

An award winning ASEAN Environmental Consultancy




Contaminated Site Assessment and Management Services



www.slpenvironmental.com

Cambodia | Indonesia | Laos | Malaysia | Myanmar | Philippines | Singapore | Thailand | Vietnam



“SLP Environmental has grown to be one of South East Asia’s leading brands in the environmental, social, health, safety and risk management consultancy sector.”

Who We Are

SLP Environmental is an award winning ASEAN consulting company specialising in the provision of high quality Environmental, Social, Health and Safety Risk Management Consulting and Advisory services throughout South East Asia.

Our specialist services help inform our clients’ business transaction risk management decisions, fulfil their regulatory compliance requirements, assess Environmental and Social (E&S) performance and satisfy E&S conditions associated with securing loans, equity financing and credit guarantees from financiers. We also specialise in providing independent E&S assessment, management and monitoring services to project lenders, investors and guarantors.

SLP Environmental has a proven track record across multiple business sectors and international jurisdictions; including Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. We have booked repeat business from some of the largest global companies including many of the Fortune Global 500 listed companies. SLP also provides specialist E&S consulting services to intergovernmental organisations such as the UNDP as well as national governments.

Our in-house multinational team of expatriate and ASEAN discipline specialists are supplemented by a comprehensive network of approved Associates and Contractors throughout the greater ASEAN region. This enables us to quickly respond to our clients’ needs and deploy quickly into the field to provide a broad range of high quality environmental, social, health, safety risk management services.

SLP Environmental has extensive experience working on numerous highly sensitive projects, and our clients can be confident that the quality of our work is such that it will withstand robust third party scrutiny. We are also acutely aware of the potential commercial and reputational liabilities that often accompany sensitive E&S assignments, and our clients can rest assured that SLP fully understands these sensitivities.

Our advice is always commercially focused, clearly communicated and conforms to the highest industry standards and international good practice guidelines.

Since our inception, SLP Environmental has grown to become one of South East Asia’s leading brands in the environmental, social, health and safety consultancy services sector.

Contaminated Site Assessment Services

Phase 2 Environmental Site Assessment

A Phase 2 Environmental Site Assessment (Phase 2 ESA) is ASTM E1903-19 terminology for a soil and groundwater contamination assessment investigation. If a prior Phase 1 Environmental Due Diligence (Phase 1 EDD) assessment indicates that a property may be contaminated as a consequence of historic and or current activities on or in the vicinity of the subject property then it is normal practice to proceed to a Phase 2 ESA to actually confirm the contamination status of the property under assessment. A Phase 2 Environmental Site Assessment is typically undertaken as part of the due diligence process associated with the acquisition or divestment of a property (transaction risk management driven) or to conform with host country legal requirements (regulatory compliance driven).

SLP Environmental provides the full spectrum of contaminated land assessment and management services from the initial preliminary reconnaissance, interview and desk study based **Phase 1 Environmental Site Assessment** through to the **Phase 2 ESA Intrusive Site Investigation**.

Quality assurance and control is the bedrock of any robust Phase 2 Site Investigation and SLP Environmental only use experienced and approved contractors working under our direct supervision to undertake the on-site intrusive investigation works such as soil boring, trial pitting and groundwater well installation works. We ensure that the soil and water samples recovered during the site investigation are tested for the chemical constituents that the Phase 1 ESA study indicates may be present (the constituents of concern) and that the testing is only undertaken by SLP approved laboratories accredited under ISO: 17025 and host country accreditation schemes for the required analyses.



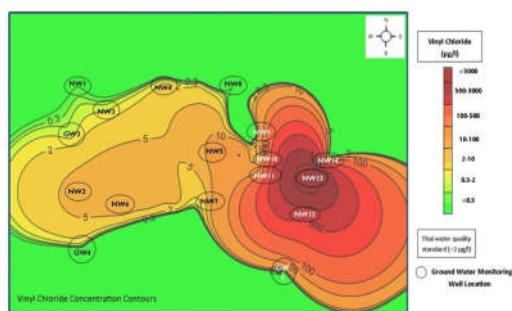
“Quality assurance and control is the bedrock of any robust Phase 2 Site Investigation and SLP Environmental only use experienced and approved contractors working under our direct supervision to undertake the on-site intrusive investigation works such as soil boring, trial pitting and groundwater well installation works.”

Where appropriate, the chemical test data is subject to detailed statistical assessment to generate a representative contaminant concentration for each constituent of concern which is then compared with the appropriate country specific *Tier 1 Risk Screening Levels*. Where exceedances of Tier 1 Screening Levels are recorded projects can also be taken forward for specialized quantitative risk assessment (QRA) computer modelling to generate *Tier 2 Site Specific Screening Levels* (SSTLs) which are then used to rescreen the chemical test dataset to better verify the actual contamination status of the property.

