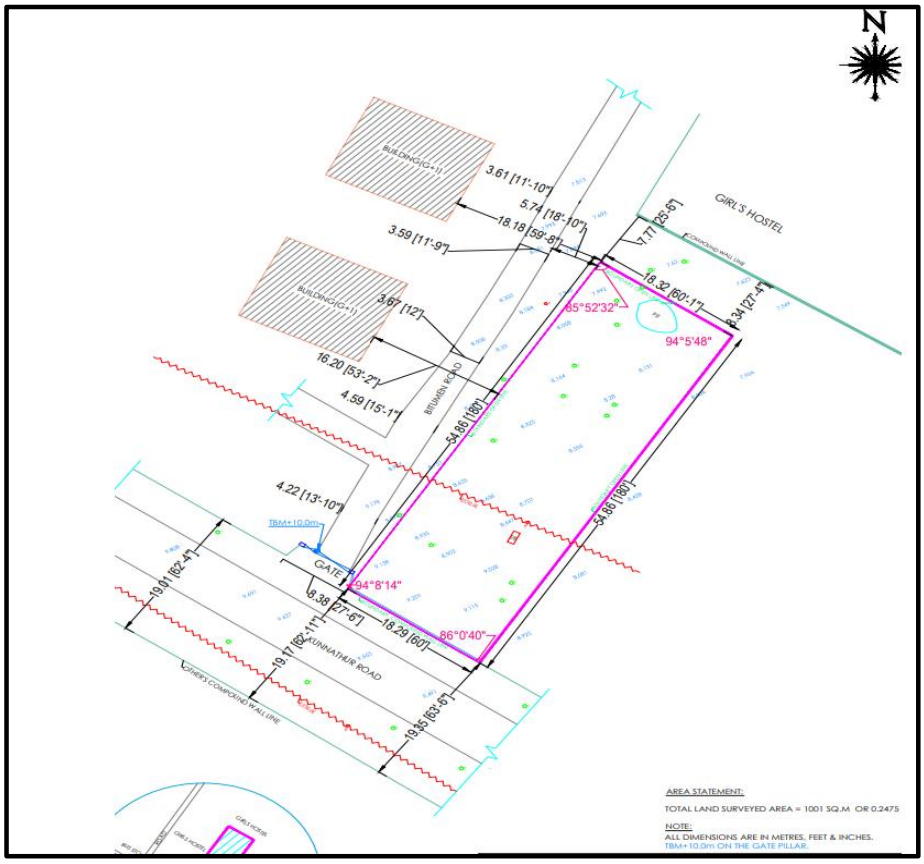
The overall project shall comprise of 30 rooms to accommodate 100 beds for women employees working in Perundurai and in the nearby localities.

**Table 1: Proposed Project TNWWHCL**

| Sl. No | Blocks | No. of Rooms | Capacity | Rent/Bed/Month |
|---|---|---|---|---|
| 1 | 4-Sharing | 20 | 80 | INR 2,750 |
| 2 | 2-Sharing | 10 | 20 | INR 3,750 |

*Source: TNFIMC*

**Figure 3: Site Survey Drawing**




45. **Output**: ADB financing for this output will be deployed as Government of Tamil Nadu (GoTN's) equity into the Tamil Nadu Shelter Fund (TNSF). The TNSF will leverage private sector investment, and utilize such financing for risk capital, equity investment, or participating instruments investment, through specific special purpose vehicles for undertaking affordable housing projects that benefit populations underserved by the housing market. To be eligible for financing, projects must be financially and economically viable affordable housing projects that increase the supply of housing for households within EWS and LIG segments and other segments of the population that are currently underserved by the housing market. Additional eligibility criteria cover safeguards, gender, and sustainability.

### C. Purpose/ Objectives of IEE

46. ADB requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirements for environmental assessment are described in ADB's Safeguard Policy Statement (SPS), 2009. The potential environmental impacts of the project have been assessed using the ADB Rapid Environmental Assessment (REA) checklist for Urban Development Projects. The potential impacts were then identified in relation to (i) pre-construction, (ii) construction, and (iii) operation of the project, the result of the assessment

shows that the project is unlikely to cause significant adverse impacts that are irreversible, diverse or unprecedented. Thus, this initial environmental examination (IEE) has been prepared in accordance with the ADB SPS, 2009 requirements and TNSF ESG for environment category “B” projects.

47. This Initial Environmental Examination (IEE) is based on the master plan, site layout plan, building plan, and other related documents prepared by Tamil Nadu Working women hostel’s Corporation Limited (TNWWHCL). The assessment primarily draws on field reconnaissance surveys and secondary sources, including information from websites, published literature and journals, as well as the Detailed Project Report (DPR) prepared by external consultants.

**D. Report Structure**

48. This report contains the following 10 chapters, excluding the Executive Summary of the report:

Chapter 1 : Introduction, which includes the Background, Project location and Outputs of the project, Purpose of the IEE, and Structure of the Report;

Chapter 2 : Policy Legal and Administrative Framework, which includes ADB Safeguard Policy Statement, Environment Legislation Framework, National Environmental Act and Legislation, Legislation relating to Occupational Health and Safety, Relevant International Conventions and Treaties, Gaps in Legal and Guiding Instruments, Permits and Clearances and Applicable Environmental Standards;

Chapter 3 : Description of the Project, which focuses primarily on project location and area, project rationale, project alternatives, project development plan and project components, project phase, and schedule and resource utilization;

Chapter 4 : Description of the Environment, which includes a description of the baseline information, project influence area, land environment, water environment, air environment, noise environment, ecological environment, socio-economic environment, and physical and cultural resources;

Chapter 5 : Anticipated Environmental Impact and Mitigation Measures, which include an introduction, impact assessment, anticipated impacts and mitigation measures during pre-construction, construction, and operation phases, cumulative impacts and mitigation, environmental benefits, and enhancement measures, and a summary of impacts and mitigation;

Chapter 6 : Analysis of Alternatives, which discusses how the alternatives were assessed in terms of site location, design and technology, environmental implications of alternatives, including the implication of No-Project alternative;

Chapter 7 : Information, Disclosure, Consultation, and Participation, which details the process approach, and methodology for preliminary consultations, and discusses future consultations during the detailed design stage and information disclosure;

Chapter 8 : Grievance Redress Mechanism for the Project;

Chapter 9 : Environmental Management Plan, which includes the institutional

arrangement, roles and responsibilities of stakeholders including contractors and environmental performance criteria; Monitoring and Reporting, which includes capacity building, cost and other reporting obligations;

Chapter 10 : Conclusion, which provides overall analysis, conclusion and recommendations of the IEE.

## II. POLICIES, LEGAL AND INSTITUTIONAL FRAMEWORK

### A. ADB Policy

49. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. This states that ADB requires an environmental assessment of all ADB investments.

50. **Screening and Categorization:** The nature of the environmental assessment required fora project depends on the significance of its environmental impacts, which are related to the type and location of the project; the sensitivity, scale, nature, and magnitude of its potential impacts; the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impacts and are assigned to one of the following four categories.

a. **Category A.** a proposed project is classified as category 'A' if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilitiessubject to physical works. An Environmental Impact Assessment (EIA) is required.

b. **Category B.** a proposed project is classified as category 'B' if its potentially adverse environmental impacts are less adverse than those of category 'A'projects. These impacts are site-specific, few of them are irreversible, and in mostcases, mitigation measures can be designed more readily than for category 'A' projects. An Initial Environmental Examination (IEE) is required.

c. **Category C.** a proposed project is classified as category 'C' if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

d. **Category FI.** a proposed project is classified as category 'FI' if it involves an investment of ADB funds to or through a Financial Intermediary (FI). An Environmental and Social Management System (ESMS) is required.

51. As per the ADB's Safeguard Policy Statement (SPS, 2009), this project is categorized as "B" (refer REA checklist in Appendix 1), for environmental safeguards. The categorization is based on the proposed construction activities and anticipated environmental impacts at the time of construction in the project area and its surrounding environment. Accordingly, this IEE report including the environmental management plan (EMP) has been prepared.

52. **Analysis of Alternatives.** The best fit option should be identified for the implementation of the project in terms of location, design, technology and/or components that would avoid, and, if avoidance is not possible, minimize adverse environmental impacts and risks.

53. **Anticipated Adverse Impact Mitigation and Management**. When the potentially significant adverse impacts and risks cannot be avoided or prevented, appropriate mitigation measures and management actions have to be identified so that the project / projects are designed, constructed, and operated in compliance with ADB SPS 2009.

54. **Environmental Management Plan (EMP):** An EMP, which addresses the potential impacts and risks identified by the environmental assessment, shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will

be commensurate with the project's impact and risks.

55. **Public Consultation.** Carry out meaningful consultations with stakeholders and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, and concerned NGOs, early in the project preparation process and ensure that their views and concerns are made known and understood by decision makers and considered.

56. **Grievance Redressal Mechanism (GRM).** Establish a grievance redressal mechanism (GRM) to receive and facilitate resolution of the affected person's concerns and grievances regarding the project's environmental performance.

57. **Public Disclosure:** ADB will post the safeguard documents on its website as well as disclose relevant information in an accessible manner to local communities:

(i) Final IEE upon receipt; and
(ii) Environmental monitoring reports submitted by the implementing agency during project implementation upon receipt.

**B. National and State Environmental Regulations**

58. **Environmental assessment**. The Government of India EIA Notification of 2006 (replacing the EIA Notification of 1994) sets out the requirements for Environmental Assessment in India. This states that Environmental Clearance is required for specified activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as 'A' or 'B' depending on the scale of the project and the nature of its impacts.

a) **Category A** projects require Environmental Clearance from the central Ministry of Environment, Forests and Climate Change (MoEF&CC). The proponent is required to provide preliminary details of the project in the prescribed manner withall requisite details, after which an Expert Appraisal Committee (EAC) of the MoEF&CC prepares comprehensive Terms of Reference (TOR) for the EIA study. On completion of the study and review of the report by the EAC, MoEF&CC considers the recommendation of the EAC and provides the Environmental Clearance if appropriate.
b) **Category B**[4] projects require environmental clearance from the State EnvironmentImpact Assessment Authority (SEIAA). The state-level EAC categorizes the project.

59. The proposed project involves the construction of G+3 floor structure provided with 30 rooms to accommodate 100 beds for women employees working in Perundurai and in the nearby localities The total built-up / saleable area is 897.40 sq. m (9,660 sq. ft).

60. As per the EIA Notification, 2006, any construction project with a built-up area exceeding 20,000 sq. m requires Environmental Clearance (EC) from the State Environmental Impact Assessment Authority (SEIAA), in addition to obtaining necessary approvals from local authorities and service providers. Since this project has a total built-up area of only 897.40 sq. m, which is well below the stipulated threshold, it does not require Environmental Clearance under the provisions of the notification.

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[4] Building and Construction projects category "B" ≥20000 sq.mtrs and <1,50,000 sq.mtrs. of built-up area. On completion of the study and review of the report by the EAC, the SEIAA issues the Environmental Clearance based on the EAC recommendation. The Notification also provides that any project or activity classified as category "B" will be treated as category "A" if it is located in whole or in part within 10 km from the boundary of protected areas, critically polluted areas,eco-sensitive areas or interstate or international boundaries.

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**Table 2: Environmental Regulatory Compliance for project**

| Law, Policy, Regulation | Description | Requirement | Authority Responsible for Supervision |
|---|---|---|---|
| Environmental Impact Assessment Notification, 2006 | The Notification imposes restrictions and prohibitions on new projects or activities and also on the expansion or modernization of existing projects or activities based on their potential environmental impacts. | Any construction project that exceeds 20,000 square meters built up area needs clearance from the SEIAA along with all the other permissions from the local authorities and service providers. This project has a total built up area of 897.40 sq. m (less than the stipulated built-up area for EC), therefore, the requisite Environmental Clearance, as per EIA notification, 2006 and its amendments thereof is not applicable to the project. | Not Applicable |
| ADB's Safeguard Policy Statement 2009 | Categorization of project components into A, B or C and developing the required level of environmental assessment for each component. | This project has been "Categorized as B" and accordingly, this IEE has been prepared. | TNWWHCL |
| Central Ground Water Authority Notification, 1997 | It provides for the regulation and control of groundwater development and management | It is informed, that water will be supplied to Tamil Nadu Working Women Hostel Corporation Limited project by TWAD, Perundurai. Approval letter for water supply shall be obtained from the municipality. Groundwater extraction not part of the present project. Since groundwater in the area is reported to be affected by industrial activities, the project will depend entirely on TWAD-supplied water, and any additional requirement will be met through authorized water suppliers. | TNWWHCL |
| The Environment Protection Act, 1986 The Environment Protection Rules, 1986 | Emissions and discharges from the facilities to be created or refurbished or augmented shall comply with the notified standards | To comply with applicable notified standards (including the Water Act 1974, the Air Act 1981 and acts relating to Biological Diversity) | PMC |

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| Law, Policy, Regulation | Description | Requirement | Authority Responsible for Supervision |
|---|---|---|---|
| Water (Prevention and Control of Pollution) Actof 1974, Rules of 1975, and amendments | The Act was enacted to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water. Control of water pollution is achieved through administering conditions imposed in consent issued under this Act.<br>All pollution potential activities will require consent to establish (CtE) from Tamil Nadu Pollution Control Board (TNPCB) before starting implementation and consent to operate (CtO) before commissioning. | To obtain CTE and CTO prior to the start of construction for (i) hot mix plant /batching plant; (ii) construction (workers) camps<br><br>Compliance with the conditions and effluent disposal standards stipulated in CTE and CTO | PMC |
| Air (Prevention and Control of Pollution) Act, 1981, amended 1987 and its Rules, 1982. | The Act was enacted to achieve prevention, control and abatement of air pollution activities by assigning regulatory powers to CPCB and SPCB's for all such functions.<br><br>Establishes ambient air qualitystandards | To obtain CTE and CTO prior to the start of construction for (i) diesel generators; (ii) hot mix units / batching units.<br><br>Compliance with conditions and emissions standards stipulated in the CTE and CTO. | PMC |
| Noise Pollution (Regulation and Control) Rules, 2000 and further amended | It provides for regulations to control ambient noise levels in public places from sources such as industries/ construction works/ community events,etc. | To comply with the noise standards (refer to Table 6). | PMC |
| The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 | It provides for regulation and control of indiscriminate disposal of Hazardous waste; and its sound management to reduce risks to environmental and human health | Applicable for the project if it deals with the generation/ handling/ storage/ processing of hazardous waste which should take cognizance of the provisions/schedules of these Rules and obtain authorization from the TNPCB. | TNWWHCL |

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| Law, Policy, Regulation | Description | Requirement | Authority Responsible for Supervision |
|---|---|---|---|
| Municipal Solid Waste Management Rules, 2016 | Rules to manage municipal solid waste generated; provides rules for segregation, storage, collection, processing and disposal. | Solid waste generated at the proposed facilities / construction camps / housing units shall be managed and disposed of in accordance with the MSW Rules by the TNWWHCL Facility Management team | TNWWHCL |
| Construction and Demolition (C&D) Waste Management Rules, 2016 | Rules to manage construction and waste resulting from construction, re- modelling, repair and demolition of civilstructure. Rules define C&D waste as comprising building materials, debrisresulting from demolition / re-modellingor repairs | Construction and demolition waste generated due to civil works at project construction site shall be managed and disposed as per these Rules by the contractors | PMC |
| Fire Safety Regulations (National and State-specific Regulations)<br><br>NBC 2016 (Part 4)<br>Tamil Nadu Fire Service Rules, 1990 | To provide fire safety norms on fire prevention, life safety and fire protection, which is practical and can reasonably achieved. | As per Tamil Nadu Fire Service Act, 1985, the project shall obtain Fire NOC before beginning construction activities.<br><br>Installation of all the mandatory firefighting equipment shall be undertaken, as per Table 7 in Part 4 of NBC 2016. | PMC |
| Labor Laws | The contractor shall not make employment decisions based upon personal characteristics unrelated tojob requirements.<br>The contractor shall base the employment relationship upon equal opportunity and fair treatment and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment or retirement,and discipline. | Provides applicable labor laws including amendments issued from time to time applicable to establishments engaged in construction of civil works, which will need to be followed by the project. | PMC |

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| Law, Policy, Regulation | Description | Requirement | Authority Responsible for Supervision |
|---|---|---|---|
| | The contractor shall provide equal wages and benefits to men and women for work of equal value or type. | | |
| The Contract Labour (Regulation & Abolition) Act 1970 (as amended) and Tamil Nadu Contract Labour Rules, 1975 | To ensure basic welfare measures to be made available to the contract workers by the employer | • Obtain Principal Employer Registration for employing contract workers as per Section 7 of Contract Labour (Regulation and Abolition) Act, 1970.<br>• Ensure that contractors have valid registration license in accordance with the state wise requirement for employing the workers.<br>• Provide for sufficient supply of wholesome drinking water, enough latrines and urinals, washing facilities and first-aid facilities etc. Provide separate rest rooms for women employees.<br>• Ensure that contractors fix wage periods in respect of wages payable to the contractual workers.<br>• Ensure a register of contractor is maintained.<br>• Submit online consolidated annual return between 1st January and 1st March every year (Ensure that contractors apply for renewal of the license. | PMC |
| Tamil Nadu State Ground Water (Development and Management) Act, 2003 | This Act is to protect groundwater resources and provide safeguards against groundwater overexploitation, and to ensure its planned developmentand management; notified areas for development, regulation, and control ofgroundwater; prohibits digging of wellsand groundwater transport in notified areas without prior permission of the designated authority; requires all wellsto be | Groundwater abstraction in any of the notified areas requires State Groundwater Board permission | PMC |

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| Law, Policy, Regulation | Description | Requirement | Authority Responsible for Supervision |
|---|---|---|---|
| | registered. | | |
| Minimum Wages Act, 1948 | The employer is supposed to pay not less than the minimum wages fixed by appropriate government agency as per the provisions of this Act if the employment is a "scheduled employment" such as construction of Roads, Runways, and Buildings. | All construction / operation and maintenance workers should be paid not less thanthe stipulated wages under this Act. | PMC |
| Equal RemunerationAct, 1979 | The Act provides for payment of equal wages for work of equal nature to male and female workers and for not making discrimination against genders. | | PMC |
| Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979 | The Act is applicable to any establishment that employs 5 or more inter-state migrant workers through an intermediary (who has recruited workers in one state for employment atan establishment situated in another state). | Contractors should register with the Labour Department in case of hiring inter-state migrant workers.<br><br>As per the act adequate and appropriate amenities and facilities are to be provided to workers including housing, sanitation, portable water, medical aid, traveling expenses from home to workplace, etc. | PMC |

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| Law, Policy, Regulation | Description | Requirement | Authority Responsible for Supervision |
|---|---|---|---|
| Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 | It regulates the employment and conditions of service of building andother construction workers and provides for their safety, health and welfare measures and for other matters connected therewith or incidental thereto. | TNWWHCL shall be responsible for providing constant and adequate supervision of any building or other construction work in this establishment to ensure compliance with the provisions of this Act relating to safety and for taking all practical steps necessary to prevent accidents.<br>TNWWHCL shall be responsible for payment of wages to each building worker employed by him and such wages shall be paid on or before such date as may be prescribed.<br>In case the contractor fails to make payment of compensation in respect of a building worker employed by him, where he is liable to make such payment when due, or makes short payment thereof, then, in the case of death or disablement of the building worker, the employer shall be liable to make payment of that compensation in full or the unpaid balance due in accordance with the provisions of the *Workmen's Compensation Act 1923 (8 of 1923)*, and recover the amount so paid from the contractor either by deduction from any amount payable to the contractor under any contract or as a debt payable by the contractor. | PMC |
| Tamil Nadu Minor Mineral Concession Rules, 1959 (amended up to 31 March 2001) | Applicable for sand mining, quarrying and borrow areas | All projects/activities being implemented and/or funded under the sector loan shall take cognizance and comply with the provisions of this Act | PMC |
| Tamil Nadu Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 and Rules,2006 | Regulates the employment and conditions of service of building and other construction workers and to provide for their safety, health and welfare measures; Provides variousbenefits for the registered workers | The project shall comply with the provisions of this Act | PMC |

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| Law, Policy, Regulation | Description | Requirement | Authority Responsible for Supervision |
|---|---|---|---|
| The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act 2013 (as amended) | To provide protection against sexual harassment of women at workplace & for the prevention and redressal of complaints of sexual harassment and for matters connected therewith | • Provide safe environment at workplace including safety of persons coming into contact at workplace and treat sexual harassment as misconduct under the service rules and initiate action for such misconduct.<br>• Formulate and widely disseminate an internal policy or charter or resolution or declaration for prohibition, prevention, and redressal of sexual harassment at the workplace.<br>• Constitute a committee to be known as the "Internal Committee (IC)":<br>• Provided that where the offices or administrative units of the workplace are located at different places or divisional or sub-divisional level, the Internal Committee shall be constituted at all administrative units or offices.<br>• Provide necessary facilities and information to IC in cases for dealing with complaints and conducting an inquiry.<br>• Organize workshops and awareness programmes at regular intervals for sensitizing the employees with the provisions of the Act.<br>• Provide assistance to person filing a complaint in relation to offence under law.<br>• Treat sexual harassment as misconduct under the service rules and initiate action for such misconduct and monitor the timely submission of reports by the Internal Committee.<br>• Display the penal consequences of sexual harassments and the order constituting Internal Committee at any conspicuous place in the workplace.<br>• IC shall in each calendar year prepare, in such form | PMC |

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| Law, Policy, Regulation | Description | Requirement | Authority Responsible for Supervision |
|---|---|---|---|
| | | and at such time as may be prescribed, an annual report and submit the same to the employer and the District Officer. | |
| The Child and Adolescent Labour (Prohibition and Regulation) Act 1986 (as amended)<br><br>The Child Labour (Prohibition and Regulation) Rule 1988 (as amended) | To prohibit employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. | The employer should not allow children below 14 years of age in any kind of work other than in certain family-based work.<br>The employer should not allow any adolescent to work in any of the hazardous occupations or processes. | PMC |
| Tamil Nadu Hostels and Homes for Women and Children (Regulation) Act, 2014. | The Act provides for the regulation of hostels, lodging houses, and homes for women and children, ensuring their safety, care, and welfare. | Every person desiring to establish, maintain or conduct hostel, lodging house or home for women and children shall make an application for licence to the Collector in such form and containing such particulars as may be prescribed. Every application for licence shall be accompanied by such fee not exceeding three thousand rupees as may be prescribed. | PMC |

*Source: MoEF&CC, CPCB, Government of Tamil Nadu.*

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61. **Clearance/Permissions to be obtained by the TNWWHCL.** The following table 3 depicts the statutory clearances/permissions (but not limited to) for the use of land, providing public utility services to the site. The TNWWHCL shall verify and support to ensure all necessary clearances/permission have been obtained prior to the start of construction.

**Table 3: Clearances and Permissions required by the TNWWHCL for Construction**

| Sl. no | Permission/ Clearances/ Declaration | Competent Authority | Remarks | Status |
|---|---|---|---|---|
| 1. | Environmental Clearance as per the EIA notification2006 | State Environment Impact Assessment Authority (SEIAA) | This project has a total built-up area of 897.40 sq.m. (less than the stipulated built-up area), therefore, the requisite Environmental Clearance from the SEIAA is not required. | Not applicable |
| 2. | Acceptance letter for collection of Municipal Solid Waste | Perundurai Municipality | Collection and transportation of Municipal Solid Waste generated from the site. | To be obtained |
| 3. | Tamil Nadu Water Board (TWAD) acceptance/ acknowledge for the supply of water and sewage connection to the site | TWAD | TWAD has confirmed the supply of water. | To be obtained |
| 4. | TWAD acceptance/ acknowledgement letter for discharging wastewater in the underground sewerage system | TWAD | Upon interaction with the SW&WE department, TWAD has confirmed the access to underground sewerage line. However, the acceptance/ acknowledgement letter is unavailable. | To be obtained |

62. **Clearances/permissions to be obtained by the Contractor.** Following table shows the list of clearances/permissions (but not limited to) required for project construction. The contractor should ascertain the requirements prior to start of the construction and obtain all necessary clearances/permission prior to start of construction.

