

DIGITAL ADDENDA 12A – 12F

Digital Addendum 12A

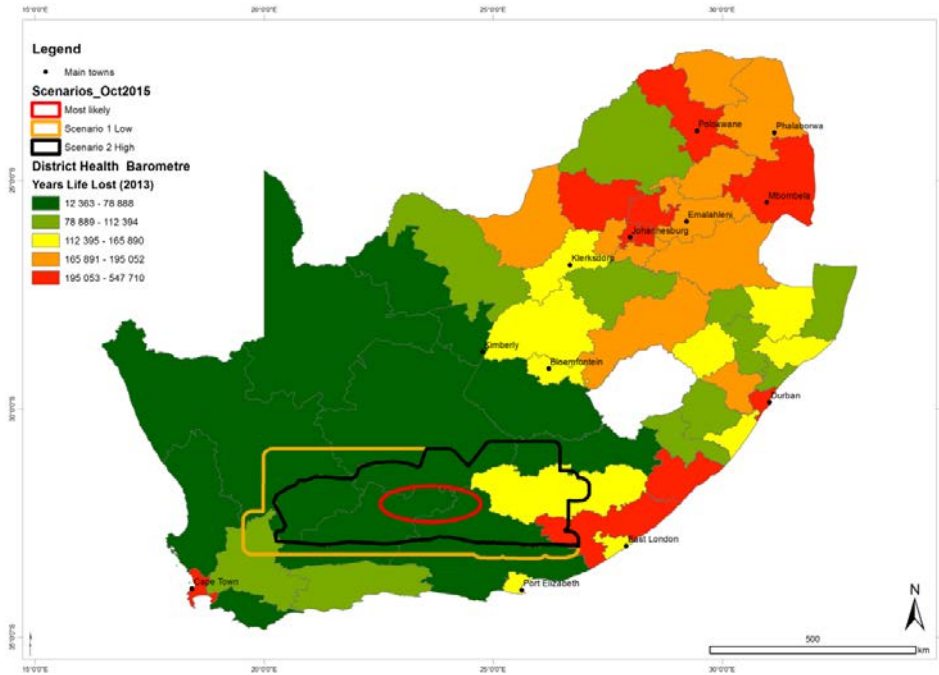


Figure 12A(i): Map of Years Life Lost (YLL) within the study area compared to the rest of the country.

