

Examples of typical cumulative effects on soil		
Type of cumulative effect	Main characteristics of effect	Soil topic example
<b>Time crowding</b>	Frequent and repetitive effects	<ul style="list-style-type: none"> <li>Increased compaction of soils at popular outdoor tourist attractions due to frequent and repetitive footfall impacts, particularly during summer months.</li> <li>Intense farming practices causing decreased nutrient content of soils i.e. too many crop cycles per year especially of the same crop.</li> </ul>
<b>Time lag</b>	Long delays between cause and effect	<ul style="list-style-type: none"> <li>Mineralisation of organic matter after drainage.</li> <li>Compaction causing anaerobic conditions in the soil. Under certain conditions this may lead to an increase in nitrous oxide emissions to the atmosphere which contributes to global warming</li> <li>Soil sealing leads to reduced rainwater infiltration and so reduced aquifer recharge. This has the long term effect of decreasing groundwater levels and productivity of the aquifer.</li> </ul>
<b>Space crowding</b>	High spatial density of effects	<ul style="list-style-type: none"> <li>High spatial density of transport infrastructure development in urban and rural areas compounding soil sealing effects.</li> </ul>
<b>Cross-boundary</b>	Effects occur some distance away from the source	<ul style="list-style-type: none"> <li>Run-off and through flow over and/ or through contaminated soils can have detrimental effects on sediments and surface water and groundwater quality in locations removed from the source.</li> </ul>
<b>Synergistic</b>	Effects resulting from multiple sources or combined effects different in nature from the individual effects	<ul style="list-style-type: none"> <li>Vegetation removal, soil sealing and soil-compaction may all cause increased surface run-off and erosion of soils that may have a negative synergistic effect on aquatic ecosystems due to increased sediment loading/ silting if the sediment rich run-off enters water bodies.</li> </ul>
<b>Indirect</b>	Secondary effects resulting from a primary activity	<ul style="list-style-type: none"> <li>Deposition of airborne pollutants such as ash causing secondary effects on soil quality such as changes in soil pH.</li> </ul>
<b>Nibbling</b>	Incremental effects	<ul style="list-style-type: none"> <li>Incremental soil sealing in urban and rural areas due to development pressures.</li> </ul>

**Note:** This table provides a framework to illustrate how this guidance could be used.