**Table 4: Clearances and Permissions Required by the Contractor for Project**

| Sl.no | Construction Activity | Statutory Authority | Statute under which Clearance is Required | Implementation | Supervision |
|---|---|---|---|---|---|
| 1. | Batching plants, Crushers and Hot mix plants (if applicable) | Tamil Nadu Pollution Control Board (TNPCB) | Consent to Establish and consent to operate under Air Act, 1981 | Contractor | TNWWHCL |
| 2. | Waste water Discharges from Construction | TNPCB | Consent to establish and consent to operate under Water Act, 1974 | Contractor | TNWWHCL |

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| Sl.no | Construction Activity | Statutory Authority | Statute under which Clearance is Required | Implementation | Supervision |
|---|---|---|---|---|---|
| | activities | | | | |
| 3. | Storage, handling and transport of hazardous materials | TNPCB | Hazardous Wastes (Management and Handling) Rules. 2016 Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989 | Contractor | TNWWHCL |
| 4. | Sand mining, quarries and borrow areas | Department of Geology and Mining, Government of Tamil Nadu | Contractor to obtain material from the existing government licensed mines/ quarries in compliant with environmental regulations of the country.<br><br>Contractor will require prior approval of PMC for obtaining material from a particular source. PMC to review and approve only existing licensed mines in complaint with environmental regulation of the country. | Contractor | TNWWHCL |
| 5. | Groundwater extraction | Public Works Department | Tamil Nadu Groundwater Development and Management Act 2000 | Contractor | TNWWHCL |
| 6. | Disposal of Construction and Demolition waste | TNPCB | Construction and Demolition (C&D) Waste Management Rules, 2016 | Contractor | TNWWHCL |
| 7. | Labour license | Labour dept. | The Contract Labour (Regulation and Abolition) Act, 1970; and Contract Labour (Regulation & Abolition) Central Rules, 1971 | Contractor | TNWWHCL |
| 8. | Workmen Insurance | Insurance company | Workmen Compensation Act, 1923 | Contractor | TNWWHCL |

*Source: MoEF&CC, CPCB, Government of Tamil Nadu*

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## C. Applicable International Standards and Best Practices

63. During the design, construction, and operation of the project the TNWWHCL will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the International Finance Corporation's (IFC) Environmental, Health and Safety (EHS) Guidelines Guidance Notes and standards of the World Health Organization (WHO). These standards contain performance levels and measures that are normally acceptable and applicable to projects. When the Government of India's regulations differ from these levels and measures, the TNWWHCL will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the TNWWHCL will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS, 2009.

64. The following IFC (World Bank Group) EHS and WHO Guidelines will be adopted in the EMP for the projects such as:

- WHO Guidelines on Air Emissions and Ambient Air Quality, Noise Management, Wastewater and Ambient Water Quality,
- Guidelines for Construction and Decommissioning (2007)
- Guidelines for Hazardous Material Management and Waste Management
- Guidance Note on Workers Accommodation: Processes and Standards, August 2006[5]
- Guidelines on Occupational Health and Safety and Community Health and Safety (2007)

65. Comparison of national emissions standards and International Standards / Best Practices is provided in Table 5, Table 6 and Table 7. Due to different measuring conditions, the emission values are not directly comparable. However, IFC Guidelines / WHO standards are stricter than the national standards if converted to comparable values.

**Table 5: National Ambient Air Quality Standards and WHO Guidelines**

| Parameter | Location [a] | National Ambient Air Quality Standards [b] | WHO Air Quality Guidelines (µg/m³) | | Applicable Per ADB SPS (µg/m³) [e] |
|---|---|---|---|---|---|
| | | | Global Update 2021 [c] | Second Edition 2000[d] | |
| Particulate Matter $PM_{10}$ (µg/m³) | Industrial | 60 (Annual) | 15 (Annual) | - | (Annual) |
| | Residential, Rural and Other Areas | 100 (24-hr) | 45 (24-hr) | | (24-hr) |
| | Sensitive Area | 60 (Annual) | 15 (Annual) | - | (Annual) |
| | | 100 (24-hr) | 45 (24-hr) | | (24-hr) |
| Particulate Matter $PM_{2.5}$ (µg/m³) | Industrial | 40 (Annual) | 5 (Annual) | - | (Annual) |
| | Residential, Rural and Other Areas | 60 (24-hr) | 15 (24-hr) | | (24-hr) |
| | Sensitive Area | 40 (Annual) | 5 (Annual) | | (Annual) |
| | | 60 (24-hr) | 15 (24-hr) | | (24-hr) |

[5] IFC Guidance Note: Workers Accommodation

| Parameter | Location [a] | National Ambient Air Quality Standards [b] | WHO Air Quality Guidelines (µg/m³) | | Applicable Per ADB SPS (µg/m³) [e] |
|---|---|---|---|---|---|
| | | | Global Update 2021 [c] | Second Edition 2000[d] | |
| Sulfur Dioxide $SO_2$ (µg/m³) | Industrial | 50 (Annual) | 40 (24-hr) | - | (Annual) |
| | Residential, Rural and Other Areas | 80 (24-hr) | 500 (10-min) | | 20 (24-hr)<br>500 (10-min) |
| | Sensitive Area | 20 (Annual) | 40 (24-hr) | - | (Annual) |
| | | 80 (24-hr) | 500 (10-min) | | (24-hr) |
| | | | | | 500 (10-min) |
| Nitrogen Dioxide $NO_2$ (µg/m³) | Industrial | 40 (Annual) | 10 (Annual) | - | (Annual) |
| | Residential, Rural and Other Areas | 80 (24-hr) | 200 (1-hr) | | 80 (24-hr)<br>200 (1-hr) |
| | Sensitive Area | 30 (Annual) | 10 (Annual) | - | (Annual) |
| | | 80 (24-hr) | 25 (24-hr) | | (24-hr)<br>200 (1-hr) |
| Carbon Monoxide CO (µg/m³) | Industrial | 2,000 (8-hr) | 4<br>(24 - Hour) | 10,000 (8-hr) | 2,000 (8-hr) |
| | Residential, Rural and Other Areas | 4,000 (1-hr) | 10 (8 hr)<br>35 (1 hr)<br>100 (15 min) | 100,000 (15-min) | 4,000 (1-hr)<br>100,000 (15-min) |
| | Sensitive Area | 2,000 (8-hr)<br>4,000 (1-hr) | - | 10,000 (8-hr)<br>100,000 (15-min) | 2,000 (8-hr)<br>4,000 (1-hr)<br>100,000 (15-min) |
| Ozone ($O_3$) (µg/m³) | Industrial | 100 (8-hr) | 100 (8-hr) | - | 1<br>C<br>C (8-hr) |
| | Residential, Rural and Other Areas | 180 (1-hr) | 60 (peak season) | | 1<br>8<br>C (1-hr) |
| | Sensitive Area | 100 (8-hr)<br>180 (1-hr) | 100 (8-hr) | - | 100 (8-hr)<br>180 (1-hr) |
| Lead (Pb) (µg/m³) | Industrial, | 0.5 (Annual) | - | 0.5 (Annual) | 0.5 (Annual) |
| | Residential, Rural and Other Areas | 1.0 (24-hr) | | | 1.0 (24-hr) |
| | Sensitive Area | 0.5 (Annual)<br>1.0 (24-hr) | - | 0.5 (Annual) | 0.5 (Annual)<br>1.0 (24-hr) |
| Ammonia ($NH_3$) (µg/m³) | Industrial | 100 (Annual) | - | | 100 (Annual) |
| | Residential, Rural and Other Areas | 400 (24-hr) | | | 400 (24-hr) |
| | Sensitive Area | 100 Annual)<br>400 (24-hr) | - | - | 100 (Annual)<br>400 (24-hr) |
| Benzene | Industrial | 5 (Annual) | - | - | 5 (Annual) |

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| Parameter | Location [a] | National Ambient Air Quality Standards [b] | WHO Air Quality Guidelines (µg/m³) | | Applicable Per ADB SPS (µg/m³) [e] |
|---|---|---|---|---|---|
| | | | Global Update 2021 [c] | Second Edition 2000[d] | |
| ($C_6H_6$) (µg/m³) | Residential, Rural and Other Areas | | | | |
| | Sensitive Area | 5 (Annual) | - | - | 5 (Annual) |
| Benzo(o) Pyrene (BaP) (ng/m³) | Industrial | 1 (Annual) | - | - | 1 (Annual) |
| | Residential, Rural and Other Areas | | | | |
| | Sensitive Area | 1 (Annual) | - | - | 1 (Annual) |
| Arsenic (As) (ng/m³) | Industrial | 6 (Annual) | - | - | 6 (Annual) |
| | Residential, Rural and Other Areas | | | | |
| | Sensitive Area | 60 (Annual) | - | - | 60 (Annual) |
| Nickel (Ni) (ng/m³) | Industrial | 20 (Annual) | - | - | 20 (Annual) |
| | Residential, Rural and Other Areas | | | | |
| | Sensitive Area | 20 (Annual) | - | - | 20 (Annual) |

[a] Sensitive area refers to Ecologically sensitive areas notified by the India Central Government

[b] http://cpcb.nic.in/uploads/National_Ambient_Air_Quality_Standards.pdf

[c] WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide. *Global update 2021*.

[d] Air Quality Guidelines for Europe Second Edition. WHO 2000.

[e] As per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

**Table 6: National Noise Standards and WHO Guidelines**

| Receptor/ Source | Noise Level Standards [a] (DBA) | | WHO Guidelines Value for Noise Levels Measured Out of Doors[b] (One Hour LAeq in dBA) | | Applicable Per ADB SPS [c] (dBA) | |
|---|---|---|---|---|---|---|
| | Day | Night | 07:00 - 22:00 | 22:00 – 07:00 | Day time | Nighttime |
| Industrial area | 75 | 70 | 70 | 70 | 70 | 70 |
| Commercial area | 65 | 55 | | | 65 | 55 |
| Residential Area | 55 | 45 | 55 | 45 | 55 | 45 |
| Silent Zone | 50 | 40 | | | 50 | 40 |

a Noise Pollution (Regulation and Control) Rules, 2002 as amended up to 2010 (http://cpcb.nic.in/displaypdf.php?id=Tm9pc2UtU3RhbmRhcmRzL25vaXNlX3J1bGVzXzIwMDAucGRm)

b Guidelines for Community Noise. WHO. 1999.

c As per ADB SPS, the project proponent shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the project proponent will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS, 2009.

**Table 7: National Drinking Water Quality Standards and WHO Guidelines**

| Group | National Standards for Drinking Water [a, b] Parameter | Unit | Max. Concentration Limit | WHO Guidelines for Drinking Water Quality, 4th Edition, 2022[c] | Applicable Per ADB SPS [d, e] |
|---|---|---|---|---|---|
| Physical | Turbidity | NTU | 1 (5) | - | 1 (5) |

| Group | National Standards for Drinking Water [a, b] | | | WHO Guidelines for Drinking Water Quality, 4th Edition, 2022[c] | Applicable Per ADB SPS [d, e] |
|---|---|---|---|---|---|
| | Parameter | Unit | Max. Concentration Limit | | |
| | pH | | 6.5 – 8.5 | None | 6.5 – 8.5 |
| | Color | Hazen Units | 5 (15) | None | 5 (15) |
| | Taste and Odor | | Agreeable | - | Agreeable |
| | TDS | mg/l | 500 (2,000) | - | 500 (2,000) |
| | Iron | mg/l | 0.3 | - | 0.3 |
| | Manganese | mg/l | 0.1 (0.3) | - | 0.1 (0.3) |
| | Arsenic | mg/l | 0.01 (0.05) | 0.01 | 0.01 |
| | Cadmium | mg/l | 0.003 | 0.003 | 0.003 |
| | Chromium | mg/l | 0.05 | 0.05 | 0.05 |
| | Cyanide | mg/l | 0.05 | None | 0.05 |
| | Fluoride | mg/l | 1 (1.5) | 1.5 | 1 (1.5) |
| | Lead | mg/l | 0.01 | 0.01 | 0.01 |
| | Ammonia | mg/l | 0.5 | none established | 0.5 |
| Chemical | Chloride | mg/l | 250 (1,000) | none established | 250 (1,000) |
| | Barium | mg/l | 0.7 | None | 0.7 |
| | Sulphate | mg/l | 200 (400) | None | 200 (400) |
| | Nitrate | mg/l | 45 | 50 | 45 |
| | Copper | mg/l | 0.05 (1.5) | 2 | 0.05 (1.5) |
| | Total Hardness | mg/l | 200 (600) | - | 200 (600) |
| | Calcium | mg/l | 75 (200) | - | 75 (200) |
| | Zinc | mg/l | 5 (15) | none established | 5 (15) |
| | Mercury | mg/l | 0.001 | 0.006 | 0.001 |
| | Aluminum | mg/l | 0.1 (0.3) | none established | 0.1 (0.3) |
| | Anionic Detergents | mg/l | 0.2 (1.0) | None | 0.2 (1.0) |
| | Phenolic Compounds | mg/l | 0.001(0.002) | None | 0.001(0.002) |
| | Residual Chlorine | mg/l | 0.2 | 5 | 0.2 |
| Microbial indicator | E-coli | MPN/100ml | Must not be detectable in any 100 ml sample | Must not be detectable in any 100 ml sample | Must not be detectable in any 100 ml Sample |
| | Total Coliform | MPN/100ml | | | |

[a] http://cgwb.gov.in/Documents/WQ-standards.pdf.

[b] Bureau of India Standard 10500: 2012 (Indian Standard, Drinking Water — Specification (Second Revision).

[c] Health-based guideline values.

[d] As per ADB SPS, the government shall achieve whichever of the drinking quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS, 2009.

[e] Figures in parenthesis are maximum limits allowed in the absence of alternate source.

66. **Core Labor Standards**. ADB is committed to due consideration of Core Labor Standards (CLS) in the design and implementation of projects. A CLS handbook has been developed by ADB with cooperation of International Labor Organization (ILO). The TNWWHCL will ensure compliance to applicable CLS of ADB-ILO during project implementation including:

- Freedom of association and the effective recognition of the right to collectivebargaining
- Elimination of all forms of forced or compulsory labor
- Effective abolition of child labor





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- Elimination of discrimination in respect of employment and occupation

**D. International Treaties/Conventions/Declarations on Environment Management**

67. India is a signatory to the following international treaties/ conventions/ declarations on environment, social, safety and occupational issues that are relevant for the project. The list of international agreements is provided in Table 8.

**Table 8: International Treaties/ Conventions/ Declarations on Environment**

| Sl. no | International Treaties/ Conventions/Declarations | Description |
|---|---|---|
| 1. | United Nations Conference on the Human Environment - Stockholm 1972 | To coordinate global efforts to promote sustainability and safeguard the natural environment |
| 2. | Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1975 | Its aim is to ensure that international trade in specimen of wild animals and plants does not threaten their survival |
| 3. | Ramsar Convention, 1971, 1975 | The Convention on Wetlands is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources |
| 4. | The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes, 1989 | The Convention aims to protect human health and the environment against the adverse effects resulting from the generation, transboundary movements and management of hazardous wastesand other wastes |
| 5. | Strategic Approach to International Chemicals Management (SAICM) | SAICM is an international non-binding policy framework to support efforts to achieve the Johannesburg Plan of Implementation (WSSD) goalfor chemicals, notably “achieve by 2020 that chemicals are used & produced in ways that lead tothe minimization of adverse effects on human health & the environment” |
| 6. | United Nations Conference on Environment and Development (UNCED), 1992, 2002 | The conference had three objectives (Agenda – 21, Rio Declaration and Millennium Development Goals), to secure renewed political commitment for sustainable development, to assess the progress and implementation gaps in meeting previous commitments, and to address new and emergingchallenges |
| 7. | United Nations Framework Convention on Climate Change (UNFCCC), 1992<br>• Kyoto Protocol, 1997 | It operationalizes the United Nations Framework Convention on Climate Change by committing industrialized countries to limit and reduce greenhouse gases (GHG) emissions in accordancewith agreed individual targets |

| Sl. no | International Treaties/ Conventions/Declarations | Description |
|---|---|---|
| 8. | The Vienna Convention, 1985<br>• Montreal Protocol on Ozone depleting substances, 1992 | It sets binding progressive phase out obligations for developed and developing countries for all the major ozone depleting substances, including chlorofluorocarbons (CFCs), halons and less damaging transitional chemicals such as hydrochlorofluorocarbons (HCFCs) |
| 9. | Convention on Biological Diversity, 1992<br>• Cartagena Protocol on Biosafety, Ratified on 17th January, 2003 | It is an international treaty governing the movement of living modified organism (LMO) resulting from modern biotechnology from one country to another |
| 10. | Convention to Combat Desertification, 1994 | It is the only binding international agreement linking environment and development to sustainable soil management |
| 11. | Rotterdam Convention on Prior Informed Consent Procedure for certain Hazardous Chemicals in International Trade, 2002 | It is a multilateral treaty to promote shared responsibilities in relation to importation of hazardous chemicals |
| 12. | Stockholm Convention on Persistent Organic Pollutants (POPs), 2001 | It aims to eliminate or restrict the production and use of Persistent Organic Pollutants (POPs) |

## III. DESCRIPTION OF THE PROJECT

### A. Project Overview

68. The Tamil Nadu Infrastructure Fund Management Corporation (hereafter referred to as TNIFMC), is an Asset Management Company (AMC) promoted by the Government of Tamil Nadu (GoTN) for the purpose of raising and managing alternative investment funds focused on sectors like infrastructure, affordable housing etc. TNIFMC is managing the Tamil Nadu Shelter Fund (TNSF) which is registered as a Category I (Social Venture) Alternative Investment Fund, with a mandate to invest in affordable housing projects in Tamil Nadu.

69. The primary focus of TNSF is to provide affordable housing with a focus on housing for the Economically Weaker Sections (EWS) and Low-Income Groups (LIG), which includes

a. Hostels - for Working Women from all sections of the society.
b. Industrial Housing for workers in and around Industrial Complexes/ Parks/ Clusters
c. Senior and Assisted Living

70. The Tamil Nadu Working Women's Hostel Corporation Limited (TNWWHCL) is developing a rental-based working women's hostel project within Perundurai Municipality, Tamil Nadu. The Tamil Nadu Shelter Fund (TNSF) has proposed investment in this initiative and is committed to integrating Environmental, Social, and Governance (ESG) principles throughout the project lifecycle. Based on the TNSF ESG screening tool and in alignment with the Asian Development Bank's Safeguard Policy Statement (SPS), 2009, the project has been classified as Category "B" for environmental safeguards. Site selection has been carried out in accordance with ADB's ESG screening criteria:

a. **Key Exclusion Criteria**. The sites do not fall under the exclusion criteria as suggested in the ESGMS of TNIFMC:

- None of the project activities are falling under the Environmental category "A" (as per the ADB SPS 2009 categorisation or the EIA notification 2006 requirements)
- The project areas are not located within the 10km radius national park, sanctuary, wetland, mangrove reserve, biodiversity hotspot, reserve, or protected forest area and CRZ zone. However, the Vellode Bird Sanctuary (~12 km away), a Ramsar site (approximately 15 km away) is present. The sub-project construction will not affect the sanctuary in anyways.
- The project is not falling under the ADB Prohibited Investment Activities List (ADB SPS, 2009).
- The project is not highly complex and sensitive.
- The project activities do not affect the PCRs e.g., local heritage sites /archaeological sites, places of worship, etc.,
- The project is not located near electricity substations, high voltage transmission lines, underground cables, solid waste dumping yards, Oil and Gas pipelines, Coastal Regulatory Zone hazard line and/or polluting (heavy emissions / noisy) industrial activities.
- Project sites are not in flood prone areas, areas with a history of flooding.

### B. Environmental guidelines for Project Selection criteria.

The project activities including the construction, are as per the environmental guidelines for project selection criteria:

- New site should provide comprehensive infrastructure and supporting services, generate new optimally sited open spaces of adequate size, and community spaces including space for training and community enterprise.
- The site is in conformation to the land use, relevant development control regulations and Erode Directorate of Town and Country Planning (DTCP) approved master plan.
- No new construction of Landfills, electricity generation/ electricity high voltage transmission line and distribution substations are proposed under this project.
- Potable water supply is through TWAD Perundurai for construction and operation period, and the quality of the water is as per the IS 10500 (drinking water standard). Additionally, I required, bore well water might also be used.
- A septic tank is proposed to treat the sewage generated from the site. Additionally the outlet of the septic tank and waste water pipeline shall be directly connected to Perundurai's underground sewer line.

### C. Proposed Project Interventions

71. The scope of this project includes the construction, operation, and maintenance of the working women's hostel with 30 rooms accommodating 100 bedded units and associated facilities at the site, which shall be achieved through the construction of G+3 floor structure with designated community area and commercial spaces over a land area of 0.25 acres.

72. Based on consultations with TNIFMC, the design requirements for the proposed hostel have been identified in accordance with the Detailed Project Report (DPR). Accordingly, TNWWHCL, with assistance from ADB, has engaged ITCOT for the preparation of the following project interventions at the selected site.

