WHICHER RANGE?

Exploration Permit 408 (EP-408) covers approximately 920 km2 (approximately 227,340 acres or 92,000 hectares) and the Whicher Range gas field is confined to a surface area estimated to be less than 90 km2 (approximately 22,250 acres or 9,000 hectares).

Any future activity would likely be from a very limited number of surface sites; each a small area foot print. As an example, the Whicher Range #4 (WR-4) well site is approximately 10,000 m2 (100m x 100m) (approximately 2 ½ acres or 1 hectare). Future sites would range from 10,000m2 (100m x 100m) for well sites to 40,000 m2 (200m x 200m) (approximately 10 acres or 4 hectares) for a small-scale production facility. We currently expect no more than 7 sites would need to be developed.

Table 1 - Comparison, by CAS numbers, of CalEnergy Whicher Range-4 downhole drilling and completion chemicals with the WA Health Department list of fracking fluids

Chemical	CAS #	Used in fracking	
		Yes in general search by Google	Yes by CAS # in WA Dept. of Heath Frack Fluids List
Potassium Chloride	7447-40-7	x	x
Calcium Carbonate	471-34-1	x	-
Magnesium Carbonate	546-93-0	x	-
Sodium Hydroxide	1310-73-2	x	x
Dazomet	533-74-4	x	x
Xanbore (Xanthan-gum)	11138-66-2	x	x
Escaid 110	64742-47-8	x	x
Amidoamine	68990-47-6	x	-
Kerosene	64742-47-8	x	x
Silica Crystalline - Quartz	14808-60-7	x	x
Organophilic Clay	1302-78-9	x	x
Propylene Carbonate	108-32-7	x	-
Calcium Hydroxide	1305-62-0	x	x
Butyl Glycol Ether EB	111-76-2	x	x
Sodium Thiosulphate	7772-98-7	x	-
Propylene Glycol	57-55-6	x	x
BPI 8509 - (MC2116) (Y10BH1519)	- 61790-69-0	x	-
Acetic Acid	64-19-7	x	x
Organic Acid Amine	9046-10-0	x	-
Aliphatic Solvent	64742-47-8	x	x
Ethylene Glycol	107-21-1	x	x
Ammonium Hydrogensulphite	10192-30-0	x	-
Potassium Hydroxide	1310-58-3	x	x

Priority areas

The Department of Water assigns priority areas within PDWSAs to guide land use decisions. Figure 1 shows how these priority areas are defined. Three different priority areas are used. These areas are legislatively approved by the Minister for Water in underground water pollution control areas in Perth, and are assigned via publicly consulted drinking water source protection reports for the rest of the state.

Priority 1 (P1) areas are defined and managed to ensure there is no degradation of the quality of the drinking water source with the objective of *risk avoidance*. P1 areas occur within PDWSAs where the existing land uses have low risks to PDWSAs. Consistent with the preventive risk–based framework of Western Australian Government, changes of land use that introduce additional risks are not recommended. P1 areas would typically include Crown land, but may also include some private land.

Priority 2 (P2) areas are defined and managed to maintain or improve the quality of the drinking water source with the objective of *risk minimisation*. P2 areas occur within PDWSAs where the land is zoned rural and the risks need to be minimised. Low levels of development consistent with the rural zoning are considered appropriate (generally with