

Environmental monitoring result to be reported to JICA (construction phase)

PACKAGE J3

Site Environmental Compliance Inspection and Monitoring Form

Project : North-South Expressway Construction Project (Ben Luc-Long Thanh) : Vietnam Expressway Corporation (VEC)
Section and Location : Package J3 : Supervision Consultant : KEI-NE-OCG-TEDI
Date : April 2018 : Contractor(s) for Reporting : SMCC – CIENCO 04 JO
Reporting Period : 1st Quarter of 2018 : Monitoring Agency : CEECO - TRECO JO

1. Mitigation Compliance Inspection

| Mitigation Measure | Mitigations Implemented (Yes, No) | Mitigations Effective? (1 to 5)* | Current situation | Action required | Contractor's action taken |
|---|-----------------------------------|----------------------------------|-------------------|-----------------|---------------------------|
| 1. Completion of detailed design in accordance with EMP requirements | Yes | 1 | 1 | None | None |
| 2. Preparation of tender document included detailed requirements in pollution control and protection of natural ecosystems. | Yes | 1 | 1 | None | None |
| 3. Proper preparation of CEMP by contractors | Yes | 1 | 1 | None | None |
| 4. Evidence of marking of work site boundaries | Yes | 1 | 1 | None | None |
| 5. No cutting trees outside the project ROW | Yes | 1 | 1 | None | None |
| 6. Replanting vegetation damaged by site clearance | Not yet implemented | - | - | None | None |
| 7. No dumping of all kinds of wastes and cut trees in rivers, canals, ponds and field | Yes | 2 | 2 | None | None |
| 8. General site condition and cleanliness | Yes | 1 | 1 | None | None |
| 9. Covering of all trucks moving to and from site | Yes | 2 | 2 | None | None |
| 10. Watering road, construction site on rainless day | Yes | 2 | 2 | None | None |
| 11. Registration papers and compliance certificates of construction vehicles with Vietnam Register Authority of Police approved environmental emissions standards | Yes | 2 | 2 | None | None |

| | | | | | |
|--|--|---|---|------|------|
| 12. Installation of temporary waste storage areas at each construction site including segregation of hazardous and non-hazardous wastes. | Yes | 2 | 2 | None | None |
| 13. Sanitation conditions at construction worker camps, included sewage treatment facilities (toilets), domestic solid wastes management, house keeping etc. | Yes | 1 | 1 | None | None |
| 14. Clean water and safe food supply for workers | Yes | 2 | 2 | None | None |
| 15. Requirements for vegetation waste (cut trees) burning met | Yes | 2 | 2 | None | None |
| 16. Proper organization of material transport to minimize environmental pollution and community disturbance | Yes | 2 | 2 | None | None |
| 17. Condition and effectiveness of erosion controls | Yes | 2 | 2 | None | None |
| 18. Condition and effectiveness of construction waste management | Yes | 2 | 2 | None | None |
| 19. Evidence of soil and/or water acidification due to leakage of acidic water from construction site to surrounding field, canals | Not | 1 | 1 | None | None |
| 20. Evidence of direct or indirect disturbance of mangroves and other vegetation outside defined worksite boundaries | Not occurred | 1 | 1 | None | None |
| 21. Stabilization, rehabilitation and landscaping of all land surfaces affected by construction activities | Yes | 2 | 2 | None | None |
| 22. Installation of noise and dust control walls | Yes | 1 | 1 | None | None |
| 23. Dust generation during windy conditions | Yes | 1 | 1 | None | None |
| 24. Number and type of community complaints on environmental issues received | No community complaints on environmental issues received | 1 | 1 | None | None |
| 25. Mangrove replanting for compensation of mangrove area lost by the project at the Thi Vai river, Long Tau and Soai Rap river banks | Not yet implemented | - | - | None | None |

* Mitigation Effectiveness Rating Criteria (Indicative examples)

Very Good (all required mitigations implemented)
Good (the majority of required mitigations implemented)
Fair (some mitigations implemented)
Poor (few mitigations implemented)
Very Poor (very few mitigations implemented)

