REFERENCES: Sax and Lewis, *Dangerous Properties of Industrial Materials*, seventh edition, Van Nostrand Reinhold Co., N.Y., 1989.

: MSDS (From Mallinckrodt Baker, Inc.) MSDS Number : S8234

MATERIAL SAFETY DATA SHEET (MSDS)

Ferric Chloride ($FeCl_3$)

Pencco
Customer Service 800-864-1742
FAX 888-273-6226

Material Safety Data Sheet (MSDS)
Ferric Chloride Solution

SECTION 1 – CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Ferric Chloride Solution **Chemical Family:** Inorganic Iron Salts
Product Use: Water Treatment Chemical **CAS #:** 7705-08-0
Product Formula: $FeCl_3$

Manufacturer's Name: Pencco, Inc.
Manufacturer's Address: P.O. Box 600, San Felipe, TX 77473
Emergency Phone Number: PENCCO (979) 885-005
CHEMTREC (800) 424-9300 – 24 hours a day

Revision Date: February 4 2014

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS #	Weight Percentage	ACGIH TLV	OSHA PEL	STEL
Water	7732-18-5	58 – 72%	N/A	N/A	N/A
Ferric Chloride	7705-08-0	28 – 42%	1 mg/m^3	1 mg/m^3	N/A
Ferrous Chloride	7758-94-3	<0.5%	1 mg/m^3	1 mg/m^3	N/A
Hydrochloric Acid	7647-01-0	<0.5%	5 ppm	5 ppm	N/A

Section 313 Supplier Notification: The hydrochloric acid mentioned above is subject to the reporting requirements of SARA TITLE III Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). This notification must be included in all MSDS's that are copied and distributed for this material.

SECTION 3 – HAZARD IDENTIFICATION

Appearance and Odor: Reddish-brown liquid with a slightly acidic odor.
Emergency Overview: A corrosive chemical. Harmful or fatal if swallowed. Harmful if inhaled. Eye or skin contact may cause irritation. Contact with liquid or vapor form of this chemical may cause severe injury or death. Avoid overexposure.
Fire and Explosion Hazards: Substance itself does not burn, but may decompose upon heating to produce corrosive and/or toxic fumes, such as hydrogen chloride and phosgene gas. Ferric chloride can react with metals to form flammable and potentially explosive hydrogen gas.
Carcinogenicity: None of the components of this material are listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.

Summary of Acute Health Hazards
Ingestion – Toxic by ingestion. May cause irritation to the mouth and stomach. Higher doses may lead to abnormal liver function with nausea or vomiting, stomach pain, diarrhea, fast and weak pulse, lethargy, pallor, shock, hypertension, dilated pupils, fever, coma and even death.

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Individuals with pre-existing liver diseases may have increased susceptibility to the toxicity of exposure.
Inhalation – May cause irritation of the upper respiratory tract, resulting in difficulty breathing.
Skin Contact – Irritation and possibly burns.
Eye Contact – Irritation and possibly burns.

SECTION 4 – FIRST AID MEASURES

Eye Contact First Aid: Immediately flush eyes for 15 minutes with large amounts of water while holding eyelids apart. Washing within one minute is essential to achieve maximum effectiveness. Obtain medical attention IMMEDIATELY after flushing.

Skin Contact First Aid: Flush skin with water. Remove contaminated clothing; wash before reuse. If irritation is still present, seek medical attention IMMEDIATELY.

Inhalation First Aid: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Obtain medical attention IMMEDIATELY.

Ingestion First Aid: DO NOT INDUCE VOMITING. Give 1 or 2 glasses of water or milk. Never give anything by mouth to an unconscious individual. Obtain medical attention IMMEDIATELY.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point: Not applicable.

Upper/Lower Explosion Limits in Air: Not applicable.

Auto Ignition Temperature: Not applicable.

Extinguishing Media: Will not burn; use materials appropriate for surrounding fire.

Fire and Explosion Hazards: Substance itself does not burn, but may decompose upon heating to produce corrosive and/or toxic fumes, such as hydrogen chloride and phosgene gas. Ferric chloride can react with metals to form flammable and potentially explosive hydrogen gas.

Fire Fighting Instructions: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face-piece operated in a positive pressure mode. Move exposed containers from fire area if it can be done without risk. Use water to keep fire-exposed containers and tanks cool.

Hazardous Product of Decomposition or Combustion: Hydrogen chloride, hydrogen, phosgene.

	NFPA Rating	HMIS Rating	4 = Extreme / Severe
Health	2	2	3 = High / Serious
Reactivity	0	0	2 = Moderate
Flammability	0	0	1 = Slight

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Review safety precautions before proceeding with cleanup. Use appropriate personal protection equipment. Do not touch spilled material. Neutralize spill with lime (calcium hydroxide), limestone (calcium carbonate), or soda ash (sodium carbonate). Restrict access to area until completion of clean up.

Caution: limestone and soda ash will evolve CO2; ventilation should be provided in enclosed areas. Dike area around spill to prevent spreading, and use absorbent material to pick up spill.

CERCLA Reportable Discharge (RQ): 1000 lbs. (454 kg), Based on anhydrous ferric chloride. Divide by solution concentration to obtain solution weight.

Disposal: Under the Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine whether a substance should be classified as a hazardous waste at the time of disposal. This is due to the fact that product use, transformation, synthesis, mixtures, etc. may change the nature of the product. Dispose of waste in accordance with applicable federal, state, and local laws.

RCRA: Test waste material for corrosivity, DOO2, prior to disposal.

Steps To Be Taken In Case Material Is Released Or Spilled: Notify the appropriate environmental authorities. Note that spills may need to be reported to the National Response Center ((800) 424-8802)

SECTION 7 – HANDLING AND STORAGE

Handing: Store and handle in corrosion-proof materials (and area). Use FRP or PVC pipes. Be cautious of substance residue in empty containers. Act according to precautions and warnings set forth.

Storage: Store in a tightly closed container. Do not store in metal containers. Fiberglass, plastic, or rubber-lined tanks may be used for storage. Protect from damage and keep separated from incompatible substances.

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

Respiratory Protection: Adequate general ventilation should be provided to keep vapor and mists below exposure limits. The exposure limits for some components are listed in Section 2. Wear a NIOSH/OSHA approved respirator with a dust/mist cartridge if there is potential of exposure to mists in excess of applicable limits, in any situation where product vapor or mists may be present, such as in confined spaces.

Eye Protection: Wear splash resistant goggles and/or safety glasses with side shields. Wear a full face shield if possibility of material splashing or spraying exists. Maintain eye wash fountain. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

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Skin Protection: Where there is possibility of skin contact, use the following as appropriate, to avoid skin contact: gloves impervious to material, apron, boots, hood, pants, and jacket. Maintain a safety shower with quick opening valves. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	**106°C (223°F)**	**pH:**	**< 2.0**
Melting Point:	**N/A**	**Solubility in Water:**	**Complete**
Specific Gravity:	**1.2 – 1.6**	**Vapor Pressure:**	**40 mm Hg @ 20°C**
% Volatile:	**60 – 75 (Water)**	**Evaporation Rate:**	**N/A**
Vapor Density (Air = 1):	**N/A**	**Molecular Weight:**	**162.2**
Appearance:	**Red/Brown Colored Liquid**	**Odor:**	**Slightly acrid**

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable at normal conditions
Polymerization: Will not occur.
Decomposition: Decomposes upon heating to produce corrosive and/or toxic fumes, such as hydrogen chloride. Contact with metals may evolve flammable hydrogen gas.
Incompatibility: Rapidly corrodes most metals (titanium is one exception); may generate flammable, potentially explosive hydrogen gas. Avoid contact with nylon, aluminum/aluminum alloys, carbon steel, stainless steel, and copper / copper alloys. Metals, bases, halocarbons, acids, and combustible materials can be considered incompatible.

SECTION 11 – TOXOLOGICAL INFORMATION

Chronic Effects: Repeated dosage may cause hemosiderosis, including possible damage to liver and pancreas.
Toxicological Data: Anhydrous Ferric Chloride Solid Oral LD_{50} (rat) = 450 mg/kg
Carcinogenicity: None of the components of this material are listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.
Reproductive Effects: TDLo Rat 1 day (intratesticular) 12976 $\mu g/kg$; TDLo Rat 1 day (intravaginal) 29 mg/kg pre pregnancy continuous.
Target Organs: No data available.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicological Information: TLm Daphnia 15 ppm/96 hr fresh water/ conditions of bioassay not specified.
Persistence and Degradation: No data available

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SECTION 13 – DISPOSAL CONSIDERATIONS

Under the Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine whether a substance should be classified as a hazardous waste at the time of disposal. This is due to the fact that product use, transformation, synthesis, mixtures, etc. may change the nature of the product. Product containers should be thoroughly emptied before disposal. Dispose of waste in accordance with applicable federal, state, and local laws.

SECTION 14 – TRANSPORTATION INFORMATION

DOT Shipping Name: Ferric Chloride Solution
Hazard Class: 8 – Corrosive Material
UN Number: UN 2582
Packing Group: III
Reportable Quantity: 1000 lbs (454 kg)
Shipping Containers: Rubber-lined steel tank cars/trucks; polyethylene drums, bottles
Storage Conditions: Keep containers closed

SECTION 15 – REGULATORY INFORMATION

OSHA: Hazardous Corrosive Liquid – 29 CFR 1920.1200
OSHA Process Safety (29 CFR 1910.119): No

CERCLA: Hazardous Substance – Reportable Quantity (RQ) = 1000 lbs (454 kg)

SARA Regulations: 313 and 40 CFR 372: No
SARA Hazard Categories, SARA Sections 311/312 (40 CFR 370.21):
Acute: Yes; Chronic: No; Fire: No; Reactive: No; Sudden Release: No

Clean Water Act: Designated as a hazardous substance under Section 311(b)(2)(A) of the Federal Water Pollution Control Act; ferric chloride is also regulated by the Clean Water Act Amendments of 1977 and 1978. This chemical is subject to regulations regarding its discharge.

TSCA Inventory Status: Yes
California Proposition 65: No
Right-To-Know Lists: Massachusetts, California, Pennsylvania, New Jersey. This substance does not contain nor is manufactured with ozone-depleting substances.

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FAX 888-273-6226

SECTION 16 – OTHER INFORMATION

IMPORTANT! Read this MSDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure.

Pencco provides the information contained in each material safety data sheet ("MSDS"), technical data sheet ("TDS"), product information brochure and/or information contained herein (including data and statements) in good faith and makes no representations as to its comprehensiveness or accuracy as of the date of publication. The MSDSs, TDSs, and product information brochures are referred to collectively as the "Data Sheets". It is the responsibility of the user to obtain and use the most recent version of the Data Sheets. Each Data Sheet relates only to the specific product designated therein and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use of the product and information are beyond the control of Pencco, Pencco expressly disclaims any and all liability as to any consequential damages or results obtained or arising from any use of the products or the information contained in the Data Sheets. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE AS CONCERNS THE DATA SHEETS OR THE RELATED PRODUCTS.

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MATERIAL SAFETY DATA SHEET (MSDS)

Polymer

SAFETY DATA SHEET **Date of issue : 01/06/2006**

Company	KURITA- GK CHEMICAL CO., LTD.
Brandname	KURITA C-3310

SECTION 1 - PRODUCT IDENTIFICATION AND COMPANY INFORMATION

Product name : KURITA C-3310
Company name : KURITA-GK CHEMICAL CO.,LTD.
460 M.17 Bangphil Industrial Estate , Bangsaothong ,
Bangsaothong Sub-District , Samutprakarn 10540. Tel. 02-3152300 Fax.02-3152302

SECTION 2 - INFORMATION ON HAZARDOUS INGREDIENTS OF COMPOSITION

Composition : Anionic Polyacrylamide CAS. NO.25987-30-8

SECTION 3 - HAZARDOUS IDENTIFICATION

Pesonal protective equipment : Reapiratory protection : dustmask Hand protection : gloves
Eye protection: chem.-saf. goggles Other:
Indus. hygiene Do not eat, drink or smoke at the working place. Avoid any direct contact with the product. Do not breathe dusts and product vapours. Change contaminated clothing immediately and thoroughly wash before reuse.

SECTION 4 - EMERGENCY AND FIRST AID MEASURES

After spillage/leakage/gas leakage : Wear protective clothing.Exhaust dusts.Close drains.Gather larger amounts of the product. Cover residue with and adsorbant,take up by mechanical means and hold product for waste disposal as discribed in section 6.
First aid : Eye contact : After separating the eyelids flush with copious amounts of water, contact an oculist if irritation persists. Skin contact : Remove contaminated clothing, take a shower, carefully wash affected skin with soap and plenty of water. Ingestion : If affected person is conscious give copious amounts of water to drink , immediately take care for medical observation. Inhalation : Remove affected person immediately from contaminated area, if inconvenience persists contact a physician. Notes to the Physician : There is not specialist information available . Treat symptomatically .

SECTION 5 - FIRE FIGHTING MEASURES

Suitable extinguishing media : Coordinate with primary case of fire and environmental vicinity. Special exposure hazards arising from substance or combustion products : Formation of harmful carbon monoxide and carbon dioxide at the combustion of the product. Combustion gases are irritating to respiratory tract and mucous membranes. Special protective equipment required for fire-fighting : Cool drums exposed to the fire with water spray. In case of fire wear a self-containing breathing apparatus and OSHA/MSHA approved protective clothing. Collect all contaminated water if possible dispose according to local regulations.

SECTION 6 - ACCIDENT RELEASE MEASURES

Wear protective clothing (see section 3). Close drains. Exhaust product vapours . Cover spill with inert material. Pump off large amounts of the product into marked , resistant containers . Cover residues with an inert absorbant , take up by machanical means into marked containers and hold for waste disposal as described in section 13. Thoroughly rinse affected ground with plenty of water.

SECTION 7 - HANDLING AND STORAGE

Store product in tightly closed containers in a cool, dark and ventilated area. Install spillage containers. Avoid spills and splashes during refilling process. Handling product only in well ventilated areas. Provide eye bath at the working place . Avoid inhalation of vapours when handling the thermal treated product . Only use corrosion resistant tools and equipments.

Brandname KURITA C-3310

SECTION 8 - EXPOSURE CONTROL AND PERSONAL PROTECTION

Fire/Explosion protection : The product itselfs is not flammable.Coordinate personal protective clothing and extinguishing media according with the case of fire.Collect all contaminated water is containers and dispose local regulations.
Extinguishing media Suitable : Water spray , Carbondioxide , Dry chemical , Foam.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Form : Powder Colour : White Odour : Slight ammonical
Bulk density : not applicable Vapour pressure : not applicable Solubility in water : max. 0.5 %
Limited by viscosity : Forms Gel pH values (0.1 % solution) : (25 °c) 6.5 - 8.5 Explosion limits : Lower : - Upper : -
Flash point : (non-flammable solid) : not applicable Ignition temperature : (non-flammable solid) : not applicable

SECTION 10 - REACTIVITY AND STABILITY

Condition to avoid : strong oxidizing conditions.
Products to avoid : strong oxidizers .
Hazerdous decomposition products : none if used as indicated

SECTION 11 - TOXILOGICAL INFORMATION

Acute oral toxicity (mouse) LD(50) : > 3,500 mg/kg.
Contact of the powder with skin or eyes can cause itching and skin slightly redden.

SECTION 12 - ECOLOGICAL INFORMATION

Never release concentrated product to the environment. Neutralize polluted wastewater before its release into the drains.

SECTION 13 - DISPOSAL CONSIDERATION

Disposal : Burn the product in a chemical incinerator equipped with an afterburner and a scrubber. Empty used containers completely, wash with water , dispose containers excluding possible external reuse. Suitable cleaning agent is water.

SECTION 14 - TRANSPORTATION INFORMATION

GGVSee/IMDG-Code: - UN-NO: - ICAO/IATA-DGR: -
GGVE/GGVS: - ria/adr : - ADNR: -

SECTION 15 - REGULATORY INFORMATION

According to general regulations the formulation is not a dangerous substance.

SECTION 16 - OTHER INFORMATION

The preparation itself is not limited by transport regulations.
This chemical's shelf life is one year upon receiving date.

SS.TANG./JUN.'06
TD-SC33100-013

MATERIAL SAFETY DATA SHEET (MSDS)

Aqueous Ammonia (NH3-25%)

REVISION DATE: 6th February 2009

AMMONIA SOLUTION 10-25% MSDS
Ammonia Solution 10 - 25%

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

PRODUCT NAME: Ammonia Solution 10 - 25%

SYNONYMS, TRADE NAMES: Ammonium Hydroxide Solution, , Aqueous Ammonia,

SUPPLIER:
Abbey Chemicals
27-30 North River Road
Great Yarmouth
Norfolk
NR30 1SH
Tel: +44 1493 850303
Fax: +44 1493 330909
www.abbey-chemicals.co.uk

Emergency Contact Number (Office Hours): +44 1493 850303

Emergency Contact Number (Outside Office Hours): +441493 850303

SDS No.: A042

2 HAZARDS IDENTIFICATION

Causes burns.

CLASSIFICATION: C;R34.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content	Classification
AMMONIA ...%	215-647-6	1336-21-6	10-25%	C;R34 N;R50

The Full Text for all R-Phrases are Displayed in Section 16

4 FIRST-AID MEASURES

INHALATION

Move the exposed person to fresh air at once. Get medical attention.

INGESTION

Provide rest, warmth and fresh air. Immediately rinse mouth and drink plenty of water (200-300 ml). Get medical attention.

SKIN CONTACT

Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention immediately.

EYE CONTACT

Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart. Get medical attention immediately. Continue to rinse.

5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Fire can be extinguished using: Water spray, fog or mist.

REVISION DATE: 6th February 2009

Ammonia Solution 10 - 25%

SPECIFIC HAZARDS

Ammonia or amines. Oxides of: Nitrogen.

PROTECTIVE MEASURES IN FIRE

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Follow precautions for safe handling described in this safety data sheet. Avoid inhalation of spray mist and contact with skin and eyes. Provide adequate ventilation.

ENVIRONMENTAL PRECAUTIONS

Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the Environmental Agency or other appropriate regulatory body.

SPILL CLEAN UP METHODS

Absorb with inert, damp, non-combustible material, then flush area with water. Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

7 HANDLING AND STORAGE

USAGE PRECAUTIONS

Avoid spilling, skin and eye contact. Avoid forming spray mists/aerosols. Provide good ventilation.

STORAGE PRECAUTIONS

Keep containers tightly closed. Keep in original container.

STORAGE CLASS

Corrosive storage.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

PROTECTIVE EQUIPMENT

RESPIRATORY EQUIPMENT

If ventilation is insufficient, suitable respiratory protection must be provided.

HAND PROTECTION

Protective gloves are recommended.

EYE PROTECTION

Wear approved safety goggles.

OTHER PROTECTION

Wear rubber apron. Wear rubber footwear.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Clear liquid		
COLOUR	Colourless		
ODOUR	Pungent		
SOLUBILITY	Soluble in water.		
MELTING POINT (°C)	-100	RELATIVE DENSITY	0.957 - 0.880

10 STABILITY AND REACTIVITY

STABILITY

Stable under normal temperature conditions and recommended use.

CONDITIONS TO AVOID

Avoid excessive heat for prolonged periods of time. Avoid contact with acids.

MATERIALS TO AVOID

Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS

Ammonia or amines.

11 TOXICOLOGICAL INFORMATION

TOXIC DOSE 1 - LD 50 350 mg/kg (oral rat)

INHALATION

Vapour may irritate respiratory system or lungs.

INGESTION

Ingestion may cause severe irritation of the mouth, the oesophagus and the gastrointestinal tract. Causes burns.

SKIN CONTACT

Irritating to skin. Causes burns.

EYE CONTACT

Causes burns.

12 ECOLOGICAL INFORMATION

ECOTOXICITY

The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

LC 50, 96 Hrs, FISH mg/l <1

EC 50, 48 Hrs, DAPHNIA, mg/l 89

MOBILITY

The product is soluble in water.

DEGRADABILITY

The product is biodegradable.

WATER HAZARD CLASSIFICATION

WGK 2

13 DISPOSAL CONSIDERATIONS

GENERAL INFORMATION

Waste to be treated as controlled waste. Disposal to licensed waste disposal site in accordance with local Waste Disposal Authority. Do not puncture or incinerate even when empty.

DISPOSAL METHODS

Dispose of waste and residues in accordance with local authority requirements.

14 TRANSPORT INFORMATION

UK ROAD CLASS	8		
PROPER SHIPPING NAME	AMMONIA		
UN NO. ROAD	2672	UK ROAD PACK GR.	III
ADR CLASS NO.	8	ADR CLASS	Class 8: Corrosive substances.
ADR PACK GROUP	III	HAZARD No. (ADR)	80
ADR LABEL NO.	8	HAZCHEM CODE	2R
CEFIC TEC(R) NO.	80GC5-II+III	RID CLASS NO.	8
RID PACK GROUP	III	UN NO. SEA	2672
IMDG CLASS	8	IMDG PACK GR.	III
EMS	F-A, S-B	MARINE POLLUTANT	No.
UN NO. AIR	2672	AIR CLASS	8
AIR PACK GR.	III		

15 REGULATORY INFORMATION

LABELLING

Corrosive

CONTAINS AMMONIA 24%

RISK PHRASES

R34	Causes burns.

SAFETY PHRASES

S1/2	Keep locked up and out of the reach of children.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).
S61	Avoid release to the environment. Refer to special instructions/safety data sheets.

STATUTORY INSTRUMENTS

Chemicals (Hazard Information and Packaging) Regulations.

APPROVED CODE OF PRACTICE

Safety Data Sheets for Substances and Preparations. Classification and Labelling of Substances and Preparations Dangerous for Supply.

GUIDANCE NOTES

CHIP for everyone HSG(108).

16 OTHER INFORMATION

REVISION DATE 6th February 2009

REVISION DATE 6th February 2009

Ammonia Solution 10 - 25%

REV. NO./REPL. SDS GENERATED	02
SDS NO.	A042
SAFETY DATA SHEET STATUS	
Approved.	
DATE	6th February 2009
SIGNATURE	Thomas Tailford

RISK PHRASES IN FULL

R34	Causes burns.
R37	Irritating to respiratory system.
R50	Very toxic to aquatic organisms.

MATERIAL SAFETY DATA SHEET (MSDS)

- Trisodium Phosphate (Na3PO4)

Health	3
Fire	0
Reactivity	0
Personal Protection	J

Material Safety Data Sheet

Sodium phosphate tribasic dodecahydrate MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sodium phosphate tribasic dodecahydrate

Catalog Codes: SLS1858, SLS3280

CAS#: 10101-89-0

RTECS: TC9575000

TSCA: TSCA 8(b) inventory: Sodium phosphate tribasic dodecahydrate

CI#: Not available.

Synonym:

Chemical Name: Not available.

Chemical Formula: Na3PO4.12H2O

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sodium phosphate tribasic dodecahydrate	10101-89-0	100

Toxicological Data on Ingredients: Sodium phosphate tribasic dodecahydrate: ORAL (LD50): Acute: 7400 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of eye contact (irritant). Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Corrosive to eyes and skin. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
If the chemical got onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical got on the victim's exposed skin, such as the hands : Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

Ingestion:
Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Corrosive solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

Section 7: Handling and Storage

Precautions:

Keep container dry. Do not ingest. Do not breathe dust. Never add water to this product In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage: Corrosive materials should be stored in a separate safety storage cabinet or room.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 380.12 g/mole

Color: Not available.

pH (1% soln/water): Not available.

Boiling Point: Decomposes.

Melting Point: 75°C (167°F)

Critical Temperature: Not available.

Specific Gravity: 1.62 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 7400 mg/kg [Rat].

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: : Not available. : NA9148 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

Pennsylvania RTK: Sodium phosphate tribasic dodecahydrate Massachusetts RTK: Sodium phosphate tribasic dodecahydrate TSCA 8(b) inventory: Sodium phosphate tribasic dodecahydrate CERCLA: Hazardous substances.: Sodium phosphate tribasic dodecahydrate

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): CLASS E: Corrosive solid.

DSCL (EEC):
R38- Irritating to skin. R41- Risk of serious damage to eyes.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection: j

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:27 PM

Last Updated: 11/01/2010 12:00 PM

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET (MSDS)

-Scale Inhibitor (KURILEX L111)

SAFETY DATA SHEET GHS1007211

1 IDENTIFICATION (PRODUCT AND COMPANY INFORMATION)

PRODUCT NAME : KURILEX L-111

USAGE : Chemical for closed recirculating cooling water systems
COMPANY NAME : KURITA WATER INDUSTRIES LTD.
DEPARTMENT : QUALITY ASSURANCE DEPT.
ADDRESS : 4-7 NISHI-SHINJUKU 3-CHOME, SHINJUKU-KU, TOKYO 160-8383, JAPAN
PHONE : 03-3347-3324
FACSIMILE : 03-3347-3048

EMERGENCY COMMUNICATION : : 2nd Section of Process Tech II Dept.
Phone:03-3347-3340

DATE OF ISSUE : July 21 , 2010
DATE OF REPLACED :

2 HAZARDOUS IDENTIFICATION

HAZARDOUS INFORMATION : Not Applicable
According to the law regulated in Japan

GHS CLASSIFICATION
ACUTE TOXICITY-ORAL : Category 3
SPECIFIC TARGET ORGAN TOXICITY(SINGLE EXPOSURE): Category 1
SPECIFIC TARGET ORGAN TOXICITY(REPEATEDEXPOSURE): Category 1
HAZARDOUS TO THE AQUATIC ENVIRONMENT-ACUTE HAZARD
: Category 3
HAZARDOUS TO THE AQUATIC ENVIRONMENT-CHRONIC HAZARD
:Ctegory 3

Labelling

Symbol :

Signal Word : Danger

Hazard statements : Toxic if swallowed
Causes damage to organs
Causes damage to oragans through prolomged or repeated exposure.
Harmful to aquatic life
Harmful to aquatic life with long lasting effects

Precautionary statement

Prevention : Do not eat, drink or smoke when using this product
Wash thoroughly after handling.
Wear protective gloves.
Wear eye protection/face protection.
Contaminated work clothing should not be allowed out of the workplace
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.
Do not breathe dust/fume/mist/vapours/spray.
Do not eat, drink or smoke when using this product.

Response : IF SWALOOWED: Immediately call a POISON CENTER or doctor.
Rinse mouth.
If exposed or concerned : Get medical attention.
Wash contaminated clothing before use.

Strage : Store locked up.

Disposal : Dispose of contents/container to follow the regional regulation.

3 COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE OR MIXTURE : Mixture

GENERAL NAMES	CHEMICAL COMPOSITION	CONTENT(%)
Organic nitrogen copper Corrosion inhibitor	—	—
Organic nitrogen compound	—	—
Sodium Nitrite	—	—

GENERAL NAMES	MITI No.	CAS No.	MHLW No.
Organic nitrogen copper Corrosion inhibitor	—	—	—
Organic nitrogen compound	—	—	—
Sodium Nitrite	—	—	—

HAZARDOUS INPURITIES

TOTAL MERCURY: Less than 0.01mg/kgHg CYANOGEN:Less than 1.0mg/kgCN

ARSENIC :Less than 0.1mg/kgAs2O3 TOTAL CHROMIUM:Less than 0.5mg/kgCr

LEAD :Less than 0.05mg/kgPb CADMIUM : Less than 0.01mg/kgCd

4 FIRST-AID MEASURES

A INHALATION

May cause irritation. Remove from exposed area immediately to fresh air. Keep warm and at rest. Take care for medical treatment.

B SKIN CONTACT

May cause irritation. Wash the affected area with plenty of water Take off immediately contaminated clothing. Wash it with plenty of water. If burns occur, cover affected area securely with sterile, dry, loose- fitting dressing. Get medical attention.

C EYE CONTACT

May cause irritation. Wash eyes immediately with large amount of water for more than 15 minutes. Get medical attention immediately.

D INGESTION

May cause unwell. Give large amount of water or milk immediately. Do not induce vomiting. Get medical attention immediately.

5 FIRE-FIGHTING MEASURES

Keep away from the source of fire or cool containers with water in case of difficult transportation.

6 ACCIDENTAL RELEASE MEASURES

Wear protective clothing. Stop leak. For small liquid spills, flush area with flooding amount of water. For large spills, stop the flow with dike, etc. without making liquid flow into sewer. Thoroughly rinse affected ground with plenty of water.

7 HANDLING AND STORAGE

Operate with filter respirator, chemical safety goggles, working clothes with long sleeve and rubber globes to avoid inhalation, eye and skin contact. Do not use empty containers for drinking water supply, etc.

Store product in tightly closed containers in the cool, dry and well-ventilated indoor Area. Store separating from acids, bases, oxidizers, reducers and flammables.

8 EXPOSURE CONTROLS/PERASONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMIT : Not Established

PROTTECTING EQUIPMENTS :Filter respirator, chemical safety goggles, working clothes with long sleeve and synthetic rubber globes.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE : Slightly yellowish to yelowish liquid

pH : 7.0 ～ 9.0 (20℃)

SPECIFIC GRAVITY : 1.24 ～ 1.28 (20℃)

WATER SOLUBILITY: Miscible at any ratio

FREEZING POINT : Less than –10℃

FLASH POINT : None

COD_{Mn} : 6.3%

Total Nitrogen 7.2% Total Phosphorus : 0.1%

10 STABILITY AND REACTIVITY

STABILITY : Stable on normal usage and handling.

11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY : Oral rat LD50 : 248 mg/kg (Estimated value from components)
SKIN CORROSION/IRRITATION : May cause irritation when product contact skin.
EYE CORROSION/IRRITATION : May cause irritation when product contact eye.

12 ECOLOGICAL INFORMATION

FISH TOXICITY : L C50 : Killifish (24hrs) : 84 mg / l

13 DISPOSAL CONDITIONS

PPRODUCT : Never draw chemical directly to waste water line.
Request treatment to licensed waste-treatment company as " Special controled industrial waste (Waste alkaline).
PACKAGE : Empty used containers completely, dispose containers.

14 TRANPORT INFORMATION

UN Class : Not Applicable UN No. : Not applicable
Prevent destruction by keeping away from water and careless dealing.

15 REGULATORY INFORMATION

The poisonous and deleterious substances control law : Not Applicable
Chemical weapon control law : Not Applicable
Export trade control order : Not Applicable
Industrial safety and health law : Not Applicable
Fire service law : Not Applicable
Ship safety law : Not Applicable
Civil aeronautic act : Not Applicable
Act on port regulation : Not Applicable
PRTR law : Not Applicable
Act on prevention of marine pollution and maritime disaster : Applicable
Sodium nitrite solution : Hazardous liquid : Class Y
*According to the law regulated in Japan.

16 OTHER INFORMATION

*The information herein may be revised by the newest knowledge.
*The information herein be only translated from MSDS written in Japanese language and nothing should be assured.

E.O.D.

MATERIAL SAFETY DATASHEET (MSDS)
-Corrosion and Scale Inhibitor (Kurita T-7682)

SAFETY DATA SHEET

Date of issue : 30/09/2014

Company	KURITA- GK CHEMICAL CO., LTD.
Brandname	KURITA T-7682

SECTION 1 - PRODUCT IDENTIFICATION AND COMPANY INFORMATION

Product name : KURITA T-7682

USAGE : Corrosion and scale inhibitor and sludge dispersant for open recirculating cooling water systems.

Company name : KURITA-GK CHEMICAL CO.,LTD.
460 M.17 Bangphli Industrial Estate , Bangsaothong ,
Bangsaothong District , Samutprakarn 10540. Tel. 02-3152300 Fax.02-3152302

SECTION 2 - HAZARDOUS IDENTIFICATION

2.1 HAZARDOUS INFORMATION : Corrosive substance.

2.2 GHS CLASSIFICATION :

ACUTE TOXICITY :	Category 5
SKIN CORROSION/IRRITATION :	Category 1
EYE DAMAGE/IRRITATION :	Category 1

2.3 Labeling :

2.4 Symbol :

2.5 Signal word : Warning

2.6 Hazard Statements :
May be harmful if swallowed (oral)
Causes severe skin burns and eye damage
Causes serious eye damage

2.7 Precautionary Statements :

Prevention : Do not eat, drink or smoke when using this product.
Do not breathe dust or mist.
Use personal protective equipment as required
Wash thoroughly after handling
Use outdoors or in a well-ventilated area
Contaminated clothing should not be allowed out of the workplace
Avoid release to the environment

Response : If swallowed : Rinse mouth . Do not induce vomitting and call a Poison center or Doctor/Physician.
If Inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing.
If on skin : Wash with plenty of soap and water.
If skin irritation occurs : Get medical advice / attention. Take off contaminated clothing and wash before reuse.
If in eyes : Rinse with water for several minutes. Remove contact lenses , if present and easy to do .
If eye irritation persists : Get medical advice / attention .

Storage : Store in a well-Ventilated place . Keep container tightly closed. Store locked up.

Disposal : Disposal of contents / container to in accordance to local disposal regulation.

SECTION 3 - INFORMATION ON HAZARDOUS INGREDIENTS OF COMPOSITION

3.1 SUBSTANCE OR MIXTURE : Mixture

3.2 GENERAL NAMES	CHEMICAL COMPOSITION	CONTENT(%)
Organic Polymer compound		20 - 30
Phosphonate		5 - 10
Potassium hydroxide		5 - 10

3.3 GENERAL NAMES	MITI No.	CAS No.	MHLW No.
Organic Polymer compound		Confidential	
Phosphonate		2809-21-4	
Phosphonate		37971-36-1	
Potassium hydroxide		1310-73-2	

SECTION 4 - EMERGENCY AND FIRST AID MEASURES

After spillage/leakage/gas leakage : Wear protective clothing. Exhaust dusts. Close drains. Gather larger amounts of the product. Cover residue with an adsorbant , take up by mechanical means and hold product for waste disposal as discribed in section 6.

First aid : Eye contact : After separating the eyelids flush with copious amounts of water, contact an oculist if irritation persists. Skin contact : Remove contaminated clothing, take a shower, carefully wash affected skin with soap and plenty of water. Ingestion : If affected person is conscious give copious amounts of water to drink , immediately take care for medical observation. Inhalation : Remove affected person immediately from contaminated area, if inconvenience persists contact a physician. Notes to the Physician : There is not special information available . Treat symptomatically .

SECTION 5 - FIRE FIGHTING MEASURES

Fire/Explosion protection : The product itselfs is not flammable.Coordinate personal protective clothing and extinguishing media according with the case of fire. Collect all contaminated water in containers and dispose local regulations.

Extinguishing media suitable : Dry Chemical , carbondioxide , water spray (fog) and foam

Extinguishing media not suitable : Water spray jet

SECTION 6 - ACCIDENT RELEASE MEASURES

Wear protective clothing . Close drains. Exhaust product vapours . Cover spill with inert material. Pump off large amounts of the product into marked , resistant containers . Cover residues with an inert absorbant , take up by machanical means into marked containers and hold for waste disposal as described in section 13. Thoroughly rinse affected ground with plenty of water.

SECTION 7 - HANDLING AND STORAGE

Store product in tightly closed containers in a cool, dark and ventilated area. Install spillage containers. Avoid spills and splashes during refilling process. Handling product only in well ventilated areas. Provide eye bath at the working place . Avoid inhalation of vapours when handling the thermal treated product . Only use corrosion resistant tools and equipments.

Brandname : KURITA T-7682

SECTION 8 - EXPOSURE CONTROL AND PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMIT : Not applicable

Personal protective equipment; Respiratory protective: mask , Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 143 or 149, Type P3 or FFP3.

Hand protection: Chemical resistant protective gloves (EN 374) ; Suitable materials such as polyvinylchloride (PVC) - 0.7 mm coating thickness or equivalent ,

Eye protection: chemical safety goggle with side shields. ,

Other: Long sleeve wearing . Industrial Hygiene : Do not eat, drink or smoke at the working place. Avoid any direct contact with the product. Do not breath dust and product vapour. Change contaminated clothing immediately and thoroughly wash before reuse.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

1. Form : Liquid
2. Density : 1.08 - 1.16 g/ml.
3. Vapour pressure : no data
4. Flash point : not application
5. Solubility in water : soluble in every proportion
6. Colour : Colorless to yellow
7. Freezing Point : not applicable
8. Explosion limits : not applicable
9. Ignition temperature : not application
10. pH values (as delivered) : (25 °C) 6.0 - 8.0

SECTION 10 - REACTIVITY AND STABILITY

Condition to avoid : Storng oxidizing conditions. ; Products to avoid : strong oxidizers

Hazardous decomposition products : none if used as indicated ; STABILITY : Stable on normal usage and handling

SECTION 11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY : Oral rat LD50 : 3,653 mg/kg

SKIN CORROSION/IRRITATION : Causes severe skin burns and eye damage

EYE CORROSION/IRRITATION : Causes serious eye damage

SECTION 12 - ECOLOGICAL INFORMATION

Never release concentrated product to the environment . Neutralize polluted wastewater before its release into the drains.

SECTION 13 - DISPOSAL CONSIDERATION

PRODUCT : Never draw chemical directly to waste water line. Request treatment to licensed industrial waste-treatment company as " Special controlled industrial waste ".

PACKAGE : Dispose contaminate packaging follow Regulation law and dispose non contaminate packaging same genaral waste or reuse . If no special regulation , contact with manufacturer.

SECTION 14 - TRANSPORTATION INFORMATION

Prevent destruction by keeping away from strong oxidizing agents.

SECTION 15 - REGULATORY INFORMATION

Announcement of Ministry of Industry : List of Hazardous 2556 ; Not in List

SECTION 16 - OTHER INFORMATION

Reference :

TOXNET Database, U.S. National Library of Medicine, Bethesda, MD .
ACGIH Documentation of the Threshold Limit Values and Biological
Exposure Indices, Sixth Edition, 1997. American Conference of Governmental Industrial Hygienists, Inc.,
Cincinnati, OH..
IUCLID 4 Dataset, based on data reported by the European Chemical Industry
following Regulation (EC) No. 793/93, European Commission – European Chemical Bureau (ECB);.
SDS from Supplier which supply these raw material .

*The information herein may be revised by the newest knowledge.
This chemical's shelf life is one year after manufacturing date.

SS.TANG/SEP.'14
TD-SB76820-220

MATERIAL SAFETY DATASHEET (MSDS)

-Hydrochloric Acid (HCl)

ScienceLab.com
Chemicals & Laboratory Equipment

Health	3
Fire	0
Reactivity	1
Personal Protection	

Material Safety Data Sheet
Hydrochloric acid MSDS

Section 1: Chemical Product and Company Identification

Product Name: Hydrochloric acid

Catalog Codes: SLH1462, SLH3154

CAS#: Mixture.

RTECS: MW4025000

TSCA: TSCA 8(b) inventory: Hydrochloric acid

CI#: Not applicable.

Synonym: Hydrochloric Acid; Muriatic Acid

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Hydrogen chloride	7647-01-0	20-38
Water	7732-18-5	62-80

Toxicological Data on Ingredients: Hydrogen chloride: GAS (LC50): Acute: 4701 ppm 0.5 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, . Slightly hazardous in case of inhalation (lung sensitizer). Non-corrosive for lungs. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Classified 3 (Not classifiable for human.) by IARC [Hydrochloric acid]. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, Circulatory System, teeth. Repeated or prolonged exposure to the substance can produce target

organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: of metals

Explosion Hazards in Presence of Various Substances: Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
Non combustible. Calcium carbide reacts with hydrogen chloride gas with incandescence. Uranium phosphide reacts with hydrochloric acid to release spontaneously flammable phosphine. Rubidium acetylene carbides burns with slightly warm hydrochloric acid. Lithium silicide in contact with hydrogen chloride becomes incandescent. When dilute hydrochloric acid is used, gas spontaneously flammable in air is evolved. Magnesium boride treated with concentrated hydrochloric acid produces spontaneously flammble gas. Cesium acetylene carbide burns hydrogen chloride gas. Cesium carbide ignites in contact with hydrochloric acid unless acid is dilute. Reacts with most metals to produce flammable Hydrodgen gas.

Special Remarks on Explosion Hazards:

Hydrogen chloride in contact with the following can cause an explosion, ignition on contact, or other violent/vigorous reaction: Acetic anhydride AgClO + CCl4 Alcohols + hydrogen cyanide, Aluminum Aluminum-titanium alloys (with HCl vapor), 2-Amino ethanol, Ammonium hydroxide, Calcium carbide Ca3P2 Chlorine + dinitroanilines (evolves gas), Chlorosulfonic acid Cesium carbide Cesium acetylene carbide, 1,1-Difluoroethylene Ethylene diamine Ethylene imine, Fluorine, HClO4 Hexalithium disilicide H2SO4 Metal acetylides or carbides, Magnesium boride, Mercuric sulfate, Oleum, Potassium permanganate, beta-Propiolactone Propylene oxide Rubidium carbide, Rubidium, acetylene carbide Sodium (with aqueous HCl), Sodium hydroxide Sodium tetraselenium, Sulfonic acid, Tetraselenium tetranitride, U3P4 , Vinyl acetate. Silver perchlorate with carbon tetrachloride in the presence of hydrochloric acid produces trichloromethyl perchlorate which detonates at 40 deg. C.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, organic materials, metals, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
CEIL: 5 (ppm) from OSHA (PEL) [United States] CEIL: 7 (mg/m3) from OSHA (PEL) [United States] CEIL: 5 from NIOSH CEIL: 7 (mg/m3) from NIOSH TWA: 1 STEL: 5 (ppm) [United Kingdom (UK)] TWA: 2 STEL: 8 (mg/m3) [United Kingdom (UK)]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Pungent. Irritating (Strong.)

Taste: Not available.

Molecular Weight: Not applicable.

Color: Colorless to light yellow.

pH (1% soln/water): Acidic.

Boiling Point:
108.58 C @ 760 mm Hg (for 20.22% HCl in water) 83 C @ 760 mm Hg (for 31% HCl in water) 50.5 C (for 37% HCl in water)

Melting Point:
-62.25°C (-80°F) (20.69% HCl in water) -46.2 C (31.24% HCl in water) -25.4 C (39.17% HCl in water)

Critical Temperature: Not available.

Specific Gravity:
1.1- 1.19 (Water = 1) 1.10 (20%and 22% HCl solutions) 1.12 (24% HCl solution) 1.15 (29.57% HCl solution) 1.16 (32% HCl solution) 1.19 (37% and 38%HCl solutions)

Vapor Pressure: 16 kPa (@ 20°C) average

Vapor Density: 1.267 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.25 to 10 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility: Soluble in cold water, hot water, diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, water

Incompatibility with various substances:
Highly reactive with metals. Reactive with oxidizing agents, organic materials, alkalis, water.

Corrosivity:
Extremely corrosive in presence of aluminum, of copper, of stainless steel(304), of stainless steel(316). Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Reacts with water especially when water is added to the product. Absorption of gaseous hydrogen chloride on mercuric sulfate becomes violent @ 125 deg. C. Sodium reacts very violently with gaseous hydrogen chloride. Calcium phosphide and hydrochloric acid undergo very energetic reaction. It reacts with oxidizers releasing chlorine gas. Incompatible with, alkali metals, carbides, borides, metal oxides, vinyl acetate, acetylides, sulphides, phosphides, cyanides, carbonates. Reacts with most metals to produce flammable Hydrogen gas. Reacts violently (moderate reaction with heat of evolution) with water especially when water is added to the product. Isolate hydrogen chloride from heat, direct sunlight, alkalies (reacts vigorously), organic materials, and oxidizers (especially nitric acid and chlorates), amines, metals, copper and alloys (e.g. brass), hydroxides, zinc (galvanized materials), lithium silicide (incandescence), sulfuric acid(increase in temperature and pressure) Hydrogen chloride gas is emitted when this product is in contact with sulfuric acid. Adsorption of Hydrochloric Acid onto silicon dioxide results in exothmeric reaction. Hydrogen chloride causes aldehydes and epoxides to violently polymerize. Hydrogen chloride or Hydrochloric Acid in contact with the folloiwng can cause explosion or ignition on contact or

Special Remarks on Corrosivity:

Highly corrosive. Incompatible with copper and copper alloys. It attacks nearly all metals (mercury, gold, platinium, tantalum, silver, and certain alloys are exceptions). It is one of the most corrosive of the nonoxidizing acids in contact with copper alloys. No corrosivity data on zinc, steel. Severe Corrosive effect on brass and bronze

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
Acute oral toxicity (LD50): 900 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 1108 ppm, 1 hours [Mouse]. Acute toxicity of the vapor (LC50): 3124 ppm, 1 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 3 (Not classifiable for human.) by IARC [Hydrochloric acid]. May cause damage to the following organs: kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, Circulatory System, teeth.