**Table 9: Project Interventions at the site**

| Sl.no | Project | Project Interventions |
|---|---|---|
| 1 | Construction of 100 bed units and supporting services | • Vehicle Parking area<br>• Pedestrian Pathway<br>• Rainwater Harvesting Pits<br>• Solar Panel Installations<br>• Lounge Area<br>• Power-backup<br>• RO Plant<br>• Lift<br>• Landscaping |

*Source: DPR*

**Figure 4: Proposed Layout Plan for the Hostel**

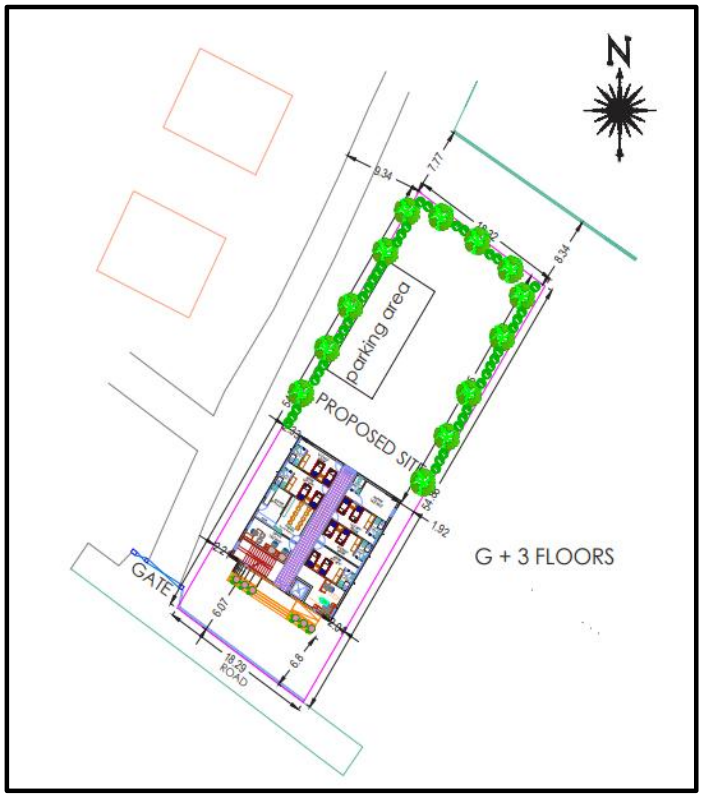


**Figure 5: Project Entrance**

**Figure 6: Site Images**

**Figure 7: Ground Floor Plan**

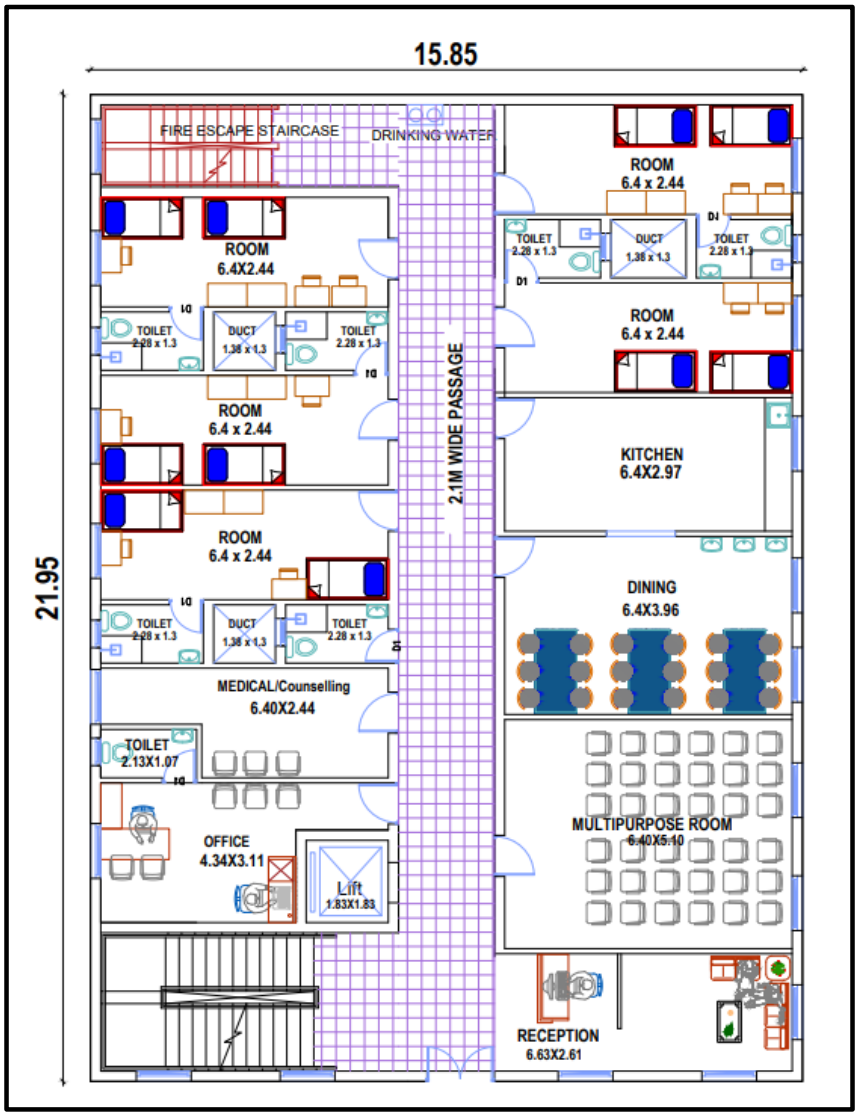


**Figure 8: First Floor Plan**

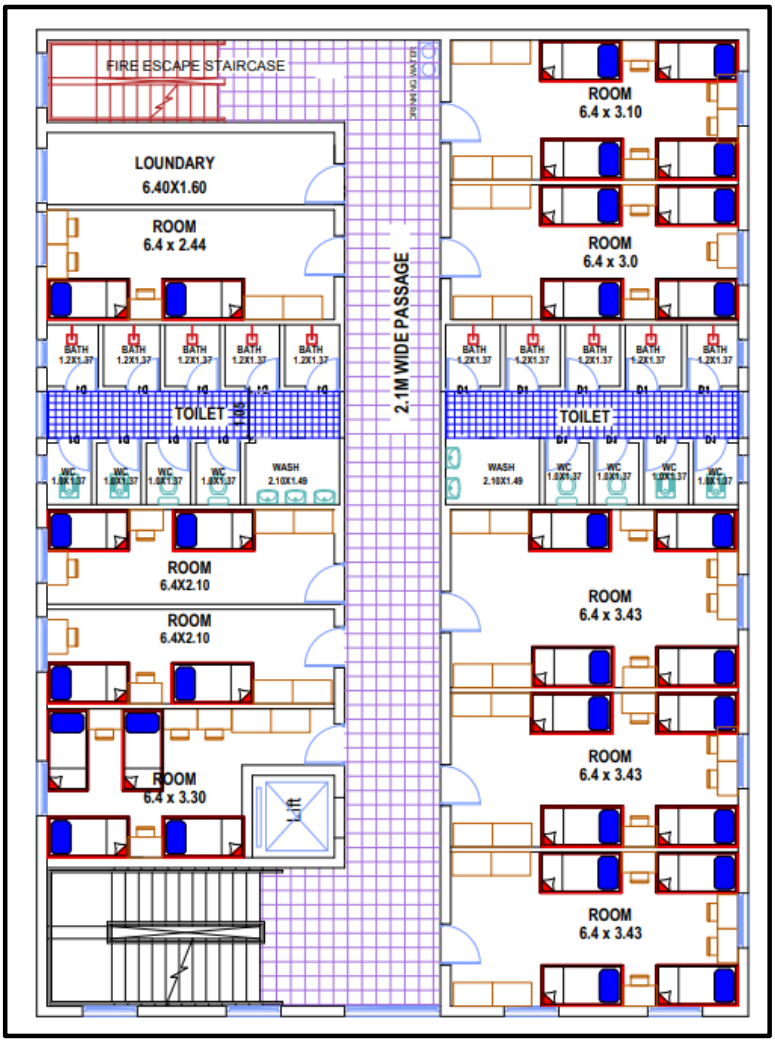


**Figure 9: Plan of Floor 2 and 3**

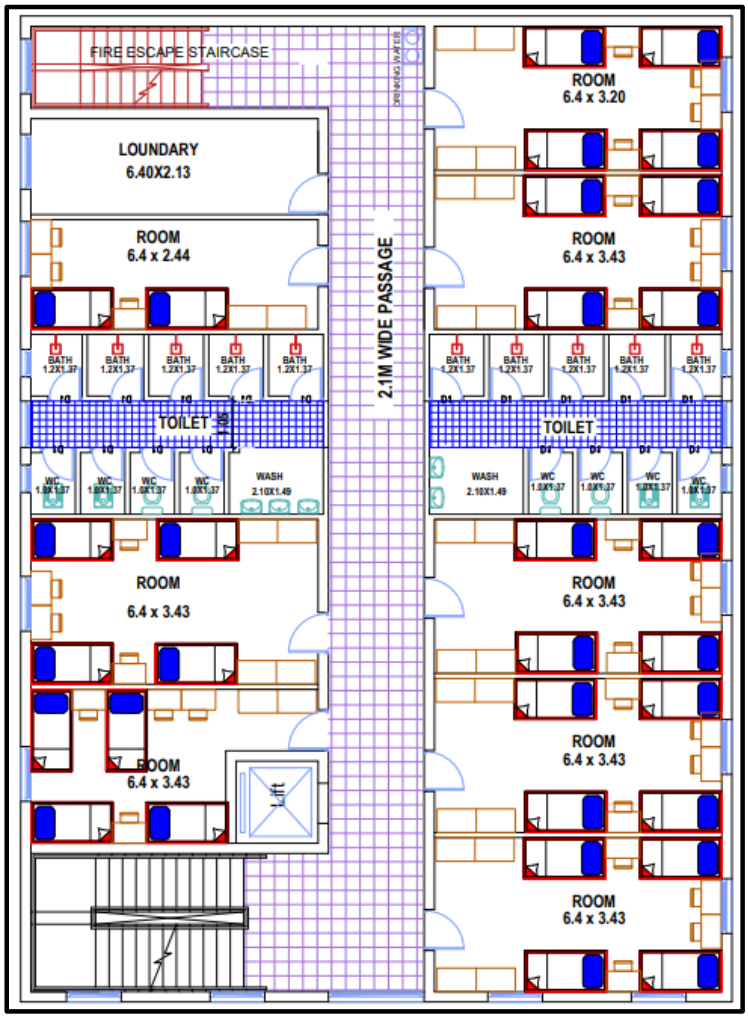


**Figure 10: Elevation Drawing of the Project**

73. **Power Requirement.** The power requirement during the project construction will be met through a temporary connection from TANGEDCO by the contractor and power generators may be used as a backup unit. The generators having emission under control certificates will be permitted in the construction site.

74. **Power-Backup.** In the event of power outages, the Diesel Generator (DG Set) 125 KVA Diesel Generator set with Auto Main Failure (AMF) panel will be used to support the facility's operation. Stack height of 3 m shall be maintained as per TNPCB norms, the height of the stack should be 3 m from the height of the building (height of the building +3 m) or 6 m above the ground level.

75. **Landscaping Plan.** The project site hosts a total of ten trees, all of which are native to the region. The trees primarily include common native species such as Rain Tree (Albizia saman), Neem (Azadirachta indica), and Subabul (Leucaena leucocephala), which are well adapted to the local climate and soil conditions. In accordance with the project's environmental management measures, a compensatory plantation plan will be implemented to offset the felling of one tree at a ratio of 1:10, ensuring the planting of ten new saplings. The landscaping plan for this plantation will be developed by the Project Management Consultant (PMC) and shared with the Tamil Nadu Working Women's Hostel Corporation Limited (TNWWHCL) for approval. The execution of the plantation activities will be carried out by TNWWHCL, with ongoing maintenance supported through active participation from the local community to ensure the long-term survival and growth of the saplings.

76. **Water Requirement and Supply.** The total water requirement during construction is estimated to be 10,000 L/Day; the source of water for construction shall be arranged by the Contractor through the TWAD. The water requirement during operation is estimated to be 15 KLD, which shall be supplied by the TWAD, and relevant calculations can be found in Table 10.

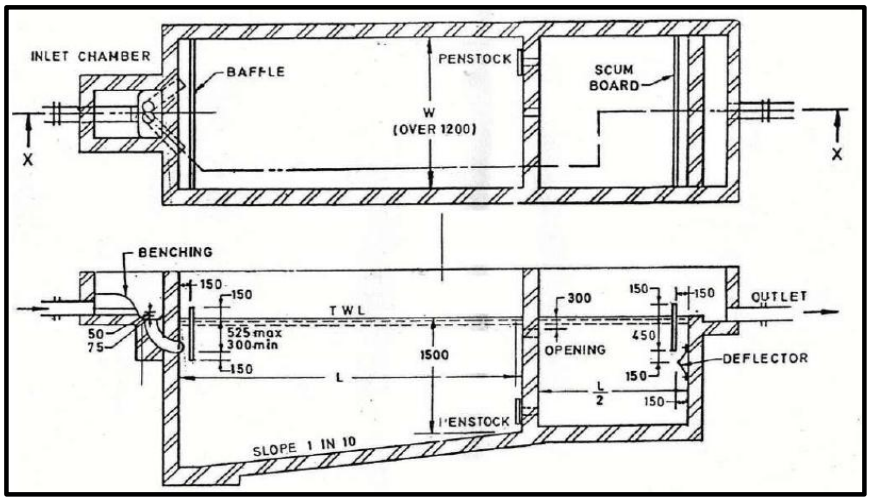
**Table 10: Water Requirement at the Site**

| S No | Project Components | No of Units | Occupancy rate @ | Total Occupancy No's |
|---|---|---|---|---|
| 1 | Residential | 100 | 1 person per unit | 100 |
| | | | 10 – people buffer | 10 |
| | **Total** | | | **110** |
| | As per the National Commission on Integrated Water Resources Development (NCIWRD) norms rural area shall be provided with 75 to150 Litre Per Capita Per Day (LPCD) have been recommended from 2025 to 2050. For this project 135 LPCD has been proposed.<br>Hence the estimated water requirement is approximately 15 KLD. | | | 110 x 135 LPCD = 0.01485 MLD (14.85 KLD )<br><br>15 KLD Approx |

*Source: TNWWHCL*

77. **Septic Tank:** An underground septic tank will be constructed to collect wastewater generated from the hostel toilets, including grey water from sinks, showers, and washing machines. For a 100-person capacity hostel, a septic tank with an approximate capacity of 37,500 litres (37.5 m³) is considered adequate to manage daily wastewater generation, based on standard design norms. This capacity assumes a per capita wastewater generation of 135 litres/day, resulting in a total daily load of 13,500 litres. The tank is designed to retain wastewater for a minimum of 2–3 days to allow for sedimentation and anaerobic digestion. The system will separate solids and initiate primary treatment, after which the treated effluent will flow into a soak pit or dispersion trench and subsequently be discharged into the municipal sewerage line provided by the Tamil Nadu Water Supply and Drainage Board (TWAD), under the Perundurai Underground Sewerage Scheme (UGSS).

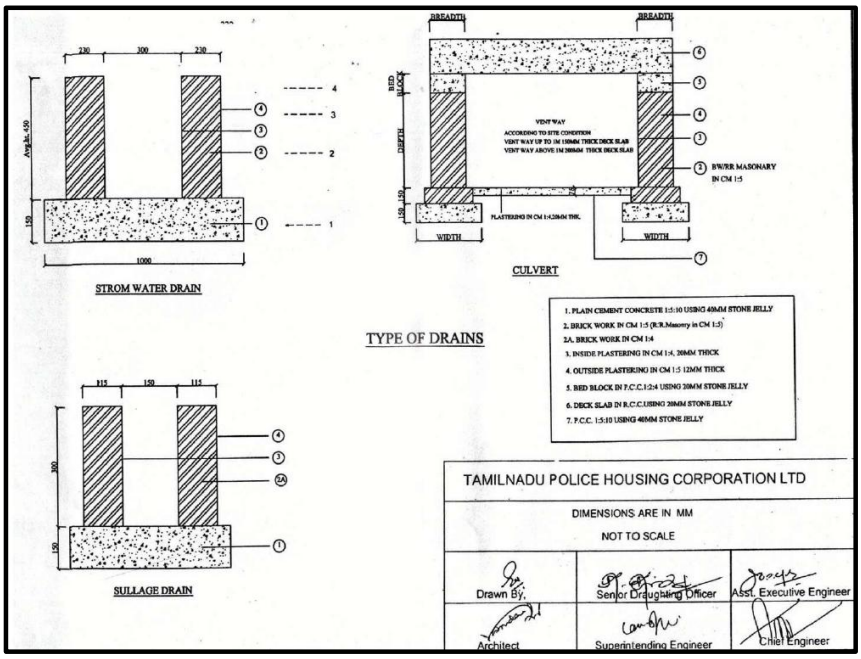
**Figure 11: Typical Cross-section of septic tank**




78. **Storm water drainage.** The stormwater drainage system at the site will be designed to facilitate partial rainwater harvesting for groundwater recharge, considering factors such as soil type, absorption capacity, ground slope, and rainfall intensity and duration. Provisions will

also be made to safely discharge excess stormwater during exceptional rainfall events into public stormwater drains. The system will include roof and ground-level inlets, sloped pipes (PVC, HDPE, or concrete), and outlets connected to municipal drains or detention ponds. Rainwater will be collected through grated inlets placed at low points and directed into open masonry drains measuring 1000 mm wide, with 230 mm thick sidewalls and 300 mm internal flow width, constructed using PCC (1:5:10 with 40 mm jelly) and brick masonry in CM 1:5. The drains will be plastered internally with CM 1:4 (20 mm) and externally with CM 1:5 (12 mm), with an average depth of 600 mm and a slope of 0.5% to 1% to ensure gravity flow and prevent stagnation. Culverts with RCC deck slabs will be provided at road crossings, and construction will follow standard specifications without prefabricated or pipe drains. (Ref: Figure 12 for cross-section details).

**Figure 12: Typical Cross-section for Stormwater Drain**




79. **Sewer Line:** The infrastructure of the Government Medical College, Perundurai including its internal sewer lines, is designed to integrate with the broader underground sewerage system developed for the town. The underground sewer lines and connections in Perundurai, including those serving institutional areas like the college campus, are part of the municipal sewerage infrastructure managed by the Tamil Nadu Water Supply and Drainage Board (TWAD). Since the sub-project is located within the college hostel premises, the outlet of the septic tank will be connected to the TWAD-managed municipal sewer line, ensuring proper and regulated discharge of treated wastewater into the town's underground sewerage network.

80. **Rainwater Harvesting Structure:** Effective measures shall be taken within each premise for conservation of rainwater, and rainwater-harvesting structures shall be provided. In view of this, 2 RWH structures/pits and with rainwater harvesting trenches in the project

area has been designed. The following sections will detail the assumptions and estimations that underpin the design. Figure 13 represent the typical cross-section of RWH structure.

**a. Rainwater volume estimation**

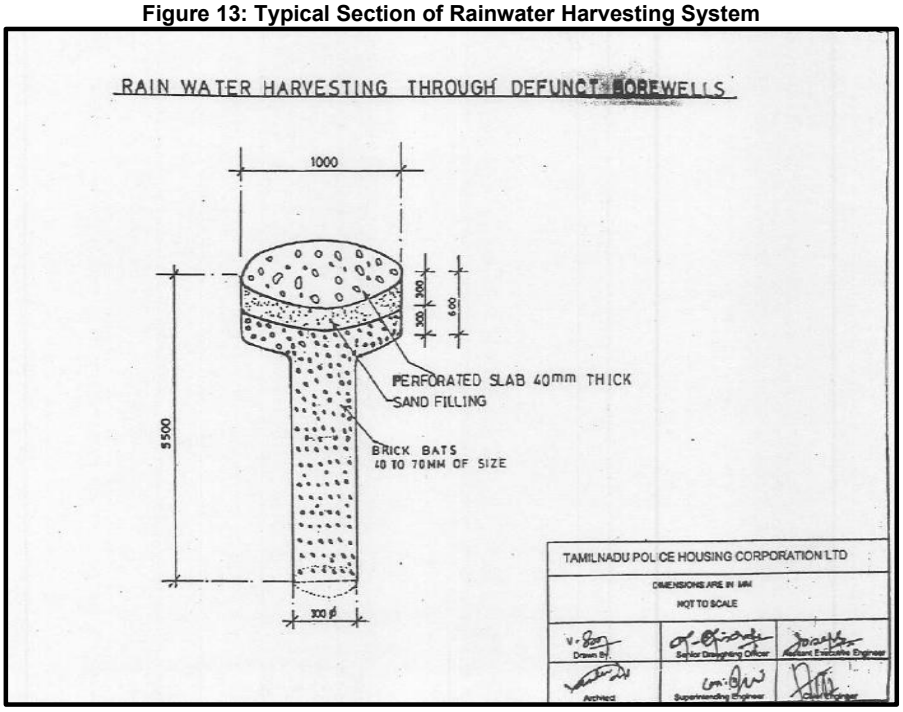
i. As per the secondary information the project district receives annual rainfall of 775 mm

ii. The rainfall intensity has been estimated to be 0.0021379m/day

iii. The total built-up area is worked out to be 897.40 m2

iv. Assuming the coefficient of runoff (c) to be 0.90 for concrete surface area, it is expected that Q=C.I.A.= 0.90×1.917x897.40 ≈ 1.73m$^3$/day/day.

**Figure 13: Typical Section of Rainwater Harvesting System**




81. The provided design for rainwater harvesting through borewells includes a perforated slab of 1000 mm diameter and 40 mm thickness, with sand filling beneath it. The borewell has a depth of 5500 mm and a diameter of 300 mm, filled with brick bats of 40 to 70 mm size for filtration. For a built-up area of 2632 sqm, approximately 15-20 recharge wells of similar design are recommended to efficiently capture and recharge rainwater, considering Perundurai's average annual rainfall of 775 mm. The wells, placed around 10-15 meters apart, will ensure effective water percolation, contributing significantly to groundwater recharge.

82. The proposed rainwater harvesting system consists of two recharge borewells, each designed with a perforated slab (1000 mm diameter, 40 mm thick) placed above a sand-filled layer to aid infiltration. Each borewell will be 5.5 m deep with a 300 mm diameter, internally

packed with brick bats (40–70 mm size) to enhance filtration and percolation. These structures are strategically located to intercept runoff from the 897 m² built-up area, based on Erode's average annual rainfall of 775 mm. While the number of wells is limited relative to the runoff potential, their continuous percolation function will facilitate localized groundwater recharge and contribute to aquifer sustainability, provided they are supported by regular maintenance, periodic inspection, and community engagement.

83. **Solid Waste Management.** During the construction phase, the generation of Municipal Solid Waste (MSW) is expected to be negligible, primarily limited to food waste from construction workers. This waste will be managed using designated bins and handed over to the Perundurai Municipality for appropriate disposal. However, approximately 30–40 tons of Construction and Demolition (C&D) waste, including concrete debris, broken bricks, metal scraps, and wood waste, is anticipated. This waste will be stored separately on-site and periodically transported to an authorized C&D waste processing facility by vendors appointed by the contractor, in accordance with the Construction and Demolition Waste Management Rules, 2016.

84. During the operation phase, the hostel with an estimated occupancy of 100 residents is expected to generate approximately 40–60 kg/day of Municipal Solid Waste (MSW). Waste will be segregated at source into biodegradable and non-biodegradable components using color-coded bins placed throughout the premises. The segregated waste will be collected separately on a daily basis and transported to a centralized collection facility managed by TNWWHCL, which oversees waste collection and disposal. In addition, sludge will be generated from the septic tank. To prevent blockages and ensure efficient system performance, sludge shall be removed every 1 to 3 years. This activity will be carried out by a vendor appointed by TNWWHCL, in compliance with applicable sanitation and waste management norms.

85. **Erection of solar photo voltaic panels**: As per the Tamil Nadu Combined Development and Building Rules, 2019 Installation of Solar Energy System is mandatory in all buildings in the category of High-Rise Buildings and Non-High-Rise Buildings exceeding 16 dwelling units and 300 sq. m of commercial building, accordingly:

i. Minimum terrace area to be reserved for erecting solar photo voltaic panels shall be 1/3rd of total terrae area.
ii. The space required for erecting solar photo voltaic panels is about 10 sq. m. For generating 1 KW of electricity.
iii. The electricity generated from solar photo voltaic system so erected will be used for common electricity requirements like staircase lights, setback lights, lifts, pumps, and non-floor space index areas, etc.
iv. Net metering guidelines of Tamil Nadu Energy Regulatory Commission shall apply to all such installation of solar photo voltaic system.

86. The proposed solar panel capacity for the project is still under deliberation.

87. **Approach Road.** The approach road is a Bitumen Road. Its width is 9m and the land is plain topography / uniform ground level, and the slope of the ground is south to north and the down from south to north is 3'-6".

