

DJ, MJ & SJ Minifie  
1092 Oxley Meadow Creek Road  
Meadow Creek VIC 3678

24 August 2011

Executive Officer  
Economic Development and Infrastructure Committee  
Parliament House, Spring Street  
EAST MELBOURNE VIC 3002

Dear Sir/Madam,

We are writing a submission to the Inquiry into Greenfields Mineral Exploration and Project Development in Victoria because last year (2010) there were 3 Exploration Licence Applications for coal seam gas in our local area in North East Victoria by Greenpower Natural Gas Pty Ltd. We objected to all 3 Exploration Licence Applications and we have attached our letter of objection outlining the huge environmental and social impacts on landholders and the community and on our land and water on which we are all dependent.

Victoria is a closely settled State and there is a finite amount of water and agricultural land (less than 5% of Australia is considered prime agricultural land). No one can guarantee that coal seam gas extraction will not contaminate groundwater, surface water and our environment. Aquifers will be contaminated by methane, salt water, polluted water, chemicals and fracking fluids used in hydraulic fracturing. In a world with increasing pressures on our land and water and demands for food, why would any sane government jeopardise these? There are alternative sources of energy (a range of renewable energy options in Victoria) to coal seam gas but there are no alternatives to clean water and uncontaminated land for agriculture.

There is widespread community opposition across Australia to the coal seam gas industry. This is being outlined in the current Senate enquiry and the media such as ABC TV Lateline, Landline, News 24, Q and A; The Business Age and The Weekly Times. More and more evidence is coming to light about the major environmental problems of the whole industry. Coal seam gas presents one of the gravest threats to both the environment and agriculture. We consider the Victorian government should put a moratorium on coal seam gas exploration.

Yours faithfully,

Sarah Minifie  
DJ, MJ & SJ Minifie

DJ, MJ and SJ Minifie,  
1092 Oxley Meadow Creek Road,  
Meadow Creek VIC 3678  
12 July 2010

The Manager,  
Earth Resources Tenements,  
Department of Primary Industries,  
G.P.O. Box 4440,  
Melbourne VIC 3001

Dear Sir/Madam,

Re: Notice of Application For an Exploration Licence Schedule 7  
by Greenpower Natural Gas Pty. Ltd.  
Application Numbers 5250, 5251 and 5252  
OBJECTION to licences being granted.

We live in a farming community within the area of exploration licence application Number 5252. We own land adjacent to the King River, on which we conduct our farm business. Our land has multiple watercourses flowing through it, wetlands and a large floodplain area. A significant proportion of our land floods in wet years and it all drains into the King River. We rely on a combination of groundwater and surface water for our stock and domestic needs.

The area covered by all the mining licences is very closely settled farming land, with the majority being small properties. They are also all reliant on good quality surface and groundwater for domestic, stock and irrigation. There are also numerous small towns that extract water from the King River and other watercourses.

In March, we lodged an objection to the original Notice of Application for an Exploration Licence and objected to the exploration licence 5252 covering the area in which we live. After extensive research on the Coal Seam Gas (CSG) industry in Australia and overseas we are objecting to all three licence applications. This is a lengthy submission compared to our initial letter of objection because of the huge amount of literature outlining the devastating impact coal seam gas extraction will have on landholders, the community and the environment. The references we have looked at are listed at the end of the submission. All the references referred to are available on the internet.

- "Coal seam methane (CSM) or coal seam gas (CSG) is also known overseas as coal bed gas (CBM) or simply as gas. Australian Mining Atlas provides a Factsheet with an excellent brief overview of the local CSM scene. It describes the CSM extraction as follows:

'CBM is produced by drilling a well into a coal seam, hydraulic fracturing the coal seam then releasing the gas by reducing the water pressure by pumping away the water. Hydraulic fracturing of the coal seam is done by pumping large volumes of water and sand at high pressure down the well into the coal seam which causes it to fracture for distances of up to 400m from the well. The sand carried in the water is deposited in the fractures to prevent them closing when pumping pressure ceases. The gas then moves through the sand-filled fractures to the well " 1

- This description of the extraction process is a very brief summary of what CSG extraction involves. The devastating implications of this process on water, land, air, people, animals, wildlife, plants and the environment will be outlined and are why we are objecting the all three exploration licences.