Other Toxic Effects on Humans:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of ingestion, . Hazardous in case of eye contact (corrosive), of inhalation (lung corrosive).

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Doses (LDL/LCL) LDL [Man] -Route: Oral; 2857 ug/kg LCL [Human] - Route: Inhalation; Dose: 1300 ppm/30M LCL [Rabbit] - Route: Inhalation; Dose: 4413 ppm/30M

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (fetoxicity). May affect genetic material.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Corrosive. Causes severe skin irritation and burns. Eyes: Corrosive. Causes severe eye irritation/conjuntivitis, burns, corneal necrosis. Inhalation: May be fatal if inhaled. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation of hydrochloric acid fumes produces nose, throat, and larryngeal burning, and irritation, pain and inflammation, coughing, sneezing, choking sensation, hoarseness, laryngeal spasms, upper respiratory tract edema, chest pains, as well has headache, and palpitations. Inhalation of high concentrations can result in corrosive burns, necrosis of bronchial epithelium, constriction of the larynx and bronchi, nasospetal perforation, glottal closure, occur, particularly if exposure is prolonged. May affect the liver. Ingestion: May be fatal if swallowed. Causes irritation and burning, ulceration, or perforation of the gastrointestinal tract and resultant peritonitis, gastric hemorrhage and infection. Can also cause nausea, vomitting (with "coffee ground" emesis), diarrhea, thirst, difficulty swallowing, salivation, chills, fever, uneasiness, shock, strictures and stenosis (esophogeal, gastric, pyloric). May affect behavior (excitement), the cardiovascular system (weak rapid pulse, tachycardia), respiration (shallow respiration), and urinary system (kidneys- renal failure, nephritis). Acute exposure via inhalation or ingestion can also cause erosion of tooth enamel. Chronic Potential Health Effects: dyspnea, bronchitis. Chemical pneumonitis and pulmonary edema can also

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Hydrochloric acid, solution UNNA: 1789 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Hydrochloric acid Illinois toxic substances disclosure to employee act: Hydrochloric acid Illinois chemical safety act: Hydrochloric acid New York release reporting list: Hydrochloric acid Rhode Island RTK hazardous substances: Hydrochloric acid Pennsylvania RTK: Hydrochloric acid Minnesota: Hydrochloric acid Massachusetts RTK: Hydrochloric acid Massachusetts spill list: Hydrochloric acid New Jersey: Hydrochloric acid New Jersey spill list: Hydrochloric acid Louisiana RTK reporting list: Hydrochloric acid Louisiana spill reporting: Hydrochloric acid California Director's List of Hazardous Substances: Hydrochloric acid TSCA 8(b) inventory: Hydrochloric acid TSCA 4(a) proposed test rules: Hydrochloric acid SARA 302/304/311/312 extremely hazardous substances: Hydrochloric acid SARA 313 toxic chemical notification and release reporting: Hydrochloric acid CERCLA: Hazardous substances.: Hydrochloric acid: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R34- Causes burns. R37- Irritating to respiratory system. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 1

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

Created: 10/09/2005 05:45 PM

Last Updated: 05/21/2013 12:00 PM

MATERIAL SAFETY DATASHEET (MSDS)

-Sodium Chlorite ($NaClO_2$)

keavyscorner.com

168 McCoy Drive
Lake Placid FL 33852
863-658-0235

THIS PRODUCT IS SHIPPED
ORM-D/LIMITED QTY

25% SODIUM CHLORITE SOLUTION
MATERIAL DATA SAFETY SHEET

1. Chemical Product And Company Information
Chemical Name: Sodium Chlorite Solution 25%
Synonyms/Trade Names: Sodium Chlorite Solution, Chlorite Solution
Chemical Family:
Formula: $NaClO_2$
Molecular Weight: 90.45
CAS No.: 7758-19-2
UN# 1908
Uses:
Generation of chlorine dioxide for use as a disinfectant or for use as a water purifier
Manufacturer & Supplier Transportation Emergency Telephone Numbers :
Sodium Chlorite manufactured by Aragonesas S.A. Madrid Spain
Solution manufactured and bottled by Keavys Corner, Sebring Florida
Emergency Telephone Numbers 888 751 4964 863-451-2175

2. Composition / Information On Ingredients
Name: Conc. % By Weight CAS No.
Sodium Chlorite 25 % 7758-19-2
Inert Ingredients 6.25%
Water Balance 7732-18-5

3. Hazard Identification
Emergency Overview:
Colourless, odourless solution with a slight greenish tint. Does not burn when wet. When dried it can decompose explosively under intense fire conditions forming oxygen and hydrogen chloride gas.
MODERATE to STRONG OXIDIZER
Promotes combustion when dried. Can be ignited readily by heat, shock or friction, and/or explode when contaminated by combustible or flammable materials (dry organic materials). Reacts violently with sulfur and sulfur-containing materials, red phosphorus and strong reducing agents. At low pH, reacts releasing corrosive and dangerously reactive chlorine dioxide.
Routes of Entry:
Inhalation, Skin Contact/absortion, Eye Contact or Ingestion
Symptoms of Exposure:
Inhalation: Inhalation of vapors or mists may cause irritation of the muscus membranes and respiatory tract. Symptoms may include coughing, bloody nose, and sneezing. severe exposure may cause lung damage.
Skin Contact/absortion: Direct contact may cause irritation and or burns with symptoms of redness , itching, swelling and posssible destruction of tissue.
Eye Contact: Direct contact may cause irritation and or burns with symptoms of redness , itching, swelling and posssible destruction of tissue.
Ingestion: Ingestion may cause gastroenteritis with any or all of the following symptoms: nausea, vomiting, lethargy, diarrha, bleeding, or ulceration. Acute ingestion of large quantities may also cause anemia due to the oxidizing affects of the chemical.

4. First Aid Measures
Skin: Remove contaminated clothing and keep it wet until washed.
Wash the affected area with soap and water. If irritation develops, get medical attention.
Eyes: Flush with water for a minimum of 15 minutes. Get medical attention.
Inhalation: If irritation or other symptoms are experienced, remove victim to fresh air. If symptoms persist get medical attention.
Ingestion:DO NOT INDUCE VOMITING. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Otherwise rinse mouth with water and give 8 to 10 ounces (or 250 to 300 ml) of milk, egg whites or gelatin solution. Get medical attention immediately.

5. Fire-Fighting Measures
Conditions Of Flammability :
Does not burn, but combustibles wetted with this solution and subsequently dried are easily ignited and burn vigorously.
Means To Extinguish: Water is the only effective extinguisher.
Hazardous Combustion Products : None, does not burn.
Flash Point & Method: Not applicable
Upper Flammability Limit: Not applicable
Lower Flammability Limit: Not applicable
Auto-Ignition Temperature: Not applicable
Mechanical Impact Sensitivity : Not applicable (water solution)
Static Discharge Sensitivity : Not applicable (water solution)

6. Accidental Release Measures
Leak Or Spill Procedures : Contain spills. Collect into clean compatible metal or high density polyethylene containers. Wash away residues with large amounts of water.
DO NOT USE RAGS, SAWDUST OR OTHER COMBUSTIBLE ABSORBENTS.
Waste Control Procedures :
Wash or incinerate all contaminated combustible material in an environmentally acceptable manner before it dries out. Consult supplier regarding disposal of reclaimed sodium chlorite.

7. Handling StorageHandling
Procedures And Equipment :
Use corrosion resistant tools and equipment. Avoid skin or clothing contact.
Storage:
Store in a cool, dry fireproof building.
KEEP AWAY FROM COMBUSTIBLES, ORGANICS AND ACIDS.

8. Exposures Controls / Personal Protection
Protective Equipment:
Chemical safety goggles.
Butyl rubber or neoprene gloves.
Chemical safety goggles.
Butyl rubber or neoprene gloves.
Dust/mist mask in dusty or misty locations.
Wear waterproof or washable outer clothing.
Remove contaminated clothing and wash it before it dries.

Engineering Controls:
Use separate, corrosion-resistant ventilation system to capture mist or fume. Do not use wood or other combustibles to construct vent system. Prevent entry into bearings or gear boxes, contact with organics (oils) could cause an explosion.

9. Physical And Chemical Properties

State: Liquid
Odor: Faint bleach-like odour
Boiling Point: Depends on concentration 100 - 105°C
Melting Point: Not applicable
Freezing Point: Depends on concentration -4 - -10°C
pH: 12.5 to 13.5
Appearance: Clear Solution, pale green clear
Specific Gravity: Depends on concentration
1.28 @ 20°C for 25 wt% Soln.

10. Stability And Reactivity

Chemical Stability:Stable in itself, but reactive as detailed below.
Reactivity Conditions Reacts on mixing with acids to give toxic chlorine dioxide and chlorine gases. Mixtures with combustibles, if allowed to dry out, are easily ignited by heat or friction and burn vigorously or may explode.
Incompatible Substances :
Incompatible with all combustibles and reducing agents, especially phosphorus, sulfur-containing materials, powdered metals, ammonium compounds. Incompatible with acids.
Hazardous Decomposition Products :
Residues of sodium chlorite, from dried-out solution, will give off oxygen on being heated strongly.

11. Toxicological Information

Skin Contact: Irritating to the skin if not washed off promptly. Dermatitis is likely to occur from repeated or prolonged contact.
Skin Absorption: Not available
Eye Contact: Causes severe eye irritation. May cause permanent damage because of its corrosive properties.
Inhalation: Spray or mist is irritating to the nose and throat.
Ingestion: Will irritate and may cause corrosion of the gastrointestinal tract.
May cause vomiting, nausea, diarrhea, cramps and pain.
May damage blood cells, liver or kidney.
LD50: 1650 mg/kg (rat) for 10 wt% Soln.
LC50: Not available
Exposure Limits: Not available
Irritancy: Severe (corrosive)
Sensitization: Not reported as a human sensitizer.
Carcinogenicity: Does not appear in reference lists.
Teratogenicity & Mutagenicity: Not teratogenic even at maternally toxic doses. Mutagenicity has been demonstrated in bacteria and mammalian cell cultures, but not in experiments involving whole animals.
Reproductive Toxicology : Shown to be toxic to mammalian fetuses only at doses toxic to the mother. In one study, sodium chlorite given in drinking water showed a small but statistically significant increase in the percentage of abnormal sperm; another study was negative.
Toxicological Synergism : Not available.

12. Ecological Information

Ecological Information: This product is toxic to aquatic life. Do not discharge into lakes, streams, ponds, sewers or other waters unless in accordance with the permitting authority.
Biodegradability:
In soil, will degrade to sodium chloride but may form chlorine dioxide in contact with acidic soils. Chlorate is an intermediate product of decomposition; it will slowly degrade to chloride.
Aquatic Toxicity:
In water, sodium chlorite will eventually degrade to sodium chloride.

13. Disposal Considerations

Disposal Considerations :Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.

14. Transportation Information

PROPER SHIPPING NAME: CHLORITE SOLUTION
UN NUMBER: 1908
CAS NUMBER: 7758-19-2
HAZMAT CLASS: Class 8 Corrosive
PACKAGING CLASS: II

15. Regulatory Information

OSHA Hazard Communication Evaluation :
Meets criteria for hazardous material, as defined by 29 CFR 1910.1200.
Canada
WHMIS Hazardous Class :
D1B Toxic Material
C Oxidizing Material
E Corrosive Material
Environmental:
All components of this product are either on the USA Toxic Substances Control Act (TSCA) Inventory List the Canadian Domestic Substances List (DSL), Non-Domestic Substances List (NDSL), or exempt from all three lists.
Transportation:
Refer to Section 14.

16. Other Information

Prepared By:
Keavys Corner
Steve Pardee
Sebring FL
Keavys Corner assumes no responsibility for injury to or death of the recipient of this material or third persons, or for any loss of damage, howsoever, caused, and the user, owner, bailee and their respective employees and agents assume all such risks if reasonable safety procedures are not adhered to.
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ภาคผนวก 2ซ

หนังสือลงนามสัญญาซื้อน้ำ
จากบริษัท จัดการและพัฒนาทรัพยากรน้ำภาค
ตะวันออก จำกัด (มหาชน) (อีสท์ วอเตอร์)

eastwater

ที่ EW/100/108/19

วันที่ 21 มีนาคม 2562

เรื่อง สนับสนุนการใช้น้ำสำหรับโครงการโรงไฟฟ้าปลวกแดง

เรียน กรรมการ
บริษัท กัลฟ์ พีดี จำกัด

อ้างถึง สัญญาซื้อขายน้ำอุตสาหกรรมระหว่างบริษัท กัลฟ์ พีดี จำกัด และ บริษัท จัดการและพัฒนาทรัพยากรน้ำภาคตะวันออก จำกัด (มหาชน) ลงวันที่ 24 สิงหาคม 2561

ตามที่บริษัท กัลฟ์ พีดี จำกัด ได้ลงนามในสัญญาซื้อขายน้ำอุตสาหกรรมกับ บริษัท จัดการและพัฒนาทรัพยากรน้ำภาคตะวันออก จำกัด (มหาชน) ("บริษัทฯ") เมื่อวันที่ 24 สิงหาคม 2561 โดยมีวัตถุประสงค์เพื่อนำน้ำอุตสาหกรรมมาใช้ในการพัฒนาและดำเนินการโครงการโรงไฟฟ้าปลวกแดง ตั้งอยู่ที่สวนอุตสาหกรรมโรจนะ (ปลวกแดง) (เดิมชื่อสวนอุตสาหกรรมปลวกแดง) ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง รายละเอียดตามอ้างถึง

บริษัทฯ ใคร่ขอเรียนให้ทราบว่า บริษัทฯ ขอยืนยันความพร้อมที่จะเป็นผู้ให้บริการจัดสรรน้ำอุตสาหกรรม ซึ่งมีคุณภาพเทียบเท่ามาตรฐานคุณภาพน้ำประปา สำหรับโครงการโรงไฟฟ้าปลวกแดง ตามโควตาที่ได้จัดสรรให้ในปริมาณไม่เกิน 60,000 ลูกบาศก์เมตรต่อวัน ตลอดอายุโครงการ โดยได้สำรวจแล้วว่าสามารถวางท่อแยกจ่ายน้ำอุตสาหกรรมจากท่อส่งน้ำหลัก เพื่อนำน้ำอุตสาหกรรมมาใช้ในโครงการโรงไฟฟ้าปลวกแดงได้

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

(จิรายุทธ รุ่งศรีทอง)
กรรมการผู้อำนวยการใหญ่

บริษัท จัดการและพัฒนาทรัพยากรน้ำภาคตะวันออก จำกัด (มหาชน)
อาคารอีสท์ วอเตอร์ เลขที่ 1 ซอยวิภาวดีรังสิต 5
ถนนวิภาวดีรังสิต แขวงจอมพล เขตจตุจักร กรุงเทพฯ 10900
โทรศัพท์ +66 2272 1600 โทรสาร +66 2272 1601-3
www.eastwater.com

ภาคผนวก 2ฌ

รายการคำนวณระบบปรับปรุงคุณภาพน้ำเบื้องต้น ภายหลังการเปลี่ยนแปลงรายละเอียดโครงการ

Water Pre-Treatment System

This system is common for all the four (4) power blocks.
The function of the water pre treatment plant is to treat the raw water from the raw water reservoir for further use as service water and fire water. The treated effluent water from the ultrafiltration system will be store in the service water tank and it will be used as feed to the demineralizer water plant. This filtered water in the service water storage tank will also be used for portable purpose.

Design Capacity of Water Pretreatment Sytem

Capacity of each UF unit	44 m^3/hr (Ultrafiltration Outlet)
Quantity of Ultrafiltration System	3 Nos.
Total capacity of plant	3 x 44 m^3/hr (Ultrafiltration Outlet)

Process Calculation Sheet

No.	Description	Formula	Unit	Amount
A	**Water Pre-treatment and Demineralized Water System**			
1	Raw Water Storage Tank			
1.1	DESIGN DATA			
	- UF Feed Pump Capacity	F	m3/hr	104
1.2	DESIGN CRITERIA			
	- Detention time	t	min	15
1.3	RESULT OF CALCULATION			
	- Volume	F x t/60	m3	26
1.4	DESIGN			
	- Volume of Raw Water Storage Tank		m3	30 > 26
2	UF Unit			
2.1	DESIGN DATA			
	- Number of Trains	A	no.	3
	- Number of Modules / Train	B	no.	10
	- Total Number of Membrane Modules	A x B	pcs.	30

ใบอนุญาตประกอบวิชาชีพวิศวกรรมควบคุม
ตามพระราชบัญญัติวิศวกร พ.ศ. ๒๕๔๒

ชื่อ-นามสกุล นายชาญนุชธ ตันติวิรมานนท์
เลขประจำตัวประชาชน 3100700478241
ประเภทวิชาชีพวิศวกรรมควบคุมที่อยู่ สิ่งแวดล้อม
ระดับ สามัญวิศวกร เลขทะเบียน สส.42
วันอนุญาต 9 มี.ค. 2557 วันสิ้นอายุ 8 มี.ค 2562
ประเภทใบอนุญาต สามัญ เลขที่ 52323
วันออกบัตร 18 มี.ค. 2557 บัตรหมดอายุ 8 มี.ค. 2562

ผู้ได้รับใบอนุญาต

เจ้าพนักงานวิศวกร

ภาคผนวก 2ญ

รายการคำนวณความเพียงพอของถังเก็บน้ำใช้ภายหลังการเปลี่ยนแปลงรายละเอียดโครงการ

Calculation Data Sheet of Water Tanks

Name	Type	Capacity
Service Water / Fire Water Storage Tank	Butt welded cone roof tank	4250 m^3

1) Service Water / Fire Water Storage Tank

Number: One (1) per plant

Capacity: 2 hours F/F water supply plus (+) 1 day service water consumption minus (-) 1 day plant cycle make-up

<Required F/F water >

1220 m3/h x 2 hours = 2440 m3 ---------- (α)

<Service water consumption>

2074 m3/day x 1 day = 2074 m3-------- (β)

<Plant Cycle Make-up>

379 m3 x 1 day = 379 m3 ---------- (x)

<Required tank capacity >

(α) + (β) – (x) : 2440 + 2074 - 379 = **4135 m3 ➔ 4250 m^3**

ภาคผนวก 2ฎ

รายการคำนวณระบบระบายน้ำฝน และบ่อหน่วงน้ำฝนของโครงการ ภายหลังการเปลี่ยนแปลงรายละเอียดโครงการ

Storm Water Discharge calculation

Quantity of runoff (Qf)

The quantity of runoff is calculated by the following rational formula

$$Qf = A \times I \times C / (3.6 \times 10^{6}) \text{ (m3/sec)}$$

A: Drainage catchment area (m2)
I: rainfall intensity (mm/hr)
C: runoff coefficient

- c for building roof & equipment foundation: 0.90
- c for concrete or asphalt pavement: 0.80
- c for gravel + concrete area: 0.80
- c for green area: 0.15
- c for non-pavement area: 0.10
- c for embankment slope area: 0.44

Capacity of storm water pond (volume)

Capacity of storm water pond is calculated by the following formula

$$\text{Volume} = A \times I \times 3 \text{ hours } (Ca - Cb)/1000$$

V: capacity of storm water pond (m3)
A: Drainage catchment area (m2)
I: rainfall intensity (mm/hr) = 100 mm/hr
Ca: runoff coefficient after development = 0.7
Cb: runoff coefficient before development = 0.3

Size of gutters

Size of gutters is calculated by the following formula

$$Q = A/n \times (R^{2/3} \times S^{1/2})$$

Q: flow capacity of gutter (m3/sec)
A: cross sectional area of flow (m2) = W × D
p: wetted perimeter (m) = W+2D
W: width of drainage line (m)
D: depth of drainage line (m)
R: Hydraulic radius (m) =A/p
S: Slope of gutter
n: manning roughness coefficient (0.012 for concrete gutter)

flow capacity of gutter is considered OK if it is 1.32 times of the runoff in its catchment area; i.e. safety factor 1.32.

GPD Project
Calculation of Required Capacity of Storm Water Pond

STORM WATER RETENSION POND-1

	Storm Water Pond
Total Catchment area (Rais)	252.87
Total Catchment area (m2)	404,584
Runoff coefficient (Before Development)	0.3
Runoff coefficient (After Development)	0.7
Rainfall Intensity (mm/hr)	100.0
retention time (hr)	3
Capacity of storm water retention pond (m3)	48,550

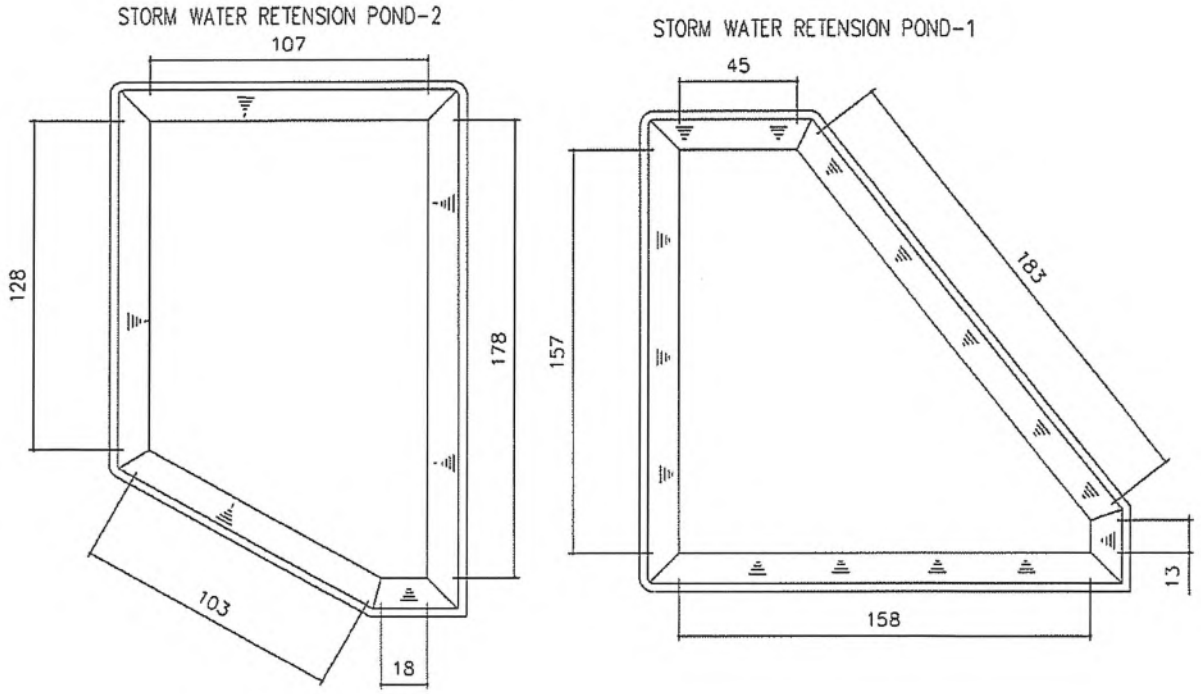
Total Required Capacity 48,550 m3

STORM WATER RETENSION POND-2

	Storm Water Pond
Total Catchment area (Rais)	239.44
Total Catchment area (m2)	383,098
Runoff coefficient (Before Development)	0.3
Runoff coefficient (After Development)	0.7
Rainfall Intensity (mm/hr)	100.0
retention time (hr)	3
Capacity of storm water retention pond (m3)	45,972

Total Required Capacity 45,972 m3

Storm Water Pond Capacity for GPD Project



Storm Water Pond				
Area A-1	=	(Area Calculation By AutoCad)	=	16,681.0 m^2
Volume A-1	=	16681X2.65	=	44,204.7 m^3
Volume Outer	=	1/2x2.65x7.95x(45+183+13+158+157)	=	5,856.8 m^3
Volume Corner	=	0.5x7.95x7.95x2.65x2.5	=	209.360 m^3
Storm Water Pond V-1	=	44204.65 + 5856.765+209.36	=	50,270.8 m^3
Area A-2	=	(Area Calculation By AutoCad)	=	16,897.0 m^2
Volume A-2	=	16897X2.65	=	44,777.1 m^3
Volume Outer	=	1/2x2.65x7.95x(107+178+18+103+128)	=	5,625.0 m^3
Volume Corner	=	0.5x7.95x7.95x2.65x2.5	=	209.360 m^3
Storm Water Pond V-2	=	44777.05 + 5625.0225+209.36	=	50,611.4 m^3

Grand Total 100,882.2 is More than 99,797.0 m^3

Calculation of storm water drainage lines of GPD Project

		Route A													
Drainage lines		1-3	2-3	3-4	4-5	6-8	7-8	8-10	9-10	10-12	11-12	12-14	13-14	14-5	5-15
Upstream drainage line (1)		-		1-3	3-4	-		6-8		8-10		10-12		12-14	4-5
Upstream drainage line (2)		-		2-3	-	-		7-8		9-10		11-12		13-14	14-5
Upstream drainage line (3)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Design conditions															
A : Runoff area (Roof)	(m2)														
A : Runoff area (Paving)	(m2)	13,267	30,638			24,429	23,555		22,820		24,183		18,399		
A : Runoff area (Grave + Paving)	(m2)														
A : Runoff area (Turf)	(m2)														
A : Runoff area (Non Paving)	(m2)			4,994											
A : Runoff area (Slope Protection)	(m2)														
A : Runoff area (Storm Water Pond)	(m2)														
c : Runoff coefficient (Roof)															
c : Runoff coefficient (Paving)		0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
c : Runoff coefficient (Grave + Paving)															
c : Runoff coefficient (Turf)															
c : Runoff coefficient (Non Paving)		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
c : Runoff coefficient (Slope Protection)															
c : Runoff coefficient (Storm Water Pond)															
I_n : Rainwater intensity	(mm/hr)	116.22	116.22	116.22	116.22	116.22	116.22	116.22	116.22	116.22	116.22	116.22	116.22	116.22	116.22
Flow Volume															
Q_{n-1} : flow volume of upstream area	(m3/s)			1.310	1.374			1.431		2.112		2.833		3.782	5.155
Q_n : flow volume from this runoff area	(m3/s)	0.300	0.692	0.048	0.000	0.552	0.532	0.000	0.516	0.000	0.546	0.303	0.416	0.000	0.000
Q : Total Flow volume with 32% safety factor $=[Q_{n-1}] + [132\% \times Q_n]$	(m3/s)	0.396	0.914	1.374	1.374	0.729	0.703	1.431	0.681	2.112	0.721	3.233	0.549	3.782	5.155
Shape of drain gutter															
W: width of drainage line	(m)	1.00	1.00	1.20	1.20	1.00	1.00	1.40	1.00	1.80	1.00	2.00	1.00	2.20	2.40
D: depth of drainage line	(m)	0.40	0.90	0.95	0.95	0.73	0.70	0.85	0.70	1.26	0.70	1.44	0.70	1.69	1.79
p: wetted perimeter = W +2D	(m)	1.80	2.80	3.10	3.10	2.46	2.40	3.10	2.40	4.31	2.40	4.89	2.40	5.58	5.98
A: cross sectional area of flow = W×D	(m2)	0.4000	0.9000	1.1400	1.1400	0.7287	0.7000	1.1900	0.7000	2.2629	0.7000	2.8864	0.7000	3.7141	4.2959
n: roughness coefficient of drainage line		0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120
R: Hydraulic radius = A/p	(m)	0.2222	0.3214	0.3677	0.3677	0.2965	0.2917	0.3839	0.2917	0.5245	0.2917	0.5907	0.2917	0.6660	0.7184
S: Slope of gutter	(%)	0.11%	0.07%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.06%	0.08%	0.07%	0.08%	0.06%	0.07%
Q: flow capacity of gutter $Q = A/n \times (R^{2/3} \times S^{1/2})$	(m3/s)	0.4056	0.9311	1.3792	1.3792	0.7638	0.7256	1.4815	0.7256	3.0042	0.7256	4.4803	0.7256	5.7820	7.5974
[Flow capacity of gutter]-[132% of required flow]	(m3/s)	0.0099	0.0172	0.0057	0.0057	0.0351	0.0230	0.0501	0.0449	0.8922	0.0043	1.2475	0.1768	2.0004	2.4423
If [Flow capacity of gutter]-[132% of required flow] > 0 then OK If [Flow capacity of gutter]-[132% of required flow] < 0 then not OK		OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

Calculation of storm water drainage lines of GPD Project

		Route B	
Drainage lines		22-23	23-24
Upstream drainage line (1)			22-23
Upstream drainage line (2)			
Upstream drainage line (3)		-	-
Design conditions			
A : Runoff area (Roof)	(m2)		
A : Runoff area (Paving)	(m2)		23,313
A : Runoff area (Grave + Paving)	(m2)		
A : Runoff area (Turf)	(m2)		
A : Runoff area (Non Paving)	(m2)	14,733	
A : Runoff area (Slope Protection)	(m2)		
A : Runoff area (Storm Water Pond)	(m2)		
c : Runoff coefficient (Roof)			
c : Runoff coefficient (Paving)		0.7	0.7
c : Runoff coefficient (Grave + Paving)			
c : Runoff coefficient (Turf)			
c : Runoff coefficient (Non Paving)		0.3	0.3
c : Runoff coefficient (Slope Protection)			
c : Runoff coefficient (Storm Water Pond)			
I_n : Rainwater intensity	(mm/hr)	116.22	116.22
Flow Volume			
Q_{n-1} : flow volume of upstream area	(m3/s)		0.188
Q_n : flow volume from this runoff area	(m3/s)	0.143	0.527
Q : Total Flow volume with 32% safety factor $=[Q_{n-1}] + [132\% \times Q_n]$	(m3/s)	0.188	0.884
Shape of drain gutter			
W: width of drainage line	(m)	1.00	1.00
D: depth of drainage line	(m)	0.20	1.00
p: wetted perimeter = W +2D	(m)	1.40	3.00
A: cross sectional area of flow = W × D	(m2)	0.2000	1.0000
n: roughness coefficient of drainage line		0.0120	0.0120
R: Hydraulic radius = A/p	(m)	0.1429	0.3333
S: Slope of gutter	(%)	0.20%	0.08%
Q: flow capacity of gutter $Q = A/n \times (R^{2/3} \times S^{1/2})$	(m3/s)	0.2037	1.1331
[Flow capacity of gutter]-[132% of required flow]	(m3/s)	0.0153	0.2494
If [Flow capacity of gutter]-[132% of required flow] > 0 then OK If [Flow capacity of gutter]-[132% of required flow] < 0 then not OK		OK	OK

Calculation of storm water drainage lines of GPD Project

		Route C
Drainage lines		25–26
Upstream drainage line (1)		
Upstream drainage line (2)		
Upstream drainage line (3)		–
Design conditions		
A : Runoff area (Roof)	(m2)	
A : Runoff area (Paving)	(m2)	
A : Runoff area (Grave + Paving)	(m2)	
A : Runoff area (Turf)	(m2)	
A : Runoff area (Non Paving)	(m2)	64,069
A : Runoff area (Slope Protection)	(m2)	
A : Runoff area (Storm Water Pond)	(m2)	
c : Runoff coefficient (Roof)		
c : Runoff coefficient (Paving)		0.7
c : Runoff coefficient (Grave + Paving)		
c : Runoff coefficient (Turf)		
c : Runoff coefficient (Non Paving)		0.3
c : Runoff coefficient (Slope Protection)		
c : Runoff coefficient (Storm Water Pond)		
I_n : Rainwater intensity	(mm/hr)	116.22
Flow Volume		
Q_{n-1} : flow volume of upstream area	(m3/s)	
Q_n : flow volume from this runoff area	(m3/s)	0.621
Q : Total Flow volume with 32% safety factor $=[Q_{n-1}] + [132\% \times Q_n]$	(m3/s)	0.819
Shape of drain gutter		
W: width of drainage line	(m)	1.00
D: depth of drainage line	(m)	0.82
p: wetted perimeter = W +2D	(m)	2.64
A: cross sectional area of flow = W × D	(m2)	0.8191
n: roughness coefficient of drainage line		0.0120
R: Hydraulic radius = A/p	(m)	0.3105
S: Slope of gutter	(%)	0.07%
Q: flow capacity of gutter $Q = A/n \times (R^{2/3} \times S^{1/2})$	(m3/s)	0.8280
[Flow capacity of gutter]–[132% of required flow]	(m3/s)	0.0089
If [Flow capacity of gutter]–[132% of required flow] > 0 then OK If [Flow capacity of gutter]–[132% of required flow] < 0 then not OK		OK

Calculation of storm water drainage lines of GPD Project

		Route D
Drainage lines		27-29
Upstream drainage line (1)		
Upstream drainage line (2)		
Upstream drainage line (3)		-
Design conditions		
A : Runoff area (Roof)	(m2)	
A : Runoff area (Paving)	(m2)	
A : Runoff area (Grave + Paving)	(m2)	
A : Runoff area (Turf)	(m2)	
A : Runoff area (Non Paving)	(m2)	27,507
A : Runoff area (Slope Protection)	(m2)	
A : Runoff area (Storm Water Pond)	(m2)	
c : Runoff coefficient (Roof)		
c : Runoff coefficient (Paving)		0.7
c : Runoff coefficient (Grave + Paving)		
c : Runoff coefficient (Turf)		
c : Runoff coefficient (Non Paving)		0.3
c : Runoff coefficient (Slope Protection)		
c : Runoff coefficient (Storm Water Pond)		
I_n : Rainwater intensity	(mm/hr)	116.22
Flow Volume		
Q_{n-1} : flow volume of upstream area	(m3/s)	
Q_n : flow volume from this runoff area	(m3/s)	0.266
Q : Total Flow volume with 32% safety factor $=[Q_{n-1}] + [132\% \times Q_n]$	(m3/s)	0.352
Shape of drain gutter		
W: width of drainage line	(m)	1.00
D: depth of drainage line	(m)	0.40
p: wetted perimeter = W +2D	(m)	1.80
A: cross sectional area of flow = W × D	(m2)	0.4000
n: roughness coefficient of drainage line		0.0120
R: Hydraulic radius = A/p	(m)	0.2222
S: Slope of gutter	(%)	0.12%
Q: flow capacity of gutter $Q = A/n \times (R^{2/3} \times S^{1/2})$	(m3/s)	0.4236
[Flow capacity of gutter]-[132% of required flow]	(m3/s)	0.0720
If [Flow capacity of gutter]-[132% of required flow] > 0 then OK If [Flow capacity of gutter]-[132% of required flow] < 0 then not OK		OK

Calculation of storm water drainage lines of GPD Project

		Route E
Drainage lines		27-28
Upstream drainage line (1)		
Upstream drainage line (2)		
Upstream drainage line (3)		-
Design conditions		
A : Runoff area (Roof)	(m2)	
A : Runoff area (Paving)	(m2)	
A : Runoff area (Grave + Paving)	(m2)	
A : Runoff area (Turf)	(m2)	
A : Runoff area (Non Paving)	(m2)	36,381
A : Runoff area (Slope Protection)	(m2)	
A : Runoff area (Storm Water Pond)	(m2)	
c : Runoff coefficient (Roof)		
c : Runoff coefficient (Paving)		0.7
c : Runoff coefficient (Grave + Paving)		
c : Runoff coefficient (Turf)		
c : Runoff coefficient (Non Paving)		0.3
c : Runoff coefficient (Slope Protection)		
c : Runoff coefficient (Storm Water Pond)		
I_n : Rainwater intensity	(mm/hr)	116.22
Flow Volume		
Q_{n-1} : flow volume of upstream area	(m3/s)	
Q_n : flow volume from this runoff area	(m3/s)	0.352
Q : Total Flow volume with 32% safety factor $=[Q_{n-1}] + [132\% \times Q_n]$	(m3/s)	0.465
Shape of drain gutter		
W: width of drainage line	(m)	1.00
D: depth of drainage line	(m)	0.50
p: wetted perimeter = W +2D	(m)	2.00
A: cross sectional area of flow = W × D	(m2)	0.5000
n: roughness coefficient of drainage line		0.0120
R: Hydraulic radius = A/p	(m)	0.2500
S: Slope of gutter	(%)	0.10%
Q: flow capacity of gutter $Q = A/n \times (R^{2/3} \times S^{1/2})$	(m3/s)	0.5229
[Flow capacity of gutter]-[132% of required flow]	(m3/s)	0.0578
If [Flow capacity of gutter]-[132% of required flow] > 0 then OK If [Flow capacity of gutter]-[132% of required flow] < 0 then not OK		OK

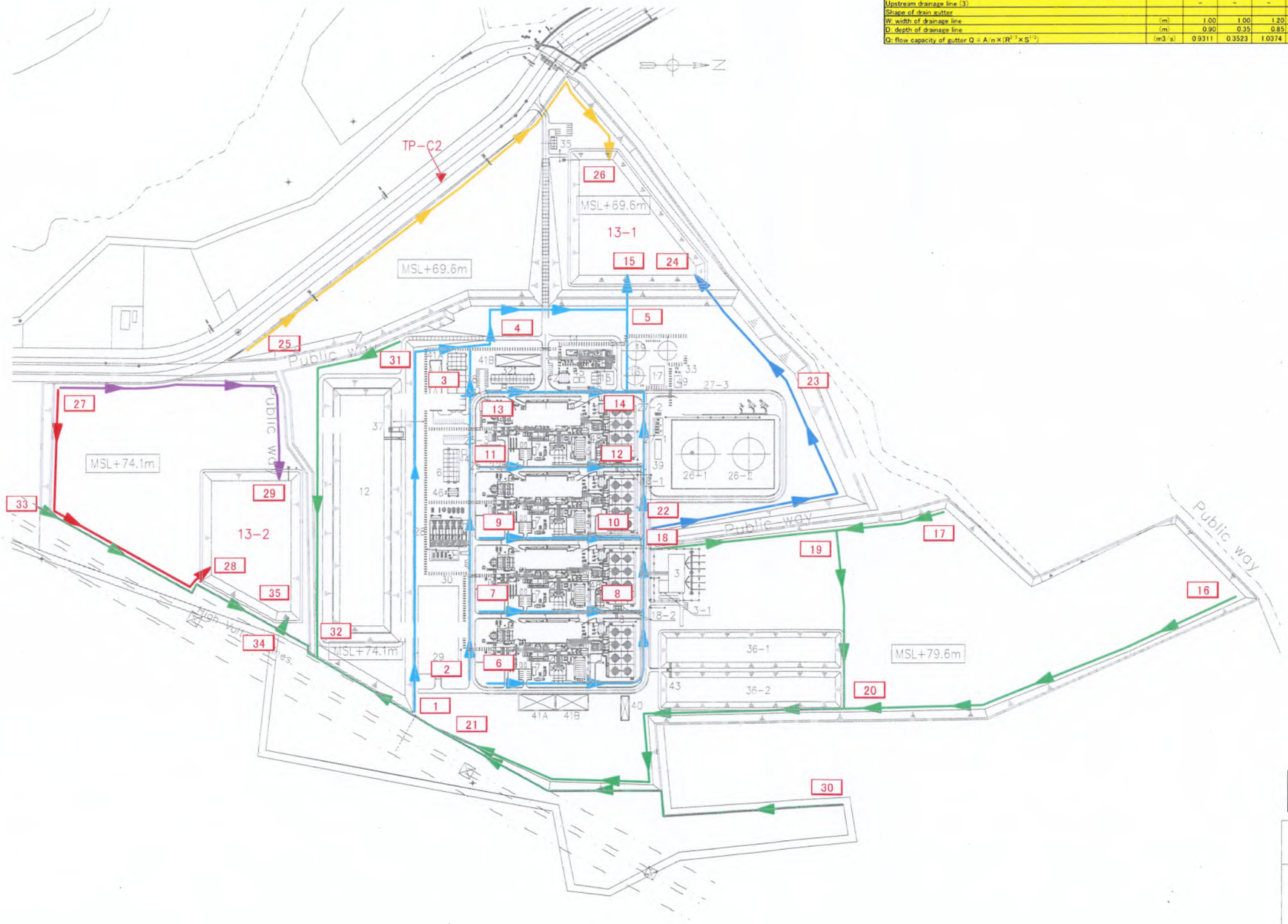
Calculation of storm water drainage lines of GPD Project

		Route F								
Drainage lines		16-20	17-19	18-19	19-20	20-21	30-21	21-32	31-32	32-33
Upstream drainage line (1)		-	-	-	17-19	16-20	-	20-21	-	21-32
Upstream drainage line (2)		-	-	-	18-19	19-20	-	30-21	-	31-32
Upstream drainage line (3)		-	-	-	-	-	-	-	-	-
Design conditions										
A : Runoff area (Roof)	(m2)									
A : Runoff area (Paving)	(m2)			33,870		30,038				
A : Runoff area (Grave + Paving)	(m2)									
A : Runoff area (Turf)	(m2)									
A : Runoff area (Non Paving)	(m2)	71,026	26,478				35,579	26,059	13,033	
A : Runoff area (Slope Protection)	(m2)									
A : Runoff area (Storm Water Pond)	(m2)									
c : Runoff coefficient (Roof)										
c : Runoff coefficient (Paving)		0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
c : Runoff coefficient (Grave + Paving)										
c : Runoff coefficient (Turf)										
c : Runoff coefficient (Non Paving)		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
c : Runoff coefficient (Slope Protection)										
c : Runoff coefficient (Storm Water Pond)										
I_n : Rainwater intensity	(mm/hr)	116.22	116.22	116.22	116.22	116.22	116.22	116.22	116.22	116.22
Flow Volume										
Q_{n-1} : flow volume of upstream area	(m3/s)				1.349	2.257		3.608		4.107
Q_n : flow volume from this runoff area	(m3/s)	0.688	0.256	0.765	0.000	0.679	0.345	0.252	0.126	0.000
Q : Total Flow volume with 32% safety factor $=[Q_{n-1}] + [132\% \times Q_n]$	(m3/s)	0.908	0.339	1.010	1.349	3.153	0.455	3.941	0.167	4.107
Shape of drain gutter										
W: width of drainage line	(m)	1.00	1.00	1.20	1.40	2.20	1.00	2.40	1.00	2.40
D: depth of drainage line	(m)	0.90	0.35	0.85	1.00	1.05	0.50	1.20	0.17	1.25
p: wetted perimeter = W +2D	(m)	2.80	1.70	2.90	3.40	4.30	2.00	4.80	1.33	4.90
A: cross sectional area of flow = W × D	(m2)	0.9000	0.3500	1.0200	1.4000	2.3100	0.5000	2.8800	0.1666	3.0000
n: roughness coefficient of drainage line		0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120
R: Hydraulic radius = A/p	(m)	0.3214	0.2059	0.3517	0.4118	0.5372	0.2500	0.6000	0.1250	0.6122
S: Slope of gutter	(%)	0.07%	0.12%	0.06%	0.05%	0.07%	0.10%	0.06%	0.30%	0.06%
Q: flow capacity of gutter $Q = A/n \times (R^{2/3} \times S^{1/2})$	(m3/s)	0.9311	0.3523	1.0374	1.4439	3.3657	0.5229	4.1820	0.1901	4.4154
[Flow capacity of gutter]-[132% of required flow]	(m3/s)	0.0231	0.0138	0.0271	0.0950	0.2128	0.0680	0.2412	0.0235	0.3079
If [Flow capacity of gutter]-[132% of required flow] > 0 then OK If [Flow capacity of gutter]-[132% of required flow] < 0 then not OK		OK	OK	OK	OK	OK	OK	OK	OK	OK

		Route A												
Drainage lines		1-3	2-3	3-4	4-5	6-8	7-8	8-10	9-10	10-12	11-12	12-14	13-14	14-5	5-15
Upstream drainage line (1)		-		1-3	3-4	-		6-8		8-10		10-12		12-14	4-5
Upstream drainage line (2)		-		2-3	-	-		7-8		9-10		11-12		13-14	14-5
Upstream drainage line (3)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shape of drain gutter															
W: width of drainage line	(m)	1.00	1.00	1.20	1.20	1.00	1.00	1.40	1.00	1.80	1.00	2.00	1.00	2.20	2.40
D: depth of drainage line	(m)	0.40	0.90	0.95	0.95	0.73	0.70	0.85	0.70	1.26	0.70	1.44	0.70	1.69	1.79
Q: flow capacity of gutter $Q = A/n \times (R^{2/3} \times S^{1/2})$	(m3/s)	0.4056	0.9311	1.3792	1.3792	0.7638	0.7256	1.4815	0.7256	3.0042	0.7256	4.4803	0.7256	5.7820	7.5974