**Figure 14: Approach Road to the site**

88. **Construction Methodology**

| S. No. | Stage | Activity |
|---|---|---|
| 1 | Pre-Construction | Site survey, soil testing, approvals, design finalization, site mobilization |
| 2 | Earthwork | Excavation for footings, dewatering if required |
| 3 | Foundation | Isolated Footing |
| 4 | Superstructure (RCC Frame) | Column, beam, slab reinforcement, shuttering, concreting & curing |
| 5 | Masonry Work | Internal/external block or brick wall construction, lintels, sunshades |
| 6 | Plastering | Internal & external cement plaster |
| 7 | Waterproofing | Basement, terrace, toilets – membrane & chemical-based systems |
| 8 | Electrical Work | Conduits in slabs/walls, wiring, switch boxes, DB panels |
| 9 | Plumbing Work | Concealed pipelines, shaft work, sanitary fittings |
| 10 | Flooring | Tiles/granite/marble laying, skirting |
| 11 | Door & Window Works | Fixing frames, shutters, grills, glazing |
| 12 | Painting | Putty, primer, emulsion paint, texture if any |

| S. No. | Stage | Activity |
|---|---|---|
| 13 | Fixtures & Fittings | CP fittings, kitchen counters, wardrobes |
| 14 | Lift & BMS | Lift installation, fire alarm, CCTV, access systems |
| 15 | External Development | Compound wall, paving, landscaping |
| 16 | Testing & Commissioning | Electrical testing, plumbing pressure testing, lift trials |
| 17 | Handover | Snag list clearance, as-built drawings, keys, manuals |

89. **Project Implementation Schedule**. The construction period is expected to take 12 months.

**Figure 15: Construction Timeline**

| S. No. | Activity | 2025 | | | | 2026 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q3 | Q4 |
| 1 | Land Development / Preliminaries | | | | | | | | | | |
| 2 | Foundation Works | | | | | | | | | | |
| 3 | Integral / Conventional Waterproofing | | | | | | | | | | |
| 4 | RCC Slab Work | | | | | | | | | | |
| 5 | Masonry Works | | | | | | | | | | |
| 6 | Plastering Works | | | | | | | | | | |
| 7 | Finishing & Internal Works | | | | | | | | | | |
| 8 | Gypsum / Putty Works | | | | | | | | | | |
| 9 | Waterproofing (Terrace, Toilets) | | | | | | | | | | |
| 10 | Flooring & Tiling | | | | | | | | | | |
| 11 | Painting | | | | | | | | | | |
| 12 | Carpentry Works | | | | | | | | | | |
| 13 | Jaali / Screen Works | | | | | | | | | | |
| 14 | Plumbing Works | | | | | | | | | | |
| 15 | Electrical Works | | | | | | | | | | |
| 16 | BMS | | | | | | | | | | |
| 17 | Lifts Installation | | | | | | | | | | |
| 18 | Common Amenities | | | | | | | | | | |
| 19 | Infrastructure Works | | | | | | | | | | |

# IV. DESCRIPTION OF THE ENVIRONMENT

## A. Area of Impact

90. The primary areas of impact are (i) project location due to the implementation of the proposed project components; (ii) main routes/intersections which will be traversed by construction vehicles; and (iii) quarries and borrow pits as sources of construction materials. The secondary areas of impact are: (i) other than the delineated primary impact area; and (ii) the area surrounding the project location in terms of over-all environmental and socio-economic improvement.

## B. Methodology used for Environment Baseline Study

91. **Data collection and stakeholder consultations.** Data for this study has been primarily collected through comprehensive literature surveys, discussion with TNWWHCL, and field visits to the proposed project site. The literature survey has broadly covered the following:

a) Project details, reports, maps, and other documents prepared by TNWWHCL through TNIFMC.

b) Discussions with technical experts of the ADB team, TNIFMC, and other relevant government agencies.

c) Secondary data from project reports and published articles; and

d) Literature on land use, soil, geology, hydrology, climate, socioeconomic profiles,and other planning documents collected from government agencies and websites.

## C. Physical Environment

### 1. Location area

92. The project is in the Perundurai area, beside the Kunnathur-Perundurai Road, Erode District, Tamil Nadu. Erode is a Special Grade Municipality, as per G.O. (Ms) No. 270 of Municipal Administration and Water Supply Department, dated 14.07.2006. It lies at a latitude of 11° 20' 34.08" N and a longitude of 77° 43' 38.68"E. Erode town is located at an altitude of 203 meters above mean sea level. It is situated along the State Highways, connecting important cities in Tamil Nadu such as Chennai, Vellore, and Villupuram.

### 2. Topography, Soils and Geology

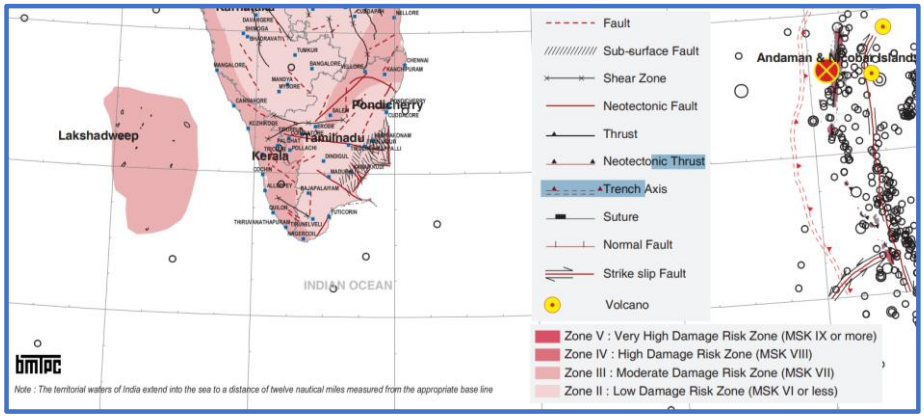
93. The topography of Perundurai is mostly plain with low lying hills towards the western parts, especially near the Western Ghats. The town is situated approximately 264 meters above mean sea level. The area is mainly covered by Red non-calcareous soil. There are no significant mineral resources found in Perundurai.

94. The geology of Erode District is characterized by diverse rock formations, including the Granulite Group, which consists of calc granulite, quartzite, charnockite, pyroxene granulite, and metagabbro, predominantly in the northern and southern regions. The Migmatite Complex features hornblende gneiss, garnetiferous quartzofeldspathic gneiss, and granite, mainly in the southern and northwestern parts. The Sathyamangalam Group includes fuchsite quartzite, schistose quartzite, talc-tremolite, actinolite schist, and gabbroanorthosite, occurring as enclaves near Sathyamangalam and west of Chennimalai. Granite bodies are concentrated in the central district near Punjai Puliampatti and Erode, while Quaternary alluvium is restricted to riverbeds of the Cauvery, Noyyil, Amaravathi, and Bhavani rivers.

## 3. Seismology

95. As per the seismic zoning map of India, Perundurai falls under Zone II, which is considered a least active zone. This indicates that the area has a relatively lower risk of seismic activity compared to higher seismic zones.

**Figure 16: Seismic Zone Map of India[6]**




## 4. Climatic Conditions

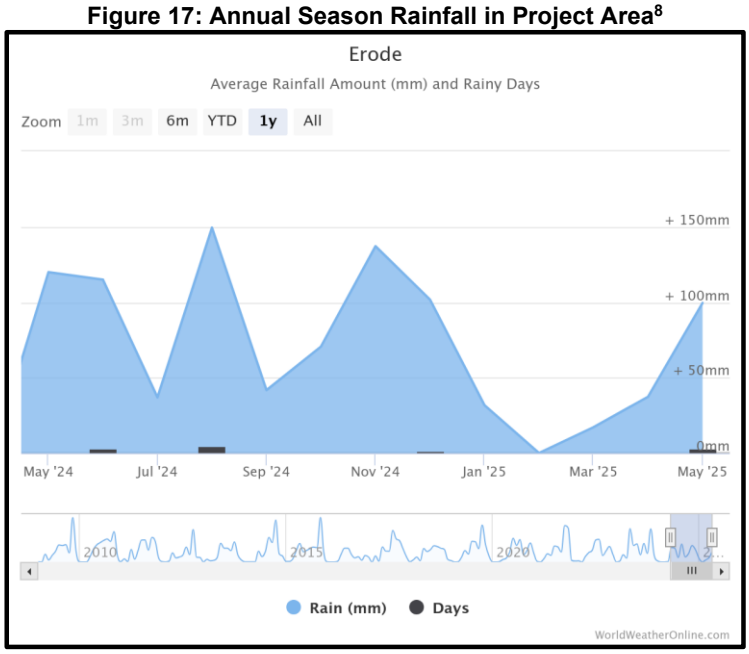
96. Erode has dry weather throughout the year, only except the monsoon season. January and February are two pleasant months as per the weather is concerned, but Mercury starts to rise from the month of March and the upward trend is continued till the end of May. In most of the years, the highest temperature of the year is recorded in the month of May.

97. But there are several bits of shower that falls in May to provide some relief from the heat. The June-August period experiences a slight improvement in the weather. This is the pre-monsoon period and Mercury reverses its rise a bit during this time. Generally, in the month of September, the sky is overcast, but the rainfall is less. Through the period of October and November, Erode experiences heavy rainfall and the rains began to disappear in December, making the climate clear and pleasant.

98. The maximum temperature of Erode is generally around 36 degree Celcius and the minimum temperature is 27 degree Celsius. Erode has an average rainfall of 775 - 800 mm.[7]

[6] https://www.bmtpc.org/datafiles/cms/file/map%20of%20india/eq-india.pdf
7 https://www.erodeonline.in/guide/erode-geography

**Figure 17: Annual Season Rainfall in Project Area[8]**




## 5. Surface Water

99. Perundurai is primarily associated with the Bhavani (65 km) and Cauvery rivers (26 km), which flow through the region. These rivers are perennial in nature. Cauvery flows in NNE-SSW direction on the border of Erode and Namakkal District. Bhavani River flows ENE-WSW direction almost center of the district, confluences with the Cauvery River at Bhavani.

## 6. Groundwater Quality.

100. The groundwater quality in Erode district, Tamil Nadu, reveals significant concerns due to industrialization and urbanization. Out of 54 samples collected in Erode in the study[9], many exceeded permissible limits for key parameters such as pH, electrical conductivity (EC), calcium, magnesium, potassium, carbonate, bicarbonate, and sulfate. Particularly, the industrial zones of Appakudal and Perundurai showed poor water quality, with elevated salinity and hardness due to dominant ions like sodium and sulfate. The Water Quality Index (WQI) indicated that while some areas had acceptable drinking water quality, others were unsuitable without treatment. For irrigation, most samples were found to be unsuitable, posing risks of soil degradation and reduced crop productivity. Geospatial analysis highlighted contamination hotspots near industrial zones, emphasizing the need for targeted water treatment and stricter pollution control measures to ensure safe and sustainable groundwater use in Erode[10].

101. Dry Climate prevails in the Eastern part of this District, and the Western part has a semi dry climate. The ground water level in this district varies from 15 feet to 50 feet in Wet

8 https://www.worldweatheronline.com/en-in/erode-weather-averages/tamil-nadu/in.aspx

9 https://www.sciencedirect.com/science/article/pii/S1944398625000633

10 (https://www.sciencedirect.com/science/article/pii/S1944398625000633)

area, 50 feet to 110 feet in dry area. m.

102. Based on the secondary data from the groundwater quality assessment in Erode city, Tamil Nadu, the groundwater in the region is significantly polluted and not suitable for direct human consumption. Physio-chemical analyses reveal that key parameters such as Total Dissolved Solids (TDS), Electrical Conductivity (EC), Total Hardness (TH), and concentrations of calcium, magnesium, and sodium exceed permissible limits set by BIS and WHO standards at several locations. The pollution is attributed primarily to rapid urbanization, industrial discharge—especially from textile processing units—and improper waste disposal practices. Since groundwater is a major source of drinking water in Erode, this poses a serious public health risk. These findings highlight the urgent need for regular monitoring, pollution control measures, and a comprehensive groundwater management strategy to ensure sustainable and safe water use in the region.

103. **Air Quality.** Based on currently available public data, the air quality at the SIPCOT Industrial Park, Perundurai (Erode district) generally remains in the "Moderate" category throughout the year[11]. The AQI typically ranges between 60 and 100, occasionally improving to "Good" levels during the monsoon months when rainfall helps reduce dust and suspended particulates. The main pollutants contributing to the AQI are particulate matter ($PM_{2.5}$ and $PM_{10}$), originating from industrial emissions, vehicular movement, and dust from construction or transport activities in the SIPCOT area. Average $PM_{2.5}$ concentrations hover around 18–25 µg/m³, which is below India's national standard (40 µg/m³ annual average) but 3–4 times higher than the WHO guideline (5 µg/m³). Gaseous pollutants such as $NO_2$, $SO_2$, and CO generally remain within permissible limits, indicating that particulate pollution is the primary concern rather than industrial gases.

104. Overall, the data suggests that Perundurai's air quality is acceptable for the general population, though sensitive groups such as children, the elderly, and people with respiratory illnesses may experience mild effects during dry or high-traffic periods. Sustained monitoring and stricter emission control within the industrial estate would help maintain or improve air quality levels in the long term.

## D. Biological Environment

105. Within the project site at Perundurai, the flora and fauna reflect the characteristics of the region's dry deciduous and semi-arid ecosystem. The vegetation primarily comprises drought-tolerant and hardy species such as Neem (Azadirachta indica), Tamarind (Tamarindus indica), Acacia (Acacia nilotica), Pongamia (Pongamia pinnata), and Prosopis juliflora, along with patches of grasses and shrubs that grow naturally in open areas.

106. The fauna observed within the site includes common birds such as myna, crow, parakeet, egret, black drongo, and sparrow, small mammals like squirrels, rats and reptiles such as garden lizards and skinks. Overall, the project site supports general terrestrial and avifaunal species typical of disturbed rural landscapes, and no rare, endangered, or ecologically sensitive species have been reported from the area.

## E. Socio-Economic Features

107. **Land Use**. The Erode district spans a total geographical area of 572,264 hectares, with a significant portion dedicated to agriculture and forestry. The net area sown constitutes 199,389 hectares, or 34.8% of the district's total area, with 25,397 hectares of this being sown

[11] https://aqicn.org/station/india-saralai-perundurai-sipcot-industrial-park/

more than once, increasing the total cropped area to 224,786 hectares (39.2%). Forests cover 227,511 hectares, making up 39% of the district's area, reflecting a balance between agricultural and natural land use. Non-agricultural uses account for 53,004 hectares, or 9.2% of the total area, while fallow lands occupy 83,368 hectares (14.5%). Cultivable waste has been minimized to just 1,707 hectares, indicating efficient land use practices. Land under trees, crops, groves, and orchards represent a modest 0.6%.

108. **Industry and Agriculture.** Perundurai is an industrially forward town located 500 meters away from National Highway 544 (NH 544) and is situated on the state highway. Major employment in the municipality is provided by agriculture, IT, retail, and tourism industries located in and around the Municipality. Paddy, Plantain, Groundnut, cotton, turmeric, coconut, and sugarcane are some of the agricultural products. With a 43% share, the Erode district is the top turmeric producer in Tamil Nadu.

109. **Road Infrastructure.** Perundurai, located west of Erode in Tamil Nadu, is supported by strong road infrastructure that ensures regional connectivity and industrial access. The main arterial stretch, Perundurai Road, links Erode city to Perundurai and further connects to NH-544 (Salem–Kochi highway), facilitating movement toward Coimbatore and Kerala. While most stretches are four-lane, sections near the SIPCOT industrial area have been expanded to six lanes to handle rising traffic. In addition, State Highway 96 (SH-96) passes through Perundurai toward Kangeyam, complementing its strategic location in the state highway network. The Erode Outer Ring Road, partially upgraded to four lanes, further reduces congestion by linking Perundurai Road with other highways around the city.

110. Ongoing infrastructure projects continue to enhance traffic flow and safety in Perundurai. The National Highways Authority of India (NHAI) has started constructing underpasses along the Perundurai bypass on NH-544, while a high-level flyover has been proposed near Pethampalayam to reduce accidents at the busy junction. Local improvements by the Perundurai Town Panchayat include strengthening and resurfacing of roads with bitumen, concrete, and paver blocks across multiple wards. Safety upgrades such as traffic islands and widened medians are also being implemented in accident-prone stretches. Together, these efforts highlight Perundurai's growing importance as a transport and industrial hub with steadily improving road infrastructure.

111. **Water Supply Infrastructure**: Water supply is managed by Perundurai Town Panchayat, which sources from a combined surface water scheme from Bhavani River, supplemented by borewells and local tanks, distributing around 3.2 MLD through a network of 70+ km pipelines and over 6,500 household connections (Census 2011 & TN Govt data). Perundurai's water supply infrastructure is predominantly driven by the Kodiveri Combined Water Supply Scheme (CWSS), which draws surface water from the Bhavani River near the Kodiveri regulator. This water is pumped through a 29.2 km pipeline to a treatment plant at Thingalur, where it undergoes purification before being stored in a clear water reservoir with a capacity of 11.05 lakh liters. From there, treated water is distributed via an extensive network—including 32 sumps, 80 service reservoirs, and over 550 km of pumping and branch mains—to serve approximately 3.47 lakh residents across Perundurai town and surrounding rural habitations, delivering an average of 135 liters per capita per day for urban zones and 55 lpcd in rural areas.

112. **Solid Waste Management.** Sanitation is primarily dependent on onsite systems (septic tanks and pits), with only partial coverage through underground drainage. Solid waste generation is estimated at 8–10 MT/day, collected through door-to-door services, though segregation at

source is limited and disposal is carried out at designated dumping yards outside the town. The area is well connected by NH-544 (Salem–Kochi highway) and State Highway 96, with Erode Junction (~20 km) serving as the nearest major railway station.

## F. Socio Cultural Resources

113. **Demography.** According to 2011 census, Perundurai has a population of 24,930 of which 12,214 are males while 12,716 are females. In Municipality, Female Sex Ratio is 1,041 against state average of 996. Schedule Caste (SC) constitutes 10.5% while Schedule Tribe (ST) were 0.06 % of total population in Perundurai.

114. In Perundurai, male literacy is around 91.09% while female literacy rate is 81.02 %. The city had a total of 6,675 households. Out of total population, 10,627 were engaged in work or business activity. Of total 10,627 working population, 96.5 % were engaged in Main Work, while 3.5 % of total workers were engaged in Marginal Work. Perundurai has 89.25% Hindus, 8.09% Muslims, 2.52% Christians and 0.14% other religions. Percentage wise of working population – Perundurai is given in table 12.

**Table 11: Percentage of working population- Perundurai**

| **Description** | **Worker** (Among total population) |
|---|---|
| Total | 42.6% |
| Male | 30.3% |
| Female | 12.3% |

*Source: https://www.censusindia.co.in/towns/perundurai-population-erode-tamil-nadu-803534*

115. **History, Culture and Tourism**

116. Erode District, originally part of Coimbatore, has a rich history intertwined with the ancient Kongu region. Initially, the area was inhabited by the Kosars, with their headquarters at Kosamputhur, later known as Coimbatore. Over time, it came under the rule of various dynasties, including the Cholas, Rashtrakutas, and later the Pandyas and Hoysalas. The region experienced a period of turmoil with the decline of the Pandyan Kingdom, leading to control by Muslim rulers of the Madurai Sultanate. Subsequently, it fell under the Vijayanagar Empire and the Madurai Nayakas, with rulers like Muthu Veerappa Nayak and Tirumalai Nayak shaping its governance. However, internal conflicts weakened the region, eventually bringing it under the rule of Mysore under Hyder Ali and later Tipu Sultan. Following Tipu Sultan's defeat in 1799, the British East India Company took control, establishing systematic administration until India's independence in 1947.

# V. ANALYSIS OF ALTERNATIVES

## A. "With" and "Without" Project scenario.

117. This project Working Women's Hostel in Perundurai is a Greenfield development and therefore offers limited scope for alternative site or design assessments. In view of the absence of pre-existing infrastructure and the strategic relevance of the selected location, this chapter presents a comparative analysis of the "with-project" and "without-project" scenarios. The assessment highlights the anticipated environmental and socio-economic outcomes of project implementation in contrast to baseline conditions, underscoring the benefits of improved accommodation, safety, and accessibility for working women, alongside manageable environmental impacts.

## B. With and Without Project Scenario

118. The "with-project" scenario presents clear positive impacts for working women, offering access to clean, safe, affordable, and gender-sensitive accommodation in close proximity to employment hubs. The project site has been screened for natural hazard risks, including flooding and erosion, confirming its suitability from both environmental and safety perspectives. In evaluating the "with" and "without" project scenarios, key factors such as site location, access to urban services, and social inclusion benefits were considered. The proposed development is expected to improve livelihood security, mobility, and dignified living conditions for the intended beneficiaries, whereas the "without-project" scenario would perpetuate existing gaps in safe and inclusive housing for women in the workforce.

## C. With Project Scenario

119. **Project location benefits.** According to the Indian Skills Report Survey, both male and female job seekers have ranked Tamil Nadu and Maharashtra as their top two preferred states for employment opportunities. Erode is witnessing growing job opportunities across sectors, particularly in agri-food processing, textiles and allied industries. With the establishment of a mini textile park, and the district's strong base in power looms and garment units, employment in apparel design, production, and logistics is on the rise. As the largest turmeric-producing district in Tamil Nadu, Erode is also seeing emerging roles in spice processing, packaging, and export logistics. Additionally, the established leather processing industry and infrastructure at SIPCOT are creating demand for skilled workers in tanning, quality control, and product development, making Erode a promising hub for industrial employment.

(i) The primary access to the project site is 9m and has easy access to public transport system as the NH 48 is in close proximity. Also, the Bus Terminal and Perundurai Railway station is located at distance of about 2.6 km & 8.5 km from the project site.

(ii) The nearest hospital/healthcare facility and college (Government Erode Medical College and Hospital) is located at a distance of about 140 meters from the project site.

120. **Project benefits**. The proposed project aims to provide substantial social and economic benefits for working women, particularly those relocating for employment opportunities. By offering safe, secure, and affordable accommodation, the project will enhance women's access to urban employment, improve their mobility, and support greater participation in the workforce. It will also contribute to women's empowerment by reducing the barriers of unsafe or inadequate housing.

121. The proposed working women's hostel will include essential amenities and

infrastructure designed to ensure comfort, safety, and well-being. The facilities will feature hygienic kitchens, common dining areas, recreational spaces, and 24/7 security services, biometric access, clean drinking water, 24*7 geyser availability, parking spaces and thereby creating a supportive and inclusive living environment. In addition, the strategic location of the hostel will provide convenient access to workplaces, public transport, healthcare, and other essential services, thereby improving the overall quality of life and social integration for its residents.

**D. Without Project Scenario.**

122. In the absence of the proposed project, the current hostel landscape in Perundurai characterised by exorbitant rents for decent accommodations and substandard conditions in affordable hostels will continue to prevail. Women migrating to the area for employment or academic opportunities will remain caught in a difficult trade-off between affordability and dignity, often compromising on safety, hygiene, and privacy. These deficiencies impose a psychosocial burden, particularly on women from economically weaker sections (EWS), who face challenges in accessing secure and gender-sensitive housing. Without targeted intervention, the situation will perpetuate inadequate access to clean drinking water, hygienic sanitation facilities, and spacious living environments, thereby reinforcing systemic barriers to inclusive urban development.

## VI. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

123. This chapter on the anticipated environmental impacts and mitigation measures is based on the detailed project design prepared for the working women's hostel project at Perundurai, Erode District.

124. Screening of potential environmental impacts is categorized into four categories considering project phases viz. (i) location impacts and (ii) design impacts (pre-construction phase), (iii) construction phase impacts and (iv) operations and maintenance phase impacts:

a. **Location impacts**. Impacts associated with site selection, including impacts on environment.

b. **Design impacts**. Impacts arising from project design, including the technology used, scale of operations etc.

c. **Construction impacts**. Impacts resulting from construction activities including site clearance, earthworks, civil works, etc.

d. **O&M impacts**. Impacts associated with the operation and maintenance of the infrastructure built in the project.

125. The proposal envisages construction, operation, and maintenance of a working women's hostel comprising 30 rooms to accommodate 100 bedded units, along with essential amenities (Pedestrian Pathway, Septic Tank, rainwater harvesting (RWH) pits, solar installations and Vehicle Parking area) and hence this would result in some environmental impacts typical to construction activities.