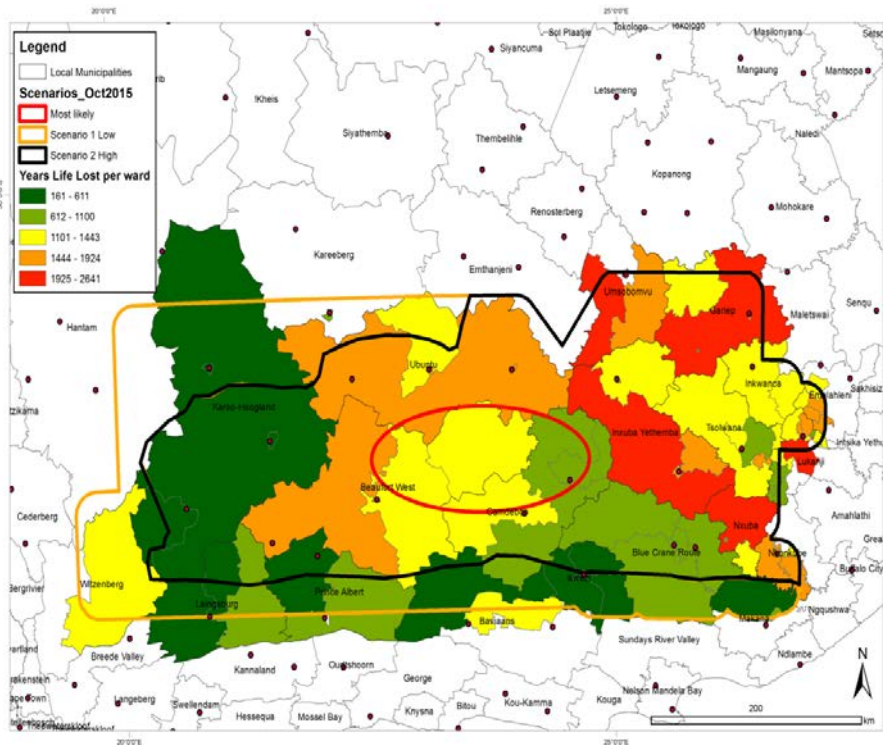


Figure 12A(ii): Map of Years Life Lost (YLL), showing differences between the municipalities within the study area.

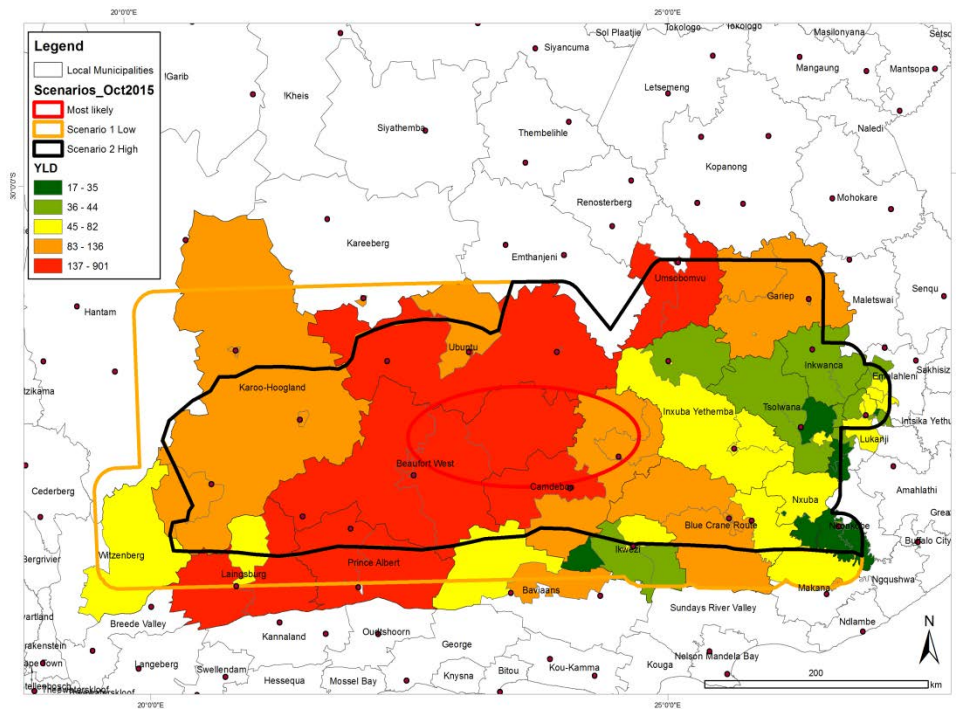


Figure 12A(iii): Map of Years Living with Disability (YLD) within the study area, and compared to YLL.

**Digital Addendum 12B**

Table 12B(i): Years Life Lost (YLL), Years Lived with Disability (YLD) and Disability Adjusted Life Years (DALY) per District and Local Municipality in the study area, based on DHB 2014/15 2013 values and the Census 2011 ward population data.