		Route B		Route C	Route D	Route E
Drainage lines		22-23	23-24	25-26	27-28	27-29
Upstream drainage line (1)			22-23			
Upstream drainage line (2)		-	-	-	-	-
Upstream drainage line (3)						
Shape of drain gutter						
W: width of drainage line	(m)	1.00	1.00	1.00	1.00	1.00
D: depth of drainage line	(m)	0.20	1.00	0.82	0.40	0.50
Q: flow capacity of gutter $Q = A/n \times (R^{2/3} \times S^{1/2})$	(m3/s)	0.2007	1.1331	0.8080	0.4036	0.5229

		Route F								
Drainage lines		16-20	17-19	18-19	19-20	20-21	30-21	21-32	31-32	32-33
Upstream drainage line (1)		-	-	-	17-19	16-20	-	20-21	-	21-32
Upstream drainage line (2)		-	-	-	18-19	19-20	-	30-21	-	31-32
Upstream drainage line (3)		-	-	-	-	-	-	-	-	-
Shape of drain gutter										
W: width of drainage line	(m)	1.00	1.00	1.20	1.40	2.20	1.00	2.40	1.00	2.40
D: depth of drainage line	(m)	0.90	0.35	0.85	1.00	1.05	0.50	1.20	0.17	1.25
Q: flow capacity of gutter $Q = A/n \times (R^{2/3} \times S^{1/2})$	(m3/s)	0.9311	0.3523	1.0374	1.4439	3.3657	0.5229	4.1820	0.1901	4.4154



LEGEND

STORM WATER DRAINAGE LINE

ROUTE A

ROUTE B

ROUTE C

ROUTE D

ROUTE E

ROUTE F

0 100 200 300(m)

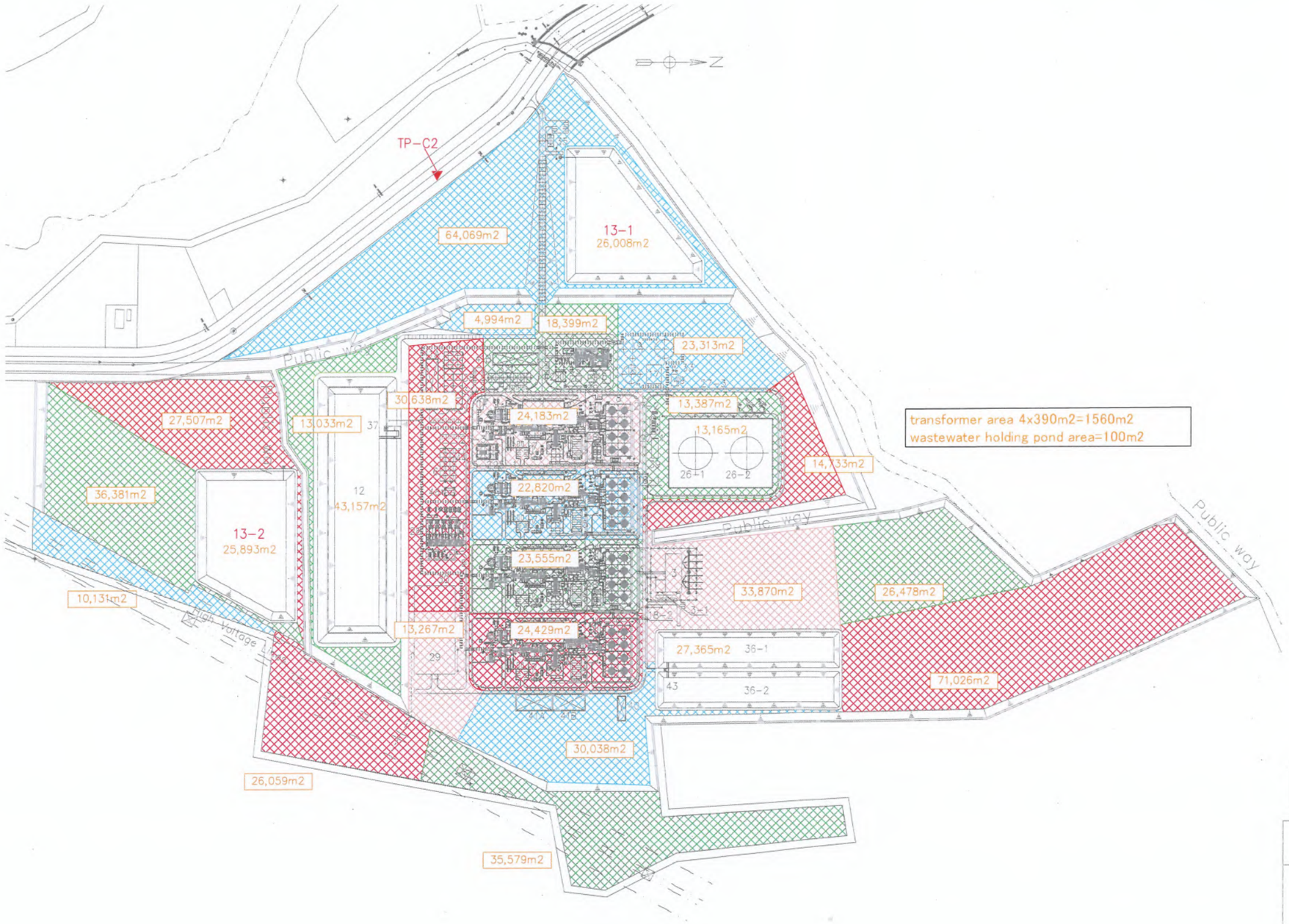
SCALE 1/6000

Preliminary - Not to be used for construction
Subject to changes during detailed design

GPD Pluak Daeng Power Plant Project

DIAGRAM OF RAIN WATER DRINAGE SYSTEM WITHIN THE PROJECT SITE

2019/02/08



Preliminary - Not to be used for construction
Subject to changes during detailed design

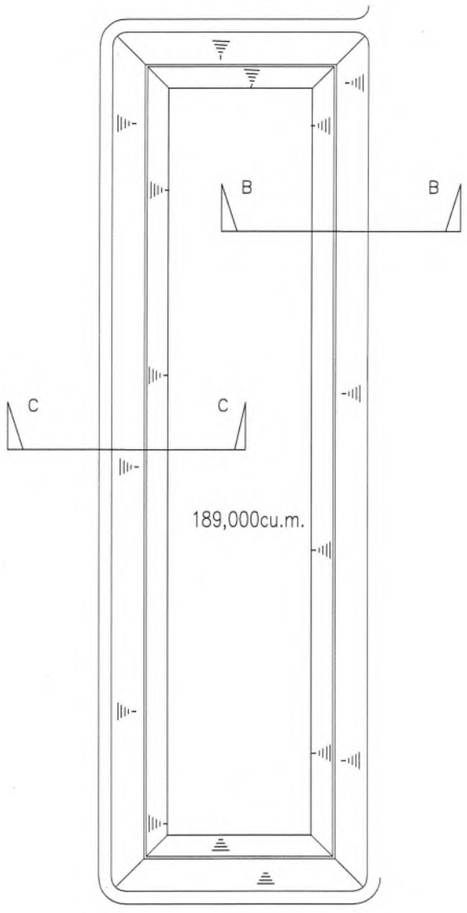
GPD Pluak Daeng Power Plant Project

DIAGRAM OF RAIN WATER DRINAGE SYSTEM
WITHIN THE PROJECT SITE

2019/02/08

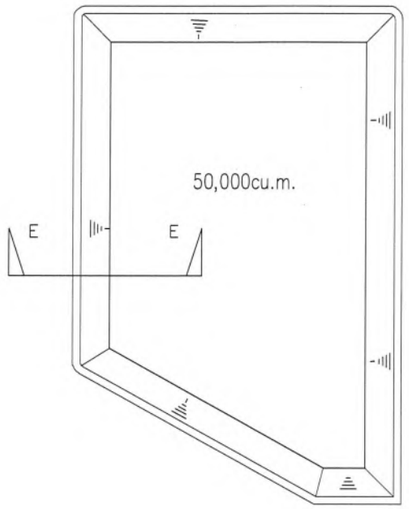
RAW WATER POND

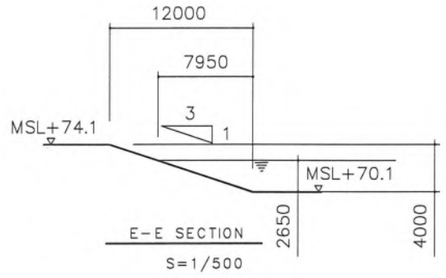
S=1/2500



STORM WATER RETENSION POND-2

S=1/2500



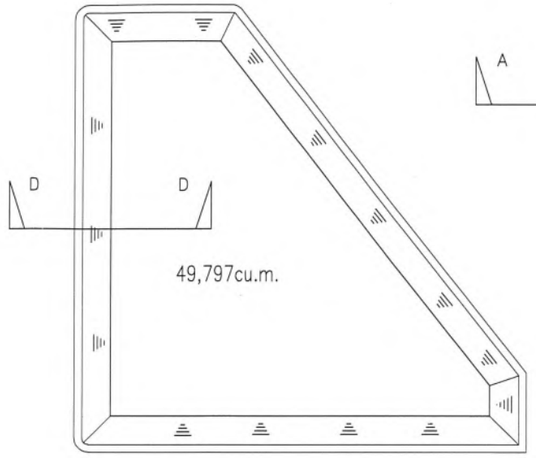


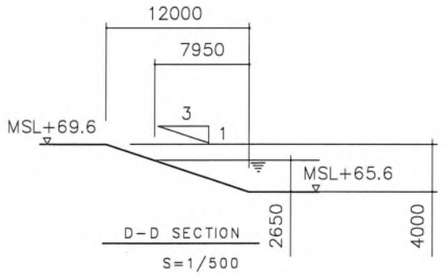
E-E SECTION

S=1/500

STORM WATER RETENSION POND-1

S=1/2500



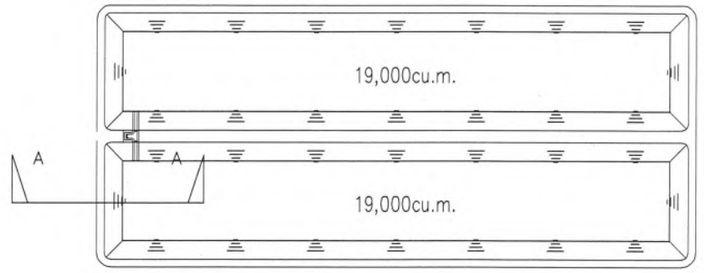


D-D SECTION

S=1/500

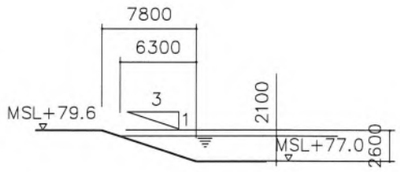
COOLING WATER HOLDING POND-2

S=1/1250



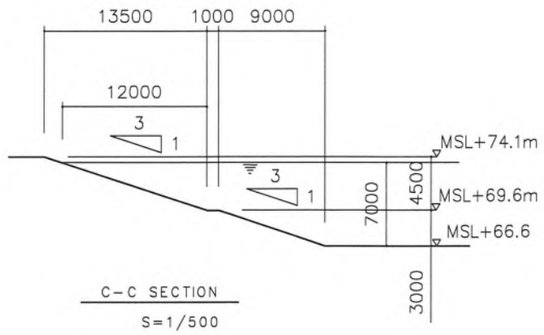
COOLING WATER HOLDING POND-1

S=1/1250



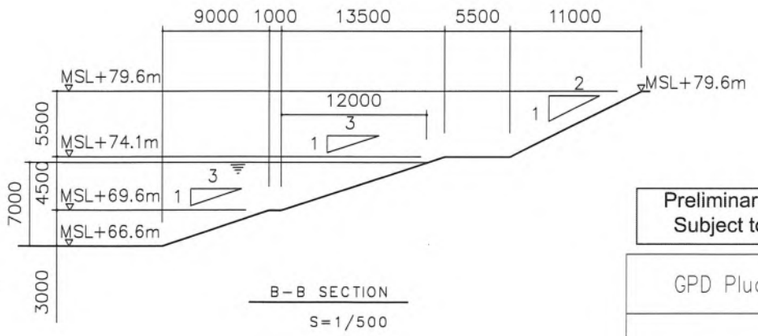
A-A SECTION

S=1/500



C-C SECTION

S=1/500



B-B SECTION

S=1/500

Preliminary - Not to be used for construction
Subject to changes during detailed design

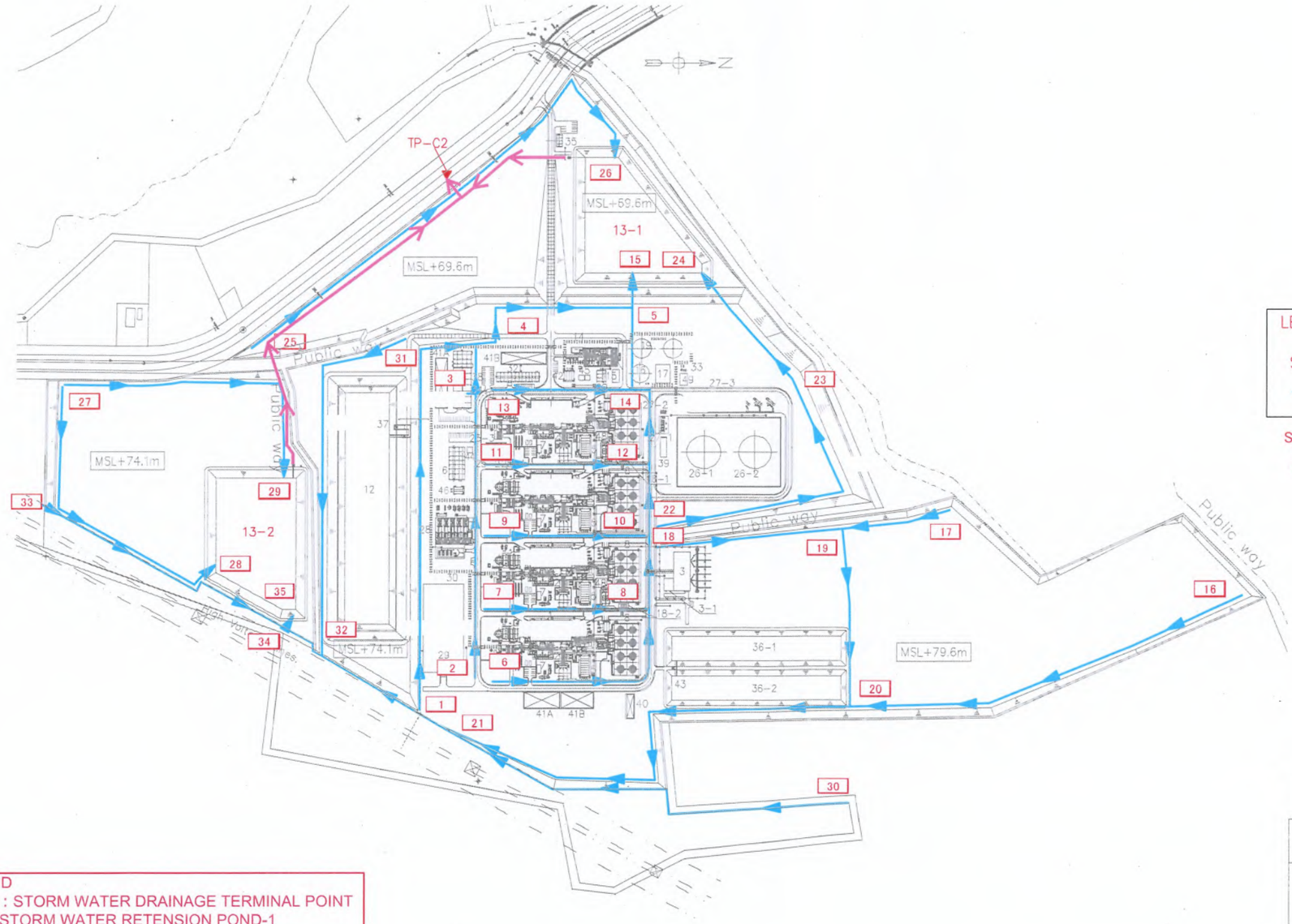
GPD Pluak Daeng Power Plant Project

POND PLAN

2019/02/08

ภาคผนวก 2ฏ

รายการคำนวณอัตราการระบายน้ำฝนออกจากพื้นที่โครงการ และเอกสารยืนยันความสามารถรองรับการระบายน้ำฝนของรางระบายน้ำฝนของสวนอุตสาหกรรมปลวกแดง ภายหลังการเปลี่ยนแปลงรายละเอียดโครงการ



LEGEND
TP-C2 : STORM WATER DRAINAGE TERMINAL POINT
13-1 : STORM WATER RETENSION POND-1
13-2 : STORM WATER RETENSION POND-2

LEGEND

STORM WATER DRAINAGE LINE

STORM WATER DISCHARGE PIPING

0 100 200 300(m)

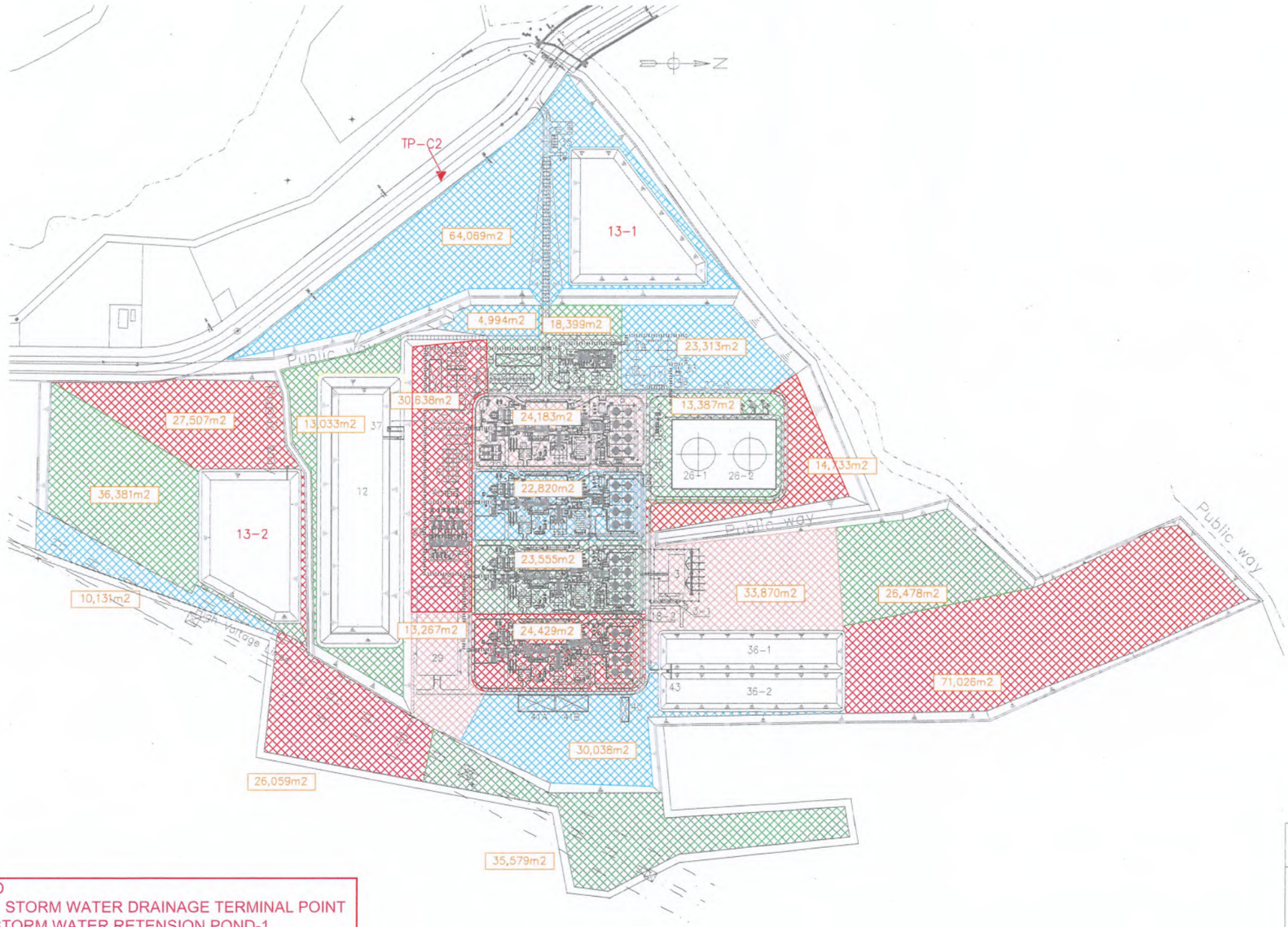
SCALE 1/6000

Preliminary - Not to be used for construction
Subject to changes during detailed design

GPD Pluak Daeng Power Plant Project

DIAGRAM OF RAIN WATER DRINAGE SYSTEM
WITHIN THE PROJECT SITE

2019/02/08



LEGEND
TP-C2 : STORM WATER DRAINAGE TERMINAL POINT
13-1 : STORM WATER RETENSION POND-1
13-2 : STORM WATER RETENSION POND-2

Preliminary - Not to be used for construction
Subject to changes during detailed design

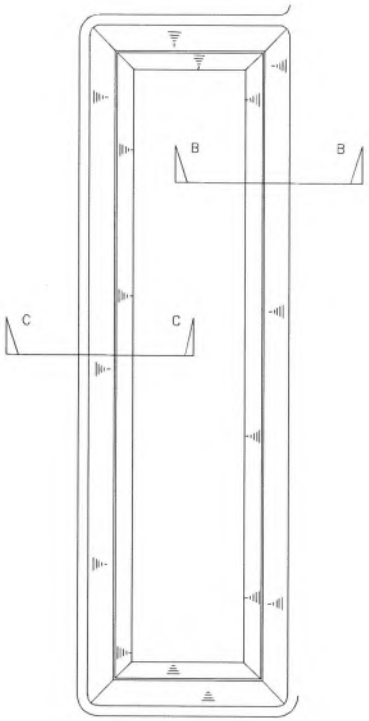
GPD Pluak Daeng Power Plant Project

DIAGRAM OF RAIN WATER DRINAGE SYSTEM WITHIN THE PROJECT SITE

2019/02/08

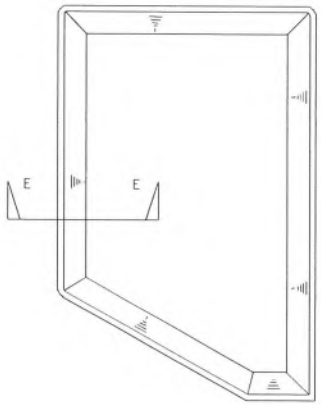
RAW WATER POND

S=1/2500



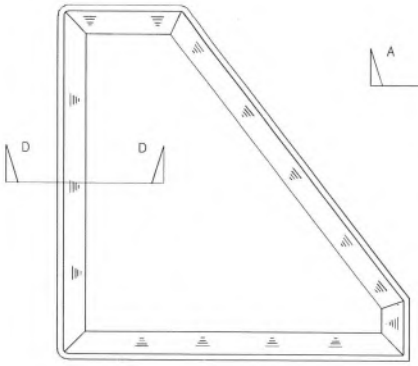
STORM WATER RETENSION POND-2

S=1/2500



STORM WATER RETENSION POND-1

S=1/2500

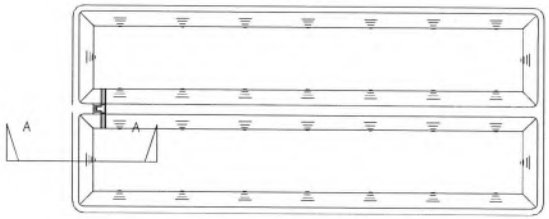


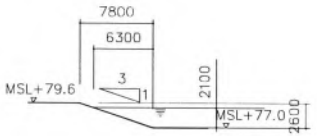
COOLING WATER HOLDING POND-2

S=1/1250

COOLING WATER HOLDING POND-1

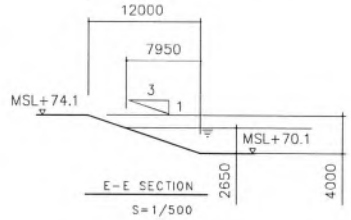
S=1/1250





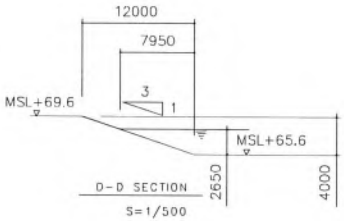
A-A SECTION

S=1/500



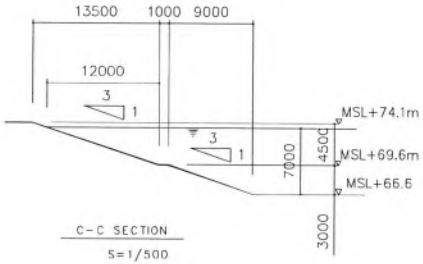
E-E SECTION

S=1/500



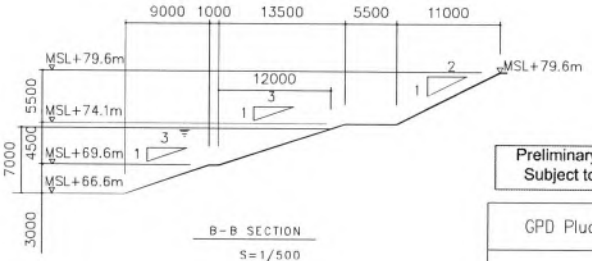
D-D SECTION

S=1/500



C-C SECTION

S=1/500



B-B SECTION

S=1/500

Preliminary - Not to be used for construction
Subject to changes during detailed design

GPD Pluak Daeng Power Plant Project

POND PLAN

2019/02/08

Storm water discharge from Pluak Daeng Power Plant to Rojana Industrial Park drainage system:

Storm water pond -1 and 2 catchment area is 492.31 rais or 787,696 sq.m.

Storm water discharge after project development will be the same as before project development, i.e. c = 0.3

Therefore; storm water discharge from Pluak Daeng Power Plant will be:

(787,696 sq.m.) x (100 mm/hr) x (1/1000 m/mm) x (0.3) x (1/3600 hr/sec)

= 6.564 cu.m./second or 23,631 cu.m./hr

Storm water discharge from pond -1 will be discharged into Rojana's u-ditch at STA 0+940 (P3 to P4) of Rojana's east gutter. Capacity of Rojana's u-ditch at STA 0+940 is 185,205 cu.m./hr, which is higher than (23,631 cu.m./hr) =>> OK.

Calculation of Rojana's u-ditch is on the following pages…

บริษัท สวนอุตสาหกรรมโรจนะ ระยอง 2 จำกัด
ROJANA INDUSTRIAL PARK RAYONG 2 CO., LTD.
2034/115 อาคารอิตัลไทย ทาวเวอร์ ถนนเพชรบุรีตัดใหม่ แขวงบางกะปิ เขตห้วยขวาง กทม. 10310
หมายเลขโทรศัพท์ 02 716 1750-7 โทรสาร 02 716 1758-9

ที่ รย (2) 008/2559

25 กรกฎาคม 2559

เรียน กรรมการ
บริษัท กัลฟ์ พีดี จำกัด

เรื่อง การรองรับการระบายน้ำฝนจากพื้นที่โครงการโรงไฟฟ้าปลวกแดง

อ้างถึง หนังสือจากบริษัทกัลฟ์ พีดี จำกัด เลขที่ GPD O 0716/011 ลงวันที่ 14 กรกฎาคม 2559

สิ่งที่ส่งมาด้วย รายการคำนวณรางระบายน้ำฝน

ตามที่ บริษัท กัลฟ์ พีดี จำกัด มีแผนพัฒนาโครงการโรงไฟฟ้าปลวกแดง ("โครงการฯ") ซึ่งตั้งอยู่ในสวนอุตสาหกรรมโรจนะ ปลวกแดง ("สวนฯ") ของบริษัทสวนอุตสาหกรรมโรจนะ ระยอง 2 จำกัด ("บริษัทฯ") และได้สอบถามถึงความสามารถในการรองรับการระบายน้ำฝนของสวนฯ เพื่อรองรับการระบายน้ำฝนจากพื้นที่โครงการฯ ดังหนังสือที่อ้างถึงนั้น

บริษัทฯ ขอยืนยันว่ารางระบายน้ำฝนหน้าพื้นที่โครงการโรงไฟฟ้าปลวกแดงที่รองรับปริมาณน้ำฝนที่อัตราการระบายสูงสุด 15 ลูกบาศก์เมตรต่อวินาที มีความสามารถรองรับน้ำฝนที่ระบายออกจากโครงการได้อย่างเพียงพอ พร้อมกันนี้บริษัทฯ ได้แนบรายการคำนวณรางระบายน้ำฝนของโครงการ เพื่อยืนยันข้อมูลการรองรับการระบายน้ำฝนดังกล่าว

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

(นายดิเรก วินิชบุตร)
ประธานเจ้าหน้าที่บริหาร

DRAINAGE CALCULATION SHEET
OF
ROJANA INDUSTRIAL PARK, PLUAK-DANG, RAYONG

DRAINAGE CALCULATION OF CONCRETE U-DITCH

6-Mar-2013

This calculation use two equations as follows:

$Q_R = CiA$ for RUNOFF

C = AVERAGE RUNOFF COEFFICIENT = 0.79
i = INTENCITY OF RAIN FALL = 110.0 mm/hr
A = CATHMENT AREA

$Q_U = 1/n\ A\ R^{2/3}\ S^{1/2}$ for OPEN CHANNEL FLOW

n = ROUGHNESS COEFFICIENT (= 0.015 for concrete surface)
A = WATER SECTION AREA
R = WATER SECTION AREA / WETTED PARIMETER
S = SLOPE OF U-DITCH

ZONE 2

33 NAME OF ROAD : No. Road A EAST Sta.0+520 - 0+940 m. (from point #P2' to #P3')

ELEVATION OF THIS CATHMENT AREA (#1/2) = + 77.36 m.
STARTING ELEVATION OF THIS ROAD = + 76.36 m.
ENDING ELEVATION OF THIS ROAD = + 76.36 m.

Slope of Road	
1 : 0	0 %

DETAILS OF U-DITCH GUTTER TYPE :

STA.	LENGTH (m)	ACC. AREA (m2)	RUNOFF, Q_R (m3/hr)	n	S (unitless)	Dep. (m)	ELV. (m)	W (m.)	A (m2)	R	Q_U (m3/hr)
0+520	0	0	0.00	0.015	0.00333	0.50	+ 75.86	2.50	1.25	0.357	8,718.77
0+620	100	146,095	12,695.68	0.015	0.00333	0.83	+ 75.53	2.50	2.08	0.500	18,185.39
0+720	200	292,190	25,391.35	0.015	0.00333	1.17	+ 75.19	2.50	2.92	0.603	28,860.07
0+820	300	438,286	38,087.03	0.015	0.00333	1.50	+ 74.86	2.50	3.75	0.682	40,252.63
0+920	400	584,381	50,782.70	0.015	0.00333	1.83	+ 74.53	2.50	4.58	0.743	52,109.80
0+940	420	613,600	53,321.84	0.015	0.00333	1.90	+ 74.46	2.50	4.75	0.754	54,522.98

34 NAME OF ROAD : No. Road A EAST Sta.0+940 - 1+082 m. (from point #P3' to #P4)

ELEVATION OF THIS CATHMENT AREA (#3) = + 75.36 m.
STARTING ELEVATION OF THIS ROAD = + 76.36 m.
ENDING ELEVATION OF THIS ROAD = + 70.86 m.

Slope of Road	
1 : 26	3.85 %

DETAILS OF U-DITCH GUTTER TYPE :

STA.	LENGTH (m)	ACC. AREA (m2)	RUNOFF, Q_R (m3/hr)	n	S (unitless)	Dep. (m)	ELV. (m)	W (m.)	A (m2)	R	Q_U (m3/hr)
0+940	0	0	53,321.84	0.015	0.03846	1.90	+ 74.46	2.50	4.75	0.754	185,205.36
1+040	100	0	53,321.84	0.015	0.03846	1.90	+ 70.61	2.50	4.75	0.754	185,205.36
1+082	142	0	53,321.84	0.015	0.03846	1.90	+ 69.00	2.50	4.75	0.754	185,205.36

35 NAME OF ROAD : From Gutter Road A-EAST to Road A-WEST

ROAD'S ELEVATION OF THIS CATHMENT AREA = + 76.36 m.

DETAILS OF U-DITCH GUTTER TYPE : BOX CURVERT

STA.	LENGTH (m)	ACC. AREA (m2)	RUNOFF, Q_R (m3/hr)	n	S (unitless)	Dep. (m)	ELV. (m)	W (m.)	A (m2)	R	Q_U (m3/hr)
Road A			53,321.84	0.015	0.00400	1.50	+ 69.00	3.00	4.50	0.750	56,384.70
1+082	40		53,321.84	0.015	0.00400	1.50	+ 68.84	3.00	4.50	0.750	56,384.70

36 NAME OF ROAD : No. Road A WEST Sta.0+520 - 0+940 m. (from point #P2' to #P3')

ELEVATION OF THIS CATHMENT AREA (#3) = + 75.36 m.

STARTING ELEVATION OF THIS ROAD = + 76.36 m.

ENDING ELEVATION OF THIS ROAD = + 76.36 m.

Slope of Road	
1 : 0	0 %

DETAILS OF U-DITCH GUTTER TYPE :

STA.	LENGTH (m)	ACC. AREA (m2)	RUNOFF, Q_R (m3/hr)	n	S (unitless)	Dep. (m)	ELV. (m)	W (m.)	A (m2)	R	Q_U (m3/hr)
0+520	0	0	0.00	0.015	0.00125	0.50	+ 74.86	1.50	0.75	0.300	2,851.95
0+620	100	17,257	1,499.65	0.015	0.00125	0.63	+ 74.74	1.50	0.94	0.341	3,882.07
0+720	200	34,514	2,999.29	0.015	0.00125	0.75	+ 74.61	1.50	1.13	0.375	4,964.09
0+820	300	51,771	4,498.94	0.015	0.00125	0.88	+ 74.49	1.50	1.31	0.404	6,084.75
0+920	400	69,029	5,998.58	0.015	0.00125	1.00	+ 74.36	1.50	1.50	0.429	7,235.02
0+940	420	72,480	6,298.51	0.015	0.00125	1.03	+ 74.34	1.50	1.54	0.433	7,468.03

37 NAME OF ROAD : No. Road A WEST Sta.0+969 - 1+082 m. (from point #P3' to #P4)

ELEVATION OF THIS CATHMENT AREA (#3) = + 75.36 m.

STARTING ELEVATION OF THIS ROAD = + 76.36 m.

ENDING ELEVATION OF THIS ROAD = + 70.86 m.

Slope of Road	
1 : 26	3.85 %

DETAILS OF U-DITCH GUTTER TYPE :

STA.	LENGTH (m)	ACC. AREA (m2)	RUNOFF, Q_R (m3/hr)	n	S (unitless)	Dep. (m)	ELV. (m)	W (m.)	A (m2)	R	Q_U (m3/hr)
0+940	0	0	6,298.51	0.015	0.03846	1.03	+ 75.34	1.50	1.54	0.433	41,425.16
1+040	100	0	6,298.51	0.015	0.03846	1.03	+ 71.49	1.50	1.54	0.433	41,425.16
1+082	142	0	6,298.51	0.015	0.03846	1.03	+ 69.87	1.50	1.54	0.433	41,425.16

38 NAME OF ROAD : From Main gutter of Road A-Zone 2 & Boxcurvert to Pond#1

ELEVATION OF THIS CATHMENT AREA = + 76.36 m.

STARTING ELEVATION OF THIS GUTTER = + 70.86 m.

ENDING ELEVATION OF THIS GUTTER = + 70.00 m.

Slope of Gutter	
1 : 233	0.43 %

DETAILS OF U-DITCH GUTTER TYPE :

STA.	LENGTH (m)	ACC. AREA (m2)	RUNOFF, Q_R (m3/hr)	n	S (unitless)	Dep. (m)	ELV. (m)	W (m.)	A (m2)	R	Q_U (m3/hr)
0+000	0	0	59,620.35	0.015	0.00833	2.02	+ 68.84	2.50	5.05	0.772	93,211.46
0+100	100	0	59,620.35	0.015	0.00833	2.43	+ 68.01	2.50	6.06	0.825	116,860.11
0+130	130	0	59,620.35	0.015	0.00833	2.55	+ 66.92	2.50	6.37	0.838	124,043.59
0+200	200	0	59,620.35	0.015	0.00833	2.83	+ 67.17	2.50	7.07	0.867	140,931.35

39 NAME OF ROAD : No. Road A EAST Sta.0+520 - 0+040 m. (from point #P2' to #P1')

ELEVATION OF THIS CATHMENT AREA (#2) = + 72.28 m.

STARTING ELEVATION OF THIS ROAD = + 76.36 m.

ENDING ELEVATION OF THIS ROAD = + 60.20 m.

Slope of Road	
1 : 30	3.33 %

DETAILS OF U-DITCH GUTTER TYPE :

STA.	LENGTH (m)	ACC. AREA (m2)	RUNOFF, Q_R (m3/hr)	n	S (unitless)	Dep. (m)	ELV. (m)	W (m.)	A (m2)	R	Q_U (m3/hr)
0+520	0	0	0.00	0.015	0.03333	0.50	+ 75.86	1.50	0.75	0.300	14,727.40
0+420	100	29,667	2,578.03	0.015	0.03333	0.50	+ 72.53	1.50	0.75	0.300	14,727.40
0+320	200	59,333	5,156.07	0.015	0.03333	0.50	+ 69.19	1.50	0.75	0.300	14,727.40
0+220	300	89,000	7,734.10	0.015	0.03333	0.50	+ 65.86	1.50	0.75	0.300	14,727.40
0+120	400	118,667	10,312.13	0.015	0.03333	0.50	+ 62.53	1.50	0.75	0.300	14,727.40
0+040	480	142,400	12,374.56	0.015	0.03333	0.50	+ 59.86	1.50	0.75	0.300	14,727.40

40 NAME OF ROAD : No. Road A WEST Sta.0+520 - 0+040 m. (from point #P2' to #P1')

ELEVATION OF THIS CATHMENT AREA = + 72.28 m.

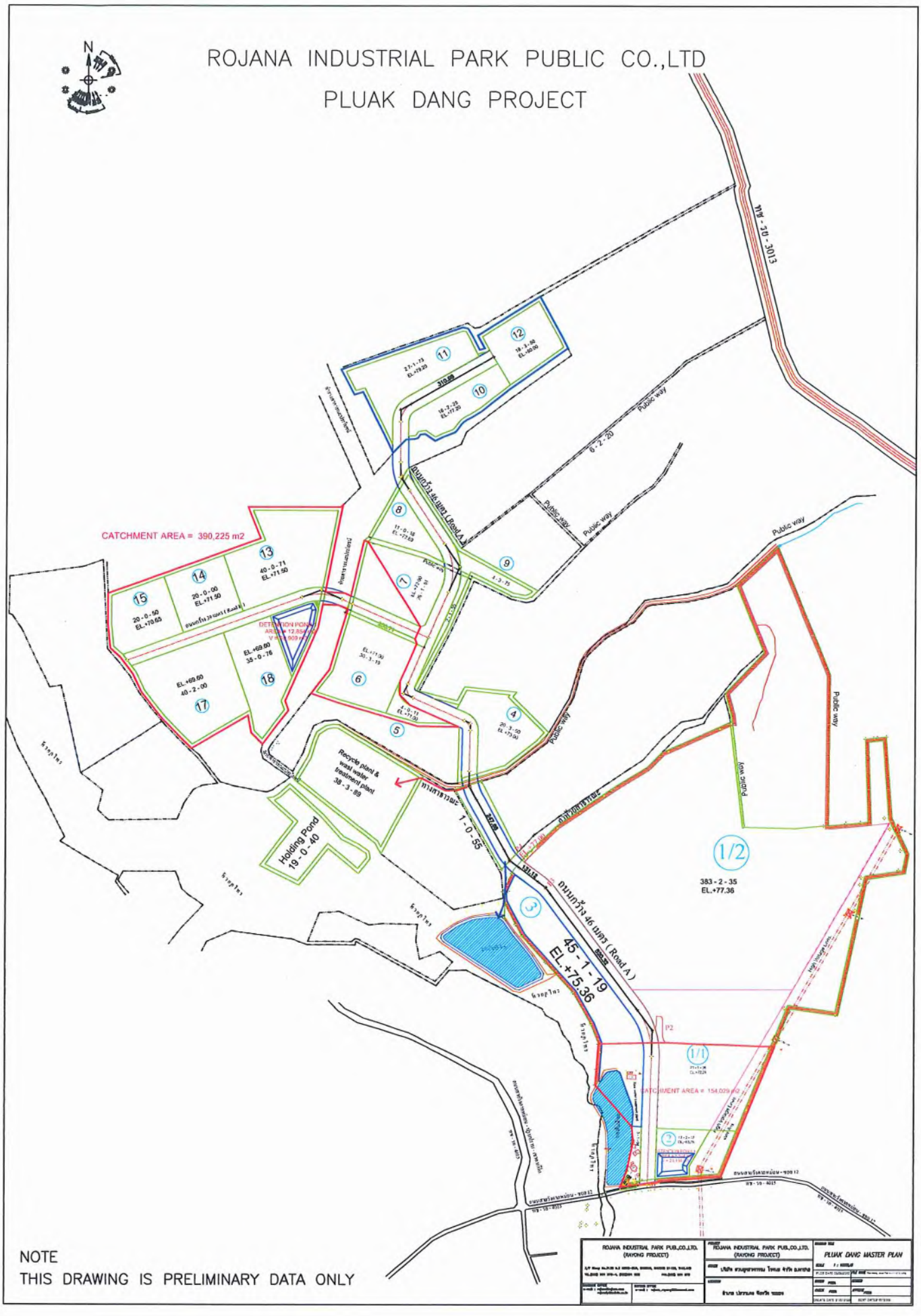
STARTING ELEVATION OF THIS ROAD = + 76.36 m.

ENDING ELEVATION OF THIS ROAD = + 60.20 m.