126. Other impacts related to construction activities such as generation of dust and noise, removal of construction debris and demolition wastes etc. are envisaged which shall be minimized and addressed by adopting safe engineering practices and appropriate methodology for demolishing works. Caution will be exercised in planning for safe construction and operations phase to minimize disturbance to the adjoining existing activities. Water for construction will be provided through TWAD or through private mobile water tankers in summers.

127. **Land Acquisition and Resettlement.** As indicated earlier, the land proposed (0.25 acres) for construction of 100 beds and associated services belongs to the Social Welfare Department and hence land acquisition and resettlement issues are not envisaged. The land will be leased to the TNWWHCL for a period of 28 years by the Social Welfare Department. The land lease is estimated to be executed by March of 2026.

128. **Design Considerations to Avoid Environmental Impacts** The following are design considerations to avoid environmental impacts:

- Provision for adequate cross ventilation.
- Incorporation of Septic Tanks
- Incorporation of adequate drainage provisions.
- Adoption of design compatible with the natural environment and suitable selection of materials to enhance the aesthetic appeal and to blend with the natural surroundings.
- Ensure water demand can be met sustainably and reused wherever possible.

129. The results of interventions are unobtrusive and will be integral part of the ambience of the site. The physical components have been proposed with minimalist design treatment.

**A. Assessment of Environmental Impacts**

130. **Determination of Area of Influence**. The primary impact areas are (i) sites for proposed project components; (ii) main routes/intersections which will be traversed by construction vehicles;and (iii) quarries and borrow pits as sources of construction materials. The secondary impact areas are: (i) Other than the delineated primary impact area; and (ii) entire Perundurai Municipality in terms of overall environmental and socioeconomic improvement.

131. In the case of this project the components will involve straight forward construction and operation, and impacts will be mainly localized, short in duration and expected during construction and operation period.

**B. Pre-construction Impacts and Mitigation Measures**

132. **Consents, permits, clearances, no objection certificate (NOC),** etc. Necessary consents/NOC as per

133. will be required during pre-construction phase and before any civil works commence. A copy of Consent/Permission/Clearance/ NoC shall be included in the monitoring reports, which will be prepared by the PMC and submitted to the TNWWHCL and TNIFMC. Failure in obtaining the same will result in the delay of work and may lead to stoppage of works.

134. **Mitigation measures**. The following measures will be conducted during the detailed design phase prior to construction (civil works):

- Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.
- Acknowledge in writing and provide report on compliance of all obtained consents,permits, clearance, NOCs, etc.
- Include in detailed design drawings and documents all conditions.
- In compliance to the Noise Standards, the proposed construction activities should be implemented in a controlled manner, the dB(A) levels for residential area (daytime noise level 55 dB(A) and nighttime noise level 45 dB(A) should be maintained.
- Pre-construction environmental monitoring will be conducted by the Contractor under the supervision of the PMC. The outcome of the analysis shall be referred as baseline information for key environmental parameters (such as ambient air quality, ambient noise level, and water quality).
- Conduct consultation with the local communities and provide detail in the local language that is understandable to the local community regarding project activities and the anticipated impacts as part of the project information dissemination (prior to the start of the construction activity).

135. **Utilities**. Though the water supply and sewerage drain facilities are provided by TWAD, Perundurai, the construction related environmental, and social impacts will be considered as part of this housing construction activities. To mitigate impacts, PMC will:

- Identify and include locations and operators of these utilities in the DPR to prevent unnecessary disruption of services during the construction phase.
- Require contractors to prepare a contingency plan to include actions to be taken in case of unintentional interruption of services.
- Require contractor to obtain from the PMC, the list of affected utilities and operators.
- If relocations are necessary, contractors along with PMC will coordinate with the

providers/line agencies to relocate the utility.

136. **Social and Cultural Resources**. Though the project site is not historically or culturally important location, there is a risk that any work involving ground disturbance can uncover and damage archaeological and historical remains. To mitigate impacts, PMC will:

- Ensure the ADB SPS, 2009 requirements are met while dealing with physical cultural resources.
- Continually consult Archaeological Survey of India and/or State Department of Archaeology to obtain an expert assessment of the archaeological potential of the site.
- Consider alternatives if the site is found to be of medium or high risk.
- Include state and local archaeological, cultural, and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available.
- Develop a chance find protocol for use by the construction contractors in conducting any excavation work, to ensure that any chance finds are recognized, and measures are taken to ensure they are protected and conserved, this must include stopping work if any suspected cultural heritage item is found.

137. **Site selection of construction work camps, stockpile areas, storage areas, and disposal areas.** Priority will be given to locating construction camps and related facilities near the project site. However, if it becomes necessary to identify alternative locations, only sites that do not pose risks of instability or lead to the destruction of property, vegetation, irrigation systems, or drinking water sources will be considered. Residential areas shall be excluded to safeguard the human environment specifically to minimise accident risks, health hazards from air and water pollution, dust, and noise, and to prevent social conflicts, shortages of amenities, and potential crime. Extreme care will be taken to avoid disposal activities near forested areas or water bodies.

138. **Site selection of sources of materials**. Significant quantities of bricks, coarse aggregateand fine aggregate will be required for construction works (Refer Table 12). The contractor should procure these materials only from the quarries permitted/licensed by the Department of Geology and Mining. The contractor should, to the maximum extent possible, procure material from existing quarries, and the creation of new quarry areas should be avoided as far as possible. If new quarries are required then the contractor will be responsible for obtaining all permissions and clearances, including environmental clearance for mining. It will be the construction contractor's responsibility to verify the suitability and legal status of all material sources and to obtain the approval of the Department of Geology and Mining and local revenue administration, as required.

**Table 12: Material Requirements**

| Materials | Quantity | Units |
|---|---|---|
| Concrete | 29 | $m^3$ |
| Steel | 43470 | Kg |
| Shuttering | 23184 | $ft^2$ |
| Brick Work | 130 | $m^3$ |
| Plastering (2 sides) | 11592 | $m^2$ |

| Materials | Quantity | Units |
|---|---|---|
| Flooring | 10626 | $ft^2$ |
| Painting (Int & Ext) | 14490 | $ft^2$ |
| Door & Window Woodwork | 1449 | Nos |
| Waterproofing | 773 | $ft^2$ |

139. **Access**. Hauling of construction materials and operation of equipment on-site can cause traffic problems. Construction traffic will access most work areas from the existing roads therefore potential impacts will be of short duration, localized and can be mitigated. The Contractor will need to adopt the following mitigation measures:

- Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites.
- Schedule transport and hauling activities during non-peak hours.
- Locate entry and exit points in areas where there is low potential for traffic congestion.
- Keep the site free from all unnecessary obstructions.
- Drive vehicles in a considerate manner.

**C. Construction Impacts and Mitigation Measures**

140. The impacts during the proposed construction works are standard and site-specific to the construction activities and are not expected to be significant. The Environmental Management Plan (EMP) specifies the necessary mitigation measures to be strictly followed by the contractor and supervised by the PMC. Key impacts during construction are envisaged on the following aspects: (i) transportation of materials, (ii) dust generation, air and noise pollution from construction activities, (iii) sourcing of water for construction activities, (iv) handling of construction materials at site and, (v) adoption of safety measures during construction. The contractor will prepare and submit to a Site-specific Environmental Management Plan (SEMP) including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for debris, solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; and (iii) monitoring program as per EMP to the PMC, for review and approval, and (iv) a team to monitor health and safety-related issues shall be approved by the PMC before the commencement of construction work.

141. **Construction Schedule and Method**. As per the detailed design, construction activities in the site are expected to take approximately 12 months for completion. Materials will be brought to site by trucks and will be stored on unused areas within the project site. The working hours will be 8 hours daily. Night works will be avoided except on an emergency basis or due to high day-time traffic as per prevailing conditions at the time of construction. This shall be further considered by the PMC but only in consultation with the local communities.

142. There is sufficient space for a staging area, construction equipment, and stockpiling of materials. However, the contractor will need to remove all construction wastes daily.

143. **Impacts on Water Quality.** The contractor will be required to undertake the following:

- Schedule civil works during non-monsoon season, to the maximum extent possible.

- Ensure drainages within the construction zones are kept free of obstructions.
- Keep loose soil material and stockpiles out of drains and flow lines.
- Avoid stockpiling of excavated and construction materials (sand, gravel, cement, etc.) unless covered by tarpaulins or plastic sheets.
- Conduct periodic Environmental Monitoring to check the water quality as indicated in Table 16.
- Use a silt trap for the surface runoff to prevent sediments from entering the nearby irrigation tank/ water bodies.
- Re-use/utilize, to the maximum extent possible, excavated materials.
- Dispose of any residuals at the identified disposal site (PMC will identify approved sites).
- Dispose of waste oil and lubricants generated as per provisions of Hazardous Waste (Management and Transboundary Movement) Rules, 2016.

144. **Impacts on Air Quality**. There is potential for increased dust, particularly during the summer/dry season due to various construction activities including stockpiling of construction materials. Emissions from vehicles transporting construction materials and debris/materials to be disposed of since they may cause an increase in air pollutants within the construction zone. These are inherent impacts which are site-specific, low magnitude, short in duration and can be easily mitigated. The contractor will be required to undertake the following:

- Conduct regular water spraying on earth piles, trenches, and sand piles.
- Conduct regular visual inspections in the construction zones to ensure that there are no excessive dust emissions.
- Spreading crushed gravel over backfilled surfaces if re-surfacing of disturbed areas cannot be done immediately.
- Maintain construction vehicles and obtain “Pollution Under Control” (PUC) certificate from Emission Testing Centres.
- Obtain CTE and CTO for batching plants, crushers, diesel generators, etc., if is to be used in the project from Tamil Nadu Pollution Control Board.
- Conduct periodical environmental monitoring for ambient air as per the Environmental Monitoring Plan (Table 17).

145. **Noise Impacts**. The site is not located near any archaeological/ heritage buildings. Most of the construction activities shall be carried out manually with minimum use of machinery and equipment and with necessary safety precautions. Hence the chances for significant noise impacts are not envisaged. Nevertheless, the contractors will be required to undertake the following:

- Plan activities in consultation with the PMC so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in the least disturbance.
- Minimize noise from construction equipment by using vehicle silencers and fitting jack hammers with noise-reducing mufflers.
- Create awareness among drivers not to use horns unless it is necessary to warn other road users or animals of the vehicle’s approach. Shut off idling equipment.
- Night-time construction activities should be avoided and only be considered on an emergency basis or due to high day-time traffic as per prevailing conditions at the time of construction.

- Follow daytime ambient noise levels as per Noise Pollution (Regulation and Control) Rules and conduct periodical environmental monitoring for ambient noise as per schedules given in the EMP Table 17.
- Ensure vehicles comply with the Government of India noise limits for vehicles. PUC should be available for every construction equipment and vehicle.

146. **Impacts on Flora and Fauna**. As per the detailed design, the removal of 10 trees is estimated. Considering space constraints within the project area, TNWWHCL will undertake compensatory plantation in the ratio of 1:10 partly within the project site as per the landscaping plan and the remaining in nearby designated open spaces identified in consultation with local authorities. There are no protected areas in the direct and indirect impact zones, and no diverse ecological biodiversity is found within the project area (construction and demolition sites). Thus, there are no significant impacts on flora and fauna. But ingeneral, the Contractor will be required to:

- Conduct site induction and environmental awareness.
- Limit activities within the work area.
- Do not remove or harm existing vegetation except those required under proposed contract.
- Strictly instruct workers not to cut trees for fuel wood.
- Replant trees in the area using minimum ratio of 10 trees for every 1 tree cut, if any. Replacement species must be approved by District Forest Department.

147. **Impact due to Waste Generation**. Construction activities will produce excess excavated soils, excess construction materials, and solid wastes (such as wood, packaging materials, empty containers, oils, lubricants, and other similar items). These impacts are minimal and reversible by mitigation measures. The contractor will need to adopt the following mitigation measures:

- Prepare and implement a Waste Management Plan.
- Manage solid waste according to the following hierarchy: reuse, recycling, and disposal. Include designated/approved disposal areas in waste management plan.
- Recover used oil and lubricants and reuse; or remove from the sites.
- Avoid stockpiling and remove immediately the excess construction materials and solid waste (wood, packaging materials, empty containers, oils, lubricants, and other similar items).
- Prohibit disposal of any material or wastes (including human waste) into drainage, nallah, or watercourse.

148. **Impacts on Occupational Health and Safety**. Workers must be made aware of occupational hazards that may arise during the proposed construction activities. Exposure to work-related chemical, physical, biological, and social hazards is likely during the execution phase. These impacts are generally negative and short-term in nature but can be effectively mitigated through appropriate measures. Overall, the contractor shall comply with all prescribed mitigation strategies in line with best international practices, which include but are not limited to the following:

- Disallow worker exposure to noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.

- Develop a comprehensive site-specific health and safety (H&S) plan. The overall objective is to provide guidance to Contractor on establishing a management strategy and applying practices that are intended to eliminate, or reduce, fatalities, injuries and illnesses for workers performing activities and tasks associated with the project.
- Include in H&S plan measures such as: (i) type of hazards during excavation works; (ii) corresponding personal protective equipment for each identified hazard; (iii) H&S training for all site personnel; (iv) procedures to be followed for all site activities; and (v) documentation of work-related accidents.
- The working hours will be 8 hours daily. Night works should be avoided; however, it may be considered on an emergency basis or due to high day-time traffic as per prevailing conditions at the time of construction. During such requirements, appropriate consultation with the local communities will be conducted.
- Provide H&S orientation training to all new workers to ensure that they are appraised of the rules of work at the site, personal protective protection, and preventing injury to fellow workers.
- Ensure that first aid kit is available at site, and it should be easily accessible for all workers in terms of emergency.
- Provide medical insurance coverage for workers.
- Secure construction zone from unauthorized intrusion and accident risks through provision of barriers, guards, and warning signs.
- Ensure the core labour standards are adopted (i). Universal and indivisible human rights, (ii) Freedom from forced labour (iii) Freedom from child labour (iv) Freedom from discrimination at work
- Provide adequate supply of potable drinking water.
- Provide clean eating areas where workers are not exposed to hazardous or noxious substances.
- Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted.
- Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas.
- Ensure moving equipment is outfitted with audible back-up alarms.
- Mark and provide sign boards in the construction zone, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate.

149. The estimated water demand of 15 KLD shall be supplied by the TWAD, Perundurai. During the summer season, if there is a drought condition, as an alternate source to meet the water demand, water shall be sourced through private vendors. For which all regulatory requirements like permission from PWD for extraction of ground/ surface water, authorisation letter / NoC etc. shall be verified before procurement of water by the TNWWHCL. The sewer line will be provided by the TWAD from the project site.

150. The prepared EMP will be adopted by the contractor and this EMP shall be monitored and reported by PMC. The key observations should be reflected in the semi-annual safeguard reports to ADB.

**D. Post-Construction Impacts and Mitigation Measures**

151. **Site clean-up after construction activities** The Contractor will be required to:

- Backfill any excavation and trenches, preferably with excess excavation material generated during the construction phase.
- Use to remove topsoil to reclaim disturbed areas.
- Re-establish the original grade and drainage pattern to the extent practicable.
- Stabilize all areas of disturbed vegetation using weed-free native shrubs, grasses, and trees.
- Restore staging areas and temporary work areas.
- Remove all tools, equipment, barricades, signs, surplus materials, debris, and rubbish. Demolish buildings/structures not required for O&M. Dispose in designated disposal sites.
- Request in writing from PMC that construction zones have been restored.
- Solid waste (debris, excavated soils, etc.) from the demolishing sites and restoration of the water body site should be disposed of by the contractor as per the guidance of the Environmental specialist of PMC.

152. **Operation and maintenance activities**. The TNWWHCL in support from the service providers will operate and maintain the infrastructure facilities at the site. The maintenance activities at the site include:

- **Rainwater Harvesting Pit Management.**
  - Regular inspection and cleaning of catchment, gutters, filters and tanks to reduce the likelihood of contamination.
  - Water from other sources should not be mixed with that in the tank.
  - TNWWHCL will carry out routine management of the RWH pits.
- **Management of the Septic Tank.** Management of the septic tanks along with sewer line will be handled either by the construction contractor or a separate contractor, as determined by TNWWHCL at the end of the construction phase. During the operation period, the septic tank will be cleaned on periodic basis by responsible personnel by a vendor appointed by TNWWHCL.

153. Maintenance of sanitation facilities, solid waste collection and regular maintenance of constructed amenities.

- Sanitation facilities do not result in pollution of groundwater.
- Sanitation facilities do not interfere with other utilities and block access to buildings, causing a nuisance to neighbouring areas.

- **Management of Municipal Solid Waste.** Management of the MSW will be handled by the Facility Management Team of the TNWWHCL. The waste will be collected at the source and segregated as wet and dry waste. Then it shall be properly discarded to the dood-to-door collection vehicle of the Perundurai municipality.

154. Firefighting equipment including the fire extinguisher and sand buckets has to be regularly maintained during the operation phase of the project.

- A minimum of two fire extinguishers per floor must be always kept and water buckets/sand buckets at accessible points shall be kept.
- Temporary firefighting arrangements like hydrants, hose reels or tanks shall be placed in the site.

- Training to workers on fire drills, emergency preparedness and emphasis of isolation on fire hazards shall be provided at regular intervals.

155. Other amenities including landscaping and streetlights shall be handed over to TNWWHCL for maintenance and operation.

## VII. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

### A. Consultation and Participation

156. The active participation of stakeholders including the local community, working women, college administrators, students, and workers across all stages of project preparation and implementation is essential for the successful execution of the Working Women's Hostel project. Inclusive engagement will help ensure that construction activities are undertaken without causing major disruptions to the functioning of nearby institutions, particularly the university located in the vicinity, and that the facility is operated with due consideration to the specific needs of working women. Furthermore, during the operational phase, quarterly stakeholder consultations will be conducted to address recurring grievances, promote transparency, and ensure the effective and responsive management of hostel services.

### B. Public Consultation

157. The public consultation and disclosure program is a continuous process throughout the project implementation, including project planning, design, and construction. On 26th November 2024, a series of stakeholder consultations were conducted at the project site, involving local auto-rickshaw drivers (3 males), security guards at the Government Erode Medical College & Hospital (2 males), interns (2 females), and first-year students (4 females) from the same institution. The discussions covered awareness of the project, its potential advantages and disadvantages, concerns related to air and water pollution, traffic congestion, climatic conditions, and general area safety. Across all groups, no major concerns were raised, indicating general acceptance and awareness of the project.

#### a) Consultation during Project Preparation

158. Several formal and informal consultations were carried out to understand the likely issues and feedback from the public on the project. The table 13 lists out few meetings/ discussions between various stakeholders.

**Table 13: Meetings/Discussions between various stake holders**

| Consultation Summary | | | | | | | |
|---|---|---|---|---|---|---|---|
| S. No | Date / Time / Venue of Meetings | Stakeholders | No. of Participants | | | Issues discussed | Project responses |
| | | | Male | Female | Total | | |
| 1 | 26-11-2024 Project site | Local Auto Rikshaw Drivers | 3 | | 3 | • Knowledge of project<br>• Boons and Bane of project development<br>• Air and Water Pollution<br>• Traffic<br>• Climatic Conditions<br>• General Area Safety | No major concerns have been noted. |
| 2 | 26-11-2024 Project site | Security Guards at the Government Erode Medical College & Hospital | 2 | | 2 | • Knowledge of project<br>• Boons and Bane of project development<br>• Air and Water Pollution<br>• Traffic | No major concerns have been noted. |

| Consultation Summary | | | | | | | |
|---|---|---|---|---|---|---|---|
| S. No | Date / Time / Venue of Meetings | Stakeholders | No. of Participants | | | Issues discussed | Project responses |
| | | | Male | Female | Total | | |
| | | | | | | • Climatic Conditions<br>• General Area Safety | |
| 3 | 26-11-2024 Project site | Interns at the Government Erode Medical College & Hospital | | 2 | 2 | • Knowledge of project<br>• Boons and Bane of project development<br>• Air and Water Pollution<br>• Traffic<br>• Climatic Conditions<br>• General Area Safety | No major concerns have been noted. |
| 4 | 26-11-2024 Project site | First-year students at the Government Erode Medical College & Hospital | | 4 | 4 | • Knowledge of project<br>• Boons and Bane of project development<br>• Air and Water Pollution<br>• Traffic<br>• Climatic Conditions<br>• General Area Safety | No major concerns have been noted. |

**b) Consultation during Construction**

159. Prior to start of construction, PMC will conduct information dissemination sessions and further consultations and solicit the help of the local community, leaders/prominent for the project work. Focus group meetings will be conducted to discuss and plan construction work with local communities to reduce disturbance and other impacts and regarding the project grievance redress mechanism. Project information and construction schedule will be provided to the public via mass media (newspapers, ULB websites etc,).

160. A constant communication will be established with the communities to redress the environmental issues likely to surface during construction phase, if any. The contractor will be required to provide public information about the construction work in the area prior to any construction commencing. At a minimum this should be at least 7 days prior to the start of work and again a day before the start of work via pamphlets. At the work sites, public information boards will also be provided to disseminate project related information.

**C. Information Disclosure and Future Consultations**

161. The Executive Summary of the Initial Environmental Examination (IEE) will be made available in both Tamil and English and displayed prominently at the offices of TNIFMC and the PMC. Copies will be placed on their notice boards to ensure public visibility and transparency. In addition, hard copies of the full IEE report will be made accessible to citizens, facilitating document disclosure and promoting broader public awareness of the project. Stakeholders will also be informed about the grievance register and redress mechanism, which will be established to address concerns during both construction and operational phases, ensuring inclusive and accountable project implementation.

## VIII. GRIEVANCE REDRESSAL MECHANISM

162. The TNWWHCL will establish the Grievance Redressal Committee and to ensure that the suitable functioning of the GRC, officers and focal points will be established within the PMC and Contractor. The majority of complaints will be the responsibility of the site level contractor and TNWWHCL. It will be addressed via procedures described in the ESGMS. Records of complaints (refer Appendix 2 – sample grievance form) received and how they are addressed will be maintained by the TNWWHCL and reported in the monitoring reports. Contact details and names of the concerned staff and contractors, will be posted at all construction sites in visible locations. The following GRM shall be followed.

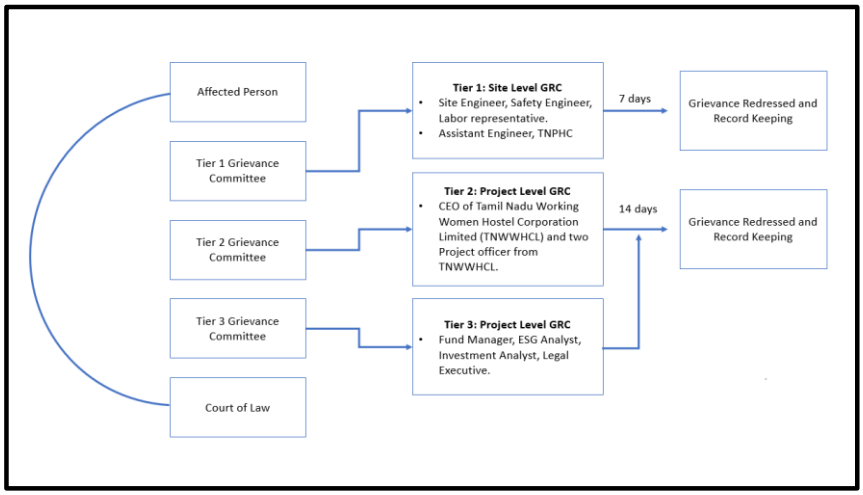
163. **Field level**. The Contractor will designate an on-site Grievance Redress Officer (GRO)-1 in consultation with the PMC and TNWWHCL. The field level GRC will be the Tier-1 committee, and it may consist of nominated member from the labour group, EHS Officer, senior engineer, safety engineer and chaired by assistant engineer of PMC. The Tier-2 GRC will be chaired by the CEO of TNWWHCL and consist of Business Head, and project engineer from TNWWHCL. The Tier-3 GRC will receive and record the complaint of the project site, and it will be headed by the TNSF Fund Manager assisted by the ESG Analyst, Legal Executive, and Investment Analyst. Alternatively, the complaint can be registered by phone call, message, email to GRO-1 and any complaints received by the contractor or site engineers will be reverted to the onsite GRO-1 for 1st level resolution. The complaint will be reviewed and on-site GRO-1 with assistance from the Site engineer of the Contractor will try to resolve the issue on-site in consultation with the aggrieved party. This will be done within 7 days of receipt of a complaint/ grievance.

