

## LOSS MONITORING (SIRA ETC.)

Section 21 of the *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019*.

A loss monitoring system (LMS) is a calculation or reconciliation based on data inputs, including:

- the amount of fuel delivered
- the amount of fuel sold
- the amount of fuel remaining in stock.

It is designed to detect losses of petroleum by measuring discrepancies between the amount of petroleum that should be in the system and the amount of petroleum that is actually present in the system. Statistical inventory reconciliation analysis (SIRA) is an example of a loss monitoring system. The LMS notifies an underground petroleum storage system (UPSS) operator when there is a significant fuel gain or loss. When a significant discrepancy in the LMS is observed, the operator must carry out an investigation to identify if there has been a loss of fuel and, if so, the cause. If a leak is confirmed, the source needs to be identified and fixed within a reasonable period. The LMS must be designed by a duly qualified person and comply with section 4.5 of AS 4897-2008. Please refer to [EPA's fact sheet for more information on loss monitoring](#).<sup>16</sup>

## ENVIRONMENTAL COMPLIANCE AND INSPECTION ROLE

Council officers may consider advising the person responsible for UPSS site to initiate system checks to determine the cause of a discrepancy identified during loss monitoring. The suggested loss monitoring procedure checklist is provided in Table 6 of the [UPSS Guidelines](#).<sup>17</sup>

When reviewing documentation associated with Council's UPSS inspection program, Council should be aware of the items identified in Table 9.

**Table 9:** Checklist for UPSS loss monitoring

Loss monitoring system (section 21 of the <i>UPSS Regulation</i> )	What exactly? (Requirements of the <i>UPSS Regulation</i> or the <i>NSW EPA UPSS Guidelines</i> , where available)	Included (Y/N)	Adequate (Yes/No)	Comments and remedy (why 'no'? how is compliance reached?)
<b>Loss monitoring system</b>	<ul style="list-style-type: none"> <li>• What type of loss monitoring system is present on the UPSS site?                             <ul style="list-style-type: none"> <li>o automated inventory reconciliation</li> <li>o manual wet stock reconciliation</li> <li>o statistical inventory reconciliation analysis</li> </ul> </li> <li>• Is the loss monitoring system designed by a duly qualified person in accordance with AS 4897-2008?</li> <li>• Does the site operator conduct routine tests for loss monitoring?</li> <li>• Does the site operator have monthly records to assess cumulative losses or gains?</li> <li>• Are details of the loss monitoring system, alarms, limits and procedures available onsite in the FSOP?</li> </ul>			

<sup>16</sup> <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/clm/19p2012-fact-sheet-2-loss-monitoring-systems.pdf>

<sup>17</sup> <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/contaminated-land/20p2700-underground-petroleum-storage-systems-guidelines.pdf>

# LOSS MONITORING (SIRA ETC.)

**Table 9 (Cont.):** Checklist for UPSS loss monitoring

Loss monitoring system (section 21 of the <i>UPSS Regulation</i> )	What exactly? (Requirements of the <i>UPSS Regulation</i> or the <i>NSW EPA UPSS Guidelines</i> , where available)	Included (Y/N)	Adequate (Yes/No)	Comments and remedy (why 'no'? how is compliance reached?)
<b>Discrepancies identified that require further investigation</b>	<ul style="list-style-type: none"> <li>• Do the records show unexplained deviation of losses or gains from normal operating trends? If yes, was an investigation undertaken?</li> <li>• Do the records show 5 or more consecutive recordings of unexplained loss, 18 or more days of unexplained losses in one calendar month (when measured every day) or 50% of recordings as unexplained losses in one calendar month (when not measured every day)?</li> <li>• Do records show an unexplained increase in the water level at the bottom of the tank between consecutive recordings? If yes, was an investigation undertaken?</li> <li>• Is a report and outcome of the investigation available onsite and included in the FSOP?</li> </ul>			
<b>Loss monitoring procedures</b>	<ul style="list-style-type: none"> <li>• Within 60 days after becoming aware of any discrepancy detected by the loss monitoring system for a storage system, were the following actions taken by the site operator or person responsible for UPSS?               <ul style="list-style-type: none"> <li>o an investigation of the discrepancy</li> <li>o confirmation of the existence of a leak and its source, if the discrepancy could not be attributed to anything other than a leak</li> </ul> </li> <li>• What steps were undertaken to stop the leak?</li> <li>• Were reasonably practicable steps taken to prevent the re-occurrence of the leak? (Refer to the 'UPSS Leak Notification' tab)</li> </ul>			

**Note:** *UPSS Regulation* = Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019;  
*UPSS Guidelines* = Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019;  
 FSOP = fuel system operation plan