Slope of Road	
1 : 30	3.33 %

DETAILS OF U-DITCH GUTTER TYPE :

STA.	LENGTH (m)	ACC. AREA (m2)	RUNOFF, Q_R (m3/hr)	n	S (unitless)	Dep. (m)	ELV. (m)	W (m.)	A (m2)	R	Q_U (m3/hr)
0+520	0	0	0.00	0.015	0.03333	0.50	+ 75.86	1.00	0.50	0.250	8,694.55
0+420	100	5,000	434.50	0.015	0.03333	0.50	+ 72.53	1.00	0.50	0.250	8,694.55
0+320	200	10,000	869.00	0.015	0.03333	0.50	+ 69.19	1.00	0.50	0.250	8,694.55
0+220	300	15,000	1,303.50	0.015	0.03333	0.50	+ 65.86	1.00	0.50	0.250	8,694.55
0+120	400	20,000	1,738.00	0.015	0.03333	0.50	+ 62.53	1.00	0.50	0.250	8,694.55
0+040	480	24,000	2,085.60	0.015	0.03333	0.50	+ 59.86	1.00	0.50	0.250	8,694.55


ROJANA INDUSTRIAL PARK PUBLIC CO.,LTD
PLUAK DANG PROJECT
N
CATCHMENT AREA = 390,225 m2
Public way
Recycle plant & wast water treatment plant
38 - 3 - 89
Holding Pond
19 - 0 - 40
1 - 0 - 55
45 - 1 - 19
EL.+75.36
383 - 2 - 35
EL.+77.36
CATCHMENT AREA = 154,029 m2
NOTE
THIS DRAWING IS PRELIMINARY DATA ONLY

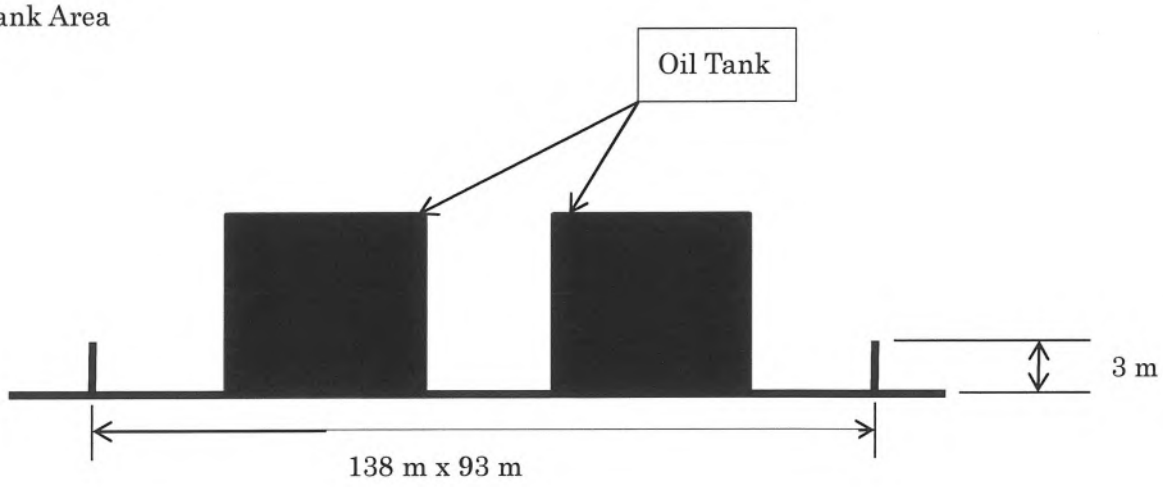
ภาคผนวก 2ฐ

รายการคำนวณความจุของคันกักเก็บน้ำฝน บริเวณที่อาจมีการปนเปื้อนน้ำมัน ภายหลังการเปลี่ยนแปลงรายละเอียดโครงการ

Comment PC 17

Potential of holding oily storm water

Oil Tank Area



Oil Tank Area 138m x 93m = 12,834 m2

Rain Water Intensity with 15 minute time duration of 10 year return period = 116.22mm/h

Volume of storm water 12834 m2 x 0.11622 x 15/60 =372.9 m3

Oil Dile Capacity 138 m x 93 m x 3 m = 38,502 m3

Tank volume in the Dike area 22.31^2 x 3.14 x 3 x 2 = 9,377 m3

Oily water Holding Capacity 38,502 – 9,377 = 29,125m3 >> 372.9 m3

ภาคผนวก 2ฑ

รายการคำนวณขนาดถังเก็บน้ำดับเพลิงและอัตราการสูบน้ำดับเพลิงของเครื่องสูบน้ำดับเพลิง ภายหลังการเปลี่ยนแปลงรายละเอียดโครงการ

Calculation Data Sheet of Required F/F Water (Fire Pump Capacity)

Item	Capacity
Required Fire Water (F/F pump capacity)	1136 m^3/h (5000GPM)

1) Water Demand Calculation for Fuel Oil Tank – Tank Cooling

- Tank Diameter (d) : 44.62 m
- Tank Height (h) : 16.545 m
- Total Surface Area (one tank) : 3884 m^2
- Density of Discharge : 2 (L/min)/m^2
- Water Demand (one + half tank) : 11652 l/min -------- (α)

2) Water Demand Calculation for Fuel Oil Tank – Foam System

- Tank Diameter (d) : 44.62 m
- Surface Area ($\pi \times r^2$) (A) : 1564 m^2
- Density of Discharge : 4.1 (L/min)/m^2 (According to NFPA 11)
- Foam / Water Demand (A x 4.1) : 6412 l/min
- Water Demand for Foam System : 6412 x 0.97 = 6220 l/min -------- (β)

3) Total water demand for Fuel Oil Tank – Tank Cooling + Foam System

- Complete 2 spray rings of tank on fire + 1 spray ring of adjacent tank (α) : 11652 l/min
- 1 no. outdoor water hydrant 1900 l/min : 1900 l/min
  (Acc. to Oil Depot Regulation BE 2556 & NFPA 850)
- Foam System of Tank on fire operates (β) : 6220 l/min
- 3 nos. Foam hydrants (189 l/min each) : 567 l/min (According to NFPA 11)

20,339 l/min

20339 l/min = 5374 GPM = 1220 m^3/h

Nearest Available Pump Capacity to be selected : 5000 GPM = 1136 m^3/h

[NOTE]

The above demand (5374 GPM) is 107.5% flow of (5000 GPM) pump rated capacity as permitted in NFPA 20.

Design Concept of the Fire Water Supply system

The fire water supply system consists of fire water tanks, fire water pumps and fire water ring main yard piping with corresponding sectional isolation valves. The fire water source will be fed from Service Water / Fire Water tank with effective storage to cater for more than 2 hours fire water supply to fire water pumps in accordance to NFPA 850 chapter-6.2.6 recommendation.

The fire pumps are sized based on the calculated largest water demand as described in Chapter-6.2.1 of NFPA 850 recommendation. Hence, the required amount of fire water and tank capacity is as below.

<Required F/F water >
1220 m^3/h x 2 hours = 2440 m^3 -------- (α)

<Service Water Consumption >
2704 m^3/day x 1 day = 2704 m^3---------- (β)

<Plant Cycle Make-up>
379 m^3/day x 1 day = 379 m^3 ---------- (x)

<Required Tank Capacity >
α + β - x : 2440 + 2704 - 379 = 4135 m3

In accordance with Oil Depot Act 2556, Chapter 6, Clause 50, fire water storage capacity shall be able to cater the water demand as per Clause 49 of the Oil Depot Act 2556.

Clause 49 (1): water demand for foam solution as per clause 48 of Oil Depot Act 2556
-Clause 48 (1) foam solution 4.1 litre/min/m^2 x tank cross section area x 30 minutes
= 4.1 litre/min/m^2 x (= 1564 m^2) x 30 mins.
= 192,372 litres
-Clause 48 (2) foam solution to fill the pipe (pipe diameter: DN 100 Length: 400 meters)
= π x 0.1/2 x 0.1/2 x 400 = 3.142 m^3 or 3,142 litres
-Clause 48 (3) foam solution 189 litre/min/foam hydrant x 3 hydrants x 30 minutes
= 189 x 3 x 30 = 17,010 litres
[Total foam solution = 192,372 + 3,142 + 17,010 = 212,524 litres]

Clause 49 (2): water for tank cooling 2 litre/min/m^2 x 120 minutes for
(a) Area of tank on fire Roof : π x 44.62/2 x 44.62/2 = 1,564 m^2
Wall : π x 44.62/2 x 16.545 = 2,319 m^2
Total: 1,564 + 2,319 = 3,884 m^2
(b) Area of adjacent tank within radius (from tank shell) of the tank on fire [shell to shell distance = 24 meters].
Half of total surface area of adjacent tank : 1/2 x 3,884 = 1,942 m^2

Total Area Required for Water Cooling : 3,884 m^2 + 1,942 m^2 = 5,826 m^2
Total Water Required for Tank Cooling : 2 l/min/m^2 x 120 mins. x 5,826 m^2 = 1,398,240 litres

Clause 49 (3): water hydrant 1900 litre/min for 30 minutes
[Total water for hydrant = 1,900 litre/min x 30 mins. = 57,000 litres

Total water required as per Oil Depot Act 2556, Chapter 6, clause 50 = 212,524 + 1,398,240 + 57,000 = 1,667,764 litres = 1,667.764 *say* **1,668 m^3**

The fire water tank capacity required as per Oil Depot Act 2556 is 1,668 m3 which is less than the calculated fire water tank (dedicated volume) capacity of **2,440 m^3**. →OK

Calculation Data Sheet of Water Tanks

Name / Description	Type	Capacity
Service Water / Fire Water Storage Tank	Butt welded cone roof tank	4250 m^3

4) Service Water / Fire Water Storage Tank

Number: One (1) per plant

Capacity: 2 hours F/F water supply plus (+) 1 day service water consumption minus (-) 1 day plant cycle make-up..

<Required F/F water >

1220 m^3/h x 2 hours = 2440 m^3 ---------- (α)

<Service water consumption>

2074 m^3/day x 1 day = 2074 m^3-------- (β)

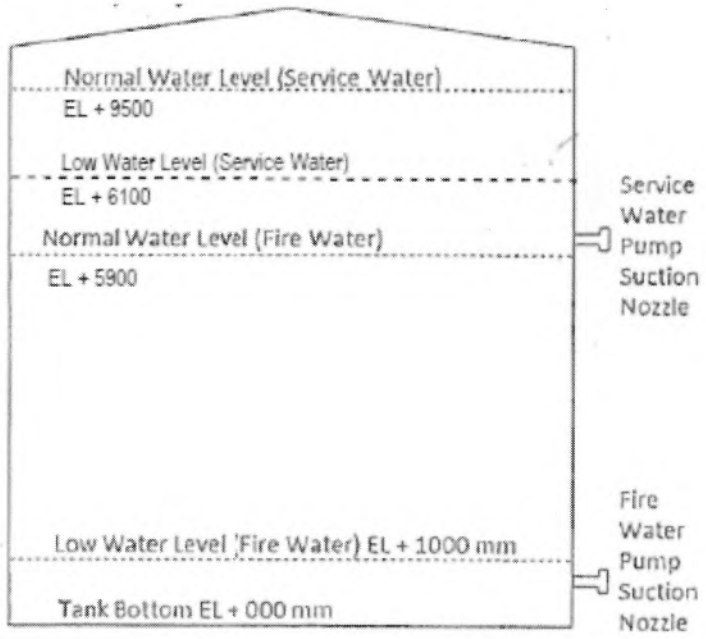
<Plant Cycle Make-up>

379 m^3/day x 1 day = 379 m^3 ---------- (x)

<Required tank capacity >

(α) + (β) – (x) : 2440 + 2074 - 379 = **4135 m^3** ➔ **4250 m^3**

Tank Capacity:



Tank Diameter = 25.22 m

Tank cross sectional area = π x $(25.22)^2$ / 4 = 499.55 m^2

Fire Water Height: NWL(FW) – LWL (FW) = 5.9 m – 1.0 m = 4.9 m

Fire Water Capacity (volume): 499.55 x 4.9 = **2,448 m^3 >** 2,440 m^3 ➔ OK

Service Water Height: NWL (SW) – LWL (SW) = 9.5 – 6.1 = 3.4 m

Service Water Capacity (volume): 499.55 x 3.4 = **1,698 m^3** > (β) – (x) = 1,695 m^3 ➔ OK

Calculation Data Sheet of Foam Storage

Name / Description	Type	Minimum Capacity
Foam Storage Tank	Horizontal Bladder Type	7013 litres

As per NFPA 11

Tank Dimensions

Inside Diameter: 44.62m

Calculation

Foam-Water Demand for Tank Internal Surface:

A = 1/4 x π x d^2

= 1,564m^2

Q_1 = 1,564m^2 x 4.1 LPM/m^2 (flow rate demand)

= 6,412LPM

Foam Demand:

Q_{F1} = 6,412LPM x 0.03 (3% foam compound) x 30 minutes

= 5,770 litres

Q_{F2} = 3,142 litres x 0.03 (3% foam compound)

= 95 litres

Q_{F3} = 189 litre/min x 3nos. x 0.03 (3% foam compound) x 30 minutes

= 510 litres

Q_{FT} = (5,770 + 95 + 510) x 1.1 (10% margin)

= 7,013 litres (1,853 gals.)

Selected Foam Concentrate Tank Capacity: **2,200 gals. (8,328L) ← OK**

As per Clause 48 of Oil Depot Act 2556:

Clause 48 (1) foam solution 4.1 litre/min/m^2 x tank cross section area x 30 minutes.
= 4.1 l/min/m2 x 1564 m2 x 30 = 192,372 litres

Clause 48 (2) foam solution to fill the pipe (diameter: 100 mm x length: 400 m)
= π x 0.1/2 x 0.1/2 x 400 = 3,142 litres

Clause 48 (3) foam solution 189 litre/min/foam hydrant x 3 hydrants x 30 minutes.
= 189 x 3 x 30 = 17,010 litres

[Total foam-water solution = 192,372 + 3,142 + 17,010 = **212,524** litres]

Foam Concentrate (3%) Quantity:
Required Foam Concentrate = 212,524 x 3% = **6,376** L < 8,328 L → **OK**

ภาคผนวก 3ก

ผลการตรวจวัดคุณภาพอากาศในบรรยากาศของโครงการ

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www. enviresearch.co.th

ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Sampling Source : Ambient Air Quality
Sampling Point : **บริเวณพื้นที่โครงการ**
GPS. Coordinate : UTM (WGS84) 47P 0733564 E, 1432620 N
Sampling Date : January 25 – February 1, 2019 **Analysis No.** : AB152/2562
Sampling Time : 07:05 **Received Date** : February 7, 2019
Sampling Method : U.S. EPA 40 CFR Part 50 **Analytical Date** : February 7-9, 2019
Sample Condition : Good **Report Date** : February 11, 2019
Sampling By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)

Parameter	Unit	Method of Analysis	Result							Standard[1/]
			Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
Total Suspended Particulate (TSP) 24 Hours Average	mg/m^3	Hi-Volume, Gravimetric Method	0.129	0.104	0.129	0.136	0.153	0.124	0.091	0.330
Particulate Size Less Than 10 Micron (PM10) 24 Hours Average	mg/m^3	PM10 Size Selective, Hi-Volume, Gravimetric Method	0.075	0.063	0.073	0.076	0.088	0.071	0.050	0.120

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Sampling Source : Ambient Air Quality
Sampling Point : **บริเวณชุมชนบ้านเนินสวรรค์ หมู่ที่ 2 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0733786 E, 1435335 N
Sampling Date : January 25 – February 1, 2019 **Analysis No.** : AB153/2562
Sampling Time : 06:37 **Received Date** : February 7, 2019
Sampling Method : U.S. EPA 40 CFR Part 50 **Analytical Date** : February 7-9, 2019
Sample Condition : Good **Report Date** : February 11, 2019
Sampling By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)

Parameter	Unit	Method of Analysis	Result							Standard[1/]
			Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
Total Suspended Particulate (TSP) 24 Hours Average	mg/m^3	Hi-Volume, Gravimetric Method	0.142	0.128	0.121	0.151	0.177	0.162	0.128	0.330
Particulate Size Less Than 10 Micron (PM10) 24 Hours Average	mg/m^3	PM10 Size Selective, Hi-Volume, Gravimetric Method	0.090	0.083	0.075	0.099	0.112	0.099	0.076	0.120

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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F-RP-020 Rev. 02, August 23, 2018

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Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Sampling Source : Ambient Air Quality
Sampling Point : **บริเวณวัดประสิทธาราม หมู่ที่ 7 ตำบลพนานิคม อำเภอนิคมพัฒนา จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0731909 E, 1430361 N
Sampling Date : January 25 – February 1, 2019 **Analysis No.** : AB154/2562
Sampling Time : 07:45 **Received Date** : February 7, 2019
Sampling Method : U.S. EPA 40 CFR Part 50 **Analytical Date** : February 7-9, 2019
Sample Condition : Good **Report Date** : February 11, 2019
Sampling By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)

Parameter	Unit	Method of Analysis	Result							Standard[1/]
			Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
Total Suspended Particulate (TSP) 24 Hours Average	mg/m^3	Hi-Volume, Gravimetric Method	0.131	0.112	0.120	0.137	0.148	0.107	0.089	0.330
Particulate Size Less Than 10 Micron (PM10) 24 Hours Average	mg/m^3	PM10 Size Selective, Hi-Volume, Gravimetric Method	0.071	0.060	0.064	0.080	0.087	0.056	0.052	0.120

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Sampling Source : Ambient Air Quality
Sampling Point : **บริเวณโรงเรียนบ้านมาบเตย หมู่ที่ 1 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0735509 E, 1433550 N
Sampling Date : January 25 – February 1, 2019 **Analysis No.** : AB155/2562
Sampling Time : 06:50 **Received Date** : February 7, 2019
Sampling Method : U.S. EPA 40 CFR Part 50 **Analytical Date** : February 7-9, 2019
Sample Condition : Good **Report Date** : February 11, 2019
Sampling By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)

Parameter	Unit	Method of Analysis	Result							Standard[1/]
			Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
Total Suspended Particulate (TSP) 24 Hours Average	mg/m^3	Hi-Volume, Gravimetric Method	0.292	0.194	0.257	0.295	0.290	0.204	0.159	0.330
Particulate Size Less Than 10 Micron (PM10) 24 Hours Average	mg/m^3	PM10 Size Selective, Hi-Volume, Gravimetric Method	0.101	0.097	0.109	0.107	0.104	0.102	0.075	0.120

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

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Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Sampling Source : Ambient Air Quality
Sampling Point : **บริเวณชุมชนด้านทิศตะวันตกของโครงการ หมู่ที่ 5 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0732008 E, 1432906 N
Sampling Date : January 25 – February 1, 2019 **Analysis No.** : AB156/2562
Sampling Time : 07:25 **Received Date** : February 7, 2019
Sampling Method : U.S. EPA 40 CFR Part 50 **Analytical Date** : February 7-9, 2019
Sample Condition : Good **Report Date** : February 11, 2019
Sampling By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)

Parameter	Unit	Method of Analysis	Result							Standard[1/]
			Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
Total Suspended Particulate (TSP) 24 Hours Average	mg/m^3	Hi-Volume, Gravimetric Method	0.195	0.223	0.258	0.252	0.186	0.148	0.138	0.330
Particulate Size Less Than 10 Micron (PM10) 24 Hours Average	mg/m^3	PM10 Size Selective, Hi-Volume, Gravimetric Method	0.110	0.113	0.116	0.112	0.100	0.089	0.065	0.120

Remark : 1/ Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : **บริเวณพื้นที่โครงการ**
GPS. Coordinate : UTM (WGS84) 47P 0733563 E, 1432617 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer Horiba Model APNA-370 Serial Number PA6WVAJ9
Reported Number : ASC054-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)											
	Jan 25-26, 19			Jan 26-27, 19			Jan 27-28, 19			Jan 28-29, 19		
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx
07:00 – 08:00	0.0085	0.0132	0.0217	0.0050	0.0099	0.0149	0.0024	0.0061	0.0085	0.0152	0.0133	0.0285
08:00 – 09:00	0.0088	0.0164	0.0252	0.0085	0.0145	0.0230	0.0029	0.0095	0.0124	0.0170	0.0191	0.0361
09:00 – 10:00	0.0087	0.0243	0.0330	0.0058	0.0232	0.0290	0.0024	0.0069	0.0093	0.0030	0.0131	0.0161
10:00 – 11:00	0.0028	0.0138	0.0166	0.0026	0.0105	0.0131	0.0020	0.0035	0.0055	0.0027	0.0084	0.0111
11:00 – 12:00	0.0021	0.0053	0.0074	0.0022	0.0049	0.0071	0.0021	0.0027	0.0048	0.0020	0.0043	0.0063
12:00 – 13:00	0.0020	0.0034	0.0054	0.0019	0.0025	0.0044	0.0020	0.0022	0.0042	0.0021	0.0035	0.0056
13:00 – 14:00	0.0022	0.0039	0.0061	0.0019	0.0025	0.0044	0.0020	0.0021	0.0041	0.0020	0.0025	0.0045
14:00 – 15:00	0.0020	0.0032	0.0052	0.0018	0.0021	0.0039	0.0019	0.0021	0.0040	0.0018	0.0028	0.0046
15:00 – 16:00	0.0021	0.0030	0.0051	0.0017	0.0020	0.0037	0.0024	0.0033	0.0057	0.0019	0.0032	0.0051
16:00 – 17:00	0.0054	0.0068	0.0122	0.0020	0.0025	0.0045	0.0020	0.0027	0.0047	0.0018	0.0041	0.0059
17:00 – 18:00	0.0022	0.0056	0.0078	0.0022	0.0033	0.0055	0.0020	0.0032	0.0052	0.0020	0.0055	0.0075
18:00 – 19:00	0.0017	0.0072	0.0089	0.0026	0.0062	0.0088	0.0023	0.0052	0.0075	0.0022	0.0088	0.0110
19:00 – 20:00	0.0018	0.0077	0.0095	0.0026	0.0108	0.0134	0.0025	0.0107	0.0132	0.0026	0.0156	0.0182
20:00 – 21:00	0.0023	0.0127	0.0150	0.0020	0.0110	0.0130	0.0028	0.0137	0.0165	0.0027	0.0242	0.0269
21:00 – 22:00	0.0028	0.0143	0.0171	0.0025	0.0118	0.0143	0.0030	0.0154	0.0184	0.0026	0.0215	0.0241
22:00 – 23:00	0.0022	0.0107	0.0129	0.0024	0.0100	0.0124	0.0032	0.0122	0.0154	0.0024	0.0184	0.0208
23:00 – 24:00	0.0022	0.0104	0.0126	0.0023	0.0117	0.0140	0.0022	0.0124	0.0146	0.0023	0.0182	0.0205
00:00 – 01:00	0.0030	0.0123	0.0153	0.0022	0.0093	0.0115	0.0022	0.0103	0.0125	0.0025	0.0170	0.0195
01:00 – 02:00	0.0026	0.0087	0.0113	0.0023	0.0136	0.0159	0.0025	0.0105	0.0130	0.0023	0.0164	0.0187
02:00 – 03:00	0.0023	0.0082	0.0105	0.0030	0.0151	0.0181	0.0024	0.0104	0.0128	0.0026	0.0159	0.0185
03:00 – 04:00	0.0025	0.0084	0.0109	0.0024	0.0156	0.0180	0.0028	0.0095	0.0123	0.0030	0.0200	0.0230
04:00 – 05:00	0.0028	0.0099	0.0127	0.0027	0.0134	0.0161	0.0025	0.0087	0.0112	0.0040	0.0150	0.0190
05:00 – 06:00	0.0029	0.0099	0.0128	0.0028	0.0118	0.0146	0.0024	0.0078	0.0102	0.0042	0.0150	0.0192
06:00 – 07:00	0.0031	0.0094	0.0125	0.0031	0.0092	0.0123	0.0024	0.0084	0.0108	0.0038	0.0133	0.0171
24 Hours Average	**0.0033**	**0.0095**	**0.0128**	**0.0029**	**0.0095**	**0.0124**	**0.0024**	**0.0075**	**0.0099**	**0.0037**	**0.0125**	**0.0162**
1 Hour Maximum	**0.0088**	**0.0243**	**0.0330**	**0.0085**	**0.0232**	**0.0290**	**0.0032**	**0.0154**	**0.0184**	**0.0170**	**0.0242**	**0.0361**

Remark : 1/ Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

(Ms.Supawan Suwannapa)
Laboratory Reviewer

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733563 E, 1432617 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer Horiba Model APNA-370 Serial Number PA6WVAJ9
Reported Number : ASC054-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)									Standard[1/]
	Jan 29-30, 19			Jan 30-31, 19			Jan 31-Feb 1, 19			
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	
07:00 – 08:00	0.0093	0.0194	0.0287	0.0066	0.0200	0.0266	0.0064	0.0167	0.0231	
08:00 – 09:00	0.0125	0.0189	0.0314	0.0069	0.0216	0.0285	0.0143	0.0225	0.0368	
09:00 – 10:00	0.0186	0.0239	0.0425	0.0043	0.0204	0.0247	0.0065	0.0209	0.0274	
10:00 – 11:00	0.0022	0.0093	0.0115	0.0023	0.0108	0.0131	0.0030	0.0133	0.0163	
11:00 – 12:00	0.0020	0.0068	0.0088	0.0021	0.0097	0.0118	0.0022	0.0087	0.0109	
12:00 – 13:00	0.0019	0.0042	0.0061	0.0019	0.0056	0.0075	0.0020	0.0062	0.0082	
13:00 – 14:00	0.0019	0.0037	0.0056	0.0019	0.0049	0.0068	0.0020	0.0069	0.0089	
14:00 – 15:00	0.0018	0.0030	0.0048	0.0019	0.0063	0.0082	0.0019	0.0061	0.0080	
15:00 – 16:00	0.0020	0.0049	0.0069	0.0021	0.0065	0.0086	0.0018	0.0073	0.0091	
16:00 – 17:00	0.0019	0.0068	0.0087	0.0019	0.0070	0.0089	0.0018	0.0083	0.0101	
17:00 – 18:00	0.0018	0.0072	0.0090	0.0018	0.0070	0.0088	0.0018	0.0067	0.0085	
18:00 – 19:00	0.0017	0.0077	0.0094	0.0018	0.0073	0.0091	0.0017	0.0060	0.0077	
19:00 – 20:00	0.0018	0.0109	0.0127	0.0018	0.0061	0.0079	0.0020	0.0089	0.0109	
20:00 – 21:00	0.0022	0.0140	0.0162	0.0022	0.0121	0.0143	0.0029	0.0159	0.0188	
21:00 – 22:00	0.0024	0.0190	0.0214	0.0031	0.0183	0.0214	0.0036	0.0161	0.0197	
22:00 – 23:00	0.0025	0.0128	0.0153	0.0028	0.0163	0.0191	0.0033	0.0154	0.0187	
23:00 – 24:00	0.0021	0.0109	0.0130	0.0027	0.0140	0.0167	0.0029	0.0125	0.0154	
00:00 – 01:00	0.0020	0.0096	0.0116	0.0032	0.0174	0.0206	0.0026	0.0104	0.0130	
01:00 – 02:00	0.0021	0.0085	0.0106	0.0029	0.0137	0.0166	0.0026	0.0092	0.0118	
02:00 – 03:00	0.0024	0.0111	0.0135	0.0028	0.0117	0.0145	0.0032	0.0105	0.0137	
03:00 – 04:00	0.0023	0.0091	0.0114	0.0029	0.0112	0.0141	0.0035	0.0108	0.0143	
04:00 – 05:00	0.0022	0.0095	0.0117	0.0047	0.0143	0.0190	0.0070	0.0152	0.0222	
05:00 – 06:00	0.0022	0.0128	0.0150	0.0041	0.0142	0.0183	0.0072	0.0136	0.0208	
06:00 – 07:00	0.0027	0.0141	0.0168	0.0037	0.0134	0.0171	0.0062	0.0129	0.0191	
24 Hours Average	**0.0035**	**0.0108**	**0.0143**	**0.0030**	**0.0121**	**0.0151**	**0.0039**	**0.0117**	**0.0156**	-
1 Hour Maximum	**0.0186**	**0.0239**	**0.0425**	**0.0069**	**0.0216**	**0.0285**	**0.0143**	**0.0225**	**0.0368**	**NO_2 ≤0.17**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733563 E, 1432617 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : SO_2 UV-Fluorescence Analyzer Thermo Model 43C Serial Number 0335804022
Reported Number : ASC054-SO_2-2562 **Report Date** : February 15, 2019

Interval Time	Result SO_2 (ppm)							Standard
	Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
07:00 – 08:00	0.0023	0.0015	0.0010	0.0013	0.0019	0.0021	0.0017	
08:00 – 09:00	0.0023	0.0017	0.0010	0.0016	0.0018	0.0021	0.0018	
09:00 – 10:00	0.0023	0.0017	0.0010	0.0012	0.0018	0.0020	0.0016	
10:00 – 11:00	0.0019	0.0014	0.0010	0.0012	0.0012	0.0019	0.0014	
11:00 – 12:00	0.0017	0.0012	0.0009	0.0011	0.0012	0.0021	0.0017	
12:00 – 13:00	0.0016	0.0012	0.0010	0.0012	0.0013	0.0020	0.0018	
13:00 – 14:00	0.0015	0.0011	0.0011	0.0011	0.0013	0.0019	0.0019	
14:00 – 15:00	0.0014	0.0012	0.0011	0.0012	0.0015	0.0018	0.0018	
15:00 – 16:00	0.0014	0.0013	0.0012	0.0012	0.0015	0.0019	0.0019	
16:00 – 17:00	0.0015	0.0012	0.0012	0.0013	0.0014	0.0018	0.0019	
17:00 – 18:00	0.0014	0.0012	0.0012	0.0014	0.0014	0.0018	0.0019	
18:00 – 19:00	0.0017	0.0012	0.0012	0.0013	0.0014	0.0019	0.0017	
19:00 – 20:00	0.0016	0.0012	0.0013	0.0013	0.0013	0.0019	0.0014	
20:00 – 21:00	0.0014	0.0012	0.0011	0.0014	0.0011	0.0017	0.0013	
21:00 – 22:00	0.0015	0.0012	0.0011	0.0013	0.0014	0.0015	0.0012	
22:00 – 23:00	0.0013	0.0011	0.0014	0.0011	0.0011	0.0017	0.0012	
23:00 – 24:00	0.0013	0.0012	0.0012	0.0012	0.0011	0.0015	0.0012	
00:00 – 01:00	0.0013	0.0012	0.0010	0.0012	0.0012	0.0014	0.0010	
01:00 – 02:00	0.0012	0.0013	0.0011	0.0011	0.0011	0.0013	0.0011	
02:00 – 03:00	0.0013	0.0014	0.0011	0.0011	0.0014	0.0014	0.0010	
03:00 – 04:00	0.0012	0.0014	0.0011	0.0015	0.0013	0.0013	0.0010	
04:00 – 05:00	0.0016	0.0015	0.0010	0.0014	0.0013	0.0012	0.0013	
05:00 – 06:00	0.0015	0.0014	0.0011	0.0015	0.0015	0.0013	0.0012	
06:00 – 07:00	0.0015	0.0013	0.0011	0.0015	0.0017	0.0016	0.0010	
24 Hours Average	**0.0016**	**0.0013**	**0.0011**	**0.0013**	**0.0014**	**0.0017**	**0.0015**	**0.12[1/]**
1 Hour Maximum	**0.0023**	**0.0017**	**0.0014**	**0.0016**	**0.0019**	**0.0021**	**0.0019**	**0.30[2/]**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).
[2/] Notification of National Environmental Board, No.12, B.E.2538 (1995), published in the Royal Government Gazette No.112 Special Part 27D dated July 13, B.E.2538 (1995) and Notification No.21, B.E.2544 (2001), published in the Royal Government Gazette No.118 Special Part 39D dated April 30, B.E.2544 (2001), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : **บริเวณพื้นที่โครงการ**
GPS. Coordinate : UTM (WGS84) 47P 0733563 E, 1432617 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : CO NDIR Analyzer Horiba Model APMA-370 Serial Number JHG8PWA8
Reported Number : ASC054-CO-2562 **Report Date** : February 15, 2019

Interval Time	Result CO (ppm)														Standard[1/]
	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19		
	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	
07:00 – 08:00	0.8	-	0.7	0.7	0.4	0.7	0.6	0.6	0.9	0.7	0.8	0.7	0.7	0.6	
08:00 – 09:00	0.7	-	0.8	0.7	0.4	0.7	0.8	0.6	0.9	0.8	0.8	0.7	0.8	0.6	
09:00 – 10:00	0.7	-	0.8	0.7	0.4	0.6	0.5	0.6	1.0	0.8	0.7	0.7	0.7	0.7	
10:00 – 11:00	0.6	-	0.6	0.7	0.3	0.6	0.5	0.6	0.5	0.8	0.5	0.7	0.5	0.6	
11:00 – 12:00	0.5	-	0.6	0.7	0.3	0.5	0.4	0.5	0.5	0.8	0.5	0.7	0.5	0.6	
12:00 – 13:00	0.4	-	0.4	0.7	0.3	0.4	0.4	0.6	0.5	0.7	0.5	0.7	0.5	0.6	
13:00 – 14:00	0.4	-	0.4	0.6	0.4	0.4	0.4	0.5	0.4	0.7	0.5	0.6	0.5	0.6	
14:00 – 15:00	0.4	0.6	0.4	0.6	0.4	0.4	0.4	0.5	0.4	0.6	0.5	0.6	0.5	0.6	
15:00 – 16:00	0.4	0.5	0.4	0.6	0.4	0.4	0.4	0.5	0.4	0.6	0.5	0.6	0.5	0.6	
16:00 – 17:00	0.4	0.5	0.4	0.5	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.5	0.5	0.5	
17:00 – 18:00	0.4	0.4	0.4	0.5	0.4	0.4	0.6	0.5	0.4	0.4	0.5	0.5	0.5	0.5	
18:00 – 19:00	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	
19:00 – 20:00	0.5	0.4	0.5	0.4	0.5	0.4	0.6	0.5	0.5	0.4	0.5	0.5	0.4	0.5	
20:00 – 21:00	0.6	0.5	0.6	0.4	0.5	0.4	0.5	0.5	0.5	0.4	0.6	0.5	0.5	0.5	
21:00 – 22:00	0.7	0.5	0.7	0.5	0.5	0.4	0.5	0.5	0.6	0.5	0.6	0.5	0.5	0.5	
22:00 – 23:00	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.5	0.6	0.5	0.6	0.5	0.5	0.5	
23:00 – 24:00	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.5	0.6	0.5	0.6	0.5	0.5	0.5	
00:00 – 01:00	0.7	0.6	0.6	0.6	0.5	0.5	0.6	0.5	0.6	0.5	0.6	0.6	0.4	0.5	
01:00 – 02:00	0.7	0.6	0.7	0.6	0.6	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.4	0.5	
02:00 – 03:00	0.7	0.6	0.8	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.3	0.4	
03:00 – 04:00	0.7	0.7	0.8	0.7	0.6	0.6	0.7	0.6	0.7	0.6	0.6	0.6	0.3	0.4	
04:00 – 05:00	0.7	0.7	0.8	0.7	0.6	0.6	0.7	0.6	0.7	0.6	0.6	0.6	0.4	0.4	
05:00 – 06:00	0.7	0.7	0.7	0.7	0.6	0.6	0.8	0.6	0.7	0.7	0.6	0.6	0.4	0.4	
06:00 – 07:00	0.7	0.7	0.6	0.7	0.6	0.6	0.8	0.7	0.7	0.7	0.6	0.6	0.4	0.4	
24 Hours Average	**0.6**	-	**0.6**	-	**0.5**	-	**0.6**	-	**0.6**	-	**0.6**	-	**0.5**	-	-
1 Hour Maximum	**0.8**	-	**0.8**	-	**0.6**	-	**0.8**	-	**1.0**	-	**0.8**	-	**0.8**	-	**30**
8 Hours Maximum	-	**0.7**	-	**0.7**	-	**0.7**	-	**0.7**	-	**0.8**	-	**0.7**	-	**0.7**	**9**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : **บริเวณชุมชนบ้านเนินสวรรค์ หมู่ที่ 2 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0733786 E, 1435336 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer API Model 200A Serial Number 068
Reported Number : ASC055-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)											
	Jan 25-26, 19			Jan 26-27, 19			Jan 27-28, 19			Jan 28-29, 19		
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx
07:00 – 08:00	0.0125	0.0165	0.0290	0.0128	0.0202	0.0330	0.0021	0.0064	0.0085	0.0024	0.0088	0.0112
08:00 – 09:00	0.0121	0.0193	0.0314	0.0130	0.0284	0.0414	0.0029	0.0105	0.0134	0.0034	0.0148	0.0182
09:00 – 10:00	0.0123	0.0269	0.0392	0.0105	0.0263	0.0368	0.0027	0.0071	0.0098	0.0028	0.0146	0.0174
10:00 – 11:00	0.0024	0.0162	0.0186	0.0023	0.0091	0.0114	0.0021	0.0046	0.0067	0.0021	0.0128	0.0149
11:00 – 12:00	0.0020	0.0086	0.0106	0.0021	0.0056	0.0077	0.0020	0.0039	0.0059	0.0019	0.0078	0.0097
12:00 – 13:00	0.0022	0.0050	0.0072	0.0020	0.0041	0.0061	0.0030	0.0031	0.0061	0.0018	0.0048	0.0066
13:00 – 14:00	0.0019	0.0044	0.0063	0.0019	0.0030	0.0049	0.0021	0.0031	0.0052	0.0020	0.0042	0.0062
14:00 – 15:00	0.0020	0.0056	0.0076	0.0020	0.0028	0.0048	0.0020	0.0035	0.0055	0.0020	0.0041	0.0061
15:00 – 16:00	0.0020	0.0047	0.0067	0.0018	0.0032	0.0050	0.0021	0.0033	0.0054	0.0021	0.0034	0.0055
16:00 – 17:00	0.0023	0.0062	0.0085	0.0017	0.0028	0.0045	0.0019	0.0030	0.0049	0.0020	0.0039	0.0059
17:00 – 18:00	0.0021	0.0086	0.0107	0.0018	0.0034	0.0052	0.0021	0.0032	0.0053	0.0018	0.0044	0.0062
18:00 – 19:00	0.0030	0.0172	0.0202	0.0105	0.0110	0.0215	0.0018	0.0031	0.0049	0.0022	0.0045	0.0067
19:00 – 20:00	0.0036	0.0215	0.0251	0.0022	0.0075	0.0097	0.0019	0.0038	0.0057	0.0023	0.0049	0.0072
20:00 – 21:00	0.0031	0.0259	0.0290	0.0058	0.0221	0.0279	0.0019	0.0052	0.0071	0.0050	0.0094	0.0144
21:00 – 22:00	0.0026	0.0198	0.0224	0.0057	0.0246	0.0303	0.0080	0.0157	0.0237	0.0091	0.0153	0.0244
22:00 – 23:00	0.0035	0.0225	0.0260	0.0036	0.0282	0.0318	0.0076	0.0246	0.0322	0.0106	0.0130	0.0236
23:00 – 24:00	0.0038	0.0210	0.0248	0.0049	0.0237	0.0286	0.0038	0.0179	0.0217	0.0085	0.0215	0.0300
00:00 – 01:00	0.0033	0.0198	0.0231	0.0032	0.0166	0.0198	0.0050	0.0185	0.0235	0.0056	0.0286	0.0342
01:00 – 02:00	0.0030	0.0148	0.0178	0.0084	0.0232	0.0316	0.0119	0.0158	0.0277	0.0029	0.0238	0.0267
02:00 – 03:00	0.0026	0.0110	0.0136	0.0078	0.0217	0.0295	0.0036	0.0122	0.0158	0.0049	0.0183	0.0232
03:00 – 04:00	0.0029	0.0173	0.0202	0.0059	0.0169	0.0228	0.0030	0.0096	0.0126	0.0050	0.0208	0.0258
04:00 – 05:00	0.0027	0.0153	0.0180	0.0042	0.0181	0.0223	0.0032	0.0095	0.0127	0.0055	0.0148	0.0203
05:00 – 06:00	0.0038	0.0167	0.0205	0.0024	0.0115	0.0139	0.0032	0.0095	0.0127	0.0048	0.0208	0.0256
06:00 – 07:00	0.0041	0.0144	0.0185	0.0021	0.0067	0.0088	0.0025	0.0083	0.0108	0.0064	0.0204	0.0268
24 Hours Average	**0.0040**	**0.0150**	**0.0190**	**0.0049**	**0.0142**	**0.0191**	**0.0034**	**0.0086**	**0.0120**	**0.0040**	**0.0125**	**0.0165**
1 Hour Maximum	**0.0125**	**0.0269**	**0.0392**	**0.0130**	**0.0284**	**0.0414**	**0.0119**	**0.0246**	**0.0322**	**0.0106**	**0.0286**	**0.0342**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณชุมชนบ้านเนินสวรรค์ หมู่ที่ 2 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0733786 E, 1435336 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer API Model 200A Serial Number 068
Reported Number : ASC055-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)									Standard[1/]
	Jan 29-30, 19			Jan 30-31, 19			Jan 31-Feb 1, 19			
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	
07:00 – 08:00	0.0119	0.0216	0.0335	0.0098	0.0276	0.0374	0.0074	0.0114	0.0188	
08:00 – 09:00	0.0136	0.0203	0.0339	0.0091	0.0280	0.0371	0.0137	0.0158	0.0295	
09:00 – 10:00	0.0059	0.0235	0.0294	0.0049	0.0281	0.0330	0.0103	0.0245	0.0348	
10:00 – 11:00	0.0064	0.0253	0.0317	0.0048	0.0268	0.0316	0.0068	0.0203	0.0271	
11:00 – 12:00	0.0030	0.0072	0.0102	0.0034	0.0210	0.0244	0.0041	0.0140	0.0181	
12:00 – 13:00	0.0028	0.0061	0.0089	0.0022	0.0135	0.0157	0.0031	0.0094	0.0125	
13:00 – 14:00	0.0030	0.0068	0.0098	0.0020	0.0063	0.0083	0.0028	0.0060	0.0088	
14:00 – 15:00	0.0026	0.0086	0.0112	0.0029	0.0055	0.0084	0.0026	0.0122	0.0148	
15:00 – 16:00	0.0026	0.0096	0.0122	0.0035	0.0126	0.0161	0.0027	0.0148	0.0175	
16:00 – 17:00	0.0027	0.0145	0.0172	0.0042	0.0144	0.0186	0.0027	0.0151	0.0178	
17:00 – 18:00	0.0028	0.0148	0.0176	0.0031	0.0162	0.0193	0.0036	0.0188	0.0224	
18:00 – 19:00	0.0044	0.0208	0.0252	0.0032	0.0150	0.0182	0.0045	0.0148	0.0193	
19:00 – 20:00	0.0034	0.0254	0.0288	0.0032	0.0183	0.0215	0.0084	0.0196	0.0280	
20:00 – 21:00	0.0038	0.0213	0.0251	0.0042	0.0187	0.0229	0.0072	0.0202	0.0274	
21:00 – 22:00	0.0049	0.0221	0.0270	0.0078	0.0211	0.0289	0.0052	0.0173	0.0225	
22:00 – 23:00	0.0033	0.0262	0.0295	0.0053	0.0293	0.0346	0.0035	0.0152	0.0187	
23:00 – 24:00	0.0028	0.0199	0.0227	0.0031	0.0252	0.0283	0.0026	0.0125	0.0151	
00:00 – 01:00	0.0028	0.0171	0.0199	0.0036	0.0159	0.0195	0.0039	0.0096	0.0135	
01:00 – 02:00	0.0041	0.0202	0.0243	0.0032	0.0166	0.0198	0.0026	0.0076	0.0102	
02:00 – 03:00	0.0028	0.0178	0.0206	0.0032	0.0124	0.0156	0.0039	0.0070	0.0109	
03:00 – 04:00	0.0026	0.0122	0.0148	0.0027	0.0090	0.0117	0.0043	0.0072	0.0115	
04:00 – 05:00	0.0036	0.0146	0.0182	0.0033	0.0093	0.0126	0.0035	0.0066	0.0101	
05:00 – 06:00	0.0033	0.0180	0.0213	0.0039	0.0102	0.0141	0.0043	0.0073	0.0116	
06:00 – 07:00	0.0065	0.0272	0.0337	0.0055	0.0113	0.0168	0.0070	0.0169	0.0239	
24 Hours Average	**0.0044**	**0.0175**	**0.0219**	**0.0043**	**0.0172**	**0.0215**	**0.0050**	**0.0135**	**0.0185**	-
1 Hour Maximum	**0.0136**	**0.0272**	**0.0339**	**0.0098**	**0.0293**	**0.0374**	**0.0137**	**0.0245**	**0.0348**	**NO_2 ≤0.17**

Remark : 1/ Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณชุมชนบ้านเนินสวรรค์ หมู่ที่ 2 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0733786 E, 1435336 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : SO_2 UV-Fluorescence Analyzer Thermo Model 43C Serial Number 60772-328/2
Reported Number : ASC055-SO_2-2562 **Report Date** : February 15, 2019