- "To produce CSG, the water contained in the coal seam must be removed to create a pressure void into which the gas migrates. As a result a significant amount of water is produced." <sup>2</sup>

- Arrow Energy, a CSG company operating in Queensland states:

"Exploration Stage 7: Pilot wells. A pilot well consists of groups of approximately three to five wells (depending on location and geological strata) placed about 200 metres apart. The wells are used to assess the rate of coal seam gas production levels from an identified area of interest. The testing period can vary as the pumping of produced water from wells which precedes the production of coal seam gas can take up to three months." <sup>3</sup>

- The industry states that a by-product of CSG production is coal seam gas-bearing water. This water is classified as wastewater as it has the potential for environmental harm to land and waterways. The coal seam gas water extracted is saline and it may also contain other contaminants such as heavy metals. Agforce in Queensland has estimated that "coal seam methane developments in Queensland could yield approximately 50,000,000 tons of salt over 30 years." <sup>4</sup> "The potential impact of large quantities of salt" and the concerns "about the risk of salt contaminating the Murray Darling Basin" were raised by witnesses to a Senate enquiry in 2009. Agforce "argued that none of the companies involved in coal seam methane extraction appeared to have a plan for the disposal of salt. Agforce stated:

'This product is able to totally poison the agricultural ability of our farmland. It can totally destroy it. One has only to travel to parts of southern Australia to see the damage that salt can do..... the immense size of this problem cannot be overstated. This whole industry should be renamed the 'salt mining industry'. We are going to see more salt produced from the Surat Basin in the next 30 years than probably the total amount of grain in the next 30 years. ....The industry and government still have no plans for its disposal. Salt cannot be burnt. Salt cannot be just flushed into the ocean; it is contaminated with a number of other products.'" <sup>5</sup>

- The North East catchment already has a serious salinity problem.

- In a closely settled agricultural area how will the huge volumes of extracted polluted water be dealt with in a traditionally high rainfall catchment, which is prone to widespread flooding and which has lots of waterways?

- For every unit of methane gas produced, 13.5 times that amount of water has to be disposed of.

- "In addition to CSG water containing concentrations of salts, it may also contain other contaminants that have the potential to cause environmental harm if released to land or water through inappropriate management. There are also ecological risks associated with the disposal of CSG water and, without proper treatment, the use of CSG water is limited." <sup>6</sup>

- "In Queensland most CSG water is currently disposed of in ponds ranging from 1-100 hectares in area." <sup>7</sup>

- "Clearly there are increasing risks, both ecological and agricultural, associated with the significant quantities of salt being brought to the surface and requiring disposal as a result of the expansion of CSG production, and with the increasing areas evaporation ponds require if used as the primary means of disposal for untreated CSG water." <sup>8</sup>

- "Generally there are widespread concerns about evaporation ponds, and the long-term legacy associated with salt stored in them. Also as the CSG industry expands, there are concerns from landholders, local governments and community groups about the groundwater and landscape impacts of CSG extraction and CSG disposal methods." <sup>9</sup>