2. Ambient air monitoring

| Parameter | Result ^{*1} ($\mu\text{g}/\text{m}^3$) | Countries standards ^{*2} ($\mu\text{g}/\text{m}^3$) | Reference Standard ^{*3} ($\mu\text{g}/\text{m}^3$) | Baseline ^{*4} ($\mu\text{g}/\text{m}^3$) | Action required (Y/N) | Contractor's action taken | Date/ Location ^{*5} |
|-----------------|--|---|--|--|-----------------------|---------------------------|--|
| TSP | 62(KK1) 256(KK2) | 300 | - | 87-269 | No | None | Date: 05 th -06 th March 2018 Location: KK1: Residential area at Binh Khanh commune, Can Gio district, HCM (Near Pier P1) KK2: Concrete batching plant area, Nhon Trach district, Dong Nai province KK3: Residential area at Binh Khanh commune, Can Gio district, HCM (near Rung Sac st, endpoint of pk J2). KK4: Residential area at Phuoc Khanh commune, Nhon Trach district, Dong Nai (Near Pier P24) |
| PM10 | 12(KK1) 117(KK4) | 150* | 150* | 18-127 | No | None | |
| CO | 1040(KK1) 6230(KK2) | 30,000 | - | 810-3540 | No | None | |
| NO _x | 21(KK1) 81(KK4) | 200 | 200 | 17-62 | No | None | |
| SO ₂ | 25(KK1) 89(KK4) | 350 | N/A | 28-73 | No | None | |

*1 The monitoring results of all monitoring points shall be attached to this form every time.

*2 National Technical Regulation for TSP and ambient air quality QCVN 05:2013/BTNMT, 1h average, except *PM10, 24h average.

*3 Reference Standard is WB/FC (WHO) guideline for ambient air quality.

*4 The Baseline data is the measured data in 2015 (dry season).

*5 The location of the monitoring points shall be attached to this form.

3. Noise and vibration

| Parameter | Unit | Result | Country standards ^{*2} | Reference Standard | Baseline ^{*4} | Action required (Y/N) | Contractor's action taken | Date/ Location ^{*5} |
|-------------|------------|---------------------|---------------------------------|--------------------|------------------------|-----------------------|---------------------------|--|
| Noise (Leq) | 6:00-21:00 | 43.1(KK1) 67.5(KK2) | 70 | 70 | 45.0-67.9 | No | None | Date: 05 th -06 th March 2018 Location: KK1: Residential area at Binh Khanh commune, Can Gio district, HCM (Near Pier P1) KK2: Concrete batching plant area, Nhon Trach district, Dong Nai province KK3: Residential area at Binh Khanh commune, Can Gio district, HCM (near Rung Sac st, endpoint of pk J2). KK4: Residential area at Phuoc Khanh commune, Nhon Trach district, Dong Nai (Near Pier P24) |
| | 21:00-6:00 | 42.5(KK1) 54.7(KK2) | 55 | 70 | 44.4-52.8 | No | None | |
| Vibration | 6:00-21:00 | 40.1(KK4) 56.7(KK2) | 75 | N/A | 38.4-51.3 | No | None | |
| | 21:00-6:00 | 37.8(KK4) 45.4(KK2) | Baseline Level | N/A | 35.4-45.7 | No | None | |

*1 The monitoring results of all monitoring points shall be attached.

*2 Noise: National Technical Regulation QCVN 26:2010/BTNMT, Vibration: National Technical Regulation QCVN 27:2010/BTNMT

*3 Reference Standard is WB/FC (WHO) guideline for noise.

*4 The Baseline data is the measured data in 2014 (dry season).

*5 The location of the monitoring points shall be attached to this form.