Interval Time	Result SO_2 (ppm)							Standard
	Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
07:00 – 08:00	0.0011	0.0012	0.0011	0.0011	0.0012	0.0013	0.0011	
08:00 – 09:00	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0011	
09:00 – 10:00	0.0012	0.0012	0.0012	0.0012	0.0013	0.0015	0.0012	
10:00 – 11:00	0.0012	0.0012	0.0012	0.0012	0.0013	0.0015	0.0013	
11:00 – 12:00	0.0012	0.0012	0.0012	0.0012	0.0013	0.0016	0.0012	
12:00 – 13:00	0.0012	0.0012	0.0012	0.0012	0.0013	0.0014	0.0013	
13:00 – 14:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0012	
14:00 – 15:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	
15:00 – 16:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	
16:00 – 17:00	0.0012	0.0012	0.0012	0.0012	0.0017	0.0013	0.0012	
17:00 – 18:00	0.0012	0.0012	0.0012	0.0012	0.0015	0.0012	0.0012	
18:00 – 19:00	0.0013	0.0012	0.0012	0.0012	0.0015	0.0012	0.0011	
19:00 – 20:00	0.0012	0.0012	0.0012	0.0012	0.0013	0.0012	0.0011	
20:00 – 21:00	0.0012	0.0012	0.0012	0.0013	0.0013	0.0011	0.0011	
21:00 – 22:00	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	
22:00 – 23:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	
23:00 – 24:00	0.0011	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	
00:00 – 01:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	
01:00 – 02:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	
02:00 – 03:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	
03:00 – 04:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	
04:00 – 05:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0011	
05:00 – 06:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	
06:00 – 07:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	
24 Hours Average	**0.0012**	**0.0012**	**0.0012**	**0.0012**	**0.0013**	**0.0012**	**0.0012**	**0.12[1/]**
1 Hour Maximum	**0.0013**	**0.0012**	**0.0012**	**0.0013**	**0.0017**	**0.0016**	**0.0013**	**0.30[2/]**

Remark : 1/ Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).
2/ Notification of National Environmental Board, No.12, B.E.2538 (1995), published in the Royal Government Gazette No.112 Special Part 27D dated July 13, B.E.2538 (1995) and Notification No.21, B.E.2544 (2001), published in the Royal Government Gazette No.118 Special Part 39D dated April 30, B.E.2544 (2001), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : **บริเวณชุมชนบ้านเนินสวรรค์ หมู่ที่ 2 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0733786 E, 1435336 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : CO NDIR Analyzer Horiba Model APMA-360CE Serial Number 576876075
Reported Number : ASC055-CO-2562 **Report Date** : February 15, 2019

Interval Time	Result CO (ppm)														Standard[1/]
	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19		
	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	
07:00 – 08:00	0.9	-	0.8	0.8	0.4	0.7	0.6	0.6	1.0	0.8	0.8	0.8	0.7	0.6	
08:00 – 09:00	0.9	-	1.0	0.8	0.5	0.6	0.6	0.6	0.9	0.8	1.0	0.8	0.8	0.7	
09:00 – 10:00	0.8	-	0.8	0.8	0.4	0.6	0.5	0.6	0.7	0.8	0.8	0.8	0.5	0.6	
10:00 – 11:00	0.6	-	0.6	0.8	0.3	0.5	0.5	0.6	0.5	0.8	0.6	0.8	0.4	0.6	
11:00 – 12:00	0.5	-	0.6	0.8	0.3	0.4	0.4	0.5	0.5	0.8	0.5	0.8	0.5	0.6	
12:00 – 13:00	0.4	-	0.4	0.7	0.4	0.4	0.4	0.5	0.5	0.7	0.5	0.7	0.5	0.6	
13:00 – 14:00	0.5	-	0.4	0.7	0.4	0.4	0.5	0.5	0.5	0.7	0.5	0.7	0.5	0.6	
14:00 – 15:00	0.5	0.6	0.4	0.6	0.5	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.5	0.6	
15:00 – 16:00	0.5	0.6	0.5	0.6	0.4	0.4	0.5	0.5	0.5	0.6	0.5	0.6	0.6	0.5	
16:00 – 17:00	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.5	
17:00 – 18:00	0.5	0.5	0.4	0.5	0.4	0.4	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.5	
18:00 – 19:00	0.7	0.5	0.5	0.5	0.4	0.4	0.6	0.5	0.6	0.5	0.7	0.6	0.5	0.5	
19:00 – 20:00	0.7	0.5	0.5	0.5	0.5	0.4	0.6	0.5	0.6	0.5	0.6	0.6	0.6	0.6	
20:00 – 21:00	0.7	0.6	0.7	0.5	0.6	0.5	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.6	
21:00 – 22:00	0.7	0.6	0.8	0.5	0.8	0.5	0.7	0.6	0.8	0.6	0.8	0.6	0.5	0.6	
22:00 – 23:00	0.8	0.6	0.8	0.6	0.7	0.5	0.8	0.6	0.7	0.6	0.6	0.6	0.5	0.6	
23:00 – 24:00	0.9	0.7	0.8	0.6	0.7	0.6	0.8	0.7	0.7	0.6	0.6	0.6	0.4	0.5	
00:00 – 01:00	0.8	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.8	0.7	0.6	0.6	0.4	0.5	
01:00 – 02:00	0.7	0.8	0.9	0.7	0.7	0.6	0.7	0.7	0.8	0.7	0.6	0.6	0.4	0.5	
02:00 – 03:00	0.8	0.8	0.9	0.8	0.6	0.7	0.7	0.7	0.8	0.7	0.6	0.6	0.3	0.5	
03:00 – 04:00	0.8	0.8	0.8	0.8	0.6	0.7	0.9	0.8	0.7	0.8	0.6	0.6	0.3	0.4	
04:00 – 05:00	0.7	0.8	0.7	0.8	0.6	0.7	0.8	0.8	0.7	0.8	0.6	0.6	0.3	0.4	
05:00 – 06:00	0.7	0.8	0.5	0.8	0.6	0.7	0.8	0.8	0.8	0.8	0.6	0.6	0.3	0.4	
06:00 – 07:00	0.8	0.8	0.4	0.7	0.6	0.6	0.8	0.8	0.8	0.8	0.7	0.6	0.8	0.4	
24 Hours Average	**0.7**	**-**	**0.6**	**-**	**0.5**	**-**	**0.6**	**-**	**0.7**	**-**	**0.6**	**-**	**0.5**	**-**	-
1 Hour Maximum	**0.9**	**-**	**1.0**	**-**	**0.8**	**-**	**0.9**	**-**	**1.0**	**-**	**1.0**	**-**	**0.8**	**-**	**30**
8 Hours Maximum	-	**0.8**	-	**0.8**	-	**0.7**	-	**0.8**	-	**0.8**	-	**0.8**	-	**0.7**	**9**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : **บริเวณวัดประสิทธาราม หมู่ที่ 7 ตำบลพนานิคม อำเภอนิคมพัฒนา จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0731909 E, 1430359 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer API Model 200AU Serial Number 92
Reported Number : ASC056-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)											
	Jan 25-26, 19			Jan 26-27, 19			Jan 27-28, 19			Jan 28-29, 19		
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx
08:00 – 09:00	0.0092	0.0143	0.0235	0.0158	0.0190	0.0348	0.0095	0.0165	0.0260	0.0153	0.0230	0.0383
09:00 – 10:00	0.0051	0.0151	0.0202	0.0159	0.0231	0.0390	0.0123	0.0154	0.0277	0.0078	0.0205	0.0283
10:00 – 11:00	0.0045	0.0170	0.0215	0.0071	0.0183	0.0254	0.0058	0.0121	0.0179	0.0053	0.0143	0.0196
11:00 – 12:00	0.0046	0.0142	0.0188	0.0058	0.0129	0.0187	0.0056	0.0106	0.0162	0.0037	0.0080	0.0117
12:00 – 13:00	0.0043	0.0124	0.0167	0.0056	0.0113	0.0169	0.0058	0.0116	0.0174	0.0051	0.0148	0.0199
13:00 – 14:00	0.0040	0.0111	0.0151	0.0055	0.0110	0.0165	0.0058	0.0117	0.0175	0.0048	0.0122	0.0170
14:00 – 15:00	0.0044	0.0103	0.0147	0.0051	0.0102	0.0153	0.0055	0.0116	0.0171	0.0045	0.0124	0.0169
15:00 – 16:00	0.0045	0.0117	0.0162	0.0049	0.0104	0.0153	0.0055	0.0117	0.0172	0.0042	0.0129	0.0171
16:00 – 17:00	0.0049	0.0107	0.0156	0.0052	0.0114	0.0166	0.0057	0.0164	0.0221	0.0047	0.0151	0.0198
17:00 – 18:00	0.0040	0.0092	0.0132	0.0058	0.0123	0.0181	0.0062	0.0148	0.0210	0.0050	0.0165	0.0215
18:00 – 19:00	0.0024	0.0069	0.0093	0.0068	0.0135	0.0203	0.0066	0.0099	0.0165	0.0051	0.0171	0.0222
19:00 – 20:00	0.0023	0.0076	0.0099	0.0064	0.0138	0.0202	0.0099	0.0125	0.0224	0.0057	0.0204	0.0261
20:00 – 21:00	0.0040	0.0141	0.0181	0.0046	0.0119	0.0165	0.0054	0.0135	0.0189	0.0061	0.0230	0.0291
21:00 – 22:00	0.0052	0.0149	0.0201	0.0036	0.0107	0.0143	0.0057	0.0138	0.0195	0.0065	0.0211	0.0276
22:00 – 23:00	0.0061	0.0150	0.0211	0.0060	0.0156	0.0216	0.0053	0.0130	0.0183	0.0069	0.0211	0.0280
23:00 – 24:00	0.0070	0.0145	0.0215	0.0046	0.0120	0.0166	0.0057	0.0138	0.0195	0.0052	0.0213	0.0265
00:00 – 01:00	0.0056	0.0130	0.0186	0.0076	0.0126	0.0202	0.0073	0.0152	0.0225	0.0037	0.0104	0.0141
01:00 – 02:00	0.0077	0.0134	0.0211	0.0100	0.0188	0.0288	0.0085	0.0186	0.0271	0.0038	0.0069	0.0107
02:00 – 03:00	0.0098	0.0130	0.0228	0.0116	0.0194	0.0310	0.0079	0.0157	0.0236	0.0047	0.0070	0.0117
03:00 – 04:00	0.0114	0.0164	0.0278	0.0130	0.0204	0.0334	0.0082	0.0148	0.0230	0.0052	0.0091	0.0143
04:00 – 05:00	0.0121	0.0168	0.0289	0.0122	0.0181	0.0303	0.0088	0.0162	0.0250	0.0049	0.0092	0.0141
05:00 – 06:00	0.0101	0.0149	0.0250	0.0096	0.0154	0.0250	0.0095	0.0154	0.0249	0.0053	0.0091	0.0144
06:00 – 07:00	0.0102	0.0134	0.0236	0.0106	0.0150	0.0256	0.0095	0.0096	0.0191	0.0051	0.0095	0.0146
07:00 – 08:00	0.0116	0.0172	0.0288	0.0092	0.0148	0.0240	0.0081	0.0161	0.0242	0.0051	0.0098	0.0149
24 Hours Average	**0.0065**	**0.0132**	**0.0197**	**0.0080**	**0.0147**	**0.0227**	**0.0073**	**0.0138**	**0.0211**	**0.0056**	**0.0144**	**0.0200**
1 Hour Maximum	**0.0121**	**0.0172**	**0.0289**	**0.0159**	**0.0231**	**0.0390**	**0.0123**	**0.0186**	**0.0277**	**0.0153**	**0.0230**	**0.0383**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : **บริเวณวัดประสิทธาราม หมู่ที่ 7 ตำบลพนานิคม อำเภอนิคมพัฒนา จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0731909 E, 1430359 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer API Model 200AU Serial Number 92
Reported Number : ASC056-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)									Standard[1/]
	Jan 29-30, 19			Jan 30-31, 19			Jan 31-Feb 1, 19			
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	
08:00 – 09:00	0.0064	0.0105	0.0169	0.0074	0.0105	0.0179	0.0069	0.0089	0.0158	
09:00 – 10:00	0.0051	0.0096	0.0147	0.0045	0.0096	0.0141	0.0072	0.0101	0.0173	
10:00 – 11:00	0.0035	0.0095	0.0130	0.0033	0.0095	0.0128	0.0046	0.0099	0.0145	
11:00 – 12:00	0.0029	0.0105	0.0134	0.0033	0.0105	0.0138	0.0038	0.0090	0.0128	
12:00 – 13:00	0.0041	0.0087	0.0128	0.0033	0.0087	0.0120	0.0028	0.0087	0.0115	
13:00 – 14:00	0.0041	0.0207	0.0248	0.0031	0.0207	0.0238	0.0027	0.0082	0.0109	
14:00 – 15:00	0.0032	0.0161	0.0193	0.0046	0.0161	0.0207	0.0025	0.0082	0.0107	
15:00 – 16:00	0.0024	0.0137	0.0161	0.0041	0.0139	0.0180	0.0027	0.0096	0.0123	
16:00 – 17:00	0.0022	0.0131	0.0153	0.0032	0.0131	0.0163	0.0022	0.0073	0.0095	
17:00 – 18:00	0.0021	0.0143	0.0164	0.0032	0.0143	0.0175	0.0021	0.0054	0.0075	
18:00 – 19:00	0.0022	0.0180	0.0202	0.0030	0.0180	0.0210	0.0023	0.0055	0.0078	
19:00 – 20:00	0.0026	0.0206	0.0232	0.0038	0.0206	0.0244	0.0030	0.0064	0.0094	
20:00 – 21:00	0.0030	0.0184	0.0214	0.0063	0.0184	0.0247	0.0043	0.0081	0.0124	
21:00 – 22:00	0.0029	0.0065	0.0094	0.0055	0.0065	0.0120	0.0049	0.0079	0.0128	
22:00 – 23:00	0.0029	0.0070	0.0099	0.0031	0.0070	0.0101	0.0049	0.0079	0.0128	
23:00 – 24:00	0.0028	0.0073	0.0101	0.0037	0.0073	0.0110	0.0052	0.0079	0.0131	
00:00 – 01:00	0.0035	0.0065	0.0100	0.0044	0.0065	0.0109	0.0059	0.0078	0.0137	
01:00 – 02:00	0.0033	0.0055	0.0088	0.0045	0.0055	0.0100	0.0073	0.0084	0.0157	
02:00 – 03:00	0.0034	0.0055	0.0089	0.0047	0.0055	0.0102	0.0057	0.0075	0.0132	
03:00 – 04:00	0.0031	0.0086	0.0117	0.0043	0.0086	0.0129	0.0056	0.0069	0.0125	
04:00 – 05:00	0.0035	0.0096	0.0131	0.0052	0.0096	0.0148	0.0064	0.0064	0.0128	
05:00 – 06:00	0.0043	0.0082	0.0125	0.0054	0.0082	0.0136	0.0058	0.0060	0.0118	
06:00 – 07:00	0.0046	0.0082	0.0128	0.0057	0.0067	0.0124	0.0081	0.0126	0.0207	
07:00 – 08:00	0.0054	0.0098	0.0152	0.0061	0.0086	0.0147	0.0069	0.0125	0.0194	
24 Hours Average	**0.0035**	**0.0111**	**0.0146**	**0.0044**	**0.0110**	**0.0154**	**0.0047**	**0.0082**	**0.0129**	-
1 Hour Maximum	**0.0064**	**0.0207**	**0.0248**	**0.0074**	**0.0207**	**0.0247**	**0.0081**	**0.0126**	**0.0207**	**NO_2 ≤0.17**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : **บริเวณวัดประสิทธาราม หมู่ที่ 7 ตำบลพนานิคม อำเภอนิคมพัฒนา จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0731909 E, 1430359 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : SO_2 UV-Fluorescence Analyzer Horiba Model APSA-370 Serial Number X7L602W6
Reported Number : ASC056-SO_2-2562 **Report Date** : February 15, 2019

Interval Time	Result SO_2 (ppm)							Standard
	Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
08:00 – 09:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	
09:00 – 10:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	0.0011	
10:00 – 11:00	0.0011	0.0012	0.0011	0.0011	0.0012	0.0012	0.0012	
11:00 – 12:00	0.0012	0.0012	0.0011	0.0012	0.0012	0.0013	0.0012	
12:00 – 13:00	0.0012	0.0012	0.0011	0.0013	0.0012	0.0013	0.0012	
13:00 – 14:00	0.0013	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	
14:00 – 15:00	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	
15:00 – 16:00	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.0012	
16:00 – 17:00	0.0013	0.0013	0.0012	0.0012	0.0015	0.0013	0.0012	
17:00 – 18:00	0.0013	0.0013	0.0012	0.0012	0.0014	0.0012	0.0011	
18:00 – 19:00	0.0012	0.0013	0.0012	0.0012	0.0013	0.0012	0.0011	
19:00 – 20:00	0.0012	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	
20:00 – 21:00	0.0012	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	
21:00 – 22:00	0.0012	0.0012	0.0011	0.0011	0.0011	0.0011	0.0011	
22:00 – 23:00	0.0012	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	
23:00 – 24:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	
00:00 – 01:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	
01:00 – 02:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	
02:00 – 03:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	
03:00 – 04:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	
04:00 – 05:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	
05:00 – 06:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	
06:00 – 07:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	
07:00 – 08:00	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	0.0011	
24 Hours Average	**0.0012**	**0.0012**	**0.0011**	**0.0011**	**0.0012**	**0.0012**	**0.0011**	**0.12[1/]**
1 Hour Maximum	**0.0013**	**0.0013**	**0.0012**	**0.0013**	**0.0015**	**0.0013**	**0.0012**	**0.30[2/]**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).
[2/] Notification of National Environmental Board, No.12, B.E.2538 (1995), published in the Royal Government Gazette No.112 Special Part 27D dated July 13, B.E.2538 (1995) and Notification No.21, B.E.2544 (2001), published in the Royal Government Gazette No.118 Special Part 39D dated April 30, B.E.2544 (2001), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

(Ms.Supawan Suwannapa)
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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณวัดประสิทธาราม หมู่ที่ 7 ตำบลพนานิคม อำเภอนิคมพัฒนา จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0731909 E, 1430359 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : CO NDIR Analyzer Thermo Model 48C Serial Number 0415406564
Reported Number : ASC056-CO-2562 **Report Date** : February 15, 2019

Interval Time	Result CO (ppm)														Standard[1/]
	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19		
	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	
08:00 – 09:00	0.8	-	0.8	0.7	0.5	0.6	0.6	0.6	0.8	0.7	0.5	0.5	0.5	0.4	
09:00 – 10:00	0.8	-	0.8	0.7	0.5	0.6	0.5	0.6	0.7	0.8	0.5	0.5	0.5	0.4	
10:00 – 11:00	0.6	-	0.6	0.7	0.5	0.6	0.5	0.5	0.5	0.7	0.3	0.5	0.3	0.4	
11:00 – 12:00	0.5	-	0.5	0.7	0.5	0.6	0.4	0.5	0.4	0.7	0.3	0.5	0.3	0.4	
12:00 – 13:00	0.3	-	0.4	0.7	0.4	0.5	0.5	0.4	0.3	0.6	0.3	0.4	0.3	0.4	
13:00 – 14:00	0.3	-	0.4	0.6	0.4	0.5	0.3	0.5	0.4	0.6	0.5	0.4	0.3	0.4	
14:00 – 15:00	0.3	-	0.4	0.6	0.4	0.5	0.3	0.5	0.4	0.5	0.4	0.4	0.3	0.4	
15:00 – 16:00	0.4	0.5	0.4	0.5	0.3	0.4	0.3	0.4	0.4	0.5	0.3	0.4	0.6	0.4	
16:00 – 17:00	0.4	0.5	0.4	0.5	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.4	
17:00 – 18:00	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.4	0.4	
18:00 – 19:00	0.5	0.4	0.5	0.4	0.3	0.4	0.5	0.4	0.5	0.4	0.5	0.4	0.3	0.4	
19:00 – 20:00	0.5	0.4	0.7	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.3	0.4	
20:00 – 21:00	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.3	0.4	0.4	0.4	
21:00 – 22:00	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.3	0.4	0.3	0.4	
22:00 – 23:00	0.6	0.5	0.5	0.5	0.6	0.4	0.5	0.4	0.5	0.5	0.3	0.4	0.3	0.4	
23:00 – 24:00	0.6	0.5	0.6	0.5	0.6	0.4	0.5	0.4	0.5	0.5	0.4	0.4	0.3	0.3	
00:00 – 01:00	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	
01:00 – 02:00	0.6	0.6	0.7	0.6	0.7	0.5	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.3	
02:00 – 03:00	0.6	0.6	0.7	0.6	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3	
03:00 – 04:00	0.7	0.6	0.8	0.6	0.7	0.6	0.8	0.5	0.6	0.5	0.4	0.4	0.3	0.3	
04:00 – 05:00	0.7	0.6	0.7	0.6	0.5	0.6	0.8	0.6	0.6	0.5	0.4	0.4	0.3	0.3	
05:00 – 06:00	0.7	0.6	0.6	0.7	0.5	0.6	0.8	0.6	0.5	0.5	0.4	0.4	0.3	0.3	
06:00 – 07:00	0.7	0.7	0.5	0.7	0.5	0.6	0.8	0.7	0.6	0.5	0.4	0.4	0.4	0.3	
07:00 – 08:00	0.7	0.7	0.6	0.7	0.5	0.6	0.7	0.7	0.5	0.5	0.5	0.4	0.7	0.4	
24 Hours Average	**0.6**	-	**0.6**	-	**0.5**	-	**0.5**	-	**0.5**	-	**0.4**	-	**0.4**	-	-
1 Hour Maximum	**0.8**	-	**0.8**	-	**0.7**	-	**0.8**	-	**0.8**	-	**0.5**	-	**0.7**	-	**30**
8 Hours Maximum	-	**0.7**	-	**0.7**	-	**0.6**	-	**0.7**	-	**0.8**	-	**0.5**	-	**0.4**	**9**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณโรงเรียนบ้านมาบเตย หมู่ที่ 1 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระย อง
GPS. Coordinate : UTM (WGS84) 47P 0735507 E, 1433551 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer Horiba Model APNA-370 Serial Number YCPL4HTM
Reported Number : ASC057-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)											
	Jan 25-26, 19			Jan 26-27, 19			Jan 27-28, 19			Jan 28-29, 19		
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx
07:00 – 08:00	0.0158	0.0212	0.0370	0.0128	0.0237	0.0365	0.0152	0.0191	0.0343	0.0166	0.0300	0.0466
08:00 – 09:00	0.0179	0.0261	0.0440	0.0138	0.0205	0.0343	0.0171	0.0208	0.0379	0.0167	0.0360	0.0527
09:00 – 10:00	0.0141	0.0347	0.0488	0.0175	0.0274	0.0449	0.0121	0.0184	0.0305	0.0183	0.0278	0.0461
10:00 – 11:00	0.0113	0.0275	0.0388	0.0144	0.0243	0.0387	0.0092	0.0157	0.0249	0.0084	0.0210	0.0294
11:00 – 12:00	0.0089	0.0208	0.0297	0.0107	0.0236	0.0343	0.0069	0.0140	0.0209	0.0070	0.0167	0.0237
12:00 – 13:00	0.0066	0.0146	0.0212	0.0100	0.0252	0.0352	0.0059	0.0126	0.0185	0.0065	0.0160	0.0225
13:00 – 14:00	0.0044	0.0108	0.0152	0.0067	0.0166	0.0233	0.0066	0.0125	0.0191	0.0057	0.0152	0.0209
14:00 – 15:00	0.0047	0.0109	0.0156	0.0065	0.0166	0.0231	0.0055	0.0122	0.0177	0.0045	0.0153	0.0198
15:00 – 16:00	0.0040	0.0086	0.0126	0.0068	0.0166	0.0234	0.0069	0.0149	0.0218	0.0040	0.0142	0.0182
16:00 – 17:00	0.0039	0.0107	0.0146	0.0065	0.0138	0.0203	0.0070	0.0167	0.0237	0.0045	0.0179	0.0224
17:00 – 18:00	0.0025	0.0066	0.0091	0.0054	0.0146	0.0200	0.0061	0.0169	0.0230	0.0076	0.0232	0.0308
18:00 – 19:00	0.0029	0.0161	0.0190	0.0067	0.0172	0.0239	0.0062	0.0160	0.0222	0.0125	0.0344	0.0469
19:00 – 20:00	0.0027	0.0114	0.0141	0.0025	0.0080	0.0105	0.0133	0.0272	0.0405	0.0111	0.0319	0.0430
20:00 – 21:00	0.0022	0.0160	0.0182	0.0026	0.0112	0.0138	0.0075	0.0253	0.0328	0.0026	0.0147	0.0173
21:00 – 22:00	0.0031	0.0267	0.0298	0.0027	0.0193	0.0220	0.0097	0.0279	0.0376	0.0065	0.0231	0.0296
22:00 – 23:00	0.0032	0.0212	0.0244	0.0027	0.0102	0.0129	0.0118	0.0287	0.0405	0.0137	0.0375	0.0512
23:00 – 24:00	0.0070	0.0257	0.0327	0.0042	0.0119	0.0161	0.0036	0.0179	0.0215	0.0034	0.0232	0.0266
00:00 – 01:00	0.0024	0.0144	0.0168	0.0110	0.0284	0.0394	0.0054	0.0225	0.0279	0.0044	0.0212	0.0256
01:00 – 02:00	0.0040	0.0210	0.0250	0.0072	0.0295	0.0367	0.0080	0.0227	0.0307	0.0037	0.0252	0.0289
02:00 – 03:00	0.0042	0.0165	0.0207	0.0061	0.0289	0.0350	0.0027	0.0144	0.0171	0.0040	0.0304	0.0344
03:00 – 04:00	0.0037	0.0196	0.0233	0.0097	0.0261	0.0358	0.0038	0.0150	0.0188	0.0055	0.0289	0.0344
04:00 – 05:00	0.0032	0.0192	0.0224	0.0040	0.0155	0.0195	0.0033	0.0114	0.0147	0.0088	0.0323	0.0411
05:00 – 06:00	0.0037	0.0191	0.0228	0.0052	0.0116	0.0168	0.0040	0.0116	0.0156	0.0053	0.0280	0.0333
06:00 – 07:00	0.0229	0.0223	0.0452	0.0078	0.0132	0.0210	0.0085	0.0176	0.0261	0.0155	0.0305	0.0460
24 Hours Average	**0.0066**	**0.0184**	**0.0250**	**0.0076**	**0.0189**	**0.0265**	**0.0078**	**0.0180**	**0.0258**	**0.0082**	**0.0248**	**0.0330**
1 Hour Maximum	**0.0229**	**0.0347**	**0.0488**	**0.0175**	**0.0295**	**0.0449**	**0.0171**	**0.0287**	**0.0405**	**0.0183**	**0.0375**	**0.0527**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : **บริเวณโรงเรียนบ้านมาบเตย หมู่ที่ 1 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0735507 E, 1433551 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer Horiba Model APNA-370 Serial Number YCPL4HTM
Reported Number : ASC057-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)									Standard[1/]
	Jan 29-30, 19			Jan 30-31, 19			Jan 31-Feb 1, 19			
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	
07:00 – 08:00	0.0100	0.0349	0.0449	0.0139	0.0287	0.0426	0.0129	0.0134	0.0263	
08:00 – 09:00	0.0109	0.0393	0.0502	0.0160	0.0356	0.0516	0.0142	0.0148	0.0290	
09:00 – 10:00	0.0117	0.0363	0.0480	0.0167	0.0344	0.0511	0.0134	0.0180	0.0314	
10:00 – 11:00	0.0127	0.0318	0.0445	0.0062	0.0161	0.0223	0.0057	0.0110	0.0167	
11:00 – 12:00	0.0082	0.0288	0.0370	0.0033	0.0094	0.0127	0.0061	0.0172	0.0233	
12:00 – 13:00	0.0079	0.0242	0.0321	0.0044	0.0135	0.0179	0.0047	0.0144	0.0191	
13:00 – 14:00	0.0047	0.0172	0.0219	0.0052	0.0154	0.0206	0.0058	0.0197	0.0255	
14:00 – 15:00	0.0027	0.0077	0.0104	0.0024	0.0063	0.0087	0.0055	0.0167	0.0222	
15:00 – 16:00	0.0030	0.0069	0.0099	0.0024	0.0052	0.0076	0.0068	0.0262	0.0330	
16:00 – 17:00	0.0029	0.0152	0.0181	0.0024	0.0072	0.0096	0.0065	0.0171	0.0236	
17:00 – 18:00	0.0024	0.0120	0.0144	0.0026	0.0119	0.0145	0.0037	0.0121	0.0158	
18:00 – 19:00	0.0022	0.0143	0.0165	0.0022	0.0106	0.0128	0.0033	0.0101	0.0134	
19:00 – 20:00	0.0021	0.0182	0.0203	0.0036	0.0160	0.0196	0.0027	0.0096	0.0123	
20:00 – 21:00	0.0022	0.0199	0.0221	0.0021	0.0120	0.0141	0.0024	0.0077	0.0101	
21:00 – 22:00	0.0022	0.0101	0.0123	0.0021	0.0103	0.0124	0.0023	0.0061	0.0084	
22:00 – 23:00	0.0049	0.0252	0.0301	0.0018	0.0066	0.0084	0.0022	0.0060	0.0082	
23:00 – 24:00	0.0025	0.0132	0.0157	0.0029	0.0146	0.0175	0.0020	0.0065	0.0085	
00:00 – 01:00	0.0028	0.0225	0.0253	0.0021	0.0086	0.0107	0.0022	0.0055	0.0077	
01:00 – 02:00	0.0027	0.0169	0.0196	0.0021	0.0076	0.0097	0.0022	0.0065	0.0087	
02:00 – 03:00	0.0028	0.0156	0.0184	0.0022	0.0073	0.0095	0.0023	0.0060	0.0083	
03:00 – 04:00	0.0034	0.0152	0.0186	0.0026	0.0084	0.0110	0.0032	0.0064	0.0096	
04:00 – 05:00	0.0028	0.0120	0.0148	0.0028	0.0075	0.0103	0.0025	0.0047	0.0072	
05:00 – 06:00	0.0039	0.0196	0.0235	0.0038	0.0094	0.0132	0.0037	0.0068	0.0105	
06:00 – 07:00	0.0201	0.0259	0.0460	0.0130	0.0113	0.0243	0.0176	0.0102	0.0278	
24 Hours Average	**0.0055**	**0.0201**	**0.0256**	**0.0050**	**0.0131**	**0.0181**	**0.0056**	**0.0114**	**0.0170**	-
1 Hour Maximum	**0.0201**	**0.0393**	**0.0502**	**0.0167**	**0.0356**	**0.0516**	**0.0176**	**0.0262**	**0.0330**	**NO_2 ≤0.17**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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Laboratory Reviewer

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : **บริเวณโรงเรียนบ้านมาบเตย หมู่ที่ 1 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0735507 E, 1433551 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : SO_2 UV-Fluorescence Analyzer Thermo Model 43i Serial Number CM14430005
Reported Number : ASC057-SO_2-2562 **Report Date** : February 15, 2019

Interval Time	Result SO_2 (ppm)							Standard
	Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
07:00 – 08:00	0.0016	0.0019	0.0007	0.0012	0.0027	0.0023	0.0017	
08:00 – 09:00	0.0017	0.0023	0.0010	0.0019	0.0029	0.0025	0.0023	
09:00 – 10:00	0.0017	0.0023	0.0008	0.0013	0.0020	0.0019	0.0026	
10:00 – 11:00	0.0016	0.0013	0.0009	0.0011	0.0014	0.0021	0.0016	
11:00 – 12:00	0.0013	0.0012	0.0008	0.0012	0.0013	0.0022	0.0022	
12:00 – 13:00	0.0011	0.0010	0.0009	0.0012	0.0015	0.0023	0.0024	
13:00 – 14:00	0.0011	0.0011	0.0009	0.0012	0.0015	0.0022	0.0027	
14:00 – 15:00	0.0012	0.0010	0.0010	0.0012	0.0016	0.0020	0.0025	
15:00 – 16:00	0.0011	0.0011	0.0010	0.0014	0.0019	0.0019	0.0028	
16:00 – 17:00	0.0011	0.0011	0.0012	0.0014	0.0017	0.0020	0.0023	
17:00 – 18:00	0.0012	0.0012	0.0012	0.0014	0.0013	0.0022	0.0025	
18:00 – 19:00	0.0015	0.0010	0.0012	0.0017	0.0013	0.0023	0.0023	
19:00 – 20:00	0.0013	0.0011	0.0013	0.0017	0.0013	0.0021	0.0020	
20:00 – 21:00	0.0013	0.0010	0.0014	0.0011	0.0012	0.0019	0.0015	
21:00 – 22:00	0.0012	0.0011	0.0012	0.0011	0.0013	0.0018	0.0014	
22:00 – 23:00	0.0014	0.0011	0.0028	0.0014	0.0014	0.0018	0.0013	
23:00 – 24:00	0.0013	0.0010	0.0012	0.0012	0.0012	0.0018	0.0011	
00:00 – 01:00	0.0009	0.0013	0.0012	0.0010	0.0013	0.0016	0.0010	
01:00 – 02:00	0.0012	0.0020	0.0015	0.0011	0.0013	0.0016	0.0010	
02:00 – 03:00	0.0010	0.0015	0.0013	0.0023	0.0013	0.0017	0.0011	
03:00 – 04:00	0.0016	0.0014	0.0012	0.0024	0.0011	0.0016	0.0010	
04:00 – 05:00	0.0018	0.0012	0.0011	0.0024	0.0014	0.0015	0.0010	
05:00 – 06:00	0.0017	0.0010	0.0010	0.0026	0.0018	0.0018	0.0012	
06:00 – 07:00	0.0015	0.0008	0.0011	0.0030	0.0026	0.0018	0.0013	
24 Hours Average	**0.0014**	**0.0013**	**0.0012**	**0.0016**	**0.0016**	**0.0020**	**0.0018**	**0.12[1/]**
1 Hour Maximum	**0.0018**	**0.0023**	**0.0028**	**0.0030**	**0.0029**	**0.0025**	**0.0028**	**0.30[2/]**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).
[2/] Notification of National Environmental Board, No.12, B.E.2538 (1995), published in the Royal Government Gazette No.112 Special Part 27D dated July 13, B.E.2538 (1995) and Notification No.21, B.E.2544 (2001), published in the Royal Government Gazette No.118 Special Part 39D dated April 30, B.E.2544 (2001), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณโรงเรียนบ้านมาบเตย หมู่ที่ 1 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระย อง
GPS. Coordinate : UTM (WGS84) 47P 0735507 E, 1433551 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : CO NDIR Analyzer Horiba Model APMA-370 Serial Number WNTLD9N8
Reported Number : ASC057-CO-2562 **Report Date** : February 15, 2019

Interval Time	Result CO (ppm)														Standard[1/]
	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19		
	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	
07:00 – 08:00	0.9	-	0.8	0.7	0.4	0.6	0.6	0.6	0.8	0.7	0.8	0.7	0.7	0.6	
08:00 – 09:00	1.1	-	1.1	0.8	0.5	0.6	0.8	0.6	1.2	0.8	1.0	0.7	0.8	0.6	
09:00 – 10:00	0.9	-	0.9	0.8	0.4	0.6	0.6	0.6	0.8	0.8	0.8	0.7	0.8	0.6	
10:00 – 11:00	0.7	-	0.6	0.8	0.3	0.5	0.5	0.6	0.6	0.8	0.5	0.7	0.4	0.6	
11:00 – 12:00	0.5	-	0.6	0.8	0.3	0.4	0.4	0.5	0.5	0.8	0.5	0.7	0.5	0.6	
12:00 – 13:00	0.4	-	0.4	0.7	0.3	0.4	0.4	0.5	0.5	0.8	0.5	0.7	0.5	0.6	
13:00 – 14:00	0.4	-	0.4	0.7	0.4	0.4	0.4	0.5	0.4	0.7	0.5	0.7	0.5	0.6	
14:00 – 15:00	0.4	0.7	0.4	0.7	0.4	0.4	0.4	0.5	0.4	0.7	0.4	0.6	0.5	0.6	
15:00 – 16:00	0.4	0.6	0.4	0.6	0.4	0.4	0.5	0.5	0.4	0.6	0.4	0.6	0.5	0.6	
16:00 – 17:00	0.4	0.5	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	
17:00 – 18:00	0.4	0.5	0.4	0.5	0.4	0.4	0.6	0.5	0.4	0.5	0.4	0.5	0.5	0.5	
18:00 – 19:00	0.5	0.4	0.4	0.4	0.5	0.4	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.5	
19:00 – 20:00	0.5	0.4	0.4	0.4	0.5	0.4	0.6	0.5	0.5	0.4	0.6	0.5	0.4	0.5	
20:00 – 21:00	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.5	0.5	0.4	0.5	0.5	0.4	0.5	
21:00 – 22:00	0.7	0.5	0.6	0.4	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	
22:00 – 23:00	0.7	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.5	0.3	0.4	
23:00 – 24:00	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.6	0.5	0.4	0.4	
00:00 – 01:00	0.7	0.6	0.7	0.5	0.6	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.3	0.4	
01:00 – 02:00	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.7	0.6	0.5	0.5	0.3	0.4	
02:00 – 03:00	0.7	0.7	0.8	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.3	0.4	
03:00 – 04:00	0.7	0.7	0.8	0.7	0.5	0.6	0.7	0.6	0.6	0.6	0.5	0.5	0.3	0.3	
04:00 – 05:00	0.7	0.7	0.6	0.7	0.5	0.6	0.8	0.6	0.6	0.6	0.5	0.5	0.3	0.3	
05:00 – 06:00	0.7	0.7	0.5	0.7	0.5	0.6	0.8	0.7	0.7	0.6	0.6	0.5	0.3	0.3	
06:00 – 07:00	0.8	0.7	0.4	0.6	0.5	0.5	0.8	0.7	0.8	0.7	0.6	0.6	0.4	0.3	
24 Hours Average	**0.6**	-	**0.6**	-	**0.5**	-	**0.6**	-	**0.6**	-	**0.5**	-	**0.4**	-	-
1 Hour Maximum	**1.1**	-	**1.1**	-	**0.6**	-	**0.8**	-	**1.2**	-	**1.0**	-	**0.8**	-	**30**
8 Hours Maximum	-	**0.7**	-	**0.8**	-	**0.6**	-	**0.7**	-	**0.8**	-	**0.7**	-	**0.6**	**9**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณชุมชนด้านทิศตะวันตกของโครงการ หมู่ที่ 5 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0732007 E, 1432903 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer Horiba Model APNA-370 Serial Number XPWS7U3L
Reported Number : ASC058-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)											
	Jan 25-26, 19			Jan 26-27, 19			Jan 27-28, 19			Jan 28-29, 19		
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx
07:00 – 08:00	0.0084	0.0070	0.0154	0.0057	0.0049	0.0106	0.0030	0.0052	0.0082	0.0035	0.0047	0.0082
08:00 – 09:00	0.0132	0.0087	0.0219	0.0156	0.0071	0.0227	0.0071	0.0083	0.0154	0.0051	0.0085	0.0136
09:00 – 10:00	0.0188	0.0242	0.0430	0.0180	0.0252	0.0432	0.0175	0.0261	0.0436	0.0129	0.0299	0.0428
10:00 – 11:00	0.0105	0.0254	0.0359	0.0265	0.0274	0.0539	0.0176	0.0356	0.0532	0.0120	0.0261	0.0381
11:00 – 12:00	0.0083	0.0177	0.0260	0.0060	0.0151	0.0211	0.0110	0.0352	0.0462	0.0133	0.0210	0.0343
12:00 – 13:00	0.0054	0.0116	0.0170	0.0187	0.0210	0.0397	0.0098	0.0288	0.0386	0.0108	0.0187	0.0295
13:00 – 14:00	0.0032	0.0085	0.0117	0.0045	0.0092	0.0137	0.0045	0.0094	0.0139	0.0041	0.0105	0.0146
14:00 – 15:00	0.0076	0.0160	0.0236	0.0170	0.0176	0.0346	0.0058	0.0228	0.0286	0.0082	0.0192	0.0274
15:00 – 16:00	0.0086	0.0163	0.0249	0.0149	0.0263	0.0412	0.0177	0.0345	0.0522	0.0068	0.0185	0.0253
16:00 – 17:00	0.0093	0.0204	0.0297	0.0186	0.0145	0.0331	0.0100	0.0316	0.0416	0.0096	0.0218	0.0314
17:00 – 18:00	0.0064	0.0137	0.0201	0.0156	0.0247	0.0403	0.0170	0.0300	0.0470	0.0079	0.0284	0.0363
18:00 – 19:00	0.0032	0.0104	0.0136	0.0059	0.0150	0.0209	0.0069	0.0175	0.0244	0.0075	0.0294	0.0369
19:00 – 20:00	0.0028	0.0104	0.0132	0.0025	0.0083	0.0108	0.0042	0.0131	0.0173	0.0043	0.0191	0.0234
20:00 – 21:00	0.0035	0.0172	0.0207	0.0031	0.0106	0.0137	0.0031	0.0099	0.0130	0.0027	0.0164	0.0191
21:00 – 22:00	0.0031	0.0126	0.0157	0.0025	0.0068	0.0093	0.0028	0.0069	0.0097	0.0028	0.0092	0.0120
22:00 – 23:00	0.0033	0.0106	0.0139	0.0027	0.0078	0.0105	0.0029	0.0061	0.0090	0.0030	0.0078	0.0108
23:00 – 24:00	0.0033	0.0081	0.0114	0.0027	0.0069	0.0096	0.0032	0.0100	0.0132	0.0033	0.0083	0.0116
00:00 – 01:00	0.0034	0.0065	0.0099	0.0030	0.0075	0.0105	0.0031	0.0086	0.0117	0.0039	0.0080	0.0119
01:00 – 02:00	0.0038	0.0049	0.0087	0.0033	0.0072	0.0105	0.0035	0.0071	0.0106	0.0050	0.0057	0.0107
02:00 – 03:00	0.0035	0.0049	0.0084	0.0040	0.0065	0.0105	0.0042	0.0066	0.0108	0.0051	0.0046	0.0097
03:00 – 04:00	0.0038	0.0050	0.0088	0.0054	0.0067	0.0121	0.0043	0.0059	0.0102	0.0062	0.0046	0.0108
04:00 – 05:00	0.0057	0.0043	0.0100	0.0067	0.0063	0.0130	0.0044	0.0050	0.0094	0.0081	0.0043	0.0124
05:00 – 06:00	0.0062	0.0046	0.0108	0.0046	0.0070	0.0116	0.0047	0.0046	0.0093	0.0097	0.0041	0.0138
06:00 – 07:00	0.0058	0.0057	0.0115	0.0033	0.0065	0.0098	0.0039	0.0045	0.0084	0.0105	0.0031	0.0136
24 Hours Average	**0.0063**	**0.0114**	**0.0177**	**0.0088**	**0.0123**	**0.0211**	**0.0072**	**0.0156**	**0.0227**	**0.0069**	**0.0138**	**0.0207**
1 Hour Maximum	**0.0188**	**0.0254**	**0.0430**	**0.0265**	**0.0274**	**0.0539**	**0.0177**	**0.0356**	**0.0532**	**0.0133**	**0.0299**	**0.0428**

Remark : [1/] Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณชุมชนด้านทิศตะวันตกของโครงการ หมู่ที่ 5 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0732007 E, 1432903 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : NOx Chemiluminescence Analyzer Horiba Model APNA-370 Serial Number XPWS7U3L
Reported Number : ASC058-NOx-2562 **Report Date** : February 15, 2019