164. **Project level**. All grievances that cannot be redressed within 7 days on-site level will be brought to the notice of the project level, tier 2 GRO officer. The project GRO-2 will resolve the grievance within 14 days of receipt of a complaint/ grievance with support of safety engineers and senior level engineers. The grievance at this tier 2 must be resolved in 14 days of its receipt.

165. **Fund level**. If the grievance is not resolved in tier 2 level, the grievance will be referred to tier 3 committee at TNFIMC level. The grievance at this level must be resolved in 14 days of its receipt.

166. The project GRM notwithstanding, an aggrieved person shall have access to the country's legal system at any stage. This can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

**Figure 18: Grievance Redressal Mechanism**




167. **ADB's Accountability Mechanism -** If the established GRM is not able to resolve the issue, the affected persons can also use the ADB Accountability Mechanism by directly contacting (in writing) the complaint receiving officer at ADB headquarters or the ADB India Resident Mission. The complaint can be submitted in any of the official languages of ADB's Developing Member Countries. The ADB Accountability Mechanism information will be included in the project information document to be distributed to the affected communities, as part of the project GRM.

168. **Periodic review and documentation of lessons learned. -**The PMC and TNWWHCL will periodically review the functioning of the GRM and record information on the effectiveness of the mechanism,especially on the program's ability to prevent and address grievances.

169. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting/ information dissemination) will be borne by the TNWWHCL.

# IX. ENVIRONMENTAL MANAGEMENT PLAN

## A. Environmental Management Plan

170. The environmental management plan (EMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels. The EMP is prepared based on the project activities, which are planned to be implemented at various stages.

(i) Environmental Management Plan for Pre-Construction Site
(ii) Environmental Management Plan for Construction Site
(iii) Environmental Management Plan for Operation/ Maintenance

171. The EMP will guide environmentally sound practices at the time of construction and operation of the project and ensure efficient lines of communication between TNWWHCL, PMC, and contractor. The EMP will (i) ensure that the activities are undertaken in a responsible non-detrimental manner; (ii) provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site; (iii) guide and control the implementation of findings and recommendations of the environmental assessment conducted for the project; (iv) detail specific actions deemed necessary to assist in mitigating the environmental impact of the project; and (v) ensure that safety recommendations are complied with. The EMP includes a monitoring program to measure the environmental condition and effectiveness of implementation of the mitigation measures. It will include observations on- and off-site, document checks, and interviews with workers and beneficiaries. The IEE and EMP will be included in the bid and contract documents to ensure compliance to the conditions set out in this document.

172. The contractor will prepare and submit to a Site-specific Environmental Management Plan (SEMP) including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for debris, solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; and (iii) monitoring program as per EMP to the PMC, for review and approval, and (iv) a team to monitor health and safety-related issues. No works are allowed to commence prior to approval of SEMP. A copy of the EMP and approved SEMP will be always kept on site during the construction period.

173. As indicated in Chapter III (Description of the project), Water supply and sewer line shall be provided by the TWAD Board. The EMP for pre-construction, construction and post-construction stages have been prepared and additionally, site specific EMP shall be prepared by the contractor, and the PMC environmental specialist shall approve the site-specific EMP. The prepared EMP and site specific EMP will be monitored and reported by PMC to TNWWHCL. The key observations should be reflected in the semi-annual safeguard reports to ADB.

174. For civil works, the contractor will be required to (i) carry out all the mitigation and monitoring measures set forth in the approved EMP and SEMP; and (ii) implement any corrective or preventative actions set out in environmental monitoring reports that the employer will prepare from time to time to monitor implementation of EMP covered in this IEE report and SEMP. The contractor shall allocate budget for compliance with SEMP measures, requirements and actions. The EMP for various stages of the project construction is given in the following table.

**Table 14: EMP for Pre-Construction and Construction Phase**

| Sl.no | Environmental Issues | Mitigation Measures | Indicators and Targets | Responsibility for Implementation | Responsibility for Supervision |
|---|---|---|---|---|---|
| 1. | **Location Impacts** | | | | |
| 1.1 | Location impacts pertaining to siting of facilities for construction of hostel project at Perundurai<br>• Clearing of wild vegetation<br>• Maintain slope for natural drain<br>• Excess earth disposal | • The siting of facilities will be in line with the DTCP approved Master Plan.<br>• The site allotted for the construction is allotted as a hostel facility. Hence there are no land related issues anticipated.<br>• There are currently 10 trees present within the project site, as reported. Wild vegetation shall be cleared before construction. | • List of tree species<br>• Tree cutting permit / permission from the Revenue department<br>• Identification of Disposal site for disposing debris and excavated soil | PMC | TNWWHCL |
| 1.2 | Lack of sufficient planning to assure long-term sustainability of the developments | • In accordance with the provisions in the project selection criteria, the project design shall include adequate provisions for ensuring effective maintenance and protection of the assets created so to ensure the long-term sustainability of the sites.<br>• The designs will be worked out and implemented in accordance with the provisions. | • DPR and designs approved from competent authority.<br>• Work plan prepared and approved by PMC | Contractor/PMC | TNWWHCL |
| 1.3 | Land acquisition (Socio economic Impacts) | • No additional land will be required.<br>• Also, the sites are free without any inhabitation.<br>• Resettlement and/or land acquisition problems are not applicable since construction activities are in vacant site. | NA | | |
| 1.4 | Clearing of trees/ Removal ofvegetation | • The project site hosts a total of ten trees, all of which are native to the region. The species primarily include Rain Tree (Albizia saman), Neem (Azadirachta indica), and Subabul (Leucaena leucocephala), which are well adapted to the local climate and soil conditions.<br>• Compensatory plantation will be undertaken in the ratio of 1:10 — partially within the project site as per the landscaping plan and the remaining in nearby designated open spaces, in consultation with local | • Tree count information and compensation ratio | Contractor | TNWWHCL |

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| Sl.no | Environmental Issues | Mitigation Measures | Indicators and Targets | Responsibility for Implementation | Responsibility for Supervision |
|---|---|---|---|---|---|
| | | authorities.<br>• All reasonable measures shall be taken to ensure that native fauna are not harmed or placed at risk during site clearing and tree-removal activities | | | |
| 2. | | | | | |
| 2.1 | Increased storm water runoff from alterations of the site's natural drainage patterns due to excavation works in the site, construction of residential units, addition of paved surfaces and approach roads | • Design of proposed building components will enable efficient drainage of the sites and maintain natural drainage patterns. The siting of the project components, involving physical construction shall be done to ensure no disruption of natural drainage patterns or flows into the nearby drain/nallah.<br>• 2 Recharge pits with a capacity of 6,500 $m^3$ will ensure that no storm water is drained out of the site. | • Site drainage plan to be prepared and applied.<br>• Construction of drains and recharge pits to prevent water logging at site during rains | PMC | TNWWHCL |
| 2.2 | Consents, permits, clearances, NOCs, etc. | • All the necessary approvals/ permissions/ clearances/ NoCs as required from DTCP/Local bodies should be obtained before the start of the construction activities.<br>• The company is required to obtain Environment Clearance and Consent to Operate (CTO) for the project. The CTE and CTO shall be separately obtained for batching plant if it is planned to be installed on site. | • Refer table 3 and table 4.<br>• Consultation meeting outcomesand records | PMC | TNWWHCL |
| 2.3 | Integration of energy/water efficiency and energy/water conservation programs in design of building components | • The environmental footprint of the project in terms of water consumption, energy consumption and utilization of materials should be in the most efficient form.<br>• Use of water-efficient fixtures and dual-flushing systems. | • DPR and designs approved from competent authority.<br>• Use of energy efficient and ISO certified equipment in construction works | PMC | TNWWHCL |
| 2.4 | Odour / smell from Sewage Treatment Plant (wherever provided), Solid waste collection area | • The detailed design/ layout of the septic tank should ensure that no odour/smell is observed in the facility or nearby areas. | • Designs approved by competent authority.<br>• MSW is designed for regular collection. | PMC | TNWWHCL |
| 2.5 | Noise pollution from the pumps used for lifting | • Pump house should be acoustic proof. | • Regular maintenance is required. | PMC | TNWWHCL |

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| Sl.no | Environmental Issues | Mitigation Measures | Indicators and Targets | Responsibility for Implementation | Responsibility for Supervision |
|---|---|---|---|---|---|
| | water | | • Conducting frequent Noise monitoring | | |
| 2.6 | Sourcing of water for construction activities | • TNWWHCL proposes utilizing water provided by TWAD for construction purposes.<br>• Water demand during construction should be reduced by the use of premixed concrete, curing agents and other best practices prevalent. | • Regular monitoring is required.<br>• Complaints, if there are any, from the local communities<br>• Ground water level monitoring | Contractor and PMC | TNWWHCL |
| 2.7 | Installation of Diesel Generators | • TNWWHCL proposes the contractor to use the appropriate and licensed Diesel Generators as per the CPCB | • Standards prescribed by the CPCB | Contractor and PMC | TNWWHCL |
| **3.** | | | | | |
| 3.1 | Submission of EMP/ SEMP; EMP implementation and reporting | • Appointing Environment, Health and Safety Supervisor to ensure EMP implementation.<br>• Submission of EMP/ SEMP<br>• Timely submission of monthly monitoring reports including documentary evidence on EMP implementation such as photographs and consultation records.<br>• SEMP documents shall include information about site restoration, noise and dust control, wastewater management, spills response, community and site health and safety, traffic control, tree cutting, construction of labour camps, storage areas, hauling roads, regulatory permissions, disposal areas for solid and hazardous wastes, sensitive features like schools and hospitals.<br>• Provide project-related information to stakeholders, communities and/or affected people before and during construction works including at least 7 days prior to the start of works and again at least 1 day prior to works through issuing a pamphlet booklet to affected persons. | • Unsatisfactory compliance with EMP<br>• Contractor consultation records | Contractor and PMC | TNWWHCL |
| 3.2 | Consents, permits, | • Obtain all necessary consents, permits, clearance, | All the project related | Contractor | TNWWHCL |

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| Sl.no | Environmental Issues | Mitigation Measures | Indicators and Targets | Responsibility for Implementation | Responsibility for Supervision |
|---|---|---|---|---|---|
| | clearances, NOCs, etc. | NOCs, etc. prior to the award of civil works.<br>• Ensure that all necessary approvals for construction to be obtained by the contractor are in place before the start of construction.<br>• Acknowledge in writing and provide a report on compliance of all obtained consents, permits, clearance, NOCs, etc. | clearances should be obtained as indicated | | |
| 3.3 | Sources of construction materials (Impact on natural land contours, vegetation, and disturbance to natural drainage patterns, water logging, and water pollution.) | • Maximize the re-use of earth-cut materials, spoils, and construction debris/wastes.<br>• Specify materials that are recycled, have recycled content or are from sustainable sources.<br>• Obtain construction materials only from government-approved quarries with prior approval of PMC<br>• PMC to review, and ensure that proposed quarry sources have all necessary clearances/ permissions in place prior to approval<br>• Contractor to submit to PMC the documentation every month with the details of the material obtained from each source (quarry/ borrow pit)<br>• Avoid the creation of new borrow areas, quarries, etc., for the project; if unavoidable, contractor to obtain all clearances and permissions as required under law, including Environmental Clearance (EC) prior to approval by PMC | Contractor to prepare a list of approved quarry sites and sources of materials with the approval of PMC before any construction commences | Contractor | TNWWHCL |
| 3.4 | Construction Camps – Location, Selection, Designand Layout | • The construction camps will be located 500m away from settlements and water bodies. The construction camps including separate female and male sanitation facilities, shelter, electricity, canteen, potable water (as per IS 10500), first aid, health care, day crèche facilities must be adequately drained, and must not be subject to periodic flooding.<br>• The camps must be located such that the drainage from and through the camps will not risk any domestic or public water supply.<br>• All sites must be graded, ditched and rendered free | • Location of construction camp approved by PMC.<br>• Construction camp having all the basic amenities with proper sanitary conditions drainage and watery supply | Contractor | TNWWHCL |

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| Sl.no | Environmental Issues | Mitigation Measures | Indicators and Targets | Responsibility for Implementation | Responsibility for Supervision |
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| | | from depressions such that water may not get stagnant and cause a nuisance.<br>• The contractor shall provide the dispenser for the disposal of Sanitary Napkins<br>• MSW and domestic sewage generated from the construction camp should be collected and disposed on day-to-day basis. The collection of waste and sewage shall be collected by TNWWHCL.<br>• Potable water (as per IS 10500 standard) to the labours/ construction workers should be provided by the Contractor.<br>• Comply with the ban on one time use and throwaway plastics under Tamil Nadu Government Order<br>• First Aid Room shall be provided in the project site during the entire construction and operation phases of the project | | | |
| 3.5 | Stockpiling of materials | • Storage of construction material confined to work sites in a way to ensure that there is no obstruction to natural drainage pattern, efficient drainage is maintained.<br>• Stockpiles to be covered to reduce dust generation.<br>• Develop and implement the Materials Management Plan (including warehouses / storage) | • Location of construction camp approved by PMC.<br>• Approved materials management plan | Contractor | TNWWHCL |
| 3.6 | Establishment of baseline environmental conditions prior to start of civil works | • Conduct documentation of location of components, areas for construction zone (camps, staging, storage, stockpiling, etc.) and surroundings (within direct impact zones), locations of environmental monitoring Include photos and GPS coordinates<br>• The monitoring parameters and thefrequency of the monitoring should comply with the Environmental Monitoring Plan (Table 16). | Baseline environmental profile including ambient air, noise, water quality as perthe standards indicated in the monitoring plan (Table 16) | Contractor | TNWWHCL |
| 3.7 | Drinking water availability and water arrangement | • The contractor will be responsible for the arrangement of water in every workplace in a suitable and easily accessible place for the whole construction period.<br>• Sufficient supply of cold potable water (as per IS | • Records of drinking water supply to workers Feedback from workers | Contractor | TNWWHCL |

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| | | 10500) to be provided and maintained.<br>• If the drinking water is obtained from an intermittent public water supply, then, storage tanks will be provided. | | | |
| 3.8 | Identification of disposal sites | • Location of disposal sites will be finalized by the Environmental Specialist of the PMC, and he will confirm that disposal of the material does not impact natural drainage courses or surface water bodies or low-lying areas and that no endangered / rare flora is impacted by such materials<br>• The disposal sites shall be identified in consultation with TNWWHCL.<br>• Information on the disposal site should be included in the IEE | • Disposal site selected and approved by PMC.<br>• Records of materials disposed at disposal site.<br>• Logbook maintained for debris disposal | Contractor | TNWWHCL |
| 3.9 | Shifting of Utilities | • Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during the construction phase.<br>• Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.<br>• Obtain from the PMC the list of affected utilities and operators.<br>• If relocation is necessary, Contractor will coordinate with the providers to relocate the utility and communicate the dates and duration in advance to affected communities / persons / businesses. | • List showing utilities to be shifted Contingency plan for services disruption | Contractor | TNWWHCL |
| 3.10 | Social and Cultural Resources | • No cultural properties or religious structures shall be removed or relocated without the knowledge and written confirmation of the concerned parties or communities and local administration as the case may be. Sites for the relocation of these religious structures shall be identified following the choice of the community<br>• As far as possible, the architectural elements of the | Conduct consultation as necessary | Contractor | TNWWHCL |

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| | | structure should be conserved/ reflected/ translated into the design of new structures following the wishes of the community.<br>• For any Chance find, consult Archaeological Survey of India (ASI) or Tamil Nadu Archaeology Department to obtain an expert assessment of the archaeological potential of the site.<br>• Consider alternatives if the site is found to be of medium or high risk.<br>• Include state and local archaeological, cultural and historical authorities, and interest groups in consultation forums as project stakeholders so that their expertise can be made available.<br>• Develop a protocol for use by the construction contractors in conducting any excavation work, to ensure that any chance finds are recognized, and measures are taken to ensure they are protected and conserved. | | | |
| 3.11 | Circulation plan during construction in the densely populated areas | • Prior to mobilization and commencement of site activities, contractor has to prepare site work plan approved by PMC so that no works or activities shall interrupt safe passage of local residents/ road users during construction stage, including development of alternative access routes, traffic regulations, signage etc., during construction.<br>• The sensitive receptors like residential settlements, schools and hospitals in the close proximity of the project site have to be consulted to discuss the site work plan for their suggestions and feedback, accordingly the plan shall be modified. | • Site work plan prepared by contractor and approved by PMC.<br>• Traffic plan andrecords of roadsignage's | Contractor | TNWWHCL |
| 3.12 | Access | • Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided.<br>• Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. | • Temporary Traffic management Plan | Contractor | TNWWHCL |

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| | | • Schedule transport and hauling activities during non-peak hours.<br>• Locate entry and exit points in areas where there is low potential for traffic congestion.<br>• Keep the site free from all unnecessary obstructions.<br>• Drive vehicles in a considerate manner. | | | |
| 3.13 | Occupational health and safety | • Comply with IFC EHS Guidelines on Occupational Health and Safety<br>• Develop comprehensive site-specific health and safety (H&S) plan. The overall objective is to provide guidance to Contractors on establishing a management strategy and applying practices that are intended to eliminate,or reduce, fatalities, injuries and illnesses for workers performing activities and tasks associated with theproject.<br>• Include in H&S plan measures such as:<br>(i) type of hazards in the construction site; corresponding personal protectiveequipment for each identified hazard.<br>(ii) H&S training for all site personnel (including labors).<br>(iii) procedures to be followed for all siteactivities; and<br>(iv) Documentation of work-related accidents.<br>• Provide medical insurance coverage forworkers.<br>• Contractor to nominate an on-site environment, health and safety officer. | • Health and safety (H&S) plan | Contractor | TNWWHCL |
| 3.14 | Site clearance activities including delineation of construction areas | • Commencements of site clearance activities shall be undertaken after permissions of PMC to minimize environmental impacts.<br>• All areas used for construction and camp activities shall be restored to their former conditions after project completion and no impact to the baseline environment indicators have been confirmed. | • Construction and workers camp sites should be restored as per the original situation | Contractor | TNWWHCL |
| 3.15 | Excessive disturbance to communities due to | • Meaningful consultations with communities to keep them informed of anticipated activities, in particular | • Community Health and Safety Plan | Contractor | TNWWHCL |

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| | prolonged construction | those that may result in disruption with respect to area access, utilities, and noisy or dust-generating activities that are likely to result in significant disturbance.<br>• Identify and adhere to strict construction schedule.<br>• Liaise with schools that are in close proximity to construction sites on school examination periods and scale down construction activities and avoid noisy activities (including piling) during such periods.<br>• Alert communities and residents if nighttime construction work shall occur nearby (no nighttime construction within 500m of the nearest household) and ensure safe alternative access is provided<br>• Ensure communities are aware of Grievance Redress Mechanism (GRM) entry points.<br>• Create awareness of health & safety risks of transmittable diseases (HIV/AIDs / COVID-19), child labor, bonded labor or forced labor.<br>• Develop and implement the Community Health and Safety Plan | • Contractor consultation records | | |
| **4.** | | | | | |
| 4.1 | Improper stockpiling of construction materials causes impacts starting from obstruction of drainage, disturbance/ safety hazard etc. | • Adequate safety precautions will be ensured during transportation of quarry material from quarries to the construction site.<br>• Vehicles transporting material will be covered to prevent spillage.<br>• Operations to be undertaken by the contractor as per the direction and satisfaction of PMC. | • Proper stockpiling of construction materials<br>• Vehicles transporting construction materials to be covered to prevent spillage | Contractor | PMC |
| 4.2 | Impacts due to Batching Plant operation | • Batching plant shall comply with the requirements and specifications of the relevant current emission control legislation.<br>• Batching plant shall be located within the project construction area and as far as possible from residential/ settlements/ commercial establishments, at least 300m in the downwind direction.<br>• The Contractor shall submit a detailed layout plan for | • Batching Plants should be kept/ stationed away from residential /settlements and at least 300m in the downwind direction from nearby sensitive receptors. | Contractor | PMC |

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| | | all such sites and seek prior approval of PMC before entering into a formal agreement with a landowner for setting up such sites.<br>• Actions by PMC against any non- compliance shall be borne by the Contractor at his own cost.<br>• Arrangements to minimize dust pollution through the provision of windscreens, mist spray units, and dust encapsulation shall have to be provided at all such sites.<br>• Specifications of batching plant shall comply with the requirements of the relevant current emission control legislation and Consent / NOC for such plant shall be submitted to the PMC<br>• No such installation by the Contractor shall be allowed till all the required legal clearances are obtained from the competent authority and the same is submitted to the PMC. | | | |
| 4.3 | Stripping, stocking, and preservation of topsoil | • The topsoil from areas of cutting and areas to be permanently covered (proposed site construction of building) will be stripped to a specified depth of 150mm and stored in stockpiles.<br>• The stockpiles will be covered with gunny bags or tarpaulin. It will be ensured by the contractor that the topsoil will not be unnecessarily trafficked either before stripping or when in stockpiles. Such stockpiled topsoil will be returned to cover the disturbed area and cut slopes. | • Topsoil preservation plan prepared and approved by PMC<br>• Record of topsoil excavated, preserved, and reutilized. | Contractor | PMC |
| 4.4 | Soil and water pollution due to storage of fuels, lubricants, construction vehicles and construction wastes | • Fuel and lubricant storage areas shall be designed in such a way that oil may not contaminate soil or water.<br>• The floor of storage area shall be protected by an impermeable membrane and covered by roof so that it is not affected by rain.<br>• Oil pumps should be used to take out the oil from the container and no oil spillage should take place.<br>• All the construction waste should be disposed properly after the end of the day so that it may not create | • Proper storage of fuel and lubricants<br>• Impermeable membrane used in flooring of storage yard to prevent soil and water pollution.<br>• Construction waste disposal records | Contractor | PMC |

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| | | nuisance at site.<br>• Soil and water pollution parameters shall be monitored as per the monitoring plan.<br>• Dispose of waste oil and lubricants that have been generated as per provisions of Hazardous Waste (Management and Transboundary Movement) Rules, 2016.<br>• Inspect all vehicles daily for fluid leaks before leaving the vehicle staging area and repair any leaks before the vehicle resumes operation.<br>• Strictly prohibit open defecation by workers in nearby areas. | • Waste management plan | | |
| 4.5 | Siltation of drains/ water bodies due to spillage of construction wastes | • Silt fencing to be provided at construction sites during rain period to prevent sediments from the construction site to enter the watercourses/ nearby settlements. The number of units of silt fencing to be installed is to be decided by the PMC.<br>• Haul roads on the site and approaches to the watercourse (or drains leading to watercourses) will be regularly cleaned to prevent the build-up of mud; areas of bare soil will be kept to a practical minimum to reduce silt runoff.<br>• Extraneous construction wastes will be transported to the pre-identified disposal site for safe disposal. | • Site fencing<br>• Numbers of Silt traps constructed at site.<br>• Proper drainage system provided at site.<br>• Regular cleaning of drains during rain period | Contractor | PMC |
| 4.6 | Emission from Construction vehicles, Equipment and Machinery | • The discharge standards promulgated under the Environmental Protection Act will be strictly adhered to.<br>• All vehicles, equipment and machinery used for construction will conform to the relevant Standard.<br>• All vehicles, equipment and machinery used for construction will be regularly maintained to ensure that pollution emission levels comply with the relevant requirements.<br>• All the construction vehicles have Pollution Under Control (PUC) certificates to check air pollution. | • PUC available for all vehicles<br>• Maintenance record of construction vehicles and equipment | Contractor | PMC |