4. Surface water quality

| Parameter | Result ¹ (mg/L) | | Reference Standard ³ (mg/L) | Baseline ⁴ (mg/L) | Action required (Y/N) | Contractor's action taken | Date/ Location ⁵ |
|---------------------------------|-------------------------------|--------------|--|---------------------------------|-----------------------------|------------------------------|--|
| | B1 | B2 | | | | | |
| pH | 6.94(NM3-2) | 7.84(NM1-1) | 6.5-8.5 | 6.65-6.78 | No | None | Date: 05 th -06 th March 2018 Location: NM1: Long Tau river (upstream) NM2: Long Tau river (downstream) NM3: Canal at the site in Binh Khanh commune, Can Gio district, HCM city (near Pipe Culvert No.2) NM4: Canal at the site in Phuoc Khanh commune, Nhon Trach district, Dong Nai (near Pipe Culvert No.4) |
| SS | 11(NM4-1) | 54(NM1-2) | - | 20-68 | No | None | |
| BOD | 8(NM4-1) | 14(NM1-2) | 5 | 4-13 | No | None | |
| COD | 17(NM4-1) | 25(NM1-2) | - | 7-25 | No | None | |
| NO ₂ -N | 0 | 0 | - | 0.012-0.024 | No | None | |
| NO ₃ -N | 0.227(NM2-1) | 0.741(NM1-1) | - | 0.056-0.921 | No | None | |
| NH ₄ ⁺ -N | 0.125(NM2-1) | 0.256(NM3-1) | - | 0.047-0.095 | No | None | |
| PO ₄ ³ -P | 0.015(NM4-1) | 0.039(NM3-2) | - | 0.015-0.024 | No | None | |
| Turbidity | 13.6(NM4-1) | 47.5(NM3-2) | - | 15.9-85.1 | No | None | |
| Oil & grease | 0.18(NM4-1) | 0.36(NM2-2) | - | 0.00-0.08 | No | None | |
| Coliform | 93(NM3-1) | 750(NM2-2) | - | 4-70 | No | None | |

*1 Please attach the list of results of all monitoring points.

*2 National Technical Regulation for surface water quality QCVN 08MT:2015/BTNMT. ** Unit: N/A for pH, MPN/100ML for coliforms

*3 Japan Standards for river water quality (Class C)

*4 The Baseline data is the measured data in 2014 (dry season).

*5 The location of the monitoring points shall be attached to this form.

5. Groundwater quality

| Parameter | Result (mg/L) ^{*1} | | Reference Standard ³ (mg/L) | Baseline ⁴ (mg/L) | Action required (Y/N) | Contractor's action taken | Date/ Location ⁵ |
|---------------------------------|--------------------------------|-------|--|---------------------------------|---|------------------------------|---|
| | B1 | B2 | | | | | |
| pH | 5.63 | 5.24 | - | 3.30-4.15 | The baseline values did not meet the standard | None | Date: 06th March 2018 Location: At Concrete batching plant (Nhon Trach - Dong Nai), near Pier P17 |
| COD | 1.21 | 1.15 | - | 1.2-1.4 | No | None | |
| TDS | - | - | - | - | No | None | |
| NH ₄ ⁺ -N | 0.046 | 0.042 | - | 0.049-0.057 | No | None | |
| NO ₂ -N | - | - | - | 0 | No | None | |
| NO ₃ -N | 2.63 | 2.15 | - | 0.051-0.083 | No | None | |
| PO4 | - | - | - | - | No | None | |
| Fe | 6.47 | 7.15 | - | 15.1-23.9 | No | None | |
| Al | 0.032 | 0.023 | - | 0.058-0.062 | No | None | |
| As | 0.009 | 0.008 | - | 0.026-0.037 | No | None | |
| Mn | 1.62 | 1.58 | - | 6.65-7.61 | No | None | |

| | | | | | | | | |
|----------|-------|-------|-----|---|-------------|----|------|------|
| Zn | 0.081 | 0.043 | 3 | - | 0.593-0.601 | No | None | None |
| EC | 2654 | 2537 | - | - | 3570-3650 | No | None | None |
| Hardness | - | - | 500 | - | - | No | None | None |
| oil | 0 | 0 | - | - | 0 | No | None | None |
| E. Coli | 0 | 0 | 0 | - | 0 | No | None | None |

*1 Please attach the list of results of all monitoring points

*2 National Technical Regulation for surface water quality QCVN 09MT:2015/BTNMT. ** Unit: N/A for pH, MPN/100ML for coliforms

*3 Japan Ground Water Environmental Standard (1999) as a specified Reference Standard is not available.

*4 The Baseline data is the measured data in 2014 (dry season).

*5 The location of the monitoring points shall be attached to this form.