The ultimate objective of any Phase 2 Environmental Site Assessment is to identify whether the study site potentially represents an *unacceptable risk* to human health and or environmental receptors, and if the rescreening exercise reveals that certain constituents exceed SSTLs then the property, or portions thereof, are assessed as contaminated land requiring some form of risk management measure/s.

Environmental Quantitative Risk Assessment

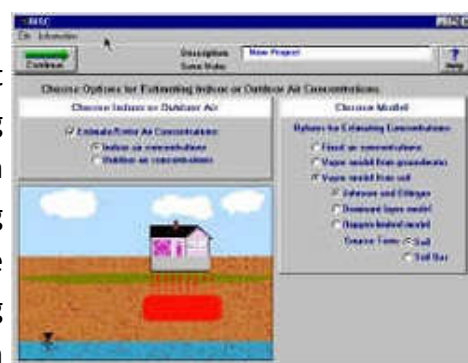
At SLP Environmental we specialise in utilising the latest computer modelling tools to derive project-specific remediation targets for each identified potential *contaminant of concern* (PCoC).



Site-specific quantitative risk assessment (QRA) modelling is a fundamental component in any environmental site assessment or environmental toxicology assessment. Specialist computer risk modelling tools are available that simulate the transport of contaminants through soil, water and atmospheric media and assess their likely effects on exposed receptors. These receptors often include human beings who may be exposed to contamination via ingestion, inhalation and dermal contact

pathways, or environmental receptors such as water resources and aquatic life. Models can be run in 'forwards' mode to determine point of exposure (PoE) concentrations for comparison with the pertinent quality standards, and backwards mode to derive site-specific target levels (SSTLs) for remediation schemes where POE concentrations exceed the soil, water and/or human health relevant quality standards.

Modelling scenarios can vary in complexity, and it is important that the selected model is appropriate to the circumstances being assessed. A complex hydrogeological system may require the use of a multi-layered model, which can assess the transport and partitioning processes occurring in discrete hydrogeological units along the contaminant migration pathway. Stochastic (probabilistic) modelling tools are useful in assessing the significance of variability present in the modelled scenario, the results of which are generally reported in terms of probability of occurrence and degrees of confidence.



Used diligently QRA modelling will ensure that any risk management measures are targeted where they are actually required and hence ensure that a client's money is not spent unnecessarily or inappropriately implementing an over-engineered solution. Consequently QRA modelling is an essential component of the value-engineering process. SLP offer a comprehensive range of deterministic and probabilistic quantitative risk assessment (QRA) modelling services. Our expertise includes undertaking detailed QRA modelling exercises for human health, groundwater, surface waters and ecosystem receptors. Our in-house experts have delivered some of the most challenging modelling assignments in the environmental sector and written and presented on the topic internationally.

Contaminated Site Management Services

Phase 3 Environmental Site Remediation

Sites assessed as posing a significant risk to environmental and or human receptors following site-specific QRA modelling are considered contaminated and generally subject to **Phase 3 Remediation**. Soil and groundwater remediation is the process of rehabilitating contaminated sites by treating, immobilizing or removing the contaminants present in soil and groundwater with the ultimate objective of reducing risks to human health and environmental receptors to *acceptable levels*.


At SLP Environmental we specialise in performing Remediation Options Appraisals to identify the most appropriate remediation solution for the contaminated site. This process culminates in SLP preparing the Remediation Action Plan (RAP) for the contaminated site and the detailed Remediation Design/Specification for the on-site remedial works that can be used for specialist contractor tendering purposes.

Our staff have extensive experience in designing, managing and delivering (to budget and programme) some of the most complex and challenging land and groundwater contamination remediation projects undertaken globally. We design, implement, manage and verify the remedial works, and upon scheme completion produce a comprehensive Phase 3 Remediation Validation Report which contains a full record of the works with accompanying drawings, chemical test results and monitoring data.

SLP Environmental personnel have experience utilising a comprehensive range of remediation technologies that includes conventional engineering type approaches (e.g. containment and off-site disposal to hazardous waste landfill) and the more specialised process based solutions such as bioremediation, soil washing and in-situ chemical oxidation. SLP Environmental personnel have demonstrable experience providing Phase 3 Environmental Remediation services globally and across the ASEAN region for a diverse client base across a range of sectors, including; chemicals, manufacturing, heavy industry, oil and gas and urban redevelopment, on behalf of both international and local companies. Client project references can be provided on request.



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“ We are acutely aware of the potential financial and reputational liabilities that often accompany sensitive environmental issues, and our clients can rest assured that SLP Environmental is fully cognisant of these commercial sensitivities.”