<b>Municipality</b>	<b>Years Life Lost (YLL)</b>	<b>Years Lived with Disability (YLD)</b>	<b>Disability Adjusted Life Years (DALY)</b>
Amathole District Municipality	17393	369	17762
Nkonkobe	11693	248	11941
Nxuba	5700	121	5821
Cacadu District Municipality	17431	2040	19471
Baviaans	1581	185	1766
Blue Crane Route	5313	622	5935
Camdeboo	7525	881	8406
Ikwezi	1555	182	1737
Makana	1456	170	1627
Cape Winelands District Municipality	1159	65	1224
Witzenberg	1159	65	1224
Central Karoo District Municipality	11345	5375	16721
Beaufort West	8606	4077	12684
Laingsburg	1376	652	2028
Prince Albert	1363	646	2008
Chris Hani District Municipality	58315	1871	60186
Emalahleni	7101	228	7329
Inkwanca	4260	137	4397
Inxuba Yethemba	12713	408	13121
Lukanji	27786	892	28678
Tsolwana	6454	207	6661
Joe Qadi District Municipality	7527	451	7978
Gariep	7527	451	7978
Namakwa District Municipality	1785	422	2207
Karoo-Hoogland	1785	422	2207
Pixley ka Seme District Municipality	16821	1670	18492
Kareeberg	2378	236	2614
Ubuntu	6690	664	7354
Umsobomvu	7754	770	8524
<b>Grand Total</b>	<b>131777</b>	<b>12264</b>	<b>144041</b>

## Digital Addendum 12C

### 12.1.1.1 List of chemicals and health effects

This is in an excel spreadsheet by TED-X called the Multistate chemicals database which can be accessed at <http://endocrinedisruption.org/chemicals-in-natural-gas-operations/health>

### Digital Addendum 12D

Table 12D(i): Chemicals remaining in consideration for prioritisation after removing prohibited chemicals in South Africa including some endocrine disruptors.

<b>Chemicals remaining in consideration for prioritisation after removing prohibited chemicals in South Africa</b>	
Hydrotreated light petroleum distillates	Ethylenediamine
Isopropanol	Bisphenol A
Peroxydisulfuric acid, diammonium salt	2-(Thiocyanomethylthio)benzothiazole
Sodium hydroxide / Caustic soda	Dodecylbenzenesulfonic acid
Guar gum	Benzoic acid
Quartz / Silica	1,3-Dichloropropene / Telone II
Glutaraldehyde	Ethyl acetate
Propargyl alcohol / Propargyl alcohol (Prop-2-YN-1-OL)	Pyridine
Potassium hydroxide	2,4-Dimethylphenol
Ethanol / (Acetylenic alcohol) / Ethyl alcohol	Chloroform / Trichloromethane
Acetic acid / Ammonium acetate (dif cas nr)	Benzyl alcohol
Citric acid	Carbon disulfide
2-Butoxyethanol / (2-BE) Ethylene glycol monobutyl ether / EGBE	Pyrene
Sodium chloride	Di-n-butyl Phthalate
Solvent naphta, petroleum, heavy arom	Fluoranthene
2,2-Dibromo-3-nitrilopropionamide	Diphenylamine
Phenolic resin / (Phenoformaldehyde resin) - similar to formaldehyde CASRN: 50-00-0	Fluorene
Choline chloride	Sodium carbonate (Soda ash)
Methenamine / Hexamethylenetetramine	Xanthan gum
Carbonic acid, dipotassium salt / Potassium carbonate	Starch/ Modified polysaccharide or Pregelatinised cornstarch or starch
1,2,4-Trimethylbenzene	Benzoalkonium chloride
quaternary ammonium compounds, benzyl-C12-16-alkyldimethylchlorides / Alkyl dimethyl benzyl ammonium chloride / Benzalkonium chloride / Barquat	Potassium chloride
Poly(oxy-1,2-ethanediy)-nonylphenyl-hydroxy (mixture)	Cellulose fibre
Formic acid	Barite sulfate / (BaSO <sub>4</sub> )
Sodium chlorite / (Chlorous acid, sodium salt) / Chlorite	Hemicellulose enzyme concentrate
Nonyl phenol ethoxylate / Polyethylene Glycol Nonylphenyl Ether	Sodium hypchlorite
Tetrakis (hydroxymethyl)phosphonium sulfate	Monoethanolamine borate
Polyethylene glycol	Methane
Ammonium chloride	Benzo(a)pyrene
Sodium persulfate	Benzo(b)fluoranthene
1-Butanol/ n-Butyl alcohol	Benzo(g,h,i)perylene
Epichlorohydrin / Chloromethyloxirane (Propene Polymere)	TPH C10 - C14
Didecyldimethylammonium chloride	TPH C15-C20
1,4,Dioxane / Diethylene oxide	TPH C29 - C36
(E)-Crotonaldehyde / 2-Butenal	2-Ethylhexanol
Furfural (2-Furaldehyde)	Diethanolamine
1,2-Propylene glycol / Propane-1,2-diol	NaHCO <sub>3</sub>