- "Coal seam water, highly saline and unfit for use, is left to evaporate in huge ponds. The remaining salty, toxic residue is windblown onto the surrounding area, rusting equipment, turning productive land barren." <sup>10</sup>
- "Due to the increasing quantities of coal seam gas water, produced through the coal seam methane extraction process and concern about the potential for environmental damage, the Queensland Government recently released a Coal Seam Gas Water Policy. The policy tightened regulatory requirements around the treatment and disposal of coal seam gas water." <sup>11</sup>
- In Queensland, "Evaporation ponds are to be discontinued as a primary means for disposing of CSG water." <sup>12</sup>
- Greenpower Energy Ltd, 'parent' entity of Greenpower Natural Gas Pty Ltd, stated in the 2007 Prospectus: "The Concerns: Water. In most areas water is produced in the early stages of a coal seam methane well. This water must be disposed of in a safe and environmentally acceptable manner. Most frequently, water is reinjected into subsurface rock formations. In some cases, the water is allowed to flow into surface drainage or is put into evaporation ponds." <sup>13</sup>
- None of these methods is "safe and environmentally acceptable" as has and will be demonstrated.
- Hydrogeology in the North East catchment of Victoria is complex. It is not well understood and hydro-geologists think there are fresh and saline aquifers at various depths and crossing over through the profile.
- We are concerned that the drilling of lots of wells through fresh water and salt water aquifers will cross contaminate these aquifers. This concern, mentioned in our original letter of objection, has unfortunately been confirmed by the research. We rely on groundwater for domestic and stock use as do a lot of other landholders in this area. If the fresh groundwater becomes saline and polluted our farms will be unviable.
- A Monash University scientist stated on the 60 Minutes program "Undermined" that CSG extraction in Queensland will adversely affect the Great Artesian Basin. <sup>14</sup>
- A "scoping paper was commissioned by the Department of Infrastructure and Planning (DIP) to develop a better understanding of the potential risks posed to regional and local aquifer systems by the development of a coal seam gas-based Liquefied Natural Gas (LNG) industry in Queensland." <sup>15</sup>
- ..... "dewatering of coal seams for CSG extraction could potentially present risks to overlying and underlying aquifers by changing the hydraulic conditions controlling connectivity." <sup>16</sup>
- "If connectivity is established between coal seams and multiple aquifers it is then possible that the water quality of productive aquifers may be compromised if connection is established with poorer quality aquifers." <sup>17</sup>
- The connectivity between coal seams and aquifers may also be altered by permanent physical changes to the strata containing the aquifer. The causes of the physical changes "include operational methods such as where coal is fractured deliberately to improve the extraction efficiency of gas. It is not known whether this fracturing may extend to overlying strata, however if this occurs fractures can provide a direct pathway for water to move from the aquifer to the coal seam. Similarly release of hydrostatic gas pressure from the coal may physically alter the coal pore structure through compaction of the seam. These changes may have implications for re-injection as a disposal method for extracted water as it is likely that the coal does not refill with water in the same way that it is dewatered (hysteresis effects). There is currently not enough basic research conducted to determine if hysteresis is likely to occur." <sup>18</sup>
- This is disturbing because Greenpower Natural Gas Pty Ltd states "most frequently water is reinjected into subsurface formations." <sup>19</sup>