Contaminated Site Assessment

Phase 2 Contaminated Site Assessment

- ◆ Phase 2 Environmental Site Assessments (ASTM E1903-19)
- ◆ Soil and Groundwater Contamination Surveys
- ◆ Site Investigation Design, Supervision and Reporting
- ◆ Field Monitoring and Sampling
- ◆ Preparation of Contract Specification and Health and Safety Plan

Environmental Quantitative Risk Assessment Services

- ◆ Environmental Risk Assessment Modelling
- ◆ Human Health Risk Assessment Modelling
- ◆ Derivation of Tier 2 Site-Specific Contaminant Screening Levels
- ◆ Derivation of Site-Specific Remedial Targets
- ◆ Deterministic and Probabilistic Modelling Capabilities
- ◆ Strict QA/QC Procedures

Phase 3 Contaminated Site Management Services

- ◆ Remediation Options Appraisals
- ◆ Remediation Action Plans
- ◆ Remedial Works Design and Specification
- ◆ In and Ex-situ Remediation Solutions
- ◆ Works Supervision and Quality Assurance
- ◆ Remediation Validation Reporting



“ SLP Environmental has demonstrable experience providing Phase 3 Environmental Remediation services across the ASEAN region for a diverse client base across a range of sectors. ”

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Why Choose Us?

Our clients choose SLP Environmental because of our:

- ◆ Commitment to competitively priced excellence;
- ◆ Multi-national and multi-disciplinary capabilities;
- ◆ Detailed understanding of ASEANs regulatory regimes;
- ◆ International expertise and experience underpinned by sound local knowledge;
- ◆ Knowledge of Good International Industry Practice (GIIP);
- ◆ Knowledge of International Financial Institution (IFI) practices and guidelines;
- ◆ Award winning high quality technical reports and consulting advice;
- ◆ Proven track record in each ASEAN jurisdiction;
- ◆ Ability to communicate effectively and promptly with clients;
- ◆ Ability to prepare bespoke reports;
- ◆ Ability to tailor our services to support the particular needs of the client;
- ◆ Local presence and proven track record in each ASEAN jurisdiction;
- ◆ Comprehensive ASEAN wide support network; and



“SLP Environmental has a proven track record in successfully delivering projects throughout the ASEAN region and we have won prestigious industry awards for the quality of our services in eight of the ten ASEAN territories.”

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Our Services

SLP Environmental can assist businesses across South East Asia realise their corporate good governance aspirations and meet the challenges of regulatory compliance with respect to the protection of human health and the natural environment.

Our broad offering of specialist services fall into eight distinct areas comprising of:

- ◆ Business Transaction Due Diligence
- ◆ ESG/ Environmental and Social Due Diligence
- ◆ Impact Assessment and Planning
- ◆ Regulatory Compliance and Risk Management
- ◆ Contaminated Site Assessment and Management
- ◆ Stakeholder and Community Engagement
- ◆ Ecology and Habitat Services
- ◆ Expert Review and Technical Assistance

We provide specialist environmental, social, health, safety and risk management consultancy and advisory services for all stages of the business cycle; from planning through to the design, construction, operation and decommissioning stages of a project. SLP Environmental is uniquely placed in the ASEAN marketplace to deliver high quality professional services as we combine internationally acquired expertise and experience with an in-depth understanding of the region's regulatory frameworks and cultural sensitivities.

A close-up photograph of a hand wearing a blue nitrile glove, holding a clear glass test tube. A single drop of liquid is falling from the tip of the tube. The background is a blurred natural setting, likely a stream or river with rocks and foliage.

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Our Clients

SLP Environmental has worked with a globally diverse client base from across multiple business and industry sectors with operations, projects and facilities located throughout the ASEAN region.

Our clients include some of the largest multinational companies and we also provide sub-consultancy services in South East Asia to over fifteen of the top twenty global multi-disciplinary environmental, health and safety consulting companies.

Some of our clients include:

- | | |
|----------------------------------|--|
| ◆ Aerospace | ◆ UTC (Raytheon), Honeywell |
| ◆ Agribusiness | ◆ Olam International, Wilmar International |
| ◆ Automotive | ◆ Johnson Controls, Mitsubishi, TE Connectivity |
| ◆ Chemicals | ◆ Brenntag, Huntsman, Icap-Sira, Lenzing AG, Shin-Etsu Polymer |
| ◆ Energy | ◆ Alstom, BYUCKSAN Power Co., Ltd., EGAT, General Electric, Tokyo Gas, PV Gas |
| ◆ Finance & Insurance | ◆ ADB, ANZ, CGIF, IFC, Nomura, Korea Eximbank, Mizuho Bank, McLaren Young International Ltd, Excelsior, Anthem Asia |
| ◆ Government, IGOs, INGOs & NGOs | ◆ Australia, Norway, Myanmar, UNDP, InfraCo Asia Development |
| ◆ Heavy Industry | ◆ General Electric, Alstom, Doosan, UTC (Raytheon), Pandrol |
| ◆ Land & Property / Real Estate | ◆ Crown Property Bureau, YOMA, SPA, CBRE, Colliers |
| ◆ Logistics & Packaging | ◆ CMA CGM, ITL Corporation, JWD Group, Aptar, Ball |
| ◆ Manufacturing | ◆ Chrom Alloy, Ingredion, Mars Inc, Reckitt Benckiser, Proctor and Gamble, Coca-Cola, Carlsberg, Omron, TE Connectivity, Analog Devices, Magna Automotive, Mattel, Maxion Wheels, TOTO, De Heus International BV, Semperit AG, Knauf International, Georg Jensen |
| ◆ Mining & Minerals | ◆ Shwe Taung Group, Siam Metal Recycle |
| ◆ Oil & Gas | ◆ ENi S.p.A, PTT, Tokyo Gas, Weatherford |
| ◆ Pharmaceutical | ◆ Cardinal Health, Novartis, GPO (Thailand) |
| ◆ Renewable Energy | ◆ EDP RENOVÁVEIS, Gamesa, Scatec, NOMAC, Vestas, Kansai Electric Power |
| ◆ Soft Commodities | ◆ Outspan |
| ◆ Tourism & Hospitality | ◆ SPA, YOMA, Memories Group, Oceanfront, Oakwood |
| ◆ Textiles & Fibres | ◆ Lenzing AG, Rip Curl, Pouchen, Bangkok Kraft |
| ◆ Waste | ◆ Brenntag, Baker Hughes, General Electric |
| ◆ Water | ◆ SUEZ Group, Carlsberg, Lenzing AG, Mars Inc |



“Our centrally located bases within ASEAN means we are never more than a few hours away from any ASEAN jurisdiction.”

An ASEAN Consultancy

SLP Environmental has been headquartered in Bangkok, Thailand since early 2008.

From our headquarter offices SLP Environmental can undertake projects across the ASEAN region and our centrally located bases within ASEAN means we are never more than a few hours away from any ASEAN jurisdiction.

SLP Environmental has successfully delivered multiple projects throughout Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam and we have won prestigious industry awards for the quality of our services in eight of the ten ASEAN territories.

- ◆ Cambodia
- ◆ Indonesia
- ◆ Laos
- ◆ Malaysia
- ◆ Myanmar
- ◆ Philippines
- ◆ Singapore
- ◆ Thailand
- ◆ Vietnam



“SLP Environmental is an award winning ASEAN consultancy.”

Awards for Excellence

Our hard work has been recognised and rewarded by our peers and clients alike and SLP Environmental has been the proud recipient of over thirty awards recognising our endeavours in the fields of environmental assessment and management, particularly with respect to our environmental & social due diligence mergers and acquisitions (M&A) support services.

ACQ Global Awards 2011-2021



ACQ, a respected global Mergers and Acquisitions (M&A) magazine serving the corporate finance sector, has recognised SLP Environmental as the leading provider of Environmental Due Diligence (EDD) services for eight of the ten ASEAN jurisdictions for the last ten years (2011-2021) and in 2018, 2019 and 2021

SLP Environmental won the prestigious award of **ASEAN Region - Environmental Due Diligence Provider**. The ACQ readership consider that SLP Environmental should be given recognition for their commitment to excellence and quality on a global scale. The annual results are published in The Financial Times.

- ◆ ASEAN Region - Environmental Due Diligence Provider 2021
- ◆ ASEAN Region - Environmental Due Diligence Provider 2019
- ◆ ASEAN Region - Environmental Due Diligence Provider 2018
- ◆ Cambodia - Environmental Due Diligence Provider 2016 (Winner: 4th Year running)
- ◆ Indonesia - Environmental Due Diligence Provider 2016 (Winner: 4th Year running)
- ◆ Laos - Environmental Due Diligence Provider 2016 (Winner: 3rd Year running)
- ◆ Malaysia - Environmental Due Diligence Provider 2016 (Winner: 4th Year running)
- ◆ Myanmar - Environmental Due Diligence Provider 2016 (Winner: 4th Year running)
- ◆ Singapore - Environmental Due Diligence Provider 2016 (Winner: 3rd Year running)
- ◆ Thailand - Environmental Due Diligence Provider 2016 (Winner: 5th Year running)
- ◆ Vietnam - Environmental Due Diligence Provider 2016 (Winner: 3rd Year running)



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