6. Waste Water

| Parameter | Result (mg/L)*1 | Limited values ² (mg/L)** | | Reference Standard ³ (mg/L) | Baseline ⁴ (mg/L) | Action required (Y/N) | Contractor's action taken | Date/ Location ⁵ |
|--------------------|-----------------|--------------------------------------|-----------------|--|------------------------------|-----------------------|---------------------------|---|
| | | domestic | Industrial | | | | | |
| pH | 7.01(NT4) | 5-9 | 5.5-9 | - | - | No | None | Date: 06th March 2018 |
| BOD | 21(NT2) | 50 | 50 | - | - | No | None | NT1: Worker camp (Can Gio side) |
| TSS | 29(NT2) | 100 | - | - | - | No | None | NT2: Clarifier outlet of concrete batching plant (Nhon Trach side and Can Gio side) |
| TDS | - | 1000 | - | - | - | No | None | NT3: Office and staff accommodation (Nhon Trach side) |
| H ₂ S | - | - | Not malodourous | - | - | No | None | NT4: Worker camp (Nhon Trach side) |
| NH ₃ -N | 1.48(NT2) | 10 | 10 | - | - | No | None | |
| NO ₃ -N | - | 50 | - | - | - | No | None | |
| PO ₄ -P | - | 10 | - | - | - | No | None | |
| Oil & Grease | 0.57(NT2) | - | - | - | - | No | None | |
| T. Coliform | 20(NT2) | 5000 | 5000 | - | - | No | None | |

*1 Please attach the list of results of monitoring sites;

A. at construction site; at least 01 ample at discharging point of each concrete batching plant,

B. Workers camp; at least 01 sample at discharging point of septic tank of each workers camp

*2 National Technical Regulation on domestic waste water QCVN 14:2008/BTNMT. National Technical Regulation on industrial waste water QCVN 24:2009/BTNMT.

** Unit: N/A for pH, MPN/100ML for coliforms

*3 Japan Ground Water Environmental Standard (1999) as a specified Reference Standard is not available.

*4 The Baseline data is the measured data in 2014 (dry season).

*5 The location of the monitoring points shall be attached to this form.

7. Waste

| Monitoring Item | Monitoring Results during Reporting Period | | Disposal Method |
|-----------------------|--|---------------------------|--|
| | Creating volume (kg/week) | Collecting Proportion (%) | |
| Domestic waste | | | |
| Organic component | 75 | 100% | - Covered containers |
| Inorganic Component | 37.5 | 100% | - Separated storage area - Contracting with functional unit |

| | | | | |
|------------------------------------|------|------|------------------------|---|
| Reusable Component | 62.5 | 30% | Separated storage area | - Concrete wasted from batching plant is used for surface levelling. - Steel is just recycled partially, the rest will be given to demanding units |
| Hazardous waste | | | | |
| Oily waste | 2.5 | 100% | Separated storage area | Not yet |
| Asbestos waste | 0 | 0% | | |
| Waste contaminated by heavy metals | 0 | 0% | | |

*Solid and hazardous wastes disposal monitoring will be carried out at all work sites.

8. Environmental Incidents During Reporting Period (if relevant)

| Environmental Incidents (accidents, spills, complaint) | Date / Location | Reported by | Description | Action Taken | Further Action Required |
|--|-----------------|-------------|-------------|--------------|-------------------------|
| Accidents | NONE | | | | |
| Oil/Chemical spills | NONE | | | | |
| People Complaint | NONE | | | | |

9. Natural environment monitoring: Will be implemented by EEMC

| Aquatic Organism Monitoring | Site 1 | Site 2 | Site 3 | Site 4 | Assessment | Action Taken |
|--|-------------------------------|---------------------------------|-------------------------------|---------------------------------|------------|--------------|
| Aquatic organism | | | | | | |
| Location | Long Tau Upstream (GIS point) | Long Tau Downstream (GIS point) | Soai Rap upstream (GIS point) | Soai Rap downstream (GIS point) | | |
| Frequency | annually | | | | | |
| Species composition | | | | | | |
| Density and Bio- indexes of planktons, Benthos | | | | | | |
| Density of predominant species (individuals/m ²) | | | | | | |
| Species diversity measured by Shannon Weaver index | | | | | | |

