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**Position Paper on Management of Light Non-Aqueous Phase Liquids  
within the South African context**

**By the NICOLA Light Non-Aqueous Phase Liquids Working Group**

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Across South Africa, the industrial heritage has created brownfields and land where contamination presents a potential risk to humans, water resources and ecosystems. Some of the impacts manifest as Light Non-Aqueous Phase Liquids (LNAPLs) in the soils subsurface. The potential presence of LNAPLs at a site leads to varying opinions within society as to how these conditions should be managed. These varying opinions often originate from a difference in concerns related to the risks associated with the LNAPL in the subsurface.

The objectives of the legislative environmental framework in South Africa, as stipulated in Article 2 of NEM:WA, is to protect health, well-being and the environment by providing reasonable measures for remediating land where contamination presents, or may present, unacceptable risk of harm to health or the environment. Furthermore, remedial measure should be conducted sustainably to assure that the benefits achieved by remediation outweigh the impacts. Remediation of contaminated sites unlocks land so that it is suitable for its existing use or for re-use, whilst ensuring that short and long-term risks are adequately managed.

NICOLA strives to improve the wider understanding of scientific and technical environmental processes and principles at work in the context of contaminated land by providing training, conferences, meetings and position papers. This document presents NICOLA's Position Statement on management of sites with potential LNAPL impacted soil and groundwater from a technical view and within the context of applicable legislative and regulatory frameworks.

The NICOLA position is that potential LNAPL contamination should be managed according to the principle of sustainable risk-based management. Therefore, soil and groundwater international best practices should be followed: i.e. assess the (potential) presence, extent and nature of LNAPL, identify and assess the associated risks and if needed, identify and implement appropriate sustainable risk-mitigation measures. The presence of LNAPL in itself does not necessarily equate to an unacceptable risk. During all stages of this process potential risks, including both chronic and acute risks to human health and the environment, should be timeously and adequately managed.

The following references are aligned with NICOLA's current understanding of the best applicable science and best practices to be applied for management of LNAPL in South Africa.

### **South African Legislation**

Act 59 of 2008 National Environmental Management: Waste Act

### **Overseas Regulatory Advisories**

Risk based NAPL Management. Texas Commission on Environmental Quality R 6. 366/TRRP July 2013

MassDEP 2016 Light Nonaqueous Phase Liquid and the MCP: Guidance on Site Assessment and Closure. MassDEP 2016

### **LNAPL Technical Guidance and Training**

CL:AIRE, 2014 *An illustrated handbook of LNAPL transport and fate in the subsurface*. CL:AIRE, London.

CRC Care (Cooperative Research Centre for Contamination Assessment and Remediation and Remediation of the Environment). 'A practitioner's guide for the analysis, management and remediation of LNAPL' Technical Report no 34, Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, Adelaide.

### **API LNAPL Resource Centre**

API (American Petroleum Institute) 'Managing risk at LNAPL sites, Frequently Asked Questiona'. *API Soil and Groundwater Research Bulletin* 18, 2<sup>nd</sup> Edition, May 2018.

API (American Petroleum Institute) *Interactive LNAPL guide*, version 2 2004

### **ITRC LNAPL Training (<https://lnapl-3.itrcweb.org>)**

ITRC (Interstate Technology and Regulatory Council) 2018. Light Non-Aqueous Phase Liquid (LNAPL) Site Management: LCSM Evolution, Decision Process, and Remedial Technologies. Washington DC

ITRC (Interstate Technology and Regulatory Council) 2009. *Evaluating LNAPL remedial technologies for achieving project goals*, prepared by the ITRC LNAPLs Team, ITRC, Washington, DC.

ITRC (Interstate Technology and Regulatory Council) 2014. *Petroleum vapour intrusion: Fundamentals of screening, investigation, and management evaluating LNAPL remedial technologies for achieving project goals*, prepared by the ITRC LNAPLs Team, ITRC, Washington, DC.

ITRC (Interstate Technology and Regulatory Council) 2016 LNAPL Training Part 1: *An improved understanding of LNAPL Behaviour in the Subsurface – State of Science versus State of Practice*.

ITRC (Interstate Technology and Regulatory Council) 2016 LNAPL Training Part 2 *LNAPL Characterisation and Recoverability – Improved Analysis – Do you know where the LNAPL is and can you recover it?*

ITRC (Interstate Technology and Regulatory Council) 2016 LNAPL Training Part 3: *Evaluating LNAPL Remedial Technologies for Achieving Project Goals*.