- Furthermore the loss of good fresh water could be very significant: "If dewatering the coal seams does compromise connectivity with Great Artesian Basin aquifers, the loss of water from the aquifers to the coal seams could potentially be of the same order as current groundwater use." <sup>20</sup>
  - Also "water residing in coal seams typically has a different chemistry and is of a poor quality to the overlying high quality shallow aquifers. Drilling and dewatering can allow for cross contamination and overhead leakage." <sup>21</sup>
  - Another serious concern is the reduction of groundwater levels. "The lowering of the groundwater table through coal seam dewatering will result in significant impacts to groundwater domestic supply bores, within the zone of influence of the commercial gas wells, through a reduction in the quantity of available groundwater and the drying up of many wells for potable supplies. Commercial irrigation wells will also be impacted causing significant economic losses in agricultural production." <sup>22</sup>
  - The North East of Victoria has been in drought for approximately 10 years and with well below average rainfall, the water table has significantly dropped. A lot of landholders have had to put bores in to secure their water supply. Towns have also been on water restrictions.
  - The further lowering of groundwater levels and groundwater depletion will have severe implications on our water security, the viability of our farms and the whole environment.
  - Furthermore, "Dewatering of the coal seams will adversely effect the groundwater system and will have a flow on effect of reduced or lost stream flow." <sup>23</sup>
  - "Environmental impacts to streams through the loss of surface flow caused by lowering of groundwater aquifers have the potential to kill off and reduce stream bank vegetation, trees and the associated loss of species." <sup>24</sup>
  - "Riparian vegetation and wetlands are at a risk by a lowering of groundwater levels and methane migration into the overlying aquifers during gas production. Regardless of well construction geological features provide transient pathways." <sup>25</sup>
  - Also "there is a risk of contamination by low quality water mixing with high quality surface aquifers and that discharging into streams." <sup>26</sup>
  - Greenpower Energy Ltd, 2007 Prospectus, states in some cases "the (waste) water is allowed to flow into surface drainage." <sup>27</sup>
- This would pollute surface fresh water and impact on drinking water, stock water and the environment. "Disposal of water pumped from production wells, as it is of low quality cannot be allowed to mix with streams or rivers." <sup>28</sup>
- "Percolation of methane into the overlying formations has the potential to impact on the aquatic ecosystem and riparian vegetation." <sup>29</sup>
  - "Both local and overseas experience shows that fundamental changes in underground pressures can result in serious escapes of methane gas into the environment. Elsewhere this has taken the form of soil poisoning and vegetation destruction, methane venting into nearby wells, surface gas escapes and collection in surface hollows with the resultant danger to human life." <sup>30</sup>
  - To view examples of methane gas contaminating bore water in Queensland download 60 Minutes, "Undermined", May 14, 2010 and on Youtube "The Gas Bore Experiment."
  - "Additional, poorly researched factors include the danger of organic coal chemicals leaching out during gas production. Research suggests these organic chemicals have carcinogenic and genetic effects." <sup>31</sup>
  - Subsidence of land is also a result of CSG extraction. "As coal seam methane production progresses it is anticipated that the coal will effectively shrink or slump as the hydrostatic pressures are reduced through dewatering. This can result in land subsidence....." <sup>32</sup>

- Furthermore "CSM production may destroy good surface fresh water in several (other) ways by (a) faulty drilling operations, (b) using good fresh water for hydraulic fracturing (c) causing depletion of the surface water aquifers by de-watering deep coal seams (already outlined) (d) contaminating underground water by unknown, toxic hydraulic fracturing chemicals." <sup>33</sup>
- Large volumes of good fresh water are used for drilling and hydraulic fracturing. "All water that is used for drilling or hydraulic fracturing is lost from the fresh water cycle, forever." <sup>34</sup>
- "Thus for fracing a single CBM well is needed about 100,000 US gallons of water x 3.785 = 378,500 litres or 0.3785 megalitres or 378.5 cubic metres of water. Multiplied by hundreds or thousands of gas wells, that usually comprise an industrial gas field, these quantities of lost fresh water are huge." <sup>35</sup>
- "Most of the drilling operations in CSM projects is not done by the gas companies themselves, but by drilling contractors. Naturally their interest is to finish the job as quickly and as cheaply as possible. Yet some operations, such as sealing the steel casing of the vertical gas wells with concrete must be done very carefully. Otherwise either the gas or the toxic production water could escape and contaminate the surface water aquifers. Neither the gas company nor the government supervisors have direct control over the contract labour force. Contractors may be tempted to take short cuts as demonstrated on the recent Four Corners report (ABC TV on the Liverpool Plains, NSW, 2009), because nobody could really see what happened deep underground." <sup>36</sup>
- The companies do not seal the wells all the way from top to bottom - no company will justify the cost. So the gas escapes into the environment and it can follow faults and come up kilometres away depending on fault structures. There is massive vegetation die off around well pads in U.S.A. Download "Divide Creek Seep - page nine - "The effects of natural gas on trees and other vegetation." <sup>37</sup>
- "Hydraulic fracturing Fact sheet based on U.S. data says: 'Large amounts of chemicals are also used in hydraulic fracturing. In natural gas fracturing, 435 chemical products are known to be used, many of which can be toxic to humans and wildlife, even in very small doses. Although the overall concentration of chemicals in fracturing fluids is around one per cent, significant quantities are used - an average of 1000 gallons of chemicals and 100,000 gallons of water for a standard coalbed methane (CBM) well. Around 20 - 70% of fracturing fluid remains underground, or an average of 20,000 to 70,000 gallons, raising concerns about the potential for contamination of drinking water supplies.'" <sup>38</sup>
- Hydraulic fracturing can use: sand or synthetic beads, and fracing fluids can include - acid (usually hydrochloric), diesel fuel, CO<sub>2</sub> (carbon dioxide gas), benzene, toluene, surfactants (soaps), solvents, polymers (plastics), foaming agents, anti-scaling agents, corrosion inhibitors and environmentally toxic biocides, as well as patented synthetics - of which there are hundreds. "Unfortunately, many of these fluids contain very toxic components, and in some cases, as with benzene, only small amounts can contaminate an entire aquifer." <sup>39</sup>
- "The waste disposal problem is further complicated by the hydraulic fracturing. 20 - 60% of those highly toxic fracing fluids stay in the wells and come gradually out with production water. These secret toxic chemicals make it pretty risky to re-use the waste water for watering farm animals and crops and even more so for a possible town water use. We note that a lot of our agricultural produce is exported. Even spraying the waste water on dirt roads for dust suppression may not be such a good idea - bulldust is bad enough without being toxic!" <sup>40</sup>
- However, this is already illegally happening in Queensland i.e. spraying waste water onto roads - view Youtube video.