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| 4.7 | Erosion Hazards | • The site topography is generally flat, and hence erosion hazards are minimal. No significant earth cutting or filling is required. However, basic preventive measures will be implemented to maintain site stability and control dust during construction, such as:<br>• Regular water sprinkling to control dust and prevent windblown soil.<br>• Proper grading and drainage to avoid water stagnation after rainfall.<br>• Reuse of excavated topsoil for landscaping and leveling.<br>• Periodic maintenance of drainage lines and catch pits to ensure free flow of stormwater.<br>• Routine inspection verify that no localized erosion or sediment accumulation occurs.<br>• | • Slope stability.<br>• Frequent monitoring during the piling operation<br>• Dust and surface runoff control | Contractor | PMC |
| 4.8 | Generation of Dust | • The contractor will take every precaution to reduce the levels of dust at construction sites to the satisfaction of the PMC.<br>• All earth works to be protected / covered in a manner acceptable to the satisfaction of the PMC to minimize dust generation.<br>• Clearance will be affected immediately by manual sweeping and removal of debris, or if so, directed by the PMC, the road surfaces will be hosed or watered using necessary equipment.<br>• Construction sites shall regularly be wetted by sprinkling of water during dusty conditions especially during summer seasons and winds.<br>• Ambient Air Quality monitoring must be performed as per the Environmental Monitoring Program as indicated in the Table 16 and 17. | • Records of housekeeping<br>• Records of water sprinkling at site<br>• Vehicles carrying excavated soil covered.<br>• AAQ parameters (Particulate matter ($PM_{10}$ & $PM_{2.5}$), $SO_x$, $NO_x$, CO) to be monitored. | Contractor | PMC |
| 4.9 | Noise from construction activities and equipment | • The Contractor will ensure appropriate noise monitoring is carried out continuously especially during piling works. | • Maintenance record of construction vehicles and equipment | Contractor | PMC |

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| | | • Prior to any heavy equipment/machinery /piling works, the contractor should inform surrounding areas as well and it will be prohibited at night. Specify the limit for noise for the piling works.<br>• Maintenance of vehicles, equipment and machinery will be regular and to the satisfaction of the PMC, to keep noise from these at a minimum.<br>• All vehicles and equipment used for construction will be fitted with exhaust silencers. During routine servicing operations, the effectiveness of exhaust silencers will be checked and if found to be defective will be replaced.<br>• Noise limits for construction equipment used in this project (measured at one meter from the edge of the equipment in free field) such as compactors, rollers, front loaders, concrete mixers, cranes (movable), vibrators and saws will not exceed 75 dB (A).<br>• Notwithstanding any other conditions of contract, noise level from any item of plant(s) will comply with the noise standards specified by CPCB.<br>• If specific noise complaints are received during construction, the Contractor may be required to implement one or more of the following noise mitigation measures, as directed by the PMC:<br>• Shut off idling equipment.<br>• Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.<br>• Notify nearby residents whenever extremely noisy work is occurring.<br>• The Contractor shall provide necessary PPEs as per the direction of the environmental specialist (PMC)<br>• The Contractor shall adopt IS 5121-1969 (Indian standard Safety Code for Piling<br>• and Other Deep Foundation Works) to ensure safety is maintained during the piling operations. | • Exhaust silencers working properly.<br>• Use of proper PPEs as work sites<br>• Records of noise monitoring as per EMP. | | |

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| | | • Ambient Noise levels have to be monitored as per the Environmental Monitoring Program | | | |
| 4.10 | Impacts on flora and fauna | • Strictly instruct workers not to cut trees for fuel wood.<br>• Do not harm existing vegetation in the area except for those indicated in site plan.<br>• Limit activities within the work area.<br>• Strictly prohibit poaching of birds and animals in the vicinity of work sites | • Baseline information of the flora and fauna for the project area | Contractor | PMC |
| 4.11 | Material Handling at Site | • All workers employed in mixing asphaltic material, cement, concrete etc., will be provided with protective footwear and protective goggles. Workers who are engaged in welding works, will be provided with welder's protective eye-shields. Workers engaged in stone breaking activities will be provided with protective goggles and clothing and will be seated at sufficiently safe intervals. | • Use of proper PPEs as work sites<br>• Records of PPEs procured and issued for use | Contractor | PMC |
| 4.12 | Disposal of Construction Waste /Debris / Cut Material | • The waste generated will be reused in the construction activities, either as a fill material or otherwise, based on its suitability of reuse to the maximum extent possible.<br>• Safe disposal of the extraneous material will be ensured in the pre-identified disposal locations. In no case, any construction waste will be disposed around the project locations indiscriminately.<br>• Burning of municipal solid waste or hazardous waste will be prohibited. | • Records of excavated soil and<br>• Records of reuse and disposal of excavated soil<br>• Disposal site identified and approved<br>• AAQ parameters (Particulate matter ($PM_{10}$ & $PM_{2.5}$), $SO_x$, $NO_x$, CO) to be monitored | Contractor | PMC |
| 4.13 | Safety Measures During Construction | • Personal Protective Equipment (PPE) for workers on the project and adequate safety measures for workers during handling of materials at site will be taken up.<br>• The contractor should comply with all regulations regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and egress. | • Use of PPEs<br>• Records of PPEs procured and issued for use Compliance of all regulations regarding scaffolding, ladders and work at | Contractor | PMC |

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| | | • Appropriate safety measures (including hard barriers) have to be adopted for the construction during the nighttime (Lux level shall be equivalent to a minimum of two 500 watt flood lights) | height | | |
| 4.14 | Risk caused by Force Majeure | • All reasonable precaution will be taken to prevent danger to the workers and the public from fire, flood, drowning, etc.<br>• All necessary steps will be taken for prompt first aid treatment of all injuries likely to be sustained during the course of work. | • Records of first aid facilities at site<br>• Records of safety training to workers | Contractor | PMC |
| 4.15 | Malaria Risk | • The Contractor will, at his own expense, conform to all anti-malarial instructions given to him by the PMC; mosquito prevention at site should be done.<br>• The frequency of the testing for malaria should be increased during the monsoon season | • Records of use of mosquito prevention measures at site and work camps<br>• Anti-malaria instructions to workers | Contractor | PMC |
| 4.15 | Clearing of Construction Camps & Restoration | • Contractor to prepare site restoration plans for approval by the PMC. The plan is to be implemented by the contractor prior to demobilization.<br>• On completion of the works, all temporary structures will be cleared away, all rubbish should be removed excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the PMC. | • Restoration plan for site and work camps prepared.<br>• Restoration of site and work camps as per plan | Contractor | PMC |
| 4.16 | Influx of migrantworkers | • Local labourer's to be given preference for job opportunities and each contractor should be bound by this commitment.<br>• The Contractor has to adopt a Code of Conduct for the migrant labour to resolve any issues with locals.<br>• Ensure labour-related regulations are met.<br>• In case of hiring outside labour, ensure that their working conditions as well as camps meet local regulations and the best practices of the industry (refer to IFC Workers' Accommodation: Processes and | • Health and safety risks<br>• Chances of spread of sexually transmittable diseases like AIDS.<br>• Water pollution<br>• Health & Safety Risks due to Transmittable diseases (HIV/AID and COVID-19) / awareness plan | Contractor | PMC |

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**Table 15: EMP for Operation and Maintenance Phase**

| Sl.no | Environmental Issues | Mitigation Measures | Indicators and Targets | Responsibility for Implementation | Responsibility for Supervision |
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| **1.** | **Operation and Maintenance Impacts** | | | | |
| 1.1 | Solid waste (debris, excavatedsoils, etc.) | • Re-establish the original grade and drainage pattern to the extent practicable.<br>• Restore access roads, staging areas, and temporary work areas.<br>• Remove all tools, equipment, barricades, signs, surplus materials, debris, and rubbish. Demolish buildings/structures not required for O&M. Dispose in designated disposal sites.<br>• Request in writing from PMC that construction zones have been restored. | • Pre-existing condition | Contractor (till the DLP period) and TNWWHCL | TNWWHCL |
| 1.2 | Proposed Buildings/ Dwelling units may result congestion and increased pollution. | • Creating awareness through Consultation<br>• The 3 Rs (Reduce, Reuse, and Recycle) approaches have to be explained to the settled communities in order to reduce the pollution level (waste minimization, water minimization etc.,)<br>• The environmental monitoring action plan during the operation stage will result in monitoring of the environmental impacts after project implementation. | • Conducting regular consultations<br>• Monitoring plan during project operation | TNWWHCL | TNWWHCL |
| 1.3 | Rainwater | • Regular inspection and cleaning of | • Monitoring plan | TNWWHCL | TNWWHCL |

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| | Harvesting Pit management | catchment, gutters, filters, and tanks reduce the likelihood of contamination.<br>• Water from other sources should not bemixed with that in the tank.<br>• Storm water drains will be maintained periodically to maintain free flow of storm water without any obstacles | during project operation | | |
| 1.4 | Management of the Septic Tank | • TNWWHCL will appoint an external vendor for systemic cleaning of septic tanks. | • Proper sanitation and solid waste management | Septic tanks service provider through TNWWHCL | TNWWHCL |
| 1.5 | Firefighting/ Emergency preparedness | • Firefighting equipment, including the fire extinguisher and sand buckets should be annually maintained. Fire extinguishers have to be checked regularly for the expiry date and has to be refilled or replaced accordingly. Wet sand (if any) in the bucket should be replaced with dry sand.<br>• Fire mock drills should be conducted as a part of emergency preparedness to create awareness among the residents. | • Fire extinguisher expiry date.<br>• Emergency preparedness plan<br>• Training records | Contractor (during the DLP) and TNWWHCL | TNWWHCL |

**Table 16: Pre-construction and Construction Stage Environmental Monitoring Plan**

| Monitoring Field | Monitoring Location | Monitoring Parameters | Frequency | Responsibility |
|---|---|---|---|---|
| Construction disturbances, nuisances, public and worker safety | Project Construction site at Perundurai. | (i) Implementation of construction stage EMP including dust control, noise control, traffic management, and safety measures.<br>(ii) Site inspection checklist to review implementation | Weekly during construction | Contractor under the supervision of PMC (sampling locations shall be identified by the Environment specialist of PMC) |
| Water quality | Pre-Construction Stage: one sample via groundwater testing (located at the appropriate area where groundwater abstraction is anticipated)<br><br>Construction stage: Two samples via groundwater testing (located at the appropriate area where groundwater abstraction is anticipated) | pH, Cl, F, $NO_3$, TC, FC, Hardness, Turbidity BOD, COD, DO, E-coli, Total Alkalinity, Heavy metals, and Pesticides. | (i) Once before the start of construction (pre-construction).<br>(ii) Quarterly monitoring (till the project completion). | Contractor under the supervision of PMC (sampling locations shall be identified by the Environment specialist of PMC).<br>The NABL agency shall be engaged by the contractor to complete the testing of environmental parameters. |

**Table 17: Operation Stage Environmental Monitoring Plan**

| Monitoringfield | Monitoring location | Monitoring parameters | Frequency | Responsibility |
|---|---|---|---|---|
| Raw Water quality (potable water supplied by TWAD). | One sample in each water sump | pH, Cl, F, $NO_3$, TC, FC, Hardness, Turbidity BOD, COD, DO, E-coli, Total Alkalinity, heavy metals and pesticides. | Half Yearly | TNWWHCL |

## B. Implementation Arrangements

175. **Project Implementation Unit (PIU), TNIFMC/TNSF.** The PIU of TNIFMC / TNSF activities will consist of an ESG Team with a dedicated and trained ESG Analyst(s) within the Fund, one Senior Environment Expert (independent hire, as part of the ADB TA, part time), one Senior Social Expert (full-time) and one Governance Expert, independent hire by TNIFMC, part time. The ESG Team will oversee safeguards implementation at PIU level, including stakeholder consultations, information disclosure, regulatory clearances and approvals, implementation of resettlement plans, EMP implementation, and grievance redressal. The ESG Team will report to the Principal, Shelter Fund, who will be ultimately responsible for the ESGMS implementation and also advise the grievance redress committee in the PIU regarding any unresolved grievances.

176. In this project TNWWHCL shall be supported by Project Monitoring Consultancy Services (PMC) hired by the TNWWHCL for environmental and social safeguards implementation. The ESG team of TNSF will ensure all safeguards compliances through the Project Monitoring Consultancy Services (PMC) for the project.

177. **Roles and Responsibilities.** The PIU ESG team will:

- Undertake due diligence of all investment proposals as per ESGMS.
- Develop and maintain stakeholder consultation and engagement plan.
- Lead impact evaluation and categorization of TNSF's investments separately for environment, involuntary resettlement, and indigenous peoples; contribute to impact monitoring of TNSF's investments; and
- Ensure disclosure of ESGMS performance to ADB in accordance with timeline stipulated in the agreed Action plan and as well as in the public domain; and supervise and monitor investment implementation.

178. **Project Management Consultant (PMC)**. The PMC will manage the construction and commissioning activities. They also provide advice/ assistance on institutional capacity development and ensure project safeguard compliance to ADB 2009, ESGMS, and loan covenants. To ensure EMP related issues, an environmental expert (on intermittent basis for 3 months out of 12-month construction period) since commencement to closure of the project shall be engaged within PMC. The PMC will be responsible for the following environmental safeguard activities:

- Ensure project compliance to GOI, GoTN statutory and legal environmental requirements, ADB SPS 2009, ESGMS, and loan covenants.
- Ensure projects conforms to exclusion criteria and project selection guidelines as stipulated in the ESG.
- Review and approve project IEE studies and reports and EMPs; ensure that project IEEs and EMPs reflect final project detailed design and submit to ADB for approval.
- Check whether all relevant permits / environmental clearances /approvals as per GoI and GoTN are obtained in a timely manner.
- Ensure that full IEE studies and EMPs are included in bidding documents, contract clauses and civil works.
- Ensure an efficient project implementation in line with IEE studies and reports and EMPs with adequate budget.

- Review and approve semi-annually environmental monitoring reports submitted by contractors and submit to ADB.
- Support the preparation of quarterly and semi-annual monitoring reports and submit to ADB.
- Ensure effective GRM set up and monitor grievances redress process and ensure timely redress.
- Ensure adequate awareness campaigns, information disclosure and additional consultations are conducted during the project implementation.
- Periodical review of safeguards related loan covenants, and the compliance in project implementation
- Organize periodic capacity building and training programs for project staff in safeguards.
- Ensure that project activities are synchronized between the EMP implementation.
- Ensure availability of budget for safeguards activities.
- Ensuring disclosure of ESGMS, IEEs and EMPs, and monitoring documents.

179. **Contractor.** Contractor will appoint a qualified and experienced Environment, Health, and Safety (EHS) staff on full time basis for the construction works. The contractor will be required to prepare a site-specific EMP (SEMP). The contractor will bear the costs of preparing these site- specific plans included in the SEMP. The contract will not be awarded until all environmental clearances, other relevant permits have been obtained, ADB will approve the project IEEs and EMPs and corresponding project for inclusion in the bid and contract documents. The following are the key safeguards tasks for contractors:

- Submit site specific EMP for construction activities and individual sub-plans (as indicated in the EMP) to PMC
- Attend training and capacity building sessions.
- Conduct orientation and daily briefing sessions to workers on EHS.
- Ensure that appropriate worker facilities (workers accommodation / camps) are provided at the work sites in line with this ESGMS.
- Register and maintain records of all work-related accidents and undertake remedial actions to mitigate/minimize recurrence.
- Implement EMP measures and report to PMC if any new impacts are surfaced; seek guidance from PMC as required in EMP implementation.
- Conduct environmental monitoring (air, noise, etc.) as per the monitoring plan.
- Prepare monthly EMP monitoring reports and submit to PMC.
- Address any grievances effectively and in a timely manner.

180. The PMC will ensure that the contractor is aware of their obligations including specific provisions requiring contractors to comply with: (i) all applicable labour laws and core labour standards on (a) prohibition of child labour as defined in national legislation for construction and maintenance activities; construction site should not hire any child below 18 years of age; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste including no discrimination against pregnant women and (c) prohibition of forced labour; and with (ii) the requirement to disseminate information on health & safety risks due to transmittable diseases, including HIV/AIDS and COVID-19, to employees.

181. If the TNIFMC fails to comply with the loan and legal agreements on safeguards requirements, ADB will seek corrective measures and work with the TNIFMC to achieve

compliance. If TNIFMC fails to re-establish compliance, then ADB may exercise remedies, including suspension, cancellation or acceleration of maturity that are available under ADB legal agreements. Before resorting to such measures, ADB will use other available means to rectify the situation satisfactory to all parties.

### C. ESGMS Monitoring, Reporting and Disclosure

182. TNIFMC for TNSF will conduct monitoring and reporting, and public disclosure of safeguard documentation in line with the ESGMS framework and the agreed action plan. Semi-annual monitoring reports (refer Appendix 4) on ESGMS implementation and the agreed action plan will be submitted to ADB on a semi-annual basis during project implementation.

### D. EMP Implementation Cost

183. As part of good engineering practices in the project, there have been several measures such as safety, signage, dust suppression, procurement of personal protective equipment, provision of drains, etc. and the costs for which will be included in the design costs of specific projects. Therefore, these items of costs have not been included in the IEE budget.

184. Although this is a construction project, its impact on air, noise, water is minimal, the implementation of the mitigation measures and required environmental reporting and monitoring in line with the environmental monitoring plan are included within the bidding and contract documents as separate line items. An appropriate Environmental Management Budget has also been estimated to carry out the monitoring requirements.

185. The cost of water sprinkling for dust suppression and providing personal protective equipment to construction workers shall be borne by contractor as part of conditions of contract. In addition, the sources of funds for mitigation measures including monitoring during the construction stage are also to be borne by the contractor. These are deemed to be included as part of the contract price amount quoted by the contractor for the works. The EMP cost is given in Table 18.

**Table 18: Indicative EMP Budget**

| Sl.no | Particulars | Stages | Unit | Total Nos. | Rate (₹) | Amount (₹) |
|---|---|---|---|---|---|---|
| 1 | Water quality | Construction and Operation | 1 | 5 | 5000 | 25,000 |
| 2 | Orientation workshop for officials involved in the project implementation on ADB Safeguards Policy Statement and environmental assessment process and Public Awareness Programs | Workshop | Lump sump | | | 500,000 |

| Sl.no | Particulars | Stages | Unit | Total Nos. | Rate (₹) | Amount (₹) |
|---|---|---|---|---|---|---|
| 3 | Replantation and maintenance cost | | Lumpsum | | | 2,00,000 |
| 4 | Maintenance of Shrubs and Landscape Areas in Sub-Project site | Covered in operation and maintenance cost | | | | 25,000 |
| 5 | Capacity Building | Covered in operation and maintenance cost | | | | |
| | | | | | **Total** | **7,50,000** |

## X. CONCLUSION AND RECOMMENDATIONS

186. The proposed Working Women's Hostel project in Perundurai, Erode District is being developed by M/s Tamil Nadu Working Women's Hostel Corporation Limited (TNWWHCL). The project entails the construction of a G+3 floor structure on a land parcel measuring 0.25 acres, with a total built-up area of 897.40 sq. m (9,660 sq. ft). The facility will comprise 30 rooms designed to accommodate 100 beds, providing safe and affordable lodging for working women residing away from their homes.

187. The proposed project is expected to benefit working women moving from different parts of Tamil Nadu and neighbouring districts to Perundurai for employment opportunities in nearby industrial areas, educational institutions, and service sectors. By providing safe, secure, and affordable accommodation, the hostel aims to support women's economic mobility and enhance their participation in the workforce. The facility will include essential amenities such as a hygienic kitchen, common dining and recreation areas, and 24/7 security services, ensuring a comfortable and conducive living environment. Additionally, its strategic location with access to public transport, workplaces, and essential services will further contribute to improving the overall quality of life and socio-economic well-being of its residents.

188. The proposed project is unlikely to cause adverse environmental impacts. The potential impacts that are associated with design, construction, and operation can be mitigated without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures. Based on the findings of the IEE, there are no significant impacts, and the classification of the project as Category "B" is confirmed.

189. The estimated water demand of 15 KLD of water for 100 bedded units shall be supplied by the TWAD.

190. Furthermore, to mitigate the environmental impacts during the project construction, phase, the specific management measures are laid down in the EMP which will effectively address any likely environmental impacts due to the project implementation. The effective implementation of the measures proposed will be ensured by building enhanced capacity through training on environmental management. Further, the environmental monitoring plan ensures the sub project receives all the necessary permits and provides adequate opportunity towards course correction to address any residual impacts during construction or operation stages.

191. The most significant impact will be the removal of 10 trees. This will be mitigated through the suggested landscaping plan by replanting 10 trees for every tree cut. This will be done by the TNWWHCL through a landscaping plan given by the PMC.

192. The Stakeholder Consultation during the construction and operation stage will be carried out with 7-days prior notice to the stakeholders through PMC in line with the stakeholder consultation plan in Annexure 5. Additionally, the three tiered GRM structure for the sub-project site will be always displayed in front of the site, accessible to the public to raise any grievances.

193. The EMP, with an allocated budget of ₹7.5 lakhs, is scheduled to be executed collaboratively by the Tamil Nadu Working Women's Hostel Corporation Limited (TNWWHCL) in coordination with the appointed Project Management Consultant (PMC). The implementation process will be closely monitored, and comprehensive progress reports will be prepared and submitted to the Tamil Nadu Infrastructure Fund Management Corporation

(TNIFMC) through TNWWHCL, in accordance with the prescribed reporting timelines and procedural requirements.

194. The IEE carried out for the project shows that the proposed project components/ interventions will result in net environmental benefits, and that any likely environmental impact can be addressed through proper location, planning and design of the proposed project, control of construction activity and mitigation measures. The EMP provide for mitigation of all identified impacts and is reflected within the contract clauses for the environmental provisions will be part of the civil works contracts. Further, consultation on the proposed designs have been undertaken with stakeholders and no significant issues requiring in terms of environmental safeguards are known to exist at present.

195. Based on the findings of the IEE, there are no significant impacts and the classification of the project as Category “B” is confirmed. No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS (2009).