Interval Time	Result (ppm)									Standard[1/]
	Jan 29-30, 19			Jan 30-31, 19			Jan 31-Feb 1, 19			
	NO	NO_2	NOx	NO	NO_2	NOx	NO	NO_2	NOx	
07:00 – 08:00	0.0091	0.0034	0.0125	0.0058	0.0090	0.0148	0.0064	0.0038	0.0102	
08:00 – 09:00	0.0084	0.0060	0.0144	0.0072	0.0095	0.0167	0.0178	0.0050	0.0228	
09:00 – 10:00	0.0114	0.0200	0.0314	0.0098	0.0237	0.0335	0.0177	0.0153	0.0330	
10:00 – 11:00	0.0098	0.0204	0.0302	0.0057	0.0139	0.0196	0.0092	0.0169	0.0261	
11:00 – 12:00	0.0060	0.0160	0.0220	0.0061	0.0190	0.0251	0.0052	0.0149	0.0201	
12:00 – 13:00	0.0051	0.0145	0.0196	0.0030	0.0064	0.0094	0.0041	0.0125	0.0166	
13:00 – 14:00	0.0039	0.0107	0.0146	0.0027	0.0052	0.0079	0.0035	0.0113	0.0148	
14:00 – 15:00	0.0043	0.0119	0.0162	0.0027	0.0067	0.0094	0.0034	0.0122	0.0156	
15:00 – 16:00	0.0031	0.0098	0.0129	0.0026	0.0058	0.0084	0.0038	0.0155	0.0193	
16:00 – 17:00	0.0027	0.0093	0.0120	0.0027	0.0079	0.0106	0.0030	0.0141	0.0171	
17:00 – 18:00	0.0026	0.0089	0.0115	0.0025	0.0071	0.0096	0.0022	0.0062	0.0084	
18:00 – 19:00	0.0025	0.0088	0.0113	0.0023	0.0073	0.0096	0.0022	0.0048	0.0070	
19:00 – 20:00	0.0024	0.0064	0.0088	0.0024	0.0069	0.0093	0.0028	0.0067	0.0095	
20:00 – 21:00	0.0026	0.0096	0.0122	0.0027	0.0093	0.0120	0.0027	0.0073	0.0100	
21:00 – 22:00	0.0027	0.0106	0.0133	0.0025	0.0122	0.0147	0.0046	0.0086	0.0132	
22:00 – 23:00	0.0027	0.0070	0.0097	0.0027	0.0110	0.0137	0.0069	0.0080	0.0149	
23:00 – 24:00	0.0029	0.0059	0.0088	0.0030	0.0078	0.0108	0.0058	0.0080	0.0138	
00:00 – 01:00	0.0031	0.0059	0.0090	0.0030	0.0057	0.0087	0.0049	0.0080	0.0129	
01:00 – 02:00	0.0034	0.0066	0.0100	0.0032	0.0056	0.0088	0.0088	0.0068	0.0156	
02:00 – 03:00	0.0035	0.0078	0.0113	0.0032	0.0042	0.0074	0.0183	0.0054	0.0237	
03:00 – 04:00	0.0036	0.0075	0.0111	0.0041	0.0033	0.0074	0.0223	0.0040	0.0263	
04:00 – 05:00	0.0035	0.0063	0.0098	0.0037	0.0039	0.0076	0.0213	0.0042	0.0255	
05:00 – 06:00	0.0038	0.0082	0.0120	0.0038	0.0039	0.0077	0.0136	0.0045	0.0181	
06:00 – 07:00	0.0068	0.0094	0.0162	0.0048	0.0037	0.0085	0.0183	0.0032	0.0215	
24 Hours Average	**0.0046**	**0.0096**	**0.0142**	**0.0038**	**0.0083**	**0.0121**	**0.0087**	**0.0086**	**0.0173**	-
1 Hour Maximum	**0.0114**	**0.0204**	**0.0314**	**0.0098**	**0.0237**	**0.0335**	**0.0223**	**0.0169**	**0.0330**	NO_2 ≤0.17

Remark : 1/ Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

(Ms.Supawan Suwannapa)
Laboratory Reviewer

(Ms.Panicha Promchai)
Laboratory Supervisor

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณชุมชนด้านทิศตะวันตกของโครงการ หมู่ที่ 5 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0732007 E, 1432903 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : SO_2 UV-Fluorescence Analyzer Thermo Model 43i Serial Number CM14430004
Reported Number : ASC058-SO_2-2562 **Report Date** : February 15, 2019

Interval Time	Result SO_2 (ppm)							Standard
	Jan 25-26, 19	Jan 26-27, 19	Jan 27-28, 19	Jan 28-29, 19	Jan 29-30, 19	Jan 30-31, 19	Jan 31-Feb 1, 19	
07:00 – 08:00	0.0016	0.0015	0.0013	0.0012	0.0016	0.0017	0.0011	
08:00 – 09:00	0.0016	0.0016	0.0012	0.0014	0.0016	0.0017	0.0012	
09:00 – 10:00	0.0017	0.0017	0.0016	0.0014	0.0017	0.0019	0.0015	
10:00 – 11:00	0.0018	0.0015	0.0017	0.0013	0.0015	0.0016	0.0014	
11:00 – 12:00	0.0019	0.0013	0.0015	0.0013	0.0013	0.0015	0.0012	
12:00 – 13:00	0.0017	0.0013	0.0015	0.0012	0.0013	0.0013	0.0011	
13:00 – 14:00	0.0015	0.0012	0.0011	0.0011	0.0012	0.0012	0.0012	
14:00 – 15:00	0.0015	0.0013	0.0013	0.0011	0.0011	0.0012	0.0011	
15:00 – 16:00	0.0015	0.0014	0.0015	0.0013	0.0011	0.0011	0.0011	
16:00 – 17:00	0.0016	0.0013	0.0013	0.0012	0.0012	0.0011	0.0020	
17:00 – 18:00	0.0015	0.0015	0.0013	0.0012	0.0012	0.0011	0.0011	
18:00 – 19:00	0.0014	0.0012	0.0012	0.0012	0.0011	0.0011	0.0010	
19:00 – 20:00	0.0013	0.0011	0.0010	0.0011	0.0010	0.0011	0.0010	
20:00 – 21:00	0.0012	0.0010	0.0010	0.0010	0.0010	0.0011	0.0009	
21:00 – 22:00	0.0011	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	
22:00 – 23:00	0.0012	0.0010	0.0010	0.0010	0.0011	0.0011	0.0010	
23:00 – 24:00	0.0012	0.0011	0.0011	0.0011	0.0015	0.0010	0.0010	
00:00 – 01:00	0.0012	0.0010	0.0011	0.0013	0.0020	0.0010	0.0010	
01:00 – 02:00	0.0011	0.0011	0.0010	0.0012	0.0019	0.0010	0.0010	
02:00 – 03:00	0.0011	0.0013	0.0011	0.0014	0.0018	0.0010	0.0010	
03:00 – 04:00	0.0011	0.0015	0.0013	0.0014	0.0018	0.0010	0.0011	
04:00 – 05:00	0.0012	0.0016	0.0014	0.0015	0.0019	0.0011	0.0010	
05:00 – 06:00	0.0014	0.0017	0.0014	0.0016	0.0017	0.0011	0.0010	
06:00 – 07:00	0.0014	0.0015	0.0014	0.0016	0.0017	0.0011	0.0011	
24 Hours Average	**0.0014**	**0.0013**	**0.0013**	**0.0013**	**0.0014**	**0.0012**	**0.0011**	**0.12**[1/]
1 Hour Maximum	**0.0019**	**0.0017**	**0.0017**	**0.0016**	**0.0020**	**0.0019**	**0.0020**	**0.30**[2/]

Remark : 1/ Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).
2/ Notification of National Environmental Board, No.12, B.E.2538 (1995), published in the Royal Government Gazette No.112 Special Part 27D dated July 13, B.E.2538 (1995) and Notification No.21, B.E.2544 (2001), published in the Royal Government Gazette No.118 Special Part 39D dated April 30, B.E.2544 (2001), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

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Laboratory Reviewer

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Air Quality
Measured Point : บริเวณชุมชนด้านทิศตะวันตกของโครงการ หมู่ที่ 5 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0732007 E, 1432903 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : CO NDIR Analyzer Thermo Model 48i-BNSAB Serial Number 0617817298
Reported Number : ASC058-CO-2562 **Report Date** : February 15, 2019

Interval Time	Result CO (ppm)														Standard[1/]
	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19		
	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	
07:00 – 08:00	0.4	-	0.6	0.5	0.6	0.6	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.6	
08:00 – 09:00	0.5	-	0.8	0.5	0.6	0.7	0.8	0.7	0.6	0.6	0.6	0.5	0.5	0.6	
09:00 – 10:00	0.6	-	0.9	0.6	0.6	0.7	0.6	0.7	0.5	0.6	0.6	0.5	0.6	0.6	
10:00 – 11:00	0.6	-	0.7	0.6	0.5	0.7	0.7	0.7	0.7	0.6	0.5	0.5	0.5	0.6	
11:00 – 12:00	0.7	-	0.6	0.6	0.4	0.6	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.6	
12:00 – 13:00	0.5	-	0.6	0.7	0.4	0.6	0.5	0.7	0.5	0.6	0.3	0.4	0.4	0.6	
13:00 – 14:00	0.4	-	0.4	0.7	0.4	0.5	0.5	0.6	0.4	0.6	0.3	0.4	0.4	0.5	
14:00 – 15:00	0.4	0.5	0.4	0.6	0.5	0.5	0.5	0.6	0.4	0.5	0.3	0.4	0.4	0.5	
15:00 – 16:00	0.4	0.5	0.5	0.6	0.4	0.5	0.6	0.6	0.5	0.5	0.3	0.4	0.4	0.5	
16:00 – 17:00	0.4	0.5	0.4	0.6	0.4	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.5	0.5	
17:00 – 18:00	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.6	0.4	0.5	0.4	0.4	0.5	0.4	
18:00 – 19:00	0.6	0.5	0.5	0.5	0.6	0.5	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	
19:00 – 20:00	0.6	0.5	0.5	0.5	0.7	0.5	0.7	0.6	0.7	0.5	0.6	0.4	0.5	0.4	
20:00 – 21:00	0.5	0.5	0.4	0.5	0.4	0.5	0.5	0.6	0.7	0.5	0.5	0.4	0.5	0.5	
21:00 – 22:00	0.5	0.5	0.4	0.5	0.4	0.5	0.5	0.6	0.6	0.5	0.5	0.4	0.5	0.5	
22:00 – 23:00	0.5	0.5	0.4	0.5	0.7	0.5	0.7	0.6	0.8	0.6	0.5	0.5	0.4	0.5	
23:00 – 24:00	0.6	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.8	0.6	0.5	0.5	0.5	0.5	
00:00 – 01:00	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.5	0.5	0.5	0.5	
01:00 – 02:00	0.4	0.5	0.5	0.5	0.6	0.6	0.5	0.6	0.5	0.7	0.5	0.5	0.4	0.5	
02:00 – 03:00	0.4	0.5	0.6	0.5	0.7	0.6	0.5	0.6	0.6	0.7	0.5	0.5	0.5	0.5	
03:00 – 04:00	0.4	0.5	0.7	0.5	0.7	0.6	0.5	0.5	0.5	0.7	0.5	0.5	0.4	0.5	
04:00 – 05:00	0.4	0.5	0.8	0.6	0.7	0.6	0.6	0.6	0.3	0.6	0.7	0.5	0.5	0.5	
05:00 – 06:00	0.5	0.5	0.8	0.6	0.9	0.7	0.6	0.6	0.3	0.6	0.8	0.6	0.5	0.5	
06:00 – 07:00	0.6	0.5	0.6	0.6	0.6	0.7	0.7	0.6	0.3	0.5	0.7	0.6	0.5	0.5	
24 Hours Average	**0.5**	-	**0.6**	-	**0.6**	-	**0.6**	-	**0.5**	-	**0.5**	-	**0.5**	-	-
1 Hour Maximum	**0.7**	-	**0.9**	-	**0.9**	-	**0.8**	-	**0.8**	-	**0.8**	-	**0.6**	-	**30**
8 Hours Maximum	-	**0.5**	-	**0.7**	-	**0.7**	-	**0.7**	-	**0.7**	-	**0.6**	-	**0.6**	**9**

Remark : 1/ Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

(Ms.Supawan Suwannapa)
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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733565 E, 1432618 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC046/2562

Date / Time	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19	
	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD
07:00 – 08:00	<0.4	Calm	<0.4	Calm	1.8	N	<0.4	Calm	0.4	NW	0.4	N	<0.4	Calm
08:00 – 09:00	<0.4	Calm	0.4	NNW	0.9	NNW	0.4	NNW	<0.4	Calm	<0.4	Calm	<0.4	Calm
09:00 – 10:00	<0.4	Calm	1.3	N	2.7	NNE	2.7	NNE	0.9	WSW	0.4	NW	<0.4	Calm
10:00 – 11:00	2.7	ENE	3.1	NE	3.6	NNE	3.6	NNE	2.7	NNE	0.9	SSW	0.4	W
11:00 – 12:00	2.7	ENE	3.6	NE	4.9	NE	4.0	NNE	2.7	NNE	2.2	SSE	1.8	NW
12:00 – 13:00	3.1	ENE	4.5	NE	4.9	NE	4.5	NNE	2.2	NE	3.1	SSE	1.3	NW
13:00 – 14:00	3.1	ENE	3.6	ENE	4.9	ENE	4.5	NE	2.2	NW	3.1	SSE	2.2	N
14:00 – 15:00	3.6	NE	3.6	NE	4.9	E	3.6	N	2.7	SSE	2.7	SE	2.7	NNE
15:00 – 16:00	3.6	NE	3.6	ENE	4.0	ENE	3.6	NNW	1.8	SSE	3.1	SSE	2.2	NW
16:00 – 17:00	2.7	ENE	3.1	ESE	3.6	ENE	2.7	NE	3.6	SW	2.2	SSW	3.6	SSW
17:00 – 18:00	2.2	ENE	3.6	E	3.1	NE	2.2	NE	3.6	SW	2.7	SSW	3.6	SSW
18:00 – 19:00	0.9	ENE	2.7	E	3.1	NE	1.8	NNE	3.1	SW	2.7	SW	2.7	SW
19:00 – 20:00	<0.4	Calm	1.8	E	0.9	NE	1.8	NE	1.8	SW	1.8	WSW	1.8	SSW
20:00 – 21:00	<0.4	Calm	0.9	S	0.4	S	1.3	SE	0.4	SW	0.4	NE	0.4	SSW
21:00 – 22:00	<0.4	Calm	<0.4	Calm	0.4	NE	0.4	NNW	0.4	ESE	<0.4	Calm	0.4	ESE
22:00 – 23:00	<0.4	Calm	<0.4	Calm	0.4	S	0.4	NNW	<0.4	Calm	0.4	SW	0.4	ESE
23:00 – 24:00	<0.4	Calm	<0.4	Calm	0.4	SW	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	SE
00:00 – 01:00	<0.4	Calm	0.9	NNW	0.4	NW	<0.4	Calm	0.4	N	0.4	SW	<0.4	Calm
01:00 – 02:00	<0.4	Calm	0.4	NNW	<0.4	Calm	0.4	NW	<0.4	Calm	<0.4	Calm	<0.4	Calm
02:00 – 03:00	<0.4	Calm	0.4	NNW	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	SSW	<0.4	Calm
03:00 – 04:00	<0.4	Calm	1.3	N	0.4	NW	0.4	NW	0.4	SSE	<0.4	Calm	<0.4	Calm
04:00 – 05:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	NW	<0.4	Calm	<0.4	Calm
05:00 – 06:00	<0.4	Calm	0.4	WNW	0.4	N	0.9	NW	<0.4	Calm	<0.4	Calm	0.4	SE
06:00 – 07:00	<0.4	Calm	0.4	ESE	0.9	N	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	SE

Remark : 1. WS = Wind Speed (m/s)
2. WD = Wind Direction
3. Height of wind vane and anemometer above ground 10 meters.

(Ms.Supawan Suwannapa)
Laboratory Reviewer

(Ms.Panicha Promchai)
Laboratory Supervisor

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : **บริเวณพื้นที่โครงการ**
GPS. Coordinate : UTM (WGS84) 47P 0733565 E, 1432618 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC046/2562

Wind Direction	Percentage frequency of wind in each speed and direction					
	0.4-1.1	1.1-2.1	2.1-3.1	3.1-4.1	>4.1	Total
N	2.38095	1.78571	0.59524	0.59524	0.00000	**5.35714**
NNE	0.00000	0.59524	2.97619	1.78571	0.59524	**5.95238**
NE	1.78571	0.59524	1.78571	4.16667	2.38095	**10.71428**
ENE	0.59524	0.00000	2.38095	3.57143	0.59524	**7.14286**
E	0.00000	0.59524	0.59524	0.59524	0.59524	**2.38096**
ESE	2.38095	0.00000	0.00000	0.59524	0.00000	**2.97619**
SE	1.78571	0.59524	0.59524	0.00000	0.00000	**2.97619**
SSE	0.59524	0.59524	1.19048	1.78571	0.00000	**4.16667**
S	1.78571	0.00000	0.00000	0.00000	0.00000	**1.78571**
SSW	1.78571	0.59524	1.19048	1.19048	0.00000	**4.76191**
SW	2.38095	0.59524	1.19048	1.78571	0.00000	**5.95238**
WSW	0.59524	0.59524	0.00000	0.00000	0.00000	**1.19048**
W	0.59524	0.00000	0.00000	0.00000	0.00000	**0.59524**
WNW	0.59524	0.00000	0.00000	0.00000	0.00000	**0.59524**
NW	4.76190	1.19048	1.19048	0.00000	0.00000	**7.14286**
NNW	4.76190	0.00000	0.00000	0.59524	0.00000	**5.35714**
Calm	**30.95237**					

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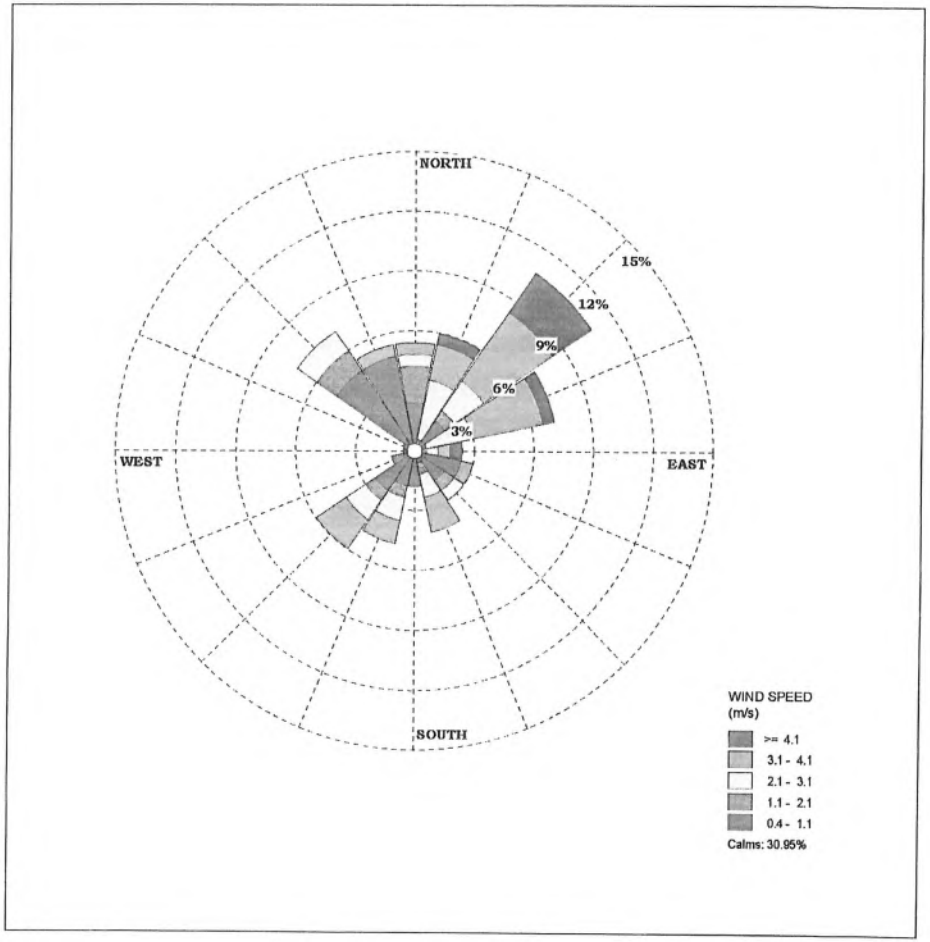
ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Measured Point : **บริเวณพื้นที่โครงการ**
Measured Date : January 25 – February 1, 2019
Reported Number : WDC046/2562



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Tel. 0-2954-7745-6 Fax 0-2954-7747
E-mail : envi@enviresearch.co.th
www.enviresearch.co.th

ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : **บริเวณชุมชนบ้านเนินสวรรค์ หมู่ที่ 2 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0733789 E, 1435334 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC047/2562

Date / Time	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19	
	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD
07:00 – 08:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
08:00 – 09:00	<0.4	Calm	<0.4	Calm	0.4	NNW	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
09:00 – 10:00	<0.4	Calm	0.4	N	2.2	N	2.2	N	0.9	N	<0.4	Calm	<0.4	Calm
10:00 – 11:00	<0.4	Calm	1.3	N	3.6	N	3.1	N	1.8	N	0.4	SSW	<0.4	Calm
11:00 – 12:00	1.8	NE	3.1	N	4.5	N	4.0	N	2.2	N	0.4	SSW	0.4	N
12:00 – 13:00	2.7	ENE	3.1	N	4.5	N	4.0	N	1.3	N	0.9	ENE	0.9	NNW
13:00 – 14:00	2.2	E	3.1	N	3.1	N	3.6	N	1.3	N	0.9	ENE	0.9	NNW
14:00 – 15:00	2.2	ENE	2.2	N	2.7	N	3.1	NNW	0.9	WSW	0.4	ESE	1.3	NW
15:00 – 16:00	1.8	NE	2.2	N	2.7	N	2.2	N	0.4	S	0.9	SSE	0.9	W
16:00 – 17:00	1.3	ESE	2.2	N	2.7	N	1.8	N	2.2	SW	1.3	S	1.3	SSE
17:00 – 18:00	1.8	SW	1.8	NE	3.1	N	2.2	N	3.6	SSW	1.8	S	2.2	S
18:00 – 19:00	3.1	SW	1.3	ENE	2.2	N	0.9	N	1.8	SSW	1.3	W	1.3	S
19:00 – 20:00	1.3	SSW	<0.4	Calm	0.4	N	<0.4	Calm	0.4	S	0.4	WSW	<0.4	Calm
20:00 – 21:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
21:00 – 22:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
22:00 – 23:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
23:00 – 24:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
00:00 – 01:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
01:00 – 02:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
02:00 – 03:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
03:00 – 04:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
04:00 – 05:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
05:00 – 06:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
06:00 – 07:00	<0.4	Calm	0.4	N	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm

Remark : 1. WS = Wind Speed (m/s)
2. WD = Wind Direction
3. Height of wind vane and anemometer above ground 10 meters.

(Ms.Supawan Suwannapa)
Laboratory Reviewer

(Ms.Panicha Promchai)
Laboratory Supervisor

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : **บริเวณชุมชนบ้านเนินสวรรค์ หมู่ที่ 2 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0733789 E, 1435334 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC047/2562

Wind Direction	Percentage frequency of wind in each speed and direction					
	0.4-1.1	1.1-2.1	2.1-3.1	3.1-4.1	>4.1	Total
N	3.57143	2.97619	7.14286	5.95238	1.19048	**20.83334**
NNE	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
NE	0.00000	1.78571	0.00000	0.00000	0.00000	**1.78571**
ENE	1.19048	0.59524	1.19048	0.00000	0.00000	**2.97620**
E	0.00000	0.00000	0.59524	0.00000	0.00000	**0.59524**
ESE	0.59524	0.59524	0.00000	0.00000	0.00000	**1.19048**
SE	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
SSE	0.59524	0.59524	0.00000	0.00000	0.00000	**1.19048**
S	1.19048	1.78571	0.59524	0.00000	0.00000	**3.57143**
SSW	1.19048	1.19048	0.00000	0.59524	0.00000	**2.97620**
SW	0.00000	0.59524	0.59524	0.59524	0.00000	**1.78572**
WSW	1.19048	0.00000	0.00000	0.00000	0.00000	**1.19048**
W	0.59524	0.59524	0.00000	0.00000	0.00000	**1.19048**
WNW	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
NW	0.00000	0.59524	0.00000	0.00000	0.00000	**0.59524**
NNW	1.78571	0.00000	0.00000	0.59524	0.00000	**2.38095**
Calm	**57.73805**					

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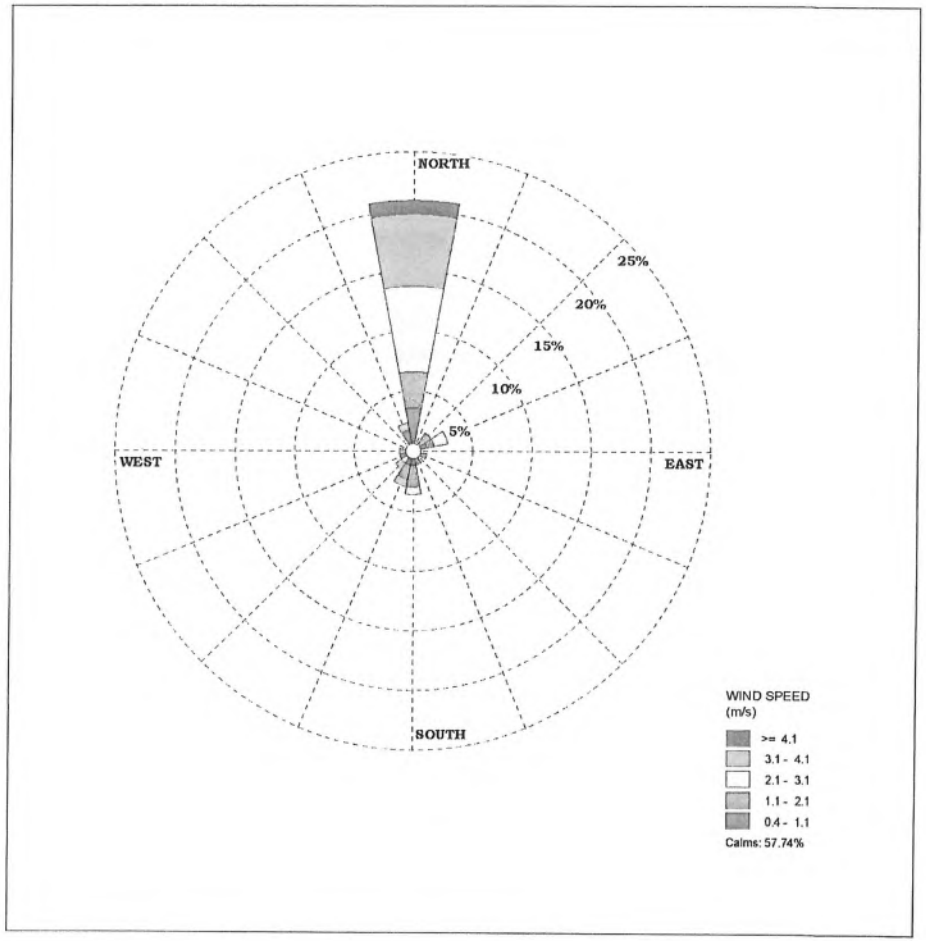
www.envisearch.co.th

ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Measured Point : บริเวณชุมชนบ้านเนินสวรรค์ หมู่ที่ 2 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Date : January 25 – February 1, 2019
Reported Number : WDC047/2562



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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : บริเวณวัดประสิทธาราม หมู่ที่ 7 ตำบลพนานิคม อำเภอนิคมพัฒนา จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0731869 E, 1430345 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC048/2562

Date / Time	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19	
	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD
08:00 – 09:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
09:00 – 10:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
10:00 – 11:00	<0.4	Calm	<0.4	Calm	0.4	NNW	0.4	ENE	<0.4	Calm	0.4	SE	<0.4	Calm
11:00 – 12:00	0.4	E	0.4	ENE	0.9	E	0.4	NNE	0.4	NNE	0.4	SW	0.4	N
12:00 – 13:00	0.9	SSE	0.9	ENE	0.9	E	0.9	N	0.4	NNE	0.9	S	0.4	NNE
13:00 – 14:00	0.9	E	0.9	ESE	0.9	ENE	0.9	N	0.9	SSE	0.9	S	0.4	NE
14:00 – 15:00	0.9	SSE	0.9	ENE	0.9	SE	0.9	NNW	0.9	S	0.4	S	0.4	NE
15:00 – 16:00	0.9	SSE	0.4	ESE	0.4	ESE	0.4	N	0.9	SW	0.9	SSW	0.4	NNE
16:00 – 17:00	0.4	NNW	0.9	SE	0.4	ESE	0.4	ENE	0.9	W	0.4	SSW	0.4	SW
17:00 – 18:00	0.9	SSW	0.4	E	0.4	E	<0.4	Calm	0.4	W	<0.4	Calm	0.4	SW
18:00 – 19:00	0.4	SW	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	W	<0.4	Calm	0.4	W
19:00 – 20:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	SSE	<0.4	Calm	<0.4	Calm	<0.4	Calm
20:00 – 21:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
21:00 – 22:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
22:00 – 23:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
23:00 – 24:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
00:00 – 01:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
01:00 – 02:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
02:00 – 03:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
03:00 – 04:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
04:00 – 05:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
05:00 – 06:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
06:00 – 07:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
07:00 – 08:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm

Remark : 1. WS = Wind Speed (m/s)
2. WD = Wind Direction
3. Height of wind vane and anemometer above ground 10 meters.

(Ms.Supawan Suwannapa)
Laboratory Reviewer

(Ms.Panicha Promchai)
Laboratory Supervisor

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : บริเวณวัดประสิทธาราม หมู่ที่ 7 ตำบลพนานิคม อำเภอนิคมพัฒนา จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0731869 E, 1430345 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC048/2562

Wind Direction	Percentage frequency of wind in each speed and direction					
	0.4-1.1	1.1-2.1	2.1-3.1	3.1-4.1	>4.1	Total
N	2.38095	0.00000	0.00000	0.00000	0.00000	**2.38095**
NNE	2.97619	0.00000	0.00000	0.00000	0.00000	**2.97619**
NE	1.19048	0.00000	0.00000	0.00000	0.00000	**1.19048**
ENE	3.57143	0.00000	0.00000	0.00000	0.00000	**3.57143**
E	3.57143	0.00000	0.00000	0.00000	0.00000	**3.57143**
ESE	2.38095	0.00000	0.00000	0.00000	0.00000	**2.38095**
SE	1.78571	0.00000	0.00000	0.00000	0.00000	**1.78571**
SSE	2.97619	0.00000	0.00000	0.00000	0.00000	**2.97619**
S	2.38095	0.00000	0.00000	0.00000	0.00000	**2.38095**
SSW	1.78571	0.00000	0.00000	0.00000	0.00000	**1.78571**
SW	2.97619	0.00000	0.00000	0.00000	0.00000	**2.97619**
WSW	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
W	2.38095	0.00000	0.00000	0.00000	0.00000	**2.38095**
WNW	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
NW	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
NNW	1.78571	0.00000	0.00000	0.00000	0.00000	**1.78571**
Calm	**67.85716**					

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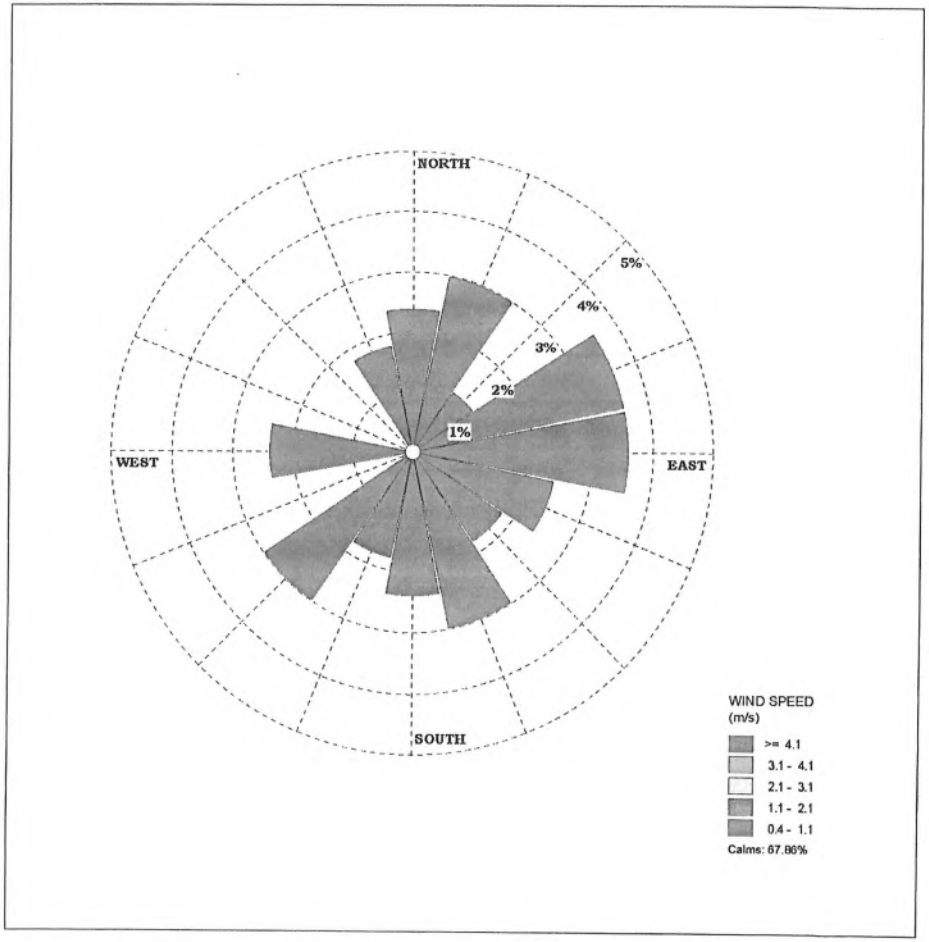
ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Measured Point : บริเวณวัดประสิทธาราม หมู่ที่ 7 ตำบลพนานิคม อำเภอนิคมพัฒนา จังหวัดระยอง
Measured Date : January 25 – February 1, 2019
Reported Number : WDC048/2562



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Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : บริเวณโรงเรียนบ้านมาบเตย หมู่ที่ 1 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0735508 E, 1433546 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC049/2562

Date / Time	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19	
	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD
07:00 – 08:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	NNW	<0.4	Calm	<0.4	Calm	<0.4	Calm
08:00 – 09:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
09:00 – 10:00	<0.4	Calm	<0.4	Calm	0.9	NNE	0.9	N	<0.4	Calm	<0.4	Calm	<0.4	Calm
10:00 – 11:00	0.4	ENE	0.9	N	1.3	NNE	1.3	N	0.4	N	0.4	SSW	<0.4	Calm
11:00 – 12:00	1.3	NE	1.3	NE	1.8	NNE	1.8	NNE	0.9	ENE	0.9	S	<0.4	Calm
12:00 – 13:00	1.8	ENE	1.8	NNE	1.8	NNE	1.8	NNE	0.9	NE	0.9	ENE	0.9	NNW
13:00 – 14:00	1.8	ENE	1.3	NNE	1.8	NE	2.2	N	0.9	ENE	0.9	ENE	1.3	NW
14:00 – 15:00	1.8	ENE	1.3	N	1.8	ENE	1.8	N	0.9	S	1.3	SE	1.8	NW
15:00 – 16:00	1.8	ENE	1.3	NE	1.3	NE	1.8	NW	1.3	SE	1.8	SE	1.3	WNW
16:00 – 17:00	0.9	ENE	1.3	ENE	0.9	NNE	1.3	N	1.3	W	1.8	S	1.8	S
17:00 – 18:00	0.9	SE	0.9	ENE	0.9	N	0.9	N	1.8	SW	1.8	S	2.7	SSW
18:00 – 19:00	1.3	SW	0.9	ENE	0.4	NE	0.4	NNW	1.3	SW	1.3	S	1.3	SSW
19:00 – 20:00	1.3	SSW	0.4	E	<0.4	Calm	<0.4	Calm	0.9	SSW	0.4	SE	0.9	SSW
20:00 – 21:00	0.4	SSW	0.4	SSW	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
21:00 – 22:00	<0.4	Calm	0.4	SW	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
22:00 – 23:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
23:00 – 24:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
00:00 – 01:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
01:00 – 02:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
02:00 – 03:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
03:00 – 04:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
04:00 – 05:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
05:00 – 06:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
06:00 – 07:00	<0.4	Calm	<0.4	Calm	0.4	NW	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm

Remark : 1. WS = Wind Speed (m/s)
2. WD = Wind Direction
3. Height of wind vane and anemometer above ground 10 meters.

(Ms.Supawan Suwannapa)
Laboratory Reviewer

(Ms.Panicha Promchai)
Laboratory Supervisor

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : บริเวณโรงเรียนบ้านมาบเตย หมู่ที่ 1 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0735508 E, 1433546 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC049/2562

Wind Direction	Percentage frequency of wind in each speed and direction					
	0.4-1.1	1.1-2.1	2.1-3.1	3.1-4.1	>4.1	Total
N	2.97619	2.38095	0.59524	0.00000	0.00000	**5.95238**
NNE	1.19048	4.16667	0.00000	0.00000	0.00000	**5.35715**
NE	1.19048	2.97619	0.00000	0.00000	0.00000	**4.16667**
ENE	4.76190	3.57143	0.00000	0.00000	0.00000	**8.33333**
E	0.59524	0.00000	0.00000	0.00000	0.00000	**0.59524**
ESE	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
SE	1.19048	1.78571	0.00000	0.00000	0.00000	**2.97619**
SSE	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
S	1.19048	2.38095	0.00000	0.00000	0.00000	**3.57143**
SSW	2.97619	1.19048	0.59524	0.00000	0.00000	**4.76191**
SW	0.59524	1.78571	0.00000	0.00000	0.00000	**2.38095**
WSW	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
W	0.00000	0.59524	0.00000	0.00000	0.00000	**0.59524**
WNW	0.00000	0.59524	0.00000	0.00000	0.00000	**0.59524**
NW	0.59524	1.78571	0.00000	0.00000	0.00000	**2.38095**
NNW	1.78571	0.00000	0.00000	0.00000	0.00000	**1.78571**
Calm	**56.54761**					

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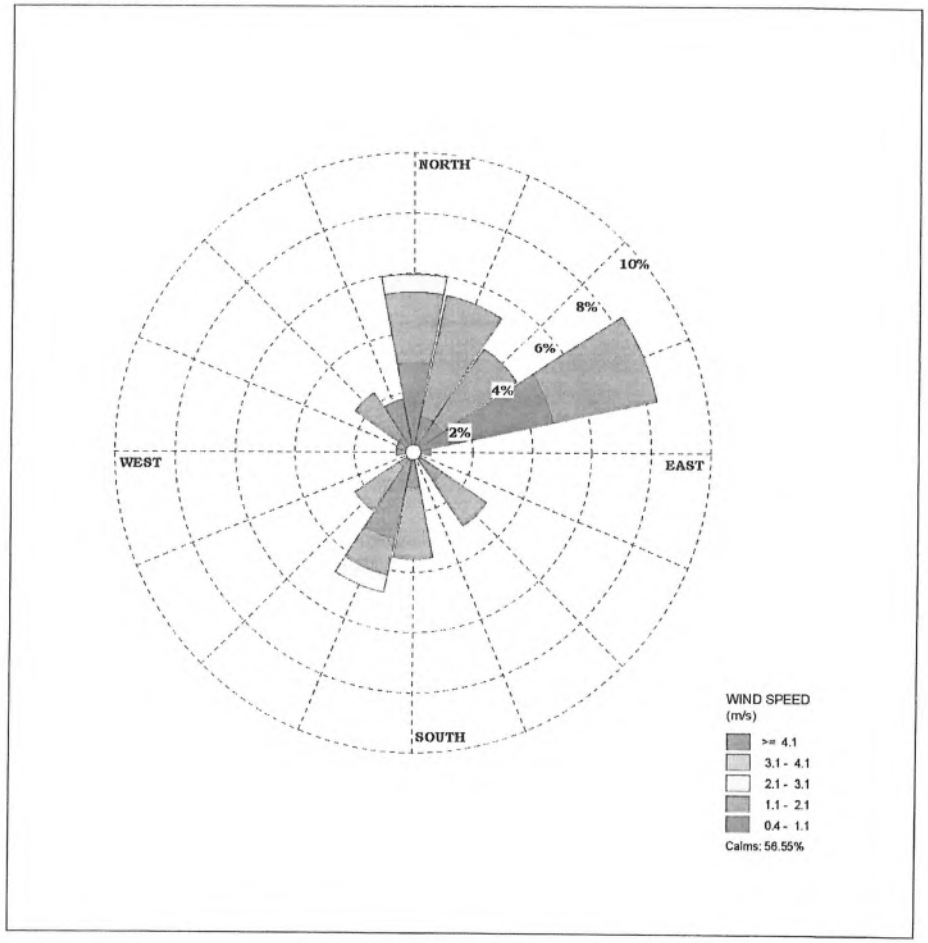
ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Measured Point : **บริเวณโรงเรียนบ้านมาบเตย หมู่ที่ 1 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
Measured Date : January 25 – February 1, 2019
Reported Number : WDC049/2562



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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : **บริเวณชุมชนด้านทิศตะวันตกของโครงการ หมู่ที่ 5 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง**
GPS. Coordinate : UTM (WGS84) 47P 0732005 E, 1432903 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC050/2562

Date / Time	Jan 25-26, 19		Jan 26-27, 19		Jan 27-28, 19		Jan 28-29, 19		Jan 29-30, 19		Jan 30-31, 19		Jan 31-Feb 1, 19	
	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD	WS	WD
07:00 – 08:00	0.4	S	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
08:00 – 09:00	0.4	ESE	<0.4	Calm	0.4	S	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
09:00 – 10:00	0.4	ESE	0.9	NNE	2.2	NNE	2.2	NNE	0.4	ENE	0.4	N	0.4	NNE
10:00 – 11:00	0.9	ENE	2.2	NE	3.1	NNE	3.1	NNE	1.8	NE	0.4	ESE	0.9	NE
11:00 – 12:00	2.7	E	3.1	ENE	4.0	NE	3.6	NE	2.2	NE	1.3	SSE	1.8	NE
12:00 – 13:00	3.6	ESE	3.6	ENE	4.0	NE	3.6	NE	1.8	NNE	2.2	SE	1.3	WNW
13:00 – 14:00	2.7	ENE	3.1	ENE	3.6	ENE	3.6	NE	1.8	NNE	2.7	SE	1.8	NNE
14:00 – 15:00	2.7	ESE	2.7	NE	4.0	ENE	2.7	N	2.2	W	1.8	S	1.8	NW
15:00 – 16:00	2.7	ESE	2.7	NNE	3.1	NE	2.7	N	1.3	WNW	1.8	SSE	1.8	NW
16:00 – 17:00	1.3	SE	3.1	ESE	2.7	ENE	2.2	NNW	2.2	SW	1.3	SW	1.8	S
17:00 – 18:00	1.8	SW	2.7	E	2.7	NE	2.2	NE	2.2	SW	0.9	S	1.3	S
18:00 – 19:00	2.2	SW	2.2	E	2.2	NE	1.3	NE	1.3	SW	1.8	SW	0.9	SW
19:00 – 20:00	0.9	SW	0.9	ESE	0.4	ESE	0.4	NE	<0.4	Calm	1.3	W	0.4	S
20:00 – 21:00	<0.4	Calm	0.4	WSW	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	ESE	<0.4	Calm
21:00 – 22:00	<0.4	Calm	<0.4	Calm	0.4	ESE	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
22:00 – 23:00	<0.4	Calm	<0.4	Calm	0.4	ESE	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
23:00 – 24:00	0.4	ESE	<0.4	Calm	0.4	ESE	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
00:00 – 01:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
01:00 – 02:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	S	<0.4	Calm	<0.4	Calm
02:00 – 03:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	0.4	ESE	<0.4	Calm	<0.4	Calm
03:00 – 04:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
04:00 – 05:00	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
05:00 – 06:00	<0.4	Calm	0.4	S	0.4	S	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm
06:00 – 07:00	<0.4	Calm	0.4	S	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm	<0.4	Calm

Remark : 1. WS = Wind Speed (m/s)
2. WD = Wind Direction
3. Height of wind vane and anemometer above ground 10 meters.