- For further, more detailed information on Hydraulic Fracturing and the chemicals used download:

1. "Impact of Mining in the Murray-Darling Basin - Public Inquiry Submission" by George Tlaskal. Page 4 has a list of references - linked to the web.

2. "Welcome to my primer on hydraulic fracing, or as I like to call it, 'How to Destroy the Earth's Water Supplies Without Anyone Finding Out'" by Lisa Bracken.

Pages 20 & 21 has a list of Frac water chemicals.

3. "Potential Exposure-Related Human Health Effects of Oil and Gas Development: A Literature Review (2007-2008).

- Other contamination can occur from the natural gas, the drilling sludge and drilling fluids.

- "Even if all the frac fluids are recovered, the raw natural gas (primarily methane) that can communicate with water sources contains benzene, toluene, xylene and other constituents that are harmful to humans and wildlife. And this is only what is known to be in raw natural gas. The fact is, there has never been a commercial motive to analyze everything in natural gas - so a lot of what can migrate into aquifers remains unknown. Now consider that of the known and unknown constituents, each can combine with other constituents and create chemical reactions - leading to all new compounds or physical changes underground - such as mobilizing harmful chemicals that otherwise would have remained locked in the formation. The potential for contamination is astronomical - and worst of all, largely unknown." <sup>41</sup>

- "Drilling sludge brought to the surface can contain fracking fluid, drilling mud, radioactive material from the subsurface land formation, hydrocarbons, metals, volatile organic compounds. When left to dry on the surface in waste pits, sludge can potentially contaminate air, water and soil. Sludge may also be removed to waste disposal sites (but usually not hazardous waste sites) or sludge may be filled into the soil in 'land forms'. These practices potentially contaminate soil, air and surface water." <sup>42</sup>

"Produced water can be brought to the surface during the extraction process. This water is usually contaminated with salts, hydrocarbons, radioactive material, metals, drilling fluids and mud. The produced water is often kept on the surface to evaporate, or it may be re-injected into the ground or released into surface waters. All of these disposal methods threaten air, water and soil quality. Additionally, spills of oil and gas wastes and / or chemicals used in production can pollute ground and surface water and soil." <sup>43</sup>

- As mentioned previously, these are all the "safe and environmentally accepted" methods of waste water disposal proposed by Greenpower Energy Ltd., in the 2007 Prospectus.

- Air surrounding gas production areas is particularly vulnerable to toxic emissions.

"Fugitive natural gas emissions may contain many contaminants. Some of these such as methane and other hydrocarbons (ethane, propane, butane) and water vapor are of relatively low human toxicity. Others such as hydrogen sulfide (H<sub>2</sub>S) are of more significant toxicity. Some natural gas wells produce a condensate which can contain complex hydrocarbons and aromatic hydrocarbons such as benzene, toluene, ethyl benzene and xylene (BTEX). These substances are important human toxics with multiple non