# Appendix

### Appendix 1: Rapid Environment Assessment Checklist

| | |
|---|---|
| **Country/Project Title:** | Working Women's Hostel Project, Erode |
| **Sector Division:** | Urban Development |

| Screening Questions | Yes | No | Remarks |
|---|---|---|---|
| **A. Project Siting**<br>Is the project area | | | |
| • Densely populated? | **X** | | The site is in Perundurai.<br>The project area is at present uninhabited. |
| • Heavy with development activities? | | **X** | The project location is in Perundurai and is surrounded by the Government Erode Medical College and the Kunnathur-Perundurai State Highway. |
| • Adjacent to or within any environmentally sensitive areas? | | | |
| ○ Cultural heritage site | | **X** | The nearest site of cultural importance the Muniappa Swamy Temple, which is located approximately 0.84 kms North-east from the project site. |
| ○ Protected Area | | **X** | The Vellode Bird Sanctuary is the nearest notified Eco-Sensitive Zone (ESZ) as per the Ministry of Environment, Forest, and Climate Change (MoEFCC) from the project site and is located at an approx. aerial distance of approximately 12 km south-east from the project site. |
| ○ Wetland | | **X** | There is no wetland in and around the project site |
| ○ Mangrove | | **X** | There are no mangroves around the site. |
| ○ Estuarine | | **X** | There are no estuarine areas around the site. |
| ○ Buffer zone of protected area | | **X** | The Vellode Bird Sanctuary is the nearest notified Eco-Sensitive Zone (ESZ) as per the Ministry of Environment, Forest, and Climate Change (MoEFCC) from the project site and is located at an approx. aerial distance of approximately 12 km south-east from the project site. |
| ○ Special area for protecting biodiversity | | **X** | There is no special area for protecting biodiversity in and around the area. |
| ○ Bay | | **X** | There are no coastal areas around the site. |

| **B. Potential Environmental Impacts**<br>Will the Project cause… | | | |
|---|---|---|---|
| • Impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services. | **X** | | The project shall comprise of 100 bed units of different typologies in a G+3 structure.<br>The project will generate municipal solid waste during the construction phase. The construction waste should be reused to the maximum and the excess should be disposed to through authorized vendors. |
| • Deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded and the capacities to manage these systems are overwhelmed? | | **X** | The activity is within the permissible development activity and the local area plan. |
| • Degradation of land and ecosystems (e.g., loss of wetlands and wild lands, coastal zones, watersheds and forests)? | | **X** | The project site is far from these types of ecosystems. |
| • Dislocation or involuntary resettlement of people? | | **X** | The project does not involve any dislocation or involuntary resettlement of the people. |
| • Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable group? | | **X** | The project is not located near any place of cultural importance. |
| • Degradation of cultural property, and loss of cultural heritage and tourism revenues? | | **X** | The site has been proposed to be used for residential purposes.<br>The nearest site of cultural importance is the Muniappa Swamy Temple, which is located approximately 0.84 kms North-east from the project site.<br>However, the impact of the project will not degrade the cultural property, or the loss of cultural heritage and tourism revenues. |

| | | | |
|---|---|---|---|
| • Degradation of aesthetic and property value loss? | | X | The land has 10 native trees. However, n degradation of aesthetic and property value is envisioned. |
| • Occupation of low-lying lands, floodplains and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries? | | X | The project will be used for residential purpose. |
| • water resource problems (e.g., depletion/degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters? | | X | The total water requirement for the proposed housing facility is 15 KLD. It will be sourced by TNWWHCL. As per the Groundwater Exploitation Assessment Report by Central Ground Water Board (CGWB), the project site located in Perundurai, Erode District, is classified as “Over-Exploited”. Thus, it is classified as “high risk” |
| • Air pollution due to urban emissions? | X | | This is anticipated during construction phase. The sources of air pollution will be from trucks transporting materials to the site, operation of diesel engine, and machinery use. The project should conduct regular ambient air quality monitoring tests and DG stack emission tests at the project site. |
| • Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation? | X | | This is anticipated during construction phase. Occupational health and safety hazards from construction works should be mitigated through the OHS measures, many of which are mandatory by regulation.<br>The Environmental Management Plan (EMP) of the project will provide measures to mitigate this impact. |
| • Road blocking and temporary flooding due to land excavation during rainy season? | X | | This could be anticipated during construction. Excavation works should be limited within the site boundary, so it is not expected to cause any roadblock. |
| • Noise and dust from construction activities? | X | | This is anticipated but will be temporary during construction phase and limited to the project site. The monitoring of the ambient noise levels should be performed regularly on the project site through an NABL certified third party laboratory during the construction phase. |

| | | | |
|---|---|---|---|
| • Traffic disturbances due to construction material transport and wastes? | **X** | | The (SH 196) will be utilized for the transportation of material and personnel during the construction phase. The impact on traffic disturbance will be temporary during construction phase only. During the construction activity, utmost care should be taken to control the noise levels within the standards. Negligible noise will be generated during operational phase. |
| • Temporary silt runoff due to construction? | **X** | | This is anticipated if excavation works are undertaken during the rainy season. The EMP of the project will provide measures to avoid or minimize runoff, such as for example, avoiding or minimizing heavy excavation works during monsoon season, providing silt traps or canals around the site, etc. |
| • Hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation? | | **X** | Not anticipated for this hostel construction project. |
| • Water depletion and/or degradation? | | **X** | Not anticipated. |
| • Overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization? | | **X** | The total water requirement for the proposed housing facility is 15 KLD. It will be through TWAD. As per the Groundwater Exploitation Assessment Report by Central Ground Water Board (CGWB), the project site located in Perundurai, Erode District, is classified as “Over-Exploited”. Thus, it is classified as “high risk”. |
| • Contamination of surface and ground waters due to improper waste disposal? | | **X** | The pollution preventive and control measures as mentioned in CTE and CTO will be applied and will comply with prescribed statutory norms.<br>The wastewater shall be discharged to the Septic Tank. |
| • Pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems? | | **X** | This is not anticipated. The project site is not near receiving bodies of water used for livelihood activities or drinking water supply. |
| • Large population influx during project construction and | | **X** | Temporary influx of construction workers during the construction phase will happen. Although the project may recruit migrant |

| | | | |
|---|---|---|---|
| operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)? | | | workers during the construction phase, the number will not be as many.<br>Therefore, this project will not cause significant burden to the infrastructure such as the water supply and sanitation during construction phase. During the operation phase water requirement will be sourced through TWAD. |
| • Social conflicts if workers from other regions or countries are hired? | | **X** | Not anticipated as most workers will be local. |
| • Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during operation and construction? | | **X** | The proposed project is only construction of hostel facility and there will not be any storage of hazardous chemicals (as per MSIHC rules). However, HSD might be used for DG sets and the waste/residue from the DG sets will be stored in the HDPE drums as per the hazardous guidelines. |
| • Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning? | **X** | | Anticipated during construction phase. During accidental spills if any, spill contingency plan should be adopted to prevent the release of pollutant into the environment and will be managed as per the MSIHC guidelines.<br>The study area is not much susceptible to floods, landslides, cloud bursts, and cyclones. The project site falls under the Seismic Zone-II (Low Damage Risk Zone) according to the Indian Standard Seismic Zoning Map. Therefore, suitable earthquake design will be followed. |

**Checklist for Preliminary Climate Risk Screening**

| | |
|---|---|
| **Country/Project Title** | Working Women's Hostel Project, Perundurai, Erode |

| Screening Questions | | Score | Remarks |
|---|---|---|---|
| **Location and Design of project** | Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides? | 0 | The site is not vulnerable to earthquakes, floods, landslides, cloud bursts. Further, the project does not fall in a cyclone prone zone. |
| | Would the project design (e.g., the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)? | 0 | No such effect envisaged. |
| **Materials and Maintenance** | Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life ofproject outputs (e.g. construction material)? | 0 | No such effect envisaged. |
| | Would weather, current and likely future climateconditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)? | 0 | No such effect envisaged. |
| **Performance of project outputs** | Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g.hydro-power generation facilities) throughout their design lifetime? | 0 | No such effect envisaged. |
| | **Cumulative score** | **0** | |

Options for answers and corresponding score are provided below:

| Response | Score |
|---|---|
| Not Likely | 0 |
| Likely | 1 |
| Very Likely | 2 |

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high-risk project.

**Result of Initial Screening (Low, Medium, High): Low**
**Other Comments**: Exposure of the site to climate change related hazard is medium.

## Appendix 2: Sample Grievance Form

(To be made available in Tamil)

The Proposed Inclusive, Resilient and Sustainable Housing for the Urban Poor Project welcomes complaints, suggestions, queries, and comments regarding program implementation. We encourage persons with a grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback. In case you want to include your personal details but want information to remain confidential, please type CONFIDENTIAL above your name.

| | | |
|---|---|---|
| **Date** | **Place of Registration** | |
| **Contact Information/Personal Details** | | |
| **Name:** | **Gender:** Male Female | **Age:** |
| **Home Address** | | |
| **Village/Town** | | |
| **District** | | |
| **Phone no.** | | |
| **E-mail** | | |
| **Complaint/Suggestion/Comment/Question** Please provide the details (who, what, where and how) of your Grievance below: If included as an attachment/note/letter, please mention here: | | |
| **How do you want us to reach you for feedback on your comment/grievance?** | | |

FOR OFFICIAL USE ONLY

| | | | |
|---|---|---|---|
| **Registered by:** (Name of Official registering grievance) | | | |
| **Verified through:** | Note/Letter | E-mail | Verbal/Telephonic |
| **Reviewed by:** (Names/Position of Official(s)reviewing grievance) | | | |
| **Action Taken:** | | | |
| **Whether Action Taken Disclosed:** | | Yes | No |
| **Means of Disclosure:** | | | |

## Appendix 3: Sample Environmental Site Inspection Report

Project Name: _____

Contract Number: _____

NAME: _____ DATE: _____
TITLE: _____ DMA: _____
LOCATION: _____ GROUP: _____

WEATHER
CONDITION:_____

INITIAL SITE CONDITION:_____

CONCLUDING SITE CONDITION:

Satisfactory _____Unsatisfactory _____Incident _____Resolved _____ Unresolved _____

INCIDENT:
Nature of incident:_____

Intervention Steps:_____

Incident Issues

| | | |
|---|---|---|
| Project Activity Stage | Survey | |
| | Design | |
| | Implementation | |
| | Pre-Commissioning | |
| | Guarantee Period | |

**Inspection**

| | |
|---|---|
| Emissions | Waste Minimization |
| Air Quality | Reuse and Recycling |
| Noise pollution | Dust and Litter Control |
| Hazardous Substances | Trees and Vegetation |

Site Restored to Original Condition Yes No

Signature

_____

**Sign off**

**Name** **Name**
**Position** **Position**

## Appendix 4: Semi-annual Environmental Monitoring Report Template

### Introduction

- Overall project description and objectives
- Environmental categorization of each project as per ADB Safeguard Policy Statement (SPS 2009)

### Project Safeguards Team

- Identify the role/s of Safeguards Team including schedule of on-site verification of reports submitted by consultants and contractors.

| Name | Designation/Office | Email Address | Contact Number | Roles |
|---|---|---|---|---|
| 1. PMU | | | | |
| | | | | |
| | | | | |
| | | | | |
| 2. Division | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| 3. Consultants | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

### Overall Project and Project/Package Progress and Status

- Description of Sub-projects and Indicate:
  - Status of design – preliminary design or final design,
  - Status of implementation - under bidding, contract awarded but no works yet, contract awarded with works (on-going construction), civil works completed, and/or Operation & Maintenance (O&M)

| Package Number | Project Name / List of Works | Type of Contract (specify if DBO, DB or civil works) | Status of Design (specify if Preliminary Design, Final Detailed Design | Contract Status (specify if under bidding or contract awarded) | Status of Implementation (specify if Contract awarded with works (On-going Construction), Completed Works, or O&M phase)[12] | If On-going Construction | |
|---|---|---|---|---|---|---|---|
| | | | | | | %Physical Progress | Expected Completion Date |
| | | | | | | | |
| | | | | | | | |

  - For package with "Contract Awarded", provide name/s and contact details of contractor/s' nodal person/s for environmental safeguards.

[12] If on-going construction, include %physical progress and expected date of completion.

**Package-wise Contractor/s' Nodal Persons for Environmental Safeguards**

| Package Name | IEE Cleared by ADB (provide date) | Contractor | EHS Nodal Person | Email Address | Contact Number |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

**Status of IEE per Project/Package**

- Provide status of final IEE[13] per package.

**Package-wise Implementation Status**

| Package Number | Final IEE based on Detailed Design | | | | Site-specific EMP or Construction (C-EMP) approved by Project Director?[14] (Yes/No) | Remarks |
|---|---|---|---|---|---|---|
| | Not yet due (detailed design not yet completed) | Submitted to ADB (provide date of submission) | Disclosed on project website. (provide link) | Final IEE provided to Contractor/s (Yes/No) | | |
| | | | | | | |
| | | | | | | |

**Compliance Status with National/State/Local Statutory Environmental Requirements[15]**

| Package Number | Statutory Environmental Requirements[16] | Status of Compliance (Specify if obtained, submitted and awaiting approval, application not yet submitted ) | Validity Date(s) (if already obtained) | Action Required | Specific Conditions that will require environmental monitoring as per environmental clearance, consent / permit to establish[17] |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

**Compliance Status with Environmental Loan Covenants**

| Schedule No. and Item (see Project Loan Agreement and list provisions / paragraph relevant to environmental safeguards, core labor standards, occupational EHS, community health and safety) | Covenant | Status of Compliance | Action Required |
|---|---|---|---|
| | | | |

[13] IEE prepared based on preliminary design and cleared by ADB.
[14] Works will not be allowed until C-EMP is approved by the PMU and/or Concerned division.
[15] All statutory clearance/s, no-objection certificates, permit/s, etc. should be obtained prior to award of contract/s. Attach as Appendix all clearances obtained during the reporting period. If already reported, specify in the "remarks" column.
[16] Specify statutory requirements: environmental clearance? Permit/consent to establish? Forest clearance? Workers/Labor permit, etc.
[17] Example: Environmental Clearance requires ambient air quality monitoring, Forest Clearance/Tree-cutting Permit requires 10 trees for every tree, etc.

| | | | |
|---|---|---|---|
| | | | |

**Compliance Status with the Environmental Management Plan (refer to EMP tables in approved IEE/s)**

- Confirm in IEE/s if contractors are required to submit construction EMPs (C-EMP). If not, describe the methodology of monitoring each package under implementation.

- Provide over-all compliance of the contractors with C-EMP. This should be supported by contractors' monthly monitoring reports to Salem PID Division (s) and/or verification reports of Salem PID Division (s) or project consultants. Include as an Appendix supporting documents such as **signed** monthly environmental site inspection reports prepared by consultants and/or contractors.

**Overall Compliance with C-EMP**

| Package Number | Status of C-EMP Implementation *(Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)* | Action Proposed and Additional Measures Required |
|---|---|---|
| | | |
| | | |
| | | |

- Provide description based on site observations and records:
  - Confirm if any dust was noted to escape the site boundaries and identify dust suppression techniques followed for site/s.
  - Identify muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads.
  - Identify type of erosion and sediment control measures installed on site/s, condition of erosion and sediment control measures including if these were intact following heavy rain.
  - Identify designated areas for concrete works, chemical storage, construction materials, and re-fuelling. Attach photographs of each area.
  - Confirm spill kits on site and site procedure for handling emergencies.
  - Identify any chemical stored on site and provide information on storage condition. Attach photograph.
  - Describe management of stockpiles in each work site (construction materials, excavated soils, spoils, etc.). Provide photographs.
  - Describe management of solid and liquid wastes on-site (quantity generated, transport, storage and disposal). Provide photographs.
  - Provide information on barricades, signages, and on-site boards. Provide photographs.
  - Provide information on construction / workers camp(s). Provide photographs.
  - Provide information on work-related accidents and incidents. Describe actions implemented.
  - Provide information on if there are any activities being undertaken out of working hours and how that is being managed.

- Provide list of trainings on environmental safeguards, core labor standards, and Occupational environment, health and safety conducted during the reporting period. Include ADB-organized workshop, trainings, seminars, etc)

**Trainings, Workshops and Seminars Conducted**

| Date | Topic | Conducted by | No. of Participants (Total) | No. of Participants (Female) | Remarks |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

- Provide the monitoring results as per the parameters outlined in the approved EMP (or SEMP when applicable).

**Summary of Environmental Monitoring Activities (for the Reporting Period)[18]**

| Impacts (List from EMP) | Mitigation Measures (List from EMP) | Parameters Monitored (As identified in the EMP) | Method of Monitoring (Visual, Actual Sampling, etc.) | Location of Monitoring (Provide GPS Coordinates)[19] | Date of Monitoring Conducted | Person Who Conducted the Monitoring |
|---|---|---|---|---|---|---|
| **Design Phase** | | | | | | |
| | | | | | | |
| | | | | | | |
| **Pre-Construction Phase** | | | | | | |
| | | | | | | |
| | | | | | | |
| **Construction Phase** | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| **Operational Phase** | | | | | | |
| | | | | | | |
| | | | | | | |

**Monitoring of Environmental Impacts on Project Surroundings**

- Confirm records of pre-work condition of roads, agricultural land or other infrastructure prior to starting to transport materials and construction.

| Package Number | Status of Pre-Work Conditions (Recorded / Not Recorded) | Baseline Environmental Conditions (air, water, noise) documented. (Yes / No) | Action Proposed and Additional Measures Required |
|---|---|---|---|
| | | | |
| | | | |

[18] Attach Laboratory Results and Sampling Map/Locations
[19] If GPS coordinate is not available, provide landmark(s) and/or chainage.

- Provide information on monitoring activities conducted during reporting period. If not conducted, provide justification. Compare results with baseline and internationally recognized standards.[20]

**Air Quality Monitoring Results**

| Site No. | Date of Testing | Site Location (Provide GPS Coordinates)[21] | Parameters (as required by statutory clearances or as mentioned in the IEE) | | | Remarks |
|---|---|---|---|---|---|---|
| | | | $PM_{10}$ $\mu g/m^3$ | $SO_2$ $\mu g/m^3$ | $NO_2$ $\mu g/m^3$ | |
| | | | | | | |
| | | | | | | |

**Water Quality Monitoring Results**

| Site No. | Date of Sampling | Site Location | Parameters (as required by statutory clearances or as mentioned in the IEE) | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | | | pH | Conductivity µS/cm | BOD mg/L | TSS mg/L | TN mg/L | TP mg/L | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**Noise Quality Monitoring Results**

| Site No. | Date of Testing | Site Location | $LA_{eq}$ (dBA) (as required by statutory clearances or as mentioned in the IEE) | | Remarks |
|---|---|---|---|---|---|
| | | | Day Time | Night Time | |
| | | | | | |
| | | | | | |

**Information Disclosure, Participation and Consultations**

- Confirm PMU/ Division/contractors provide project-related information to stakeholders, communities and/or affected people before and during construction works.[22]
- Provide information on consultations conducted during reporting period such dates, topics discussed, type of consultation, issues/concerns raised, safeguards team member present. Attach minutes of meetings (ensure English translation is provided), attendance sheet, and photos.

| Date of Consultation | Location | Number of Participants (specify total, male and female) | Issues/Concerns Raised | Response to issues/concerns |
|---|---|---|---|---|
| | | | | |

[20] ADB Safeguard Policy Statement (SPS) Appendix 1, para 33: During the design, construction, and operation of the project the borrower/client will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety Guidelines. These standards contain performance levels and measures that are normally acceptable and applicable to projects. When host country regulations differ from these levels and measures, the borrower/client will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in the SPS.

[21] If GPS coordinate is not available, provide landmark(s) and/or chainage.

[22] Check EMP requirement on information disclosure. At a minimum, concerned division through the contractor should notify communities/affected persons/sensitive receptors 7 days and again 1 day before start of works.

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**Grievance Redressal Mechanism**

- **Grievance Redressal Mechanism.** Provide information on establishment of grievance redressal mechanism and capacity of grievance redressal committee to address project-related issues/complaints. Include as an Appendix Notification of the GRM (package-wise if applicable).
- **Complaints Received during the Reporting Period.** Provide information on number, nature, and resolution of complaints received during reporting period. Attach records as per GRM in the approved IEE. Identify safeguards team member/s involved in the GRM process. Attach minutes of meetings (ensure English translation is provided).

**Summary of Key issues/concerns identified during the Reporting Period and Remedial Actions**

- Provide corrective action plan which should include all issues/concerns, actions required to be implemented, responsible entities, and target dates.

**Status of Corrective Actions from Previous Monitoring Report(S)**

- Provide information on corrective actions to be implemented as reported in the previous Monitoring Report(s). Include status of implementation of feedback/comments/suggestions as provided by ADB, if any.

**Corrective Action Plan Status**

| Issues/Concerns | Corrective Action | Status | Remarks |
|---|---|---|---|
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**Appendices**

- Photos
- Records of consultations
- Copies of environmental clearances and permits (if not provided in the previous Monitoring Report
- Environmental site inspection report (if not provided in the previous Monitoring Report
- Other

## Appendix 5: Stakeholder Engagement Plan

Overview

The active participation of stakeholder's engagement plan in all stages of project preparation and implementation is essential for successful implementation of the project. It ensures that the projects are designed, constructed, and operated with utmost consideration to local needs, ensures community acceptance, and will bring maximum benefits to the people. Public consultation and information disclosure.

What is stakeholder engagement analysis

- Stakeholder analysis refers to endeavors to identify, understand, and prioritize the various parties involved in a project.
- In a nutshell, stakeholder analysis is a systematic process of mapping out the key individuals, groups, or organizations who have a vested interest in a project, assessing their needs and expectations, and determining the best strategies for managing relationships and communication with them.
- In project management, stakeholder analysis and management are critical as the landscape is often fast paced, highly competitive, and involves diverse interests. Engaging with stakeholders in a thoughtful way enables you to gain valuable insights and feedback to shape your product, build a strong ecosystem around it, and, ultimately, deliver a successful, high-impact product that meets the needs of all parties involved.

How to conduct a stakeholder Analysis

- Project managers, you are obsessing over your customers and will understand their needs well. However, there may be other stakeholders beyond your customers who need to be factored into the product design too.
- The number and range of people involved with your product will vary depending on your organization's unique goals and requirements, but the general steps involved in conducting a stakeholder analysis are as follows:
- Identify stakeholders — List all potential stakeholders, including customers, employees, investors, partners, regulators, and more. Consider everyone who has an interest in the product.
- Prioritize stakeholder needs and expectations — Assess the impact of each stakeholder on the product, as well as their level of influence over its success. Consider factors such as their potential contribution, their ability to affect the outcome, and their importance in achieving project goals.
- Analyse stakeholder relationships — Understand the relationships between different stakeholders and identify any potential conflicts or synergies. This can help in developing strategies to manage their expectations and foster collaboration.
- Develop communication and engagement strategies — Based on the priorities and relationships identified, create tailored communication and engagement plans for each stakeholder group. This includes determining the most appropriate channels, frequency, and type of interaction.
- Monitor and adjust — Regularly review and update the stakeholder analysis, as relationships, priorities, and project requirements may change over time. Adapt communication and engagement strategies accordingly to maintain strong relationships.

Managing stakeholder relationship post analysis

Once you have conducted a comprehensive stakeholder analysis, it's important to keep the momentum going and continue to manage stakeholder relationships effectively throughout the projt development process.

Here are some additional steps to follow you've conducted your stakeholder analysis:

- Document stakeholder information — Maintain a detailed record of stakeholder information, including their roles, responsibilities, and contact details. This documentation will be helpful in keeping track of communications and ensuring that all relevant parties are informed and engaged.
- Establish clear communication channels — Ensure that all stakeholders are aware of the communication channels being used and the expected response times. This will help in streamlining communication and reducing potential misunderstandings or delays.
- Involve stakeholders in decision-making — Engage stakeholders in the decision-making process, especially when their input or expertise is crucial. This not only strengthens relationships but also improves the overall quality of the product by incorporating diverse perspectives.
- Measure and evaluate stakeholder satisfaction — Regularly assess stakeholder satisfaction to identify areas for improvement and address any concerns. This can be done through surveys, interviews, or informal feedback sessions.
- Recognize and celebrate success — Acknowledge the contributions of stakeholders and celebrate the successful completion of milestones or project phases. This fosters a positive atmosphere and encourages stakeholders to continue supporting the product.

By diligently following these steps and continually managing stakeholder relationships, product managers can ensure that they are working effectively with all stakeholders, ultimately leading to the successful development and the product.