(Ms.Supawan Suwannapa)
Laboratory Reviewer

(Ms.Panicha Promchai)
Laboratory Supervisor

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F-RP-007 Rev. 01, July 1, 2017

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Point : บริเวณชุมชนด้านทิศตะวันตกของโครงการ หมู่ที่ 5 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
GPS. Coordinate : UTM (WGS84) 47P 0732005 E, 1432903 N
Measured Date : January 25 – February 1, 2019
Measured By : Mr.Apiwat Chamnanweeh (Personnel of Environment Research & Technology Co., Ltd.)
Reported Number : WDC050/2562

Wind Direction	Percentage frequency of wind in each speed and direction					
	0.4-1.1	1.1-2.1	2.1-3.1	3.1-4.1	>4.1	Total
N	0.59524	0.00000	1.19048	0.00000	0.00000	**1.78572**
NNE	1.19048	1.78571	1.78571	1.19048	0.00000	**5.95238**
NE	1.19048	1.78571	3.57143	3.57143	0.00000	**10.11905**
ENE	1.19048	0.00000	1.19048	2.97619	0.00000	**5.35715**
E	0.00000	0.00000	1.78571	0.00000	0.00000	**1.78571**
ESE	6.54762	0.00000	1.19048	1.19048	0.00000	**8.92858**
SE	0.00000	0.59524	1.19048	0.00000	0.00000	**1.78572**
SSE	0.00000	1.19048	0.00000	0.00000	0.00000	**1.19048**
S	4.76190	1.78571	0.00000	0.00000	0.00000	**6.54761**
SSW	0.00000	0.00000	0.00000	0.00000	0.00000	**0.00000**
SW	1.19048	2.38095	1.78571	0.00000	0.00000	**5.35714**
WSW	0.59524	0.00000	0.00000	0.00000	0.00000	**0.59524**
W	0.00000	0.59524	0.59524	0.00000	0.00000	**1.19048**
WNW	0.00000	1.19048	0.00000	0.00000	0.00000	**1.19048**
NW	0.00000	1.19048	0.00000	0.00000	0.00000	**1.19048**
NNW	0.00000	0.00000	0.59524	0.00000	0.00000	**0.59524**
Calm	46.42854					

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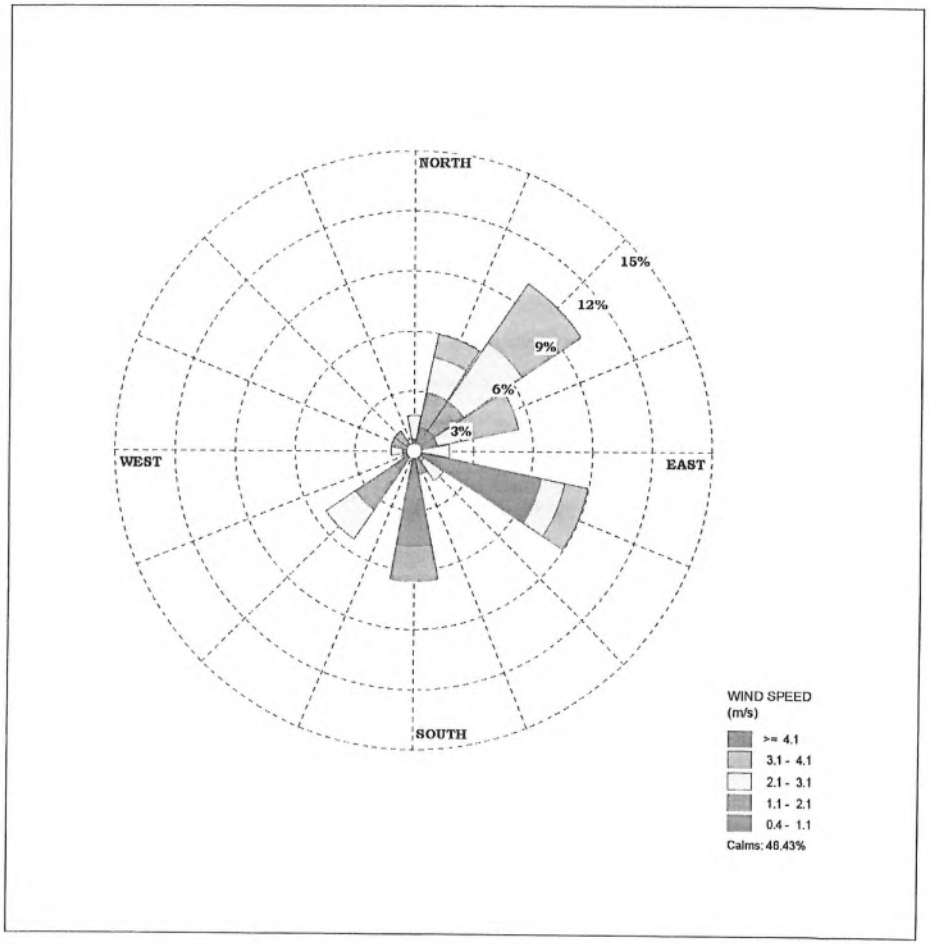
www.envisearch.co.th

ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Measured Point : บริเวณชุมชนด้านทิศตะวันตกของโครงการ หมู่ที่ 5 ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Date : January 25 – February 1, 2019
Reported Number : WDC050/2562



ภาคผนวก 3ข

ผลการตรวจวัดระดับเสียงของโครงการ

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 13, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
07:00-07:05	62.0	46.3	10:00-10:05	56.8	44.7	13:00-13:05	52.9	42.9	16:00-16:05	60.1	46.7
07:05-07:10	64.7	46.7	10:05-10:10	67.0	41.7	13:05-13:10	58.3	43.1	16:05-16:10	55.6	45.6
07:10-07:15	63.6	49.0	10:10-10:15	62.3	43.2	13:10-13:15	55.0	45.1	16:10-16:15	57.5	44.9
07:15-07:20	63.1	50.1	10:15-10:20	59.9	48.1	13:15-13:20	50.8	41.3	16:15-16:20	55.7	46.2
07:20-07:25	62.4	46.7	10:20-10:25	63.1	48.7	13:20-13:25	53.0	44.3	16:20-16:25	61.5	46.4
07:25-07:30	63.5	48.3	10:25-10:30	55.5	46.6	13:25-13:30	53.3	44.0	16:25-16:30	60.9	47.1
07:30-07:35	64.8	48.5	10:30-10:35	56.3	43.5	13:30-13:35	58.1	43.8	16:30-16:35	62.3	46.3
07:35-07:40	64.2	49.1	10:35-10:40	50.8	43.6	13:35-13:40	62.5	45.9	16:35-16:40	62.9	47.6
07:40-07:45	63.7	48.0	10:40-10:45	56.9	42.9	13:40-13:45	50.9	42.6	16:40-16:45	56.4	48.1
07:45-07:50	61.8	47.0	10:45-10:50	62.2	42.0	13:45-13:50	55.9	44.6	16:45-16:50	59.2	48.5
07:50-07:55	61.3	44.8	10:50-10:55	57.0	41.3	13:50-13:55	54.9	44.8	16:50-16:55	60.7	47.9
07:55-08:00	60.4	45.2	10:55-11:00	55.9	40.9	13:55-14:00	59.0	45.3	16:55-17:00	63.4	48.6
08:00-08:05	60.1	43.9	11:00-11:05	54.6	41.3	14:00-14:05	57.9	47.0	17:00-17:05	61.4	49.6
08:05-08:10	61.3	45.7	11:05-11:10	51.3	40.8	14:05-14:10	60.0	47.1	17:05-17:10	61.4	48.5
08:10-08:15	67.6	46.4	11:10-11:15	49.3	39.5	14:10-14:15	55.4	45.6	17:10-17:15	65.0	49.2
08:15-08:20	62.0	49.8	11:15-11:20	53.0	42.0	14:15-14:20	53.5	45.6	17:15-17:20	63.1	48.0
08:20-08:25	59.7	46.9	11:20-11:25	54.4	44.8	14:20-14:25	55.1	43.6	17:20-17:25	63.7	50.8
08:25-08:30	58.7	48.0	11:25-11:30	56.9	44.5	14:25-14:30	50.6	45.6	17:25-17:30	63.8	50.8
08:30-08:35	56.7	53.6	11:30-11:35	57.5	43.3	14:30-14:35	52.2	45.3	17:30-17:35	62.3	51.2
08:35-08:40	61.6	50.5	11:35-11:40	54.2	44.7	14:35-14:40	53.7	44.8	17:35-17:40	61.0	52.3
08:40-08:45	61.2	48.5	11:40-11:45	55.3	44.6	14:40-14:45	54.6	45.7	17:40-17:45	62.4	51.2
08:45-08:50	57.6	48.1	11:45-11:50	50.1	42.1	14:45-14:50	55.5	44.0	17:45-17:50	61.3	53.5
08:50-08:55	57.4	47.3	11:50-11:55	51.2	42.5	14:50-14:55	57.0	45.9	17:50-17:55	60.4	51.3
08:55-09:00	63.3	48.1	11:55-12:00	50.0	44.9	14:55-15:00	54.7	45.7	17:55-18:00	59.8	48.0
09:00-09:05	58.6	50.0	12:00-12:05	53.6	44.9	15:00-15:05	55.9	44.4	18:00-18:05	62.0	47.3
09:05-09:10	60.4	51.9	12:05-12:10	59.3	46.3	15:05-15:10	57.0	44.0	18:05-18:10	61.9	47.4
09:10-09:15	68.0	52.1	12:10-12:15	55.5	42.6	15:10-15:15	57.1	45.0	18:10-18:15	61.4	49.8
09:15-09:20	64.5	52.3	12:15-12:20	55.3	41.4	15:15-15:20	55.1	46.7	18:15-18:20	62.7	50.3
09:20-09:25	60.5	54.3	12:20-12:25	51.3	40.9	15:20-15:25	59.4	47.2	18:20-18:25	58.7	47.7
09:25-09:30	64.3	56.4	12:25-12:30	54.1	42.5	15:25-15:30	55.7	45.2	18:25-18:30	60.4	48.4
09:30-09:35	62.0	56.4	12:30-12:35	58.6	42.6	15:30-15:35	59.7	45.5	18:30-18:35	56.9	49.1
09:35-09:40	66.2	60.9	12:35-12:40	53.8	42.6	15:35-15:40	57.5	47.0	18:35-18:40	58.5	50.0
09:40-09:45	66.4	62.3	12:40-12:45	54.1	42.2	15:40-15:45	53.0	44.7	18:40-18:45	61.5	49.6
09:45-09:50	69.1	63.7	12:45-12:50	51.6	41.5	15:45-15:50	58.6	46.1	18:45-18:50	59.2	50.3
09:50-09:55	67.9	60.6	12:50-12:55	57.3	41.3	15:50-15:55	61.4	46.8	18:50-18:55	60.2	51.0
09:55-10:00	63.3	52.3	12:55-13:00	57.8	40.2	15:55-16:00	55.8	46.5	18:55-19:00	62.0	51.0

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 13-14, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
19:00-19:05	57.3	48.6	22:00-22:05	48.0	43.1	01:00-01:05	39.3	35.6	04:00-04:05	41.8	35.8
19:05-19:10	60.5	49.6	22:05-22:10	50.0	43.4	01:05-01:10	40.7	34.4	04:05-04:10	36.4	33.4
19:10-19:15	62.1	48.2	22:10-22:15	58.1	43.8	01:10-01:15	46.0	35.2	04:10-04:15	50.3	34.9
19:15-19:20	67.3	48.4	22:15-22:20	59.2	42.8	01:15-01:20	40.6	37.3	04:15-04:20	39.0	34.4
19:20-19:25	61.0	48.9	22:20-22:25	63.6	43.8	01:20-01:25	42.8	36.6	04:20-04:25	47.6	36.0
19:25-19:30	61.0	48.6	22:25-22:30	46.2	40.7	01:25-01:30	47.6	38.1	04:25-04:30	48.6	37.3
19:30-19:35	60.2	47.3	22:30-22:35	43.7	38.7	01:30-01:35	44.7	37.5	04:30-04:35	40.3	35.8
19:35-19:40	62.4	47.1	22:35-22:40	52.4	37.7	01:35-01:40	37.9	33.7	04:35-04:40	39.7	36.3
19:40-19:45	59.5	47.4	22:40-22:45	51.7	39.7	01:40-01:45	45.3	36.4	04:40-04:45	39.8	36.5
19:45-19:50	57.7	45.7	22:45-22:50	55.0	39.6	01:45-01:50	49.6	35.4	04:45-04:50	41.0	37.8
19:50-19:55	57.0	46.5	22:50-22:55	52.4	37.7	01:50-01:55	46.3	36.8	04:50-04:55	49.7	39.0
19:55-20:00	54.2	46.7	22:55-23:00	51.0	38.7	01:55-02:00	40.8	36.8	04:55-05:00	48.1	38.6
20:00-20:05	54.2	46.5	23:00-23:05	48.3	37.4	02:00-02:05	44.5	36.3	05:00-05:05	40.8	37.8
20:05-20:10	54.3	45.3	23:05-23:10	44.5	38.2	02:05-02:10	45.4	36.7	05:05-05:10	57.1	37.7
20:10-20:15	58.8	46.8	23:10-23:15	50.6	38.8	02:10-02:15	38.5	34.8	05:10-05:15	45.0	38.2
20:15-20:20	60.3	49.2	23:15-23:20	47.4	38.2	02:15-02:20	38.8	34.2	05:15-05:20	47.6	40.1
20:20-20:25	58.7	47.1	23:20-23:25	39.9	36.7	02:20-02:25	40.1	35.4	05:20-05:25	49.4	41.8
20:25-20:30	62.9	47.0	23:25-23:30	55.8	37.6	02:25-02:30	41.6	32.4	05:25-05:30	52.4	41.9
20:30-20:35	57.6	46.1	23:30-23:35	54.0	37.0	02:30-02:35	35.7	31.8	05:30-05:35	55.6	40.1
20:35-20:40	59.8	46.3	23:35-23:40	46.9	37.9	02:35-02:40	43.9	36.2	05:35-05:40	44.1	39.3
20:40-20:45	58.3	45.5	23:40-23:45	41.4	37.4	02:40-02:45	36.2	32.5	05:40-05:45	53.3	40.0
20:45-20:50	53.3	45.7	23:45-23:50	51.1	39.8	02:45-02:50	41.8	34.7	05:45-05:50	56.7	41.9
20:50-20:55	59.1	48.0	23:50-23:55	45.6	38.2	02:50-02:55	44.8	33.6	05:50-05:55	53.1	42.2
20:55-21:00	52.4	41.6	23:55-24:00	48.8	37.8	02:55-03:00	36.9	32.2	05:55-06:00	57.0	42.9
21:00-21:05	51.1	41.8	00:00-00:05	48.4	34.8	03:00-03:05	38.3	34.2	06:00-06:05	56.2	42.8
21:05-21:10	54.1	42.9	00:05-00:10	45.5	37.1	03:05-03:10	44.5	34.5	06:05-06:10	61.1	44.0
21:10-21:15	56.9	42.2	00:10-00:15	40.7	36.9	03:10-03:15	49.2	34.8	06:10-06:15	67.0	45.0
21:15-21:20	51.2	43.3	00:15-00:20	45.8	34.5	03:15-03:20	39.8	34.0	06:15-06:20	62.5	46.5
21:20-21:25	53.4	43.2	00:20-00:25	49.4	37.8	03:20-03:25	45.4	32.5	06:20-06:25	57.0	45.1
21:25-21:30	54.5	43.6	00:25-00:30	49.6	37.2	03:25-03:30	36.7	33.4	06:25-06:30	58.2	43.9
21:30-21:35	52.9	44.6	00:30-00:35	37.7	34.0	03:30-03:35	48.4	35.1	06:30-06:35	62.5	45.9
21:35-21:40	56.5	43.9	00:35-00:40	40.4	36.3	03:35-03:40	44.6	34.0	06:35-06:40	57.8	45.6
21:40-21:45	53.8	42.1	00:40-00:45	46.3	34.2	03:40-03:45	36.7	33.8	06:40-06:45	64.1	47.5
21:45-21:50	51.5	42.0	00:45-00:50	46.2	36.3	03:45-03:50	37.7	33.2	06:45-06:50	61.0	47.6
21:50-21:55	51.1	43.5	00:50-00:55	41.8	37.8	03:50-03:55	35.8	32.2	06:50-06:55	62.3	48.2
21:55-22:00	53.8	45.3	00:55-01:00	39.8	36.3	03:55-04:00	38.4	32.9	06:55-07:00	61.7	45.9

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 14, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
07:00–07:05	63.1	47.9	10:00–10:05	54.3	44.8	13:00–13:05	57.6	42.4	16:00–16:05	65.7	59.0
07:05–07:10	62.6	48.9	10:05–10:10	52.3	42.9	13:05–13:10	46.6	41.0	16:05–16:10	65.1	58.5
07:10–07:15	63.7	47.8	10:10–10:15	47.2	43.1	13:10–13:15	55.2	42.4	16:10–16:15	60.4	56.2
07:15–07:20	62.9	48.6	10:15–10:20	55.5	43.4	13:15–13:20	52.3	42.9	16:15–16:20	60.6	52.7
07:20–07:25	64.1	49.0	10:20–10:25	62.2	44.1	13:20–13:25	52.8	45.1	16:20–16:25	58.8	49.7
07:25–07:30	62.1	46.8	10:25–10:30	55.0	42.4	13:25–13:30	55.8	43.6	16:25–16:30	57.1	48.1
07:30–07:35	63.3	49.0	10:30–10:35	55.1	41.4	13:30–13:35	58.4	45.7	16:30–16:35	60.5	49.3
07:35–07:40	63.5	47.0	10:35–10:40	58.9	43.1	13:35–13:40	60.7	43.0	16:35–16:40	58.7	49.6
07:40–07:45	64.0	46.1	10:40–10:45	55.0	41.7	13:40–13:45	53.5	41.6	16:40–16:45	59.7	50.8
07:45–07:50	62.3	48.1	10:45–10:50	60.9	46.9	13:45–13:50	52.1	45.0	16:45–16:50	57.9	50.4
07:50–07:55	61.2	44.2	10:50–10:55	53.1	42.5	13:50–13:55	57.5	45.0	16:50–16:55	63.2	49.0
07:55–08:00	59.4	42.9	10:55–11:00	51.3	43.4	13:55–14:00	49.0	43.8	16:55–17:00	60.2	48.7
08:00–08:05	58.5	42.3	11:00–11:05	51.5	41.6	14:00–14:05	58.7	45.1	17:00–17:05	61.3	47.0
08:05–08:10	59.5	43.5	11:05–11:10	62.7	45.3	14:05–14:10	57.1	46.4	17:05–17:10	63.0	50.1
08:10–08:15	60.6	44.0	11:10–11:15	63.8	43.3	14:10–14:15	57.4	45.3	17:10–17:15	62.8	50.1
08:15–08:20	61.4	46.9	11:15–11:20	58.0	43.4	14:15–14:20	53.2	45.0	17:15–17:20	66.0	49.0
08:20–08:25	66.2	53.5	11:20–11:25	56.6	43.0	14:20–14:25	57.6	45.5	17:20–17:25	62.5	48.6
08:25–08:30	60.4	54.1	11:25–11:30	53.3	43.2	14:25–14:30	56.4	44.3	17:25–17:30	60.6	49.1
08:30–08:35	59.9	54.0	11:30–11:35	58.9	44.2	14:30–14:35	55.1	44.9	17:30–17:35	61.9	47.6
08:35–08:40	61.7	55.0	11:35–11:40	54.4	42.2	14:35–14:40	57.6	46.0	17:35–17:40	62.2	48.1
08:40–08:45	61.5	48.6	11:40–11:45	53.9	45.5	14:40–14:45	57.3	48.4	17:40–17:45	59.3	48.5
08:45–08:50	61.3	47.6	11:45–11:50	58.2	44.4	14:45–14:50	58.3	49.4	17:45–17:50	57.9	48.1
08:50–08:55	59.0	48.8	11:50–11:55	55.5	41.4	14:50–14:55	60.1	48.0	17:50–17:55	58.9	47.2
08:55–09:00	56.6	48.1	11:55–12:00	58.1	41.2	14:55–15:00	61.5	54.2	17:55–18:00	62.4	48.3
09:00–09:05	57.4	49.9	12:00–12:05	58.1	43.2	15:00–15:05	64.2	58.1	18:00–18:05	62.2	46.7
09:05–09:10	64.9	50.2	12:05–12:10	57.6	44.4	15:05–15:10	64.1	59.6	18:05–18:10	62.8	47.5
09:10–09:15	55.0	48.2	12:10–12:15	57.3	45.6	15:10–15:15	67.5	55.2	18:10–18:15	60.6	48.8
09:15–09:20	60.3	50.1	12:15–12:20	55.0	40.6	15:15–15:20	68.9	61.8	18:15–18:20	64.2	50.1
09:20–09:25	65.3	45.4	12:20–12:25	52.8	42.5	15:20–15:25	67.8	64.3	18:20–18:25	60.3	48.2
09:25–09:30	56.1	47.4	12:25–12:30	53.1	38.9	15:25–15:30	66.0	61.9	18:25–18:30	59.9	47.1
09:30–09:35	57.4	47.5	12:30–12:35	55.5	39.3	15:30–15:35	64.4	60.5	18:30–18:35	58.1	46.8
09:35–09:40	56.0	46.3	12:35–12:40	54.9	44.4	15:35–15:40	61.8	55.8	18:35–18:40	59.5	47.8
09:40–09:45	61.3	45.5	12:40–12:45	52.5	40.4	15:40–15:45	61.6	57.0	18:40–18:45	54.3	45.9
09:45–09:50	56.4	45.4	12:45–12:50	54.3	43.8	15:45–15:50	61.6	55.6	18:45–18:50	59.0	47.0
09:50–09:55	59.3	47.7	12:50–12:55	53.7	45.1	15:50–15:55	60.4	53.3	18:50–18:55	58.9	46.9
09:55–10:00	56.2	43.3	12:55–13:00	51.7	41.8	15:55–16:00	59.1	54.1	18:55–19:00	62.0	46.9

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 14-15, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
19:00–19:05	61.9	47.8	22:00–22:05	52.1	42.1	01:00–01:05	40.9	34.0	04:00–04:05	47.4	36.1
19:05–19:10	59.0	47.8	22:05–22:10	57.7	41.9	01:05–01:10	40.8	35.9	04:05–04:10	48.7	35.7
19:10–19:15	59.6	48.0	22:10–22:15	61.0	43.1	01:10–01:15	38.5	35.2	04:10–04:15	36.8	34.7
19:15–19:20	58.9	46.5	22:15–22:20	54.1	43.2	01:15–01:20	49.4	35.9	04:15–04:20	48.7	34.8
19:20–19:25	62.4	46.6	22:20–22:25	47.9	40.4	01:20–01:25	49.8	36.8	04:20–04:25	36.5	33.9
19:25–19:30	61.2	48.4	22:25–22:30	48.3	39.9	01:25–01:30	47.9	35.0	04:25–04:30	52.1	37.5
19:30–19:35	61.7	45.4	22:30–22:35	51.7	39.2	01:30–01:35	35.3	32.6	04:30–04:35	39.2	35.2
19:35–19:40	56.0	43.3	22:35–22:40	52.6	40.9	01:35–01:40	50.3	34.6	04:35–04:40	51.8	35.2
19:40–19:45	60.6	45.9	22:40–22:45	49.8	41.2	01:40–01:45	38.3	33.4	04:40–04:45	46.7	37.5
19:45–19:50	55.5	43.2	22:45–22:50	43.5	39.1	01:45–01:50	51.8	34.0	04:45–04:50	39.7	37.0
19:50–19:55	55.7	43.9	22:50–22:55	45.1	40.7	01:50–01:55	39.1	32.8	04:50–04:55	41.0	38.0
19:55–20:00	63.3	46.7	22:55–23:00	42.0	38.9	01:55–02:00	41.3	33.9	04:55–05:00	44.6	39.1
20:00–20:05	56.9	44.1	23:00–23:05	48.6	41.1	02:00–02:05	39.1	33.8	05:00–05:05	50.5	37.9
20:05–20:10	60.2	47.7	23:05–23:10	53.1	39.7	02:05–02:10	37.7	34.3	05:05–05:10	52.8	39.0
20:10–20:15	59.7	47.9	23:10–23:15	52.0	41.4	02:10–02:15	40.5	35.7	05:10–05:15	58.2	41.6
20:15–20:20	60.2	48.5	23:15–23:20	47.0	41.2	02:15–02:20	42.6	33.8	05:15–05:20	51.9	39.8
20:20–20:25	60.6	48.6	23:20–23:25	57.2	39.9	02:20–02:25	37.3	34.0	05:20–05:25	53.3	39.4
20:25–20:30	62.8	48.6	23:25–23:30	48.7	37.9	02:25–02:30	38.7	32.9	05:25–05:30	54.2	41.4
20:30–20:35	61.9	47.0	23:30–23:35	50.5	38.2	02:30–02:35	39.7	34.1	05:30–05:35	45.2	41.4
20:35–20:40	57.4	46.2	23:35–23:40	41.4	36.6	02:35–02:40	35.6	33.0	05:35–05:40	48.3	41.0
20:40–20:45	57.4	49.9	23:40–23:45	48.2	36.7	02:40–02:45	36.5	34.3	05:40–05:45	56.7	39.4
20:45–20:50	57.6	45.4	23:45–23:50	41.5	38.6	02:45–02:50	38.9	34.9	05:45–05:50	56.1	40.3
20:50–20:55	60.8	44.3	23:50–23:55	44.8	38.5	02:50–02:55	47.3	34.4	05:50–05:55	52.9	42.1
20:55–21:00	51.9	43.1	23:55–24:00	54.5	36.0	02:55–03:00	49.4	33.2	05:55–06:00	54.5	42.8
21:00–21:05	56.0	43.9	00:00–00:05	48.5	38.4	03:00–03:05	38.6	34.1	06:00–06:05	57.3	43.2
21:05–21:10	53.5	43.4	00:05–00:10	46.5	37.4	03:05–03:10	44.3	33.8	06:05–06:10	59.2	43.5
21:10–21:15	58.3	44.0	00:10–00:15	47.2	35.4	03:10–03:15	36.3	33.2	06:10–06:15	63.4	44.9
21:15–21:20	55.9	44.0	00:15–00:20	51.4	34.9	03:15–03:20	35.9	33.8	06:15–06:20	62.3	45.2
21:20–21:25	55.5	42.8	00:20–00:25	41.9	37.5	03:20–03:25	43.9	33.4	06:20–06:25	61.2	46.1
21:25–21:30	52.1	43.6	00:25–00:30	41.4	36.3	03:25–03:30	47.5	34.2	06:25–06:30	58.4	45.7
21:30–21:35	55.2	42.8	00:30–00:35	36.1	32.7	03:30–03:35	37.6	34.3	06:30–06:35	59.2	45.9
21:35–21:40	52.8	42.8	00:35–00:40	44.6	38.0	03:35–03:40	41.2	35.1	06:35–06:40	58.9	47.1
21:40–21:45	57.9	42.0	00:40–00:45	42.1	36.3	03:40–03:45	48.6	38.3	06:40–06:45	58.6	46.2
21:45–21:50	58.8	43.9	00:45–00:50	41.8	34.3	03:45–03:50	50.1	34.9	06:45–06:50	63.2	47.4
21:50–21:55	58.4	44.6	00:50–00:55	43.7	35.6	03:50–03:55	36.6	34.8	06:50–06:55	63.8	48.7
21:55–22:00	50.5	42.8	00:55–01:00	43.7	35.1	03:55–04:00	37.3	35.7	06:55–07:00	63.0	46.8

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 15, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
07:00–07:05	64.3	46.6	10:00–10:05	54.5	43.0	13:00–13:05	58.1	45.0	16:00–16:05	58.5	45.1
07:05–07:10	62.9	46.1	10:05–10:10	51.2	44.1	13:05–13:10	60.0	43.7	16:05–16:10	57.6	44.6
07:10–07:15	62.8	45.2	10:10–10:15	51.4	44.1	13:10–13:15	57.5	44.1	16:10–16:15	57.9	43.2
07:15–07:20	63.5	45.1	10:15–10:20	61.2	44.0	13:15–13:20	51.8	44.7	16:15–16:20	59.2	45.6
07:20–07:25	63.7	45.4	10:20–10:25	58.6	45.6	13:20–13:25	53.8	46.3	16:20–16:25	58.8	45.0
07:25–07:30	63.8	45.9	10:25–10:30	49.0	43.6	13:25–13:30	56.6	44.2	16:25–16:30	62.7	46.3
07:30–07:35	65.0	45.4	10:30–10:35	53.1	43.6	13:30–13:35	54.5	43.8	16:30–16:35	57.8	44.8
07:35–07:40	62.3	45.6	10:35–10:40	56.9	44.2	13:35–13:40	58.2	46.1	16:35–16:40	60.0	45.8
07:40–07:45	64.0	44.5	10:40–10:45	54.0	44.0	13:40–13:45	57.8	46.1	16:40–16:45	59.8	44.7
07:45–07:50	61.8	43.4	10:45–10:50	60.4	43.9	13:45–13:50	56.1	44.9	16:45–16:50	60.0	47.8
07:50–07:55	58.5	41.0	10:50–10:55	61.7	42.1	13:50–13:55	56.1	42.9	16:50–16:55	60.9	47.7
07:55–08:00	60.6	40.9	10:55–11:00	58.1	42.8	13:55–14:00	56.5	45.6	16:55–17:00	57.4	47.2
08:00–08:05	61.7	42.3	11:00–11:05	58.2	43.2	14:00–14:05	61.0	44.9	17:00–17:05	58.1	46.2
08:05–08:10	62.1	42.4	11:05–11:10	55.9	41.8	14:05–14:10	61.0	44.1	17:05–17:10	59.4	47.1
08:10–08:15	67.0	43.6	11:10–11:15	52.0	42.2	14:10–14:15	53.9	46.5	17:10–17:15	63.1	50.2
08:15–08:20	61.2	45.2	11:15–11:20	53.9	43.3	14:15–14:20	62.6	46.0	17:15–17:20	63.7	51.1
08:20–08:25	60.8	44.7	11:20–11:25	43.9	39.9	14:20–14:25	55.8	44.7	17:20–17:25	65.9	49.6
08:25–08:30	61.0	44.0	11:25–11:30	56.0	40.6	14:25–14:30	58.6	45.8	17:25–17:30	62.0	48.4
08:30–08:35	60.2	43.3	11:30–11:35	54.0	42.5	14:30–14:35	54.1	44.7	17:30–17:35	62.5	50.4
08:35–08:40	59.1	43.3	11:35–11:40	58.6	39.8	14:35–14:40	51.1	40.2	17:35–17:40	62.4	49.8
08:40–08:45	62.9	48.1	11:40–11:45	49.5	40.2	14:40–14:45	55.1	41.2	17:40–17:45	65.2	53.6
08:45–08:50	66.9	48.8	11:45–11:50	56.8	45.8	14:45–14:50	58.5	44.4	17:45–17:50	65.5	59.0
08:50–08:55	61.6	47.9	11:50–11:55	58.2	46.4	14:50–14:55	52.3	42.3	17:50–17:55	63.2	50.9
08:55–09:00	55.4	47.3	11:55–12:00	52.3	46.9	14:55–15:00	56.1	43.6	17:55–18:00	62.4	47.1
09:00–09:05	66.8	47.8	12:00–12:05	60.5	48.7	15:00–15:05	61.1	45.7	18:00–18:05	62.4	50.5
09:05–09:10	59.2	43.4	12:05–12:10	55.3	48.7	15:05–15:10	56.5	44.0	18:05–18:10	61.3	51.1
09:10–09:15	58.2	45.1	12:10–12:15	57.1	41.8	15:10–15:15	54.6	44.4	18:10–18:15	63.2	51.1
09:15–09:20	52.2	42.9	12:15–12:20	57.7	44.4	15:15–15:20	57.3	44.3	18:15–18:20	62.2	50.2
09:20–09:25	59.9	45.8	12:20–12:25	58.7	43.3	15:20–15:25	57.5	43.1	18:20–18:25	61.1	50.2
09:25–09:30	60.6	40.3	12:25–12:30	57.7	42.8	15:25–15:30	54.9	45.5	18:25–18:30	62.7	52.2
09:30–09:35	55.5	46.3	12:30–12:35	57.5	43.1	15:30–15:35	57.0	44.9	18:30–18:35	61.6	49.6
09:35–09:40	54.8	44.2	12:35–12:40	54.4	42.3	15:35–15:40	60.2	45.9	18:35–18:40	60.2	49.9
09:40–09:45	57.3	45.9	12:40–12:45	56.0	42.1	15:40–15:45	52.4	43.7	18:40–18:45	68.0	49.8
09:45–09:50	53.9	42.9	12:45–12:50	56.4	41.7	15:45–15:50	58.4	44.6	18:45–18:50	57.9	48.4
09:50–09:55	59.2	44.3	12:50–12:55	58.3	46.0	15:50–15:55	56.6	45.1	18:50–18:55	63.8	46.9
09:55–10:00	53.7	43.8	12:55–13:00	55.5	43.7	15:55–16:00	65.0	46.0	18:55–19:00	58.4	47.4

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 15-16, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
19:00–19:05	61.8	47.6	22:00–22:05	57.1	41.6	01:00–01:05	37.6	34.9	04:00–04:05	56.2	36.2
19:05–19:10	58.2	46.4	22:05–22:10	53.7	41.7	01:05–01:10	42.0	36.9	04:05–04:10	36.5	33.0
19:10–19:15	60.2	47.2	22:10–22:15	47.3	40.5	01:10–01:15	50.4	35.8	04:10–04:15	54.9	35.2
19:15–19:20	63.8	46.1	22:15–22:20	52.7	41.3	01:15–01:20	48.7	34.6	04:15–04:20	49.6	34.1
19:20–19:25	60.5	44.1	22:20–22:25	57.3	41.8	01:20–01:25	37.4	34.0	04:20–04:25	48.2	32.4
19:25–19:30	61.6	43.7	22:25–22:30	56.3	39.1	01:25–01:30	44.5	35.8	04:25–04:30	34.5	30.6
19:30–19:35	61.4	45.4	22:30–22:35	53.7	39.9	01:30–01:35	36.7	34.4	04:30–04:35	40.5	31.7
19:35–19:40	67.2	47.9	22:35–22:40	55.1	41.6	01:35–01:40	38.7	34.4	04:35–04:40	49.9	34.8
19:40–19:45	59.4	46.8	22:40–22:45	51.0	42.6	01:40–01:45	42.2	37.4	04:40–04:45	53.1	34.8
19:45–19:50	56.7	45.0	22:45–22:50	56.8	39.4	01:45–01:50	49.7	37.8	04:45–04:50	51.7	31.3
19:50–19:55	59.9	45.2	22:50–22:55	54.6	38.1	01:50–01:55	38.5	35.2	04:50–04:55	38.8	33.3
19:55–20:00	58.5	43.6	22:55–23:00	48.5	39.6	01:55–02:00	38.4	34.9	04:55–05:00	42.1	32.2
20:00–20:05	58.5	45.6	23:00–23:05	47.6	37.5	02:00–02:05	40.7	34.4	05:00–05:05	51.4	33.7
20:05–20:10	57.8	46.4	23:05–23:10	40.2	36.6	02:05–02:10	47.2	32.3	05:05–05:10	36.0	32.8
20:10–20:15	58.9	47.0	23:10–23:15	46.5	36.8	02:10–02:15	34.8	33.3	05:10–05:15	55.9	33.0
20:15–20:20	55.9	45.1	23:15–23:20	49.5	36.9	02:15–02:20	38.8	34.4	05:15–05:20	52.0	36.4
20:20–20:25	62.9	47.1	23:20–23:25	54.0	36.9	02:20–02:25	33.9	31.3	05:20–05:25	51.6	37.2
20:25–20:30	60.5	46.9	23:25–23:30	43.9	35.6	02:25–02:30	49.9	31.3	05:25–05:30	57.2	37.5
20:30–20:35	55.7	44.6	23:30–23:35	53.0	37.0	02:30–02:35	49.2	34.0	05:30–05:35	39.3	36.2
20:35–20:40	53.5	43.2	23:35–23:40	54.6	36.1	02:35–02:40	37.2	34.1	05:35–05:40	54.1	37.9
20:40–20:45	59.2	46.0	23:40–23:45	46.0	36.7	02:40–02:45	40.4	36.8	05:40–05:45	48.2	38.2
20:45–20:50	55.5	44.2	23:45–23:50	44.5	37.9	02:45–02:50	38.7	36.3	05:45–05:50	53.3	38.1
20:50–20:55	60.2	44.0	23:50–23:55	50.1	39.3	02:50–02:55	42.1	36.3	05:50–05:55	54.4	37.3
20:55–21:00	53.6	43.0	23:55–24:00	50.3	36.3	02:55–03:00	47.9	35.2	05:55–06:00	48.9	39.8
21:00–21:05	58.8	43.1	00:00–00:05	50.3	35.9	03:00–03:05	44.9	37.4	06:00–06:05	55.6	38.8
21:05–21:10	55.9	42.9	00:05–00:10	40.1	37.0	03:05–03:10	36.5	35.4	06:05–06:10	65.1	40.5
21:10–21:15	50.7	42.1	00:10–00:15	50.3	35.7	03:10–03:15	37.2	35.3	06:10–06:15	56.3	39.8
21:15–21:20	57.5	42.2	00:15–00:20	52.7	35.3	03:15–03:20	37.6	35.2	06:15–06:20	60.0	39.4
21:20–21:25	53.9	41.9	00:20–00:25	37.7	35.6	03:20–03:25	39.6	37.3	06:20–06:25	59.3	39.7
21:25–21:30	57.5	43.9	00:25–00:30	53.3	35.9	03:25–03:30	49.0	35.6	06:25–06:30	52.9	40.9
21:30–21:35	55.1	43.6	00:30–00:35	37.7	35.2	03:30–03:35	49.2	36.0	06:30–06:35	55.6	42.9
21:35–21:40	56.1	44.2	00:35–00:40	39.2	36.8	03:35–03:40	47.6	34.1	06:35–06:40	60.8	43.3
21:40–21:45	58.2	41.7	00:40–00:45	37.9	35.9	03:40–03:45	45.6	34.2	06:40–06:45	60.1	44.0
21:45–21:50	54.9	41.5	00:45–00:50	45.4	36.5	03:45–03:50	46.8	33.4	06:45–06:50	60.8	42.5
21:50–21:55	53.0	42.8	00:50–00:55	39.0	35.8	03:50–03:55	45.4	35.5	06:50–06:55	58.8	42.8
21:55–22:00	52.1	39.9	00:55–01:00	54.0	33.9	03:55–04:00	53.2	34.7	06:55–07:00	66.6	44.5

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 16, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
07:00-07:05	60.2	43.4	10:00-10:05	62.4	53.5	13:00-13:05	57.1	39.8	16:00-16:05	57.1	45.6
07:05-07:10	61.5	45.2	10:05-10:10	60.0	49.1	13:05-13:10	53.0	39.5	16:05-16:10	58.9	46.5
07:10-07:15	62.9	45.2	10:10-10:15	59.6	48.2	13:10-13:15	56.1	37.7	16:10-16:15	58.6	46.6
07:15-07:20	62.8	44.1	10:15-10:20	57.5	47.3	13:15-13:20	58.0	40.9	16:15-16:20	58.1	45.4
07:20-07:25	62.2	43.6	10:20-10:25	53.9	45.5	13:20-13:25	56.3	39.1	16:20-16:25	57.6	46.6
07:25-07:30	64.8	47.8	10:25-10:30	58.1	45.5	13:25-13:30	56.3	41.3	16:25-16:30	60.0	47.3
07:30-07:35	65.6	45.6	10:30-10:35	52.9	45.7	13:30-13:35	60.3	38.1	16:30-16:35	58.5	47.6
07:35-07:40	64.4	46.7	10:35-10:40	55.5	45.1	13:35-13:40	55.8	39.0	16:35-16:40	56.8	50.3
07:40-07:45	61.4	44.9	10:40-10:45	60.4	46.4	13:40-13:45	58.9	41.5	16:40-16:45	58.6	50.8
07:45-07:50	55.6	44.5	10:45-10:50	56.9	45.1	13:45-13:50	59.2	42.6	16:45-16:50	61.0	51.2
07:50-07:55	62.8	47.8	10:50-10:55	57.6	45.8	13:50-13:55	53.6	43.3	16:50-16:55	58.1	49.9
07:55-08:00	61.2	49.0	10:55-11:00	60.9	46.1	13:55-14:00	53.3	42.9	16:55-17:00	58.4	48.0
08:00-08:05	59.5	49.4	11:00-11:05	57.4	46.2	14:00-14:05	52.9	42.0	17:00-17:05	58.6	47.7
08:05-08:10	61.4	52.2	11:05-11:10	59.1	46.2	14:05-14:10	54.3	42.4	17:05-17:10	66.9	51.6
08:10-08:15	62.8	51.1	11:10-11:15	54.6	45.1	14:10-14:15	60.8	42.2	17:10-17:15	62.6	48.7
08:15-08:20	63.6	50.9	11:15-11:20	56.3	44.1	14:15-14:20	51.8	43.1	17:15-17:20	59.8	49.1
08:20-08:25	62.5	48.8	11:20-11:25	60.6	44.0	14:20-14:25	50.4	44.5	17:20-17:25	62.7	50.1
08:25-08:30	60.7	47.9	11:25-11:30	61.1	44.1	14:25-14:30	55.2	43.9	17:25-17:30	61.3	47.8
08:30-08:35	61.9	52.2	11:30-11:35	61.7	44.1	14:30-14:35	55.6	41.4	17:30-17:35	62.0	47.6
08:35-08:40	60.5	51.3	11:35-11:40	59.5	45.2	14:35-14:40	62.6	42.7	17:35-17:40	61.3	49.3
08:40-08:45	64.1	51.1	11:40-11:45	57.3	43.8	14:40-14:45	54.8	43.5	17:40-17:45	62.3	47.9
08:45-08:50	57.7	49.0	11:45-11:50	56.0	42.6	14:45-14:50	55.2	43.2	17:45-17:50	61.3	50.9
08:50-08:55	58.7	45.3	11:50-11:55	59.0	40.9	14:50-14:55	55.8	43.0	17:50-17:55	62.8	53.6
08:55-09:00	60.3	45.4	11:55-12:00	55.2	42.5	14:55-15:00	56.6	42.3	17:55-18:00	65.3	53.3
09:00-09:05	58.9	46.9	12:00-12:05	51.0	40.3	15:00-15:05	56.5	45.3	18:00-18:05	59.0	51.4
09:05-09:10	59.2	45.5	12:05-12:10	54.9	40.6	15:05-15:10	52.3	42.6	18:05-18:10	63.9	51.8
09:10-09:15	60.7	46.0	12:10-12:15	56.2	42.9	15:10-15:15	63.5	43.3	18:10-18:15	63.1	51.7
09:15-09:20	61.7	46.1	12:15-12:20	57.1	41.8	15:15-15:20	52.2	44.1	18:15-18:20	58.5	50.8
09:20-09:25	61.9	47.9	12:20-12:25	59.2	43.3	15:20-15:25	51.6	43.1	18:20-18:25	61.0	51.0
09:25-09:30	60.7	47.5	12:25-12:30	55.8	42.4	15:25-15:30	61.1	42.4	18:25-18:30	61.0	50.6
09:30-09:35	64.2	56.8	12:30-12:35	56.0	43.5	15:30-15:35	60.3	45.2	18:30-18:35	58.5	50.8
09:35-09:40	61.6	44.3	12:35-12:40	57.9	41.4	15:35-15:40	54.0	42.7	18:35-18:40	59.2	50.1
09:40-09:45	54.6	41.9	12:40-12:45	57.0	43.3	15:40-15:45	54.6	43.0	18:40-18:45	59.1	49.9
09:45-09:50	61.4	47.3	12:45-12:50	52.4	38.1	15:45-15:50	59.6	43.2	18:45-18:50	63.0	50.7
09:50-09:55	52.8	47.9	12:50-12:55	53.9	38.7	15:50-15:55	55.6	44.6	18:50-18:55	66.1	51.7
09:55-10:00	55.0	48.3	12:55-13:00	60.3	39.8	15:55-16:00	60.4	44.9	18:55-19:00	60.0	52.6

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 16-17, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
19:00-19:05	58.0	51.6	22:00-22:05	56.8	43.6	01:00-01:05	45.5	36.0	04:00-04:05	45.1	36.0
19:05-19:10	59.4	50.5	22:05-22:10	53.4	43.3	01:05-01:10	44.1	36.8	04:05-04:10	39.9	36.3
19:10-19:15	57.4	51.8	22:10-22:15	52.8	43.8	01:10-01:15	45.3	39.5	04:10-04:15	37.6	35.8
19:15-19:20	60.2	48.0	22:15-22:20	52.7	42.6	01:15-01:20	45.6	35.6	04:15-04:20	47.0	37.0
19:20-19:25	58.3	47.3	22:20-22:25	51.4	40.2	01:20-01:25	40.5	35.9	04:20-04:25	38.3	36.7
19:25-19:30	62.2	48.6	22:25-22:30	51.3	39.0	01:25-01:30	43.6	35.0	04:25-04:30	39.6	37.6
19:30-19:35	62.0	49.8	22:30-22:35	55.6	41.3	01:30-01:35	38.5	34.6	04:30-04:35	45.6	36.7
19:35-19:40	58.5	49.0	22:35-22:40	52.2	39.5	01:35-01:40	40.9	36.0	04:35-04:40	38.3	36.1
19:40-19:45	60.8	49.4	22:40-22:45	44.6	37.7	01:40-01:45	48.1	34.8	04:40-04:45	37.7	36.4
19:45-19:50	56.8	49.5	22:45-22:50	52.6	37.2	01:45-01:50	36.9	34.8	04:45-04:50	48.9	37.0
19:50-19:55	58.4	49.7	22:50-22:55	52.7	38.4	01:50-01:55	38.0	36.1	04:50-04:55	39.8	36.7
19:55-20:00	56.4	49.7	22:55-23:00	45.0	39.7	01:55-02:00	46.7	36.3	04:55-05:00	41.9	37.8
20:00-20:05	54.9	47.6	23:00-23:05	56.3	39.7	02:00-02:05	41.8	40.6	05:00-05:05	41.1	36.5
20:05-20:10	62.5	49.4	23:05-23:10	56.7	39.4	02:05-02:10	40.9	39.8	05:05-05:10	39.6	37.5
20:10-20:15	56.3	47.1	23:10-23:15	53.6	38.0	02:10-02:15	41.9	40.5	05:10-05:15	49.4	38.6
20:15-20:20	56.3	47.1	23:15-23:20	43.6	38.7	02:15-02:20	41.8	40.5	05:15-05:20	51.4	38.1
20:20-20:25	58.9	48.5	23:20-23:25	51.3	39.5	02:20-02:25	40.9	39.7	05:20-05:25	50.4	38.4
20:25-20:30	61.1	48.2	23:25-23:30	52.0	38.3	02:25-02:30	43.7	38.8	05:25-05:30	42.1	37.8
20:30-20:35	58.4	49.9	23:30-23:35	57.8	40.0	02:30-02:35	41.9	38.1	05:30-05:35	51.4	39.2
20:35-20:40	62.1	49.9	23:35-23:40	55.1	39.4	02:35-02:40	40.3	36.7	05:35-05:40	52.0	39.2
20:40-20:45	58.7	49.7	23:40-23:45	51.4	37.9	02:40-02:45	40.6	37.3	05:40-05:45	48.7	38.4
20:45-20:50	58.1	49.1	23:45-23:50	48.4	39.4	02:45-02:50	41.5	37.8	05:45-05:50	41.8	37.7
20:50-20:55	55.3	46.0	23:50-23:55	50.5	38.4	02:50-02:55	40.4	39.0	05:50-05:55	52.6	38.8
20:55-21:00	58.0	51.8	23:55-24:00	46.6	37.0	02:55-03:00	40.5	38.5	05:55-06:00	47.5	39.5
21:00-21:05	58.3	51.8	00:00-00:05	49.6	37.4	03:00-03:05	53.7	34.3	06:00-06:05	53.5	42.0
21:05-21:10	58.6	51.5	00:05-00:10	50.5	37.8	03:05-03:10	39.5	35.6	06:05-06:10	50.8	41.9
21:10-21:15	59.5	53.1	00:10-00:15	51.0	38.8	03:10-03:15	39.3	35.6	06:10-06:15	51.2	41.7
21:15-21:20	56.3	51.1	00:15-00:20	49.9	38.5	03:15-03:20	37.8	34.3	06:15-06:20	53.1	42.3
21:20-21:25	58.5	50.3	00:20-00:25	57.5	39.7	03:20-03:25	39.3	34.9	06:20-06:25	49.2	43.8
21:25-21:30	56.5	53.2	00:25-00:30	50.8	37.5	03:25-03:30	53.6	38.7	06:25-06:30	57.2	43.9
21:30-21:35	56.3	46.6	00:30-00:35	44.7	38.7	03:30-03:35	43.7	38.4	06:30-06:35	57.8	44.3
21:35-21:40	54.2	48.8	00:35-00:40	40.9	37.1	03:35-03:40	52.6	36.0	06:35-06:40	59.2	46.2
21:40-21:45	58.3	49.9	00:40-00:45	50.3	35.5	03:40-03:45	41.7	34.7	06:40-06:45	57.6	44.4
21:45-21:50	51.6	42.6	00:45-00:50	43.8	36.1	03:45-03:50	47.6	37.0	06:45-06:50	60.7	44.9
21:50-21:55	54.6	40.3	00:50-00:55	42.1	36.8	03:50-03:55	40.9	35.4	06:50-06:55	59.3	44.1
21:55-22:00	55.0	50.7	00:55-01:00	40.7	35.6	03:55-04:00	46.5	36.4	06:55-07:00	58.8	45.1

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงโนพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 17, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
07:00-07:05	57.0	43.2	10:00-10:05	60.7	44.3	13:00-13:05	58.7	41.1	16:00-16:05	57.3	46.2
07:05-07:10	58.9	44.6	10:05-10:10	60.2	44.2	13:05-13:10	58.5	41.0	16:05-16:10	57.2	46.6
07:10-07:15	61.3	44.4	10:10-10:15	66.0	45.4	13:10-13:15	56.5	40.8	16:10-16:15	56.4	47.5
07:15-07:20	60.9	45.7	10:15-10:20	60.2	46.9	13:15-13:20	62.3	42.8	16:15-16:20	54.9	46.2
07:20-07:25	61.1	44.9	10:20-10:25	63.4	44.6	13:20-13:25	61.0	42.4	16:20-16:25	60.9	47.0
07:25-07:30	63.8	44.5	10:25-10:30	61.5	45.2	13:25-13:30	53.4	43.5	16:25-16:30	58.6	47.9
07:30-07:35	60.2	44.3	10:30-10:35	56.7	43.6	13:30-13:35	61.9	46.5	16:30-16:35	63.4	48.5
07:35-07:40	60.1	43.2	10:35-10:40	59.0	44.0	13:35-13:40	61.3	47.6	16:35-16:40	64.8	51.8
07:40-07:45	59.5	42.1	10:40-10:45	60.3	45.1	13:40-13:45	53.9	45.4	16:40-16:45	62.4	54.6
07:45-07:50	59.2	43.8	10:45-10:50	57.9	42.7	13:45-13:50	60.4	45.1	16:45-16:50	61.6	50.3
07:50-07:55	58.3	42.6	10:50-10:55	59.6	43.0	13:50-13:55	61.5	47.0	16:50-16:55	62.8	51.7
07:55-08:00	59.4	42.4	10:55-11:00	60.2	44.6	13:55-14:00	56.0	44.4	16:55-17:00	59.6	50.5
08:00-08:05	57.8	43.2	11:00-11:05	55.5	41.8	14:00-14:05	58.0	44.0	17:00-17:05	61.5	51.0
08:05-08:10	60.9	45.9	11:05-11:10	56.5	41.5	14:05-14:10	58.2	43.6	17:05-17:10	61.8	50.7
08:10-08:15	60.9	46.0	11:10-11:15	65.5	43.6	14:10-14:15	56.1	43.2	17:10-17:15	59.7	50.5
08:15-08:20	63.8	46.2	11:15-11:20	57.4	43.6	14:15-14:20	58.1	45.5	17:15-17:20	62.2	49.8
08:20-08:25	60.5	43.9	11:20-11:25	61.2	42.4	14:20-14:25	57.2	44.2	17:20-17:25	62.1	50.9
08:25-08:30	62.7	45.8	11:25-11:30	59.8	42.5	14:25-14:30	57.4	43.9	17:25-17:30	61.0	49.6
08:30-08:35	59.8	43.0	11:30-11:35	59.7	42.4	14:30-14:35	55.2	44.7	17:30-17:35	60.6	50.6
08:35-08:40	64.5	54.1	11:35-11:40	60.2	44.2	14:35-14:40	53.2	43.4	17:35-17:40	57.2	49.1
08:40-08:45	62.3	60.0	11:40-11:45	55.6	42.7	14:40-14:45	57.2	44.1	17:40-17:45	60.0	50.7
08:45-08:50	62.2	52.4	11:45-11:50	56.1	43.4	14:45-14:50	50.8	42.9	17:45-17:50	60.2	51.0
08:50-08:55	59.2	46.1	11:50-11:55	57.0	41.9	14:50-14:55	62.4	45.1	17:50-17:55	59.5	50.7
08:55-09:00	61.9	48.9	11:55-12:00	56.9	43.9	14:55-15:00	59.7	44.4	17:55-18:00	58.7	50.9
09:00-09:05	65.4	53.8	12:00-12:05	63.2	44.8	15:00-15:05	57.6	45.9	18:00-18:05	57.9	50.8
09:05-09:10	58.0	47.8	12:05-12:10	54.8	44.4	15:05-15:10	61.6	43.3	18:05-18:10	60.9	52.0
09:10-09:15	57.2	46.2	12:10-12:15	59.8	41.0	15:10-15:15	55.4	44.7	18:10-18:15	60.4	47.2
09:15-09:20	65.4	47.9	12:15-12:20	60.2	42.7	15:15-15:20	57.3	45.9	18:15-18:20	58.0	51.1
09:20-09:25	58.0	46.8	12:20-12:25	59.6	42.4	15:20-15:25	58.8	46.2	18:20-18:25	59.9	47.2
09:25-09:30	61.0	47.1	12:25-12:30	53.6	41.3	15:25-15:30	55.0	45.7	18:25-18:30	57.4	47.5
09:30-09:35	60.3	45.0	12:30-12:35	60.1	41.6	15:30-15:35	55.1	45.2	18:30-18:35	63.3	49.8
09:35-09:40	61.5	45.5	12:35-12:40	62.5	41.1	15:35-15:40	59.4	47.2	18:35-18:40	60.5	48.5
09:40-09:45	62.1	43.7	12:40-12:45	61.0	41.9	15:40-15:45	65.5	47.1	18:40-18:45	59.6	49.8
09:45-09:50	59.8	42.1	12:45-12:50	61.0	40.7	15:45-15:50	59.3	47.6	18:45-18:50	63.0	50.4
09:50-09:55	58.7	44.8	12:50-12:55	55.6	41.0	15:50-15:55	57.7	47.5	18:50-18:55	63.7	48.8
09:55-10:00	58.8	44.3	12:55-13:00	60.0	43.0	15:55-16:00	58.9	48.1	18:55-19:00	59.9	49.9

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
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Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 17-18, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
19:00-19:05	57.3	48.4	22:00-22:05	49.9	45.0	01:00-01:05	52.1	35.6	04:00-04:05	40.9	35.3
19:05-19:10	58.7	47.2	22:05-22:10	58.2	44.7	01:05-01:10	39.7	35.1	04:05-04:10	44.8	36.3
19:10-19:15	60.7	48.2	22:10-22:15	54.1	42.7	01:10-01:15	41.0	35.5	04:10-04:15	48.4	34.7
19:15-19:20	57.9	46.4	22:15-22:20	54.3	43.3	01:15-01:20	41.7	36.7	04:15-04:20	38.1	34.6
19:20-19:25	59.6	47.5	22:20-22:25	54.1	42.1	01:20-01:25	47.4	36.1	04:20-04:25	45.0	34.8
19:25-19:30	61.2	48.7	22:25-22:30	59.4	41.9	01:25-01:30	37.0	33.4	04:25-04:30	41.0	34.8
19:30-19:35	55.6	47.6	22:30-22:35	52.0	43.1	01:30-01:35	49.8	33.7	04:30-04:35	54.2	37.3
19:35-19:40	62.2	48.4	22:35-22:40	57.5	42.9	01:35-01:40	35.8	34.1	04:35-04:40	37.7	34.7
19:40-19:45	57.9	46.9	22:40-22:45	44.5	39.6	01:40-01:45	38.0	34.1	04:40-04:45	47.0	35.5
19:45-19:50	59.7	46.9	22:45-22:50	57.8	41.5	01:45-01:50	39.0	35.2	04:45-04:50	53.4	35.9
19:50-19:55	59.3	48.2	22:50-22:55	55.6	41.6	01:50-01:55	46.4	33.2	04:50-04:55	41.3	37.4
19:55-20:00	55.0	47.3	22:55-23:00	48.7	38.6	01:55-02:00	41.2	34.3	04:55-05:00	47.3	33.4
20:00-20:05	56.9	46.3	23:00-23:05	49.0	39.1	02:00-02:05	40.6	35.2	05:00-05:05	38.0	34.7
20:05-20:10	58.8	48.1	23:05-23:10	41.0	37.6	02:05-02:10	44.5	38.0	05:05-05:10	41.4	37.8
20:10-20:15	56.4	46.5	23:10-23:15	42.4	38.6	02:10-02:15	42.6	36.5	05:10-05:15	46.8	37.1
20:15-20:20	58.3	46.7	23:15-23:20	52.8	40.4	02:15-02:20	41.0	36.2	05:15-05:20	54.4	38.6
20:20-20:25	56.0	47.8	23:20-23:25	54.0	41.6	02:20-02:25	41.0	34.6	05:20-05:25	51.1	38.2
20:25-20:30	56.0	46.4	23:25-23:30	45.9	39.8	02:25-02:30	37.7	35.7	05:25-05:30	44.8	39.4
20:30-20:35	58.2	46.7	23:30-23:35	48.1	40.0	02:30-02:35	38.9	36.4	05:30-05:35	49.5	38.7
20:35-20:40	57.3	47.1	23:35-23:40	39.4	38.1	02:35-02:40	38.3	35.5	05:35-05:40	45.3	39.3
20:40-20:45	56.1	46.7	23:40-23:45	49.1	38.1	02:40-02:45	39.9	36.0	05:40-05:45	49.4	39.8
20:45-20:50	55.2	46.8	23:45-23:50	43.8	38.2	02:45-02:50	35.5	33.6	05:45-05:50	44.8	40.4
20:50-20:55	52.1	46.2	23:50-23:55	50.6	40.1	02:50-02:55	45.9	34.5	05:50-05:55	54.5	41.4
20:55-21:00	54.3	46.1	23:55-24:00	42.3	38.1	02:55-03:00	37.3	34.7	05:55-06:00	53.5	42.5
21:00-21:05	54.3	45.1	00:00-00:05	42.7	39.2	03:00-03:05	35.7	33.1	06:00-06:05	55.2	42.4
21:05-21:10	51.9	44.4	00:05-00:10	47.6	38.3	03:05-03:10	38.0	32.5	06:05-06:10	58.8	42.2
21:10-21:15	54.1	43.2	00:10-00:15	54.3	39.8	03:10-03:15	52.5	33.3	06:10-06:15	58.0	42.8
21:15-21:20	54.0	45.7	00:15-00:20	41.0	37.3	03:15-03:20	35.5	33.1	06:15-06:20	58.4	44.9
21:20-21:25	53.6	47.7	00:20-00:25	44.6	38.5	03:20-03:25	44.9	34.0	06:20-06:25	61.1	44.1
21:25-21:30	53.3	46.7	00:25-00:30	50.6	37.8	03:25-03:30	35.6	33.5	06:25-06:30	55.6	43.8
21:30-21:35	54.9	44.2	00:30-00:35	50.5	38.7	03:30-03:35	35.3	33.7	06:30-06:35	60.2	44.3
21:35-21:40	55.8	45.1	00:35-00:40	46.3	38.9	03:35-03:40	37.5	35.1	06:35-06:40	56.4	44.9
21:40-21:45	60.1	48.3	00:40-00:45	44.7	39.5	03:40-03:45	43.6	36.8	06:40-06:45	59.4	44.2
21:45-21:50	59.3	45.8	00:45-00:50	43.3	37.8	03:45-03:50	40.4	37.3	06:45-06:50	62.0	45.6
21:50-21:55	57.2	47.6	00:50-00:55	41.6	36.5	03:50-03:55	37.7	35.3	06:50-06:55	66.7	44.6
21:55-22:00	54.4	45.0	00:55-01:00	52.5	37.3	03:55-04:00	37.4	34.7	06:55-07:00	60.8	45.8

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 18, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
07:00–07:05	64.8	48.7	10:00–10:05	61.2	45.3	13:00–13:05	58.9	44.4	16:00–16:05	59.6	46.1
07:05–07:10	63.8	47.5	10:05–10:10	49.9	41.0	13:05–13:10	58.2	42.5	16:05–16:10	60.7	48.5
07:10–07:15	62.8	47.7	10:10–10:15	52.1	40.0	13:10–13:15	57.1	42.8	16:10–16:15	59.4	46.4
07:15–07:20	63.4	48.7	10:15–10:20	57.8	41.8	13:15–13:20	58.1	44.3	16:15–16:20	58.9	46.3
07:20–07:25	61.5	45.9	10:20–10:25	58.9	41.8	13:20–13:25	57.2	45.8	16:20–16:25	53.1	45.5
07:25–07:30	64.6	48.8	10:25–10:30	58.1	43.6	13:25–13:30	58.3	45.0	16:25–16:30	55.4	46.5
07:30–07:35	65.3	47.6	10:30–10:35	52.8	42.2	13:30–13:35	55.4	46.3	16:30–16:35	58.9	45.2
07:35–07:40	66.4	46.5	10:35–10:40	56.8	43.9	13:35–13:40	54.5	45.9	16:35–16:40	55.6	44.4
07:40–07:45	63.3	46.0	10:40–10:45	51.5	42.8	13:40–13:45	55.4	46.3	16:40–16:45	57.6	47.9
07:45–07:50	62.1	43.4	10:45–10:50	55.2	42.4	13:45–13:50	58.3	44.1	16:45–16:50	62.2	47.8
07:50–07:55	60.5	44.3	10:50–10:55	51.5	42.2	13:50–13:55	56.2	46.0	16:50–16:55	61.7	48.7
07:55–08:00	62.4	45.8	10:55–11:00	59.4	42.9	13:55–14:00	58.4	43.5	16:55–17:00	57.8	46.2
08:00–08:05	66.4	42.6	11:00–11:05	66.2	44.0	14:00–14:05	56.7	43.0	17:00–17:05	59.7	47.5
08:05–08:10	65.1	45.5	11:05–11:10	66.6	42.8	14:05–14:10	57.0	44.6	17:05–17:10	62.0	46.3
08:10–08:15	65.5	46.8	11:10–11:15	58.2	44.1	14:10–14:15	59.1	46.9	17:10–17:15	63.3	49.1
08:15–08:20	60.1	49.4	11:15–11:20	54.7	43.0	14:15–14:20	60.7	46.0	17:15–17:20	63.5	49.3
08:20–08:25	61.6	54.8	11:20–11:25	57.4	44.2	14:20–14:25	58.2	46.3	17:20–17:25	65.8	49.4
08:25–08:30	70.2	55.8	11:25–11:30	63.6	44.5	14:25–14:30	55.4	43.7	17:25–17:30	62.1	48.2
08:30–08:35	70.8	67.2	11:30–11:35	58.7	44.3	14:30–14:35	60.3	44.6	17:30–17:35	66.0	49.9
08:35–08:40	62.2	55.0	11:35–11:40	57.5	43.0	14:35–14:40	56.6	44.8	17:35–17:40	60.1	49.7
08:40–08:45	69.3	64.1	11:40–11:45	59.2	44.1	14:40–14:45	56.1	44.9	17:40–17:45	65.5	50.0
08:45–08:50	64.7	50.2	11:45–11:50	55.1	45.1	14:45–14:50	60.6	47.9	17:45–17:50	67.3	56.1
08:50–08:55	60.3	45.9	11:50–11:55	57.1	44.9	14:50–14:55	56.1	45.3	17:50–17:55	65.6	52.4
08:55–09:00	60.2	43.8	11:55–12:00	54.7	43.9	14:55–15:00	56.6	46.0	17:55–18:00	61.7	47.9
09:00–09:05	52.5	41.5	12:00–12:05	60.0	45.1	15:00–15:05	59.6	45.2	18:00–18:05	65.1	47.4
09:05–09:10	69.6	45.5	12:05–12:10	65.8	48.0	15:05–15:10	53.4	44.5	18:05–18:10	60.0	46.6
09:10–09:15	70.3	55.5	12:10–12:15	59.3	44.5	15:10–15:15	56.8	43.7	18:10–18:15	61.2	49.0
09:15–09:20	70.6	54.7	12:15–12:20	58.3	45.6	15:15–15:20	54.8	44.9	18:15–18:20	59.9	49.5
09:20–09:25	69.7	43.9	12:20–12:25	58.4	45.7	15:20–15:25	57.1	44.9	18:20–18:25	61.6	50.8
09:25–09:30	52.5	42.6	12:25–12:30	53.9	43.8	15:25–15:30	55.5	45.3	18:25–18:30	57.9	48.3
09:30–09:35	55.8	43.0	12:30–12:35	55.9	43.8	15:30–15:35	56.8	45.8	18:30–18:35	60.9	48.1
09:35–09:40	62.3	46.0	12:35–12:40	51.7	43.5	15:35–15:40	57.1	46.8	18:35–18:40	63.6	47.4
09:40–09:45	64.5	42.5	12:40–12:45	56.6	42.6	15:40–15:45	58.6	46.8	18:40–18:45	68.8	48.6
09:45–09:50	58.0	42.9	12:45–12:50	60.4	44.1	15:45–15:50	48.7	44.8	18:45–18:50	58.9	47.8
09:50–09:55	55.3	44.6	12:50–12:55	58.6	44.0	15:50–15:55	63.1	46.0	18:50–18:55	57.2	47.0
09:55–10:00	59.0	44.6	12:55–13:00	57.6	45.0	15:55–16:00	54.6	47.0	18:55–19:00	60.9	49.8

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 18-19, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
19:00–19:05	66.3	47.8	22:00–22:05	52.1	40.0	01:00–01:05	49.7	34.4	04:00–04:05	48.0	35.9
19:05–19:10	59.6	48.7	22:05–22:10	51.6	41.3	01:05–01:10	37.5	34.1	04:05–04:10	41.6	37.8
19:10–19:15	56.8	48.1	22:10–22:15	54.4	40.4	01:10–01:15	37.6	34.8	04:10–04:15	44.8	39.0
19:15–19:20	62.4	47.3	22:15–22:20	50.7	39.0	01:15–01:20	44.0	36.5	04:15–04:20	44.3	36.7
19:20–19:25	62.1	47.3	22:20–22:25	50.9	36.9	01:20–01:25	45.5	34.3	04:20–04:25	51.2	36.6
19:25–19:30	61.9	46.1	22:25–22:30	52.7	37.0	01:25–01:30	41.7	33.2	04:25–04:30	41.6	37.5
19:30–19:35	59.7	46.8	22:30–22:35	53.1	36.5	01:30–01:35	43.4	35.8	04:30–04:35	47.1	38.5
19:35–19:40	58.8	45.8	22:35–22:40	51.9	36.7	01:35–01:40	36.3	31.6	04:35–04:40	42.3	37.8
19:40–19:45	60.4	44.1	22:40–22:45	49.7	38.2	01:40–01:45	39.4	33.6	04:40–04:45	48.7	36.1
19:45–19:50	59.1	48.9	22:45–22:50	51.0	40.7	01:45–01:50	45.9	33.7	04:45–04:50	52.0	35.7
19:50–19:55	58.2	47.9	22:50–22:55	48.8	38.0	01:50–01:55	40.2	35.3	04:50–04:55	52.2	37.2
19:55–20:00	55.2	47.9	22:55–23:00	53.0	34.8	01:55–02:00	45.1	36.2	04:55–05:00	37.3	36.0
20:00–20:05	57.3	47.3	23:00–23:05	39.4	34.5	02:00–02:05	42.7	33.7	05:00–05:05	50.4	37.7
20:05–20:10	59.5	47.4	23:05–23:10	50.2	36.5	02:05–02:10	41.4	33.8	05:05–05:10	56.6	35.7
20:10–20:15	59.4	47.7	23:10–23:15	48.2	35.4	02:10–02:15	38.6	33.6	05:10–05:15	52.5	39.9
20:15–20:20	57.6	46.2	23:15–23:20	53.5	36.2	02:15–02:20	40.5	36.7	05:15–05:20	56.2	39.2
20:20–20:25	61.3	48.7	23:20–23:25	47.8	35.6	02:20–02:25	39.8	35.9	05:20–05:25	52.3	38.1
20:25–20:30	63.9	50.1	23:25–23:30	52.9	35.6	02:25–02:30	36.8	34.4	05:25–05:30	55.0	40.3
20:30–20:35	61.2	46.9	23:30–23:35	46.0	38.8	02:30–02:35	47.7	36.4	05:30–05:35	51.1	40.1
20:35–20:40	58.4	43.7	23:35–23:40	44.9	37.1	02:35–02:40	40.7	37.1	05:35–05:40	43.5	39.9
20:40–20:45	59.3	47.4	23:40–23:45	47.3	37.1	02:40–02:45	41.8	35.6	05:40–05:45	55.5	43.0
20:45–20:50	52.5	44.7	23:45–23:50	42.5	37.9	02:45–02:50	41.1	36.2	05:45–05:50	56.8	42.3
20:50–20:55	54.1	45.0	23:50–23:55	44.2	38.8	02:50–02:55	39.0	36.1	05:50–05:55	51.8	40.3
20:55–21:00	48.8	40.8	23:55–24:00	53.4	34.7	02:55–03:00	42.4	35.7	05:55–06:00	53.8	41.6
21:00–21:05	45.2	42.4	00:00–00:05	45.0	35.3	03:00–03:05	36.9	34.6	06:00–06:05	55.0	44.1
21:05–21:10	52.3	42.5	00:05–00:10	48.0	37.7	03:05–03:10	38.6	36.4	06:05–06:10	58.8	43.8
21:10–21:15	50.6	41.9	00:10–00:15	41.1	36.8	03:10–03:15	38.8	36.1	06:10–06:15	61.9	45.2
21:15–21:20	52.6	43.0	00:15–00:20	51.2	34.0	03:15–03:20	39.0	36.1	06:15–06:20	61.9	46.9
21:20–21:25	52.7	42.4	00:20–00:25	50.2	38.2	03:20–03:25	50.3	35.9	06:20–06:25	60.2	48.4
21:25–21:30	52.8	41.0	00:25–00:30	41.2	35.2	03:25–03:30	50.9	35.7	06:25–06:30	59.6	46.8
21:30–21:35	54.5	42.8	00:30–00:35	37.2	33.9	03:30–03:35	37.7	35.8	06:30–06:35	57.6	46.6
21:35–21:40	60.0	45.2	00:35–00:40	42.4	38.5	03:35–03:40	40.9	35.1	06:35–06:40	58.0	48.5
21:40–21:45	58.6	42.7	00:40–00:45	42.7	38.0	03:40–03:45	35.2	34.3	06:40–06:45	60.3	50.5
21:45–21:50	54.2	40.3	00:45–00:50	42.0	37.0	03:45–03:50	38.2	34.8	06:45–06:50	68.0	49.2
21:50–21:55	61.4	41.8	00:50–00:55	40.5	35.5	03:50–03:55	37.0	34.6	06:50–06:55	62.2	49.1
21:55–22:00	55.1	41.6	00:55–01:00	40.3	35.1	03:55–04:00	46.1	36.9	06:55–07:00	64.8	50.5

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 19, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
07:00-07:05	64.0	50.4	10:00-10:05	79.7	70.7	13:00-13:05	58.3	45.3	16:00-16:05	57.1	47.0
07:05-07:10	63.3	49.3	10:05-10:10	78.9	69.6	13:05-13:10	52.8	44.8	16:05-16:10	57.0	46.8
07:10-07:15	61.7	47.6	10:10-10:15	73.9	68.7	13:10-13:15	59.5	45.8	16:10-16:15	64.3	45.6
07:15-07:20	63.4	51.1	10:15-10:20	72.2	48.7	13:15-13:20	57.9	47.4	16:15-16:20	58.2	45.7
07:20-07:25	64.2	50.7	10:20-10:25	68.2	65.1	13:20-13:25	53.9	43.8	16:20-16:25	55.3	44.9
07:25-07:30	67.2	49.7	10:25-10:30	68.9	66.1	13:25-13:30	57.3	46.4	16:25-16:30	56.9	44.0
07:30-07:35	64.7	52.6	10:30-10:35	52.4	45.6	13:30-13:35	56.3	46.3	16:30-16:35	57.1	45.9
07:35-07:40	67.9	50.7	10:35-10:40	57.3	44.8	13:35-13:40	55.2	44.6	16:35-16:40	59.1	46.2
07:40-07:45	63.3	47.1	10:40-10:45	69.7	47.7	13:40-13:45	56.2	44.3	16:40-16:45	58.0	47.0
07:45-07:50	62.3	47.2	10:45-10:50	72.9	68.8	13:45-13:50	57.0	44.7	16:45-16:50	58.9	47.0
07:50-07:55	59.0	44.6	10:50-10:55	73.8	69.3	13:50-13:55	57.6	44.4	16:50-16:55	54.3	45.2
07:55-08:00	59.2	46.4	10:55-11:00	71.1	67.5	13:55-14:00	54.3	45.2	16:55-17:00	55.9	46.1
08:00-08:05	62.2	45.6	11:00-11:05	69.2	65.7	14:00-14:05	55.5	46.0	17:00-17:05	62.8	47.7
08:05-08:10	60.7	48.7	11:05-11:10	71.6	66.3	14:05-14:10	58.2	46.5	17:05-17:10	59.7	47.6
08:10-08:15	79.9	59.3	11:10-11:15	72.0	66.5	14:10-14:15	56.3	46.1	17:10-17:15	64.6	51.8
08:15-08:20	77.2	73.9	11:15-11:20	66.4	50.0	14:15-14:20	52.7	44.8	17:15-17:20	59.4	50.3
08:20-08:25	74.9	51.4	11:20-11:25	72.0	68.9	14:20-14:25	55.3	45.7	17:20-17:25	63.1	50.2
08:25-08:30	78.0	72.8	11:25-11:30	70.7	50.5	14:25-14:30	57.9	44.5	17:25-17:30	62.5	50.0
08:30-08:35	80.4	59.6	11:30-11:35	67.9	50.1	14:30-14:35	56.7	44.7	17:30-17:35	59.1	49.5
08:35-08:40	81.2	77.6	11:35-11:40	76.0	52.9	14:35-14:40	53.2	44.7	17:35-17:40	60.2	50.4
08:40-08:45	82.7	79.0	11:40-11:45	74.8	51.6	14:40-14:45	54.0	44.1	17:40-17:45	67.2	51.8
08:45-08:50	77.4	49.2	11:45-11:50	71.9	50.5	14:45-14:50	57.6	44.9	17:45-17:50	66.0	51.0
08:50-08:55	80.3	77.0	11:50-11:55	67.2	62.4	14:50-14:55	58.9	46.6	17:50-17:55	62.7	53.5
08:55-09:00	81.3	76.5	11:55-12:00	58.6	53.8	14:55-15:00	57.4	46.2	17:55-18:00	61.6	48.3
09:00-09:05	80.0	74.7	12:00-12:05	59.7	54.2	15:00-15:05	56.9	45.3	18:00-18:05	60.1	49.1
09:05-09:10	80.8	76.3	12:05-12:10	60.6	50.1	15:05-15:10	57.6	46.2	18:05-18:10	64.6	50.3
09:10-09:15	78.7	74.6	12:10-12:15	60.3	48.7	15:10-15:15	56.6	46.4	18:10-18:15	58.7	48.9
09:15-09:20	78.1	73.7	12:15-12:20	59.9	48.1	15:15-15:20	55.6	45.4	18:15-18:20	64.3	50.0
09:20-09:25	72.2	48.8	12:20-12:25	52.2	46.8	15:20-15:25	57.0	44.6	18:20-18:25	61.5	49.6
09:25-09:30	71.4	49.8	12:25-12:30	58.3	47.3	15:25-15:30	59.7	46.7	18:25-18:30	60.4	47.7
09:30-09:35	76.3	70.1	12:30-12:35	56.3	47.4	15:30-15:35	57.7	46.8	18:30-18:35	58.1	46.8
09:35-09:40	79.4	76.2	12:35-12:40	59.7	47.7	15:35-15:40	56.4	46.2	18:35-18:40	62.0	46.5
09:40-09:45	79.9	76.2	12:40-12:45	55.5	47.0	15:40-15:45	55.6	46.6	18:40-18:45	59.9	47.5
09:45-09:50	81.1	74.1	12:45-12:50	54.4	48.6	15:45-15:50	57.2	46.2	18:45-18:50	58.5	46.3
09:50-09:55	73.1	48.7	12:50-12:55	58.2	48.6	15:50-15:55	67.7	50.0	18:50-18:55	59.2	47.4
09:55-10:00	80.7	76.9	12:55-13:00	55.4	44.9	15:55-16:00	60.4	49.5	18:55-19:00	59.3	47.0

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 19-20, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC133/2562

Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)		Interval Time	Noise Level For 5 minutes, dB(A)	
	Leq	L90		Leq	L90		Leq	L90		Leq	L90
19:00-19:05	60.3	48.7	22:00-22:05	46.5	41.3	01:00-01:05	39.0	34.7	04:00-04:05	40.2	34.4
19:05-19:10	57.0	48.4	22:05-22:10	49.8	43.4	01:05-01:10	40.4	36.7	04:05-04:10	47.5	32.8
19:10-19:15	61.5	50.2	22:10-22:15	53.3	43.9	01:10-01:15	39.5	36.3	04:10-04:15	38.5	35.0
19:15-19:20	58.5	46.8	22:15-22:20	46.4	38.8	01:15-01:20	44.9	36.4	04:15-04:20	51.4	37.5
19:20-19:25	58.6	47.4	22:20-22:25	52.2	39.2	01:20-01:25	40.6	36.7	04:20-04:25	37.5	34.5
19:25-19:30	61.3	45.2	22:25-22:30	53.6	39.3	01:25-01:30	42.1	38.4	04:25-04:30	45.4	35.2
19:30-19:35	59.7	47.9	22:30-22:35	51.1	39.9	01:30-01:35	45.1	36.3	04:30-04:35	47.6	37.2
19:35-19:40	68.3	45.1	22:35-22:40	42.4	39.4	01:35-01:40	37.0	35.5	04:35-04:40	39.7	36.6
19:40-19:45	57.8	46.4	22:40-22:45	52.1	39.9	01:40-01:45	49.1	35.8	04:40-04:45	38.0	36.2
19:45-19:50	55.5	45.7	22:45-22:50	54.7	38.9	01:45-01:50	43.5	36.0	04:45-04:50	49.2	35.5
19:50-19:55	56.1	48.2	22:50-22:55	53.5	38.9	01:50-01:55	42.9	32.3	04:50-04:55	40.1	37.1
19:55-20:00	57.1	47.4	22:55-23:00	47.7	37.8	01:55-02:00	43.6	35.9	04:55-05:00	47.5	37.8
20:00-20:05	60.1	47.8	23:00-23:05	53.1	38.1	02:00-02:05	38.5	36.2	05:00-05:05	51.8	37.8
20:05-20:10	62.3	48.7	23:05-23:10	50.1	38.4	02:05-02:10	38.6	34.8	05:05-05:10	58.5	40.0
20:10-20:15	60.3	48.6	23:10-23:15	44.5	38.2	02:10-02:15	44.2	34.8	05:10-05:15	56.6	41.4
20:15-20:20	63.4	48.9	23:15-23:20	48.8	37.1	02:15-02:20	40.5	34.6	05:15-05:20	50.2	40.9
20:20-20:25	61.4	49.5	23:20-23:25	48.5	37.9	02:20-02:25	43.9	38.3	05:20-05:25	56.2	40.7
20:25-20:30	63.6	47.4	23:25-23:30	44.0	35.4	02:25-02:30	39.0	36.7	05:25-05:30	52.7	42.5
20:30-20:35	60.6	45.8	23:30-23:35	42.3	36.7	02:30-02:35	38.1	35.5	05:30-05:35	49.1	39.0
20:35-20:40	59.8	46.5	23:35-23:40	48.0	38.4	02:35-02:40	38.5	36.6	05:35-05:40	43.6	40.1
20:40-20:45	55.5	45.8	23:40-23:45	40.9	36.3	02:40-02:45	40.7	37.2	05:40-05:45	54.6	43.7
20:45-20:50	57.7	45.1	23:45-23:50	41.3	35.1	02:45-02:50	43.2	34.4	05:45-05:50	55.7	41.6
20:50-20:55	64.5	41.2	23:50-23:55	42.5	38.5	02:50-02:55	36.2	33.2	05:50-05:55	51.5	41.3
20:55-21:00	50.1	43.1	23:55-24:00	51.0	39.0	02:55-03:00	37.2	32.7	05:55-06:00	57.3	43.8
21:00-21:05	52.7	40.4	00:00-00:05	42.3	36.4	03:00-03:05	40.6	36.0	06:00-06:05	56.8	44.2
21:05-21:10	60.6	45.8	00:05-00:10	55.4	35.4	03:05-03:10	36.3	32.9	06:05-06:10	57.9	43.5
21:10-21:15	52.0	43.7	00:10-00:15	53.8	35.4	03:10-03:15	41.6	35.7	06:10-06:15	61.5	46.0
21:15-21:20	53.7	41.5	00:15-00:20	51.3	37.5	03:15-03:20	42.1	35.4	06:15-06:20	61.0	47.1
21:20-21:25	52.5	41.3	00:20-00:25	43.5	36.9	03:20-03:25	43.3	33.5	06:20-06:25	55.0	45.2
21:25-21:30	54.6	41.1	00:25-00:30	42.6	35.5	03:25-03:30	48.1	33.6	06:25-06:30	62.0	45.9
21:30-21:35	59.1	43.0	00:30-00:35	40.8	35.5	03:30-03:35	44.0	33.5	06:30-06:35	57.5	45.7
21:35-21:40	49.3	39.9	00:35-00:40	47.3	37.6	03:35-03:40	47.7	35.5	06:35-06:40	63.8	46.7
21:40-21:45	57.2	39.2	00:40-00:45	43.8	38.4	03:40-03:45	41.1	35.3	06:40-06:45	63.5	49.6
21:45-21:50	56.1	43.0	00:45-00:50	46.9	39.4	03:45-03:50	37.1	32.4	06:45-06:50	60.6	48.6
21:50-21:55	49.6	40.7	00:50-00:55	42.9	33.0	03:50-03:55	36.6	33.5	06:50-06:55	63.2	48.3
21:55-22:00	63.2	41.9	00:55-01:00	51.0	33.8	03:55-04:00	42.5	33.8	06:55-07:00	67.7	49.8

(Ms.Napajarut Muenwong)
Laboratory Reviewer

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ENVIRONMENT RESEARCH & TECHNOLOGY CO., LTD.

(Ms.Thanida Bunrungrueang)
Laboratory Supervisor

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ANALYSIS REPORT

Customer Name : TLT Consultants Company Limited
Address : 152 Nuan Chan Road, Nuan Chan, Bueng Kum, Bangkok 10230
Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 13-14, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC134/2562

Interval Time	Noise Level, dB(A)					
	Leq	Lmax	L5	L10	L50	L90
07:00 – 08:00	63.2	81.4	69.9	67.4	55.7	47.7
08:00 – 09:00	61.7	87.2	67.5	64.2	53.6	48.8
09:00 – 10:00	65.4	87.0	70.8	67.7	62.4	58.4
10:00 – 11:00	60.7	90.4	65.5	60.8	50.5	44.7
11:00 – 12:00	53.9	78.2	59.8	55.2	46.5	43.2
12:00 – 13:00	55.9	78.9	61.9	57.3	47.2	42.8
13:00 – 14:00	56.8	85.5	61.9	57.7	47.9	44.1
14:00 – 15:00	55.7	74.6	61.8	57.6	48.9	45.6
15:00 – 16:00	57.8	79.9	63.8	61.0	50.7	45.9
16:00 – 17:00	60.4	88.0	66.8	62.9	51.8	47.1
17:00 – 18:00	62.4	83.8	68.7	66.1	56.0	50.7
18:00 – 19:00	60.8	81.1	67.0	64.4	54.4	49.5
19:00 – 20:00	61.3	90.2	66.8	63.7	52.2	47.9
20:00 – 21:00	58.5	81.7	64.7	61.6	51.1	46.6
21:00 – 22:00	53.8	72.4	60.1	56.3	46.9	43.3
22:00 – 23:00	56.1	81.4	62.1	56.4	45.5	41.4
23:00 – 24:00	50.0	77.7	53.0	50.2	41.1	38.0
00:00 – 01:00	45.8	70.0	50.3	46.1	39.8	36.3
01:00 – 02:00	44.8	70.1	49.3	45.1	39.6	36.3
02:00 – 03:00	41.9	62.0	47.3	45.6	38.2	34.5
03:00 – 04:00	43.8	66.6	48.7	44.0	36.7	33.8
04:00 – 05:00	45.9	68.9	50.5	46.3	39.1	36.6
05:00 – 06:00	53.4	76.3	59.9	54.7	43.8	40.7
06:00 – 07:00	62.0	90.5	68.1	64.8	51.6	45.9
24 Hours Measurement	**59.0**	**90.5**	**64.9**	**61.7**	**52.5**	**47.9**
Standard[1/]	**70**	**115**	-	-	-	-
Ldn	**62.3**	-	-	-	-	-

Remark : 1/ Notification of National Environmental Board, No.15, B.E.2540 (1997) under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992), published in the Royal Government Gazette No.114 Part 27D dated April 3, B.E.2540 (1997).

(Ms.Napajarut Muenwong)
Laboratory Reviewer

(Ms.Thanida Bunrungrueang)
Laboratory Supervisor

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Project Name : โครงการโรงไฟฟ้าปลวกแดงในพื้นที่สวนอุตสาหกรรมปลวกแดง
Project Location : ตำบลมาบยางพร อำเภอปลวกแดง จังหวัดระยอง
Measured Source : Ambient Noise
Measured Point : บริเวณพื้นที่โครงการ
GPS. Coordinate : UTM (WGS84) 47P 0733603 E, 1432601 N
Measured Date : March 14-15, 2019
Measured By : Mr.Suriya Choothong (Personnel of Environment Research & Technology Co., Ltd.)
Measured Instrument : Integrating Sound Level Meter Type II, RION Model NL-42 Serial Number 00321430
Reported Number : NCC134/2562

Interval Time	Noise Level, dB(A)					
	Leq	Lmax	L5	L10	L50	L90
07:00 – 08:00	62.8	83.2	69.3	66.8	55.0	47.5
08:00 – 09:00	61.2	85.9	67.1	64.1	54.2	50.8
09:00 – 10:00	60.3	92.2	64.8	61.9	51.7	47.7
10:00 – 11:00	56.8	81.8	62.2	57.6	47.1	43.6
11:00 – 12:00	58.6	79.5	64.4	60.3	47.4	43.4
12:00 – 13:00	55.2	76.6	61.2	57.4	47.1	43.0
13:00 – 14:00	55.8	83.6	60.5	57.3	47.6	43.7
14:00 – 15:00	58.0	80.8	63.3	59.9	52.6	48.0
15:00 – 16:00	65.0	84.7	69.3	67.5	63.2	59.4
16:00 – 17:00	61.5	81.5	67.1	64.5	57.1	53.7
17:00 – 18:00	62.1	84.0	68.6	65.9	54.5	48.6
18:00 – 19:00	60.8	82.8	67.5	64.4	52.9	47.6
19:00 – 20:00	60.3	82.3	67.0	63.5	51.2	46.5
20:00 – 21:00	59.7	80.1	65.7	62.7	52.0	47.2
21:00 – 22:00	56.1	78.9	62.4	57.6	47.0	43.4
22:00 – 23:00	53.8	81.7	57.4	54.3	44.5	41.1
23:00 – 24:00	51.3	76.9	55.2	51.9	42.6	39.2
00:00 – 01:00	45.7	68.2	50.8	47.6	41.0	36.3
01:00 – 02:00	46.7	75.4	50.4	46.9	38.0	34.7
02:00 – 03:00	42.7	70.5	45.5	43.5	36.9	34.1
03:00 – 04:00	44.4	71.5	49.2	44.8	37.3	34.9
04:00 – 05:00	47.2	73.6	52.1	47.6	39.4	36.5
05:00 – 06:00	54.0	82.5	60.6	56.5	44.1	40.7
06:00 – 07:00	61.3	83.7	67.6	64.7	53.0	46.1
24 Hours Measurement	**58.9**	**92.2**	**64.7**	**61.8**	**53.1**	**48.8**
Standard[1/]	**70**	**115**	-	-	-	-
Ldn	**62.0**	-	-	-	-	-

Remark : 1/ Notification of National Environmental Board, No.15, B.E.2540 (1997) under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992), published in the Royal Government Gazette No.114 Part 27D dated April 3, B.E.2540 (1997).

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