10. Natural environment monitoring (Mangrove)*: Will be implemented by EEMC

| Mangroves and Wild terrestrial animals Monitoring | Site 1 | Site 2 | Assessment | Action Taken |
|---|--------|--------|------------|--------------|
| Mangroves Monitoring | | | | |

| | | | |
|--|---|---|--|
| Location | Phuoc Khanh commune (Can Gio district) annually | Thi Vai river bank (Dong Nai province) annually | |
| Frequency | | | |
| Date | | | |
| Total area (ha) of reforestation | | | |
| Biomass of mangroves (kg/m ²) | | | |
| Density of predominant species (individuals/m ²) | | | |
| Species diversity measured by Shannon Weaver index | | | |
| Average height and stem diameter | | | |
| Wild terrestrial animals (species composition and density) | | | |
| Aquatic organisms (planktons, fish; species composition, density and Bioindexes) | | | |

* In case there is any report of monitoring result which covers all monitoring parameters shown above, it is acceptable to attach the report to this form instead of filling this table.

Signature

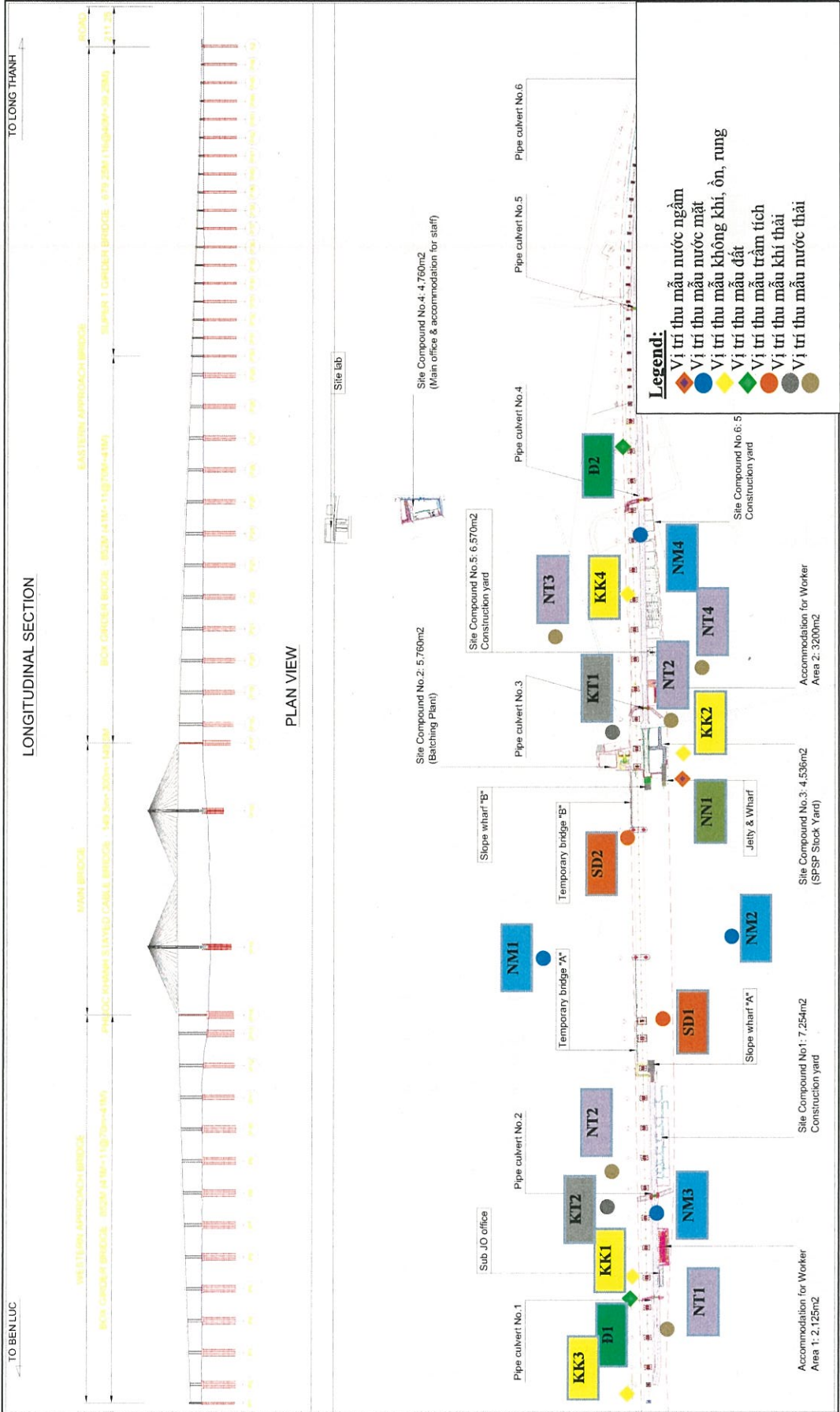


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NGUYEN QUOC LUAN

Attachment:

1. Location of sampling points
2. Pictures captioned on construction site



Location map of sampling points

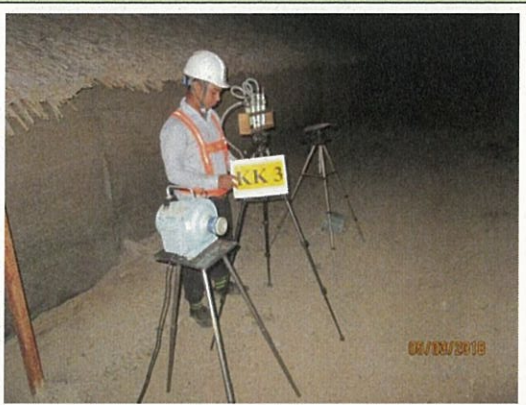
Ambient air, noise & vibration monitoring / Quan trắc không khí, tiếng ồn, độ rung



Location KK1 – day & night / Vị trí KK1 – ngày và đêm



Location KK2 – day & night / Vị trí KK2 – ngày và đêm



Location KK3 – day & night / Vị trí KK3 – ngày và đêm



Location KK4 – day & night / Vị trí KK4 – ngày và đêm

Surface water sampling / Lấy mẫu nước mặt



Location NM1 / vị trí NM1



Location NM2 / vị trí NM2



Location NM3 / vị trí NM3



Location NM4 / vị trí NM4

Ground water and sediment sampling / Lấy mẫu nước ngầm và trầm tích



Location NN1 / vị trí NN1



Location NN2 / vị trí NN2

Soil sampling / Lấy mẫu đất



Location Đ1 / Vị trí Đ1



Location Đ2 / Vị trí Đ2

Wastewater sampling/ Lấy mẫu nước thải



Location NT1 / vị trí NT1



Location NT2 / vị trí NT2

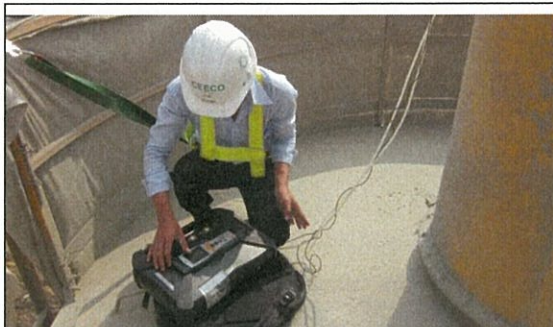


Location NT3 / vị trí NT3

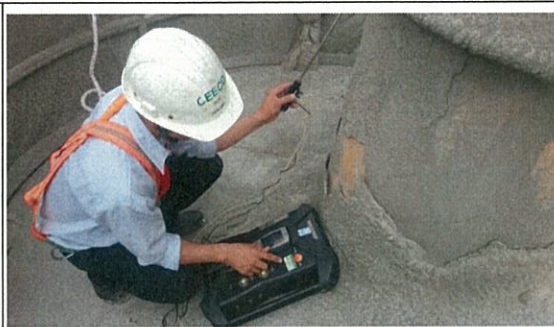


Location NT4 / vị trí NT4

Emissions measurement / Đo mẫu khí thải



Location KT1 / Vị trí KT1



Location KT2 / Vị trí KT2