**CHAPTER 12: IMPACTS ON HUMAN HEALTH  
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Hexanedioic acid /Adipic acid	Boric acid
2-Methyl-1-propanol (Isobutanol)	2-(2-Methoxyethoxy)ethanol
Dichloromethane / Methylene Chloride)	2,2,2"-Nitrilotriethanol
Humic acid (Leonardite)	5-Chloro-2-methyl-4-isothiazolin-3-one
Iron	Acetic anhydride
Kerosene	Ammonium nitrate
Sodium metasilicate	Chlorine dioxide
Sodium nitrate	Coal
Sodium nitrite	Diethylene glycol
Urea	Ethylene oxide
1,2-Bromo-2-nitropropane-1,3-Diol (2-Bromo-2-nitro-1,3-propanediol or Bronopol)	Glyoxal
Hydrogen sulfide	Aliphatic hydrocarbon
Mercaptoacidic acid	Ammonium sulfate
Nickel sulfate	Ammonium thiocyanate
N-methyldiethanolamine	Cadmium
Polyvinyl alcohol [AlcoteX 17F-H]	Calcium sulfate
Zinc	Cottonseed flour
1,6-Hexanediamine	Dibromoacetonitrile
1-Methoxy-2-propanol	Diethylenetriamine
9-Octadecenoic acid (9Z)	Dodecanoid acid
Acrolein	Ethoxylated octylphenol
Hexanoic acid	Sodium tetraborate decahydrate (Borax)
Hydrodesulfurized kerosene	Styrene
Methyl salicylate	Sulfur dioxide
Octadecanoic acid	Thiourea
Petroleum distillate/ naphtha	Tributyl phosphate
Silane, dichlorodimethyl-, reaction products with silica	Zinc chloride fume
Sodium bromate	Zirconium sulfate
Sodium bromide	Sucrose

**Digital Addendum 12E**

Table 12E(i): Towns, population, sources of water, location and Blue- and Green Drop Scores (Source: DWS WARMS, 2016).

<b>Town</b>	<b>Population (2011)</b>	<b>Source of Water</b>	<b>Location</b>	<b>Blue drop score 2012</b>	<b>Green drop score 2011</b>
Murraysburg	5 069	Boreholes (0.268 mcm/a)	Prospectivity – high probability	n/a	n/a
Nelspoort	1 699	Sout River weir (0.1 mcm/a) and boreholes (0.043 mcm/a)	Prospectivity – high probability	74.45%	87.9%
Rietbron	1 184	Boreholes (0.0344 mcm/a)	Border of Prospectivity – medium probability	n/a	n/a
Steytlerville	4 017	Boreholes (0.268 mcm/a)	Outside study area	33.04%	18.65%
Nieu-Bethesda	1 540	Boreholes (0.012 mcm/a)	Border of Prospectivity – high probability	42.86%	6.8%
Graaff-Reinet	35 672	Nqweba dam (2.4 mcm/a) and boreholes (0.84 mcm/a).	Prospectivity – high probability	53.49%	6%
Aberdeen	7 162	Boreholes (0.3 mcm/a)	Prospectivity – medium probability	42.11%	5.3%
Jansenville	5 612	Boreholes (0.21 mcm/a)	Border of Prospectivity – medium probability	n/a	n/a
Kirkwood	5 371	Sundays River (2.025 mcm/a)	Outside study area	28.33%	3.21%
n/a = Not Applicable					

**Digital Addendum 12F**

US EPA 2015 documents can be accessed at

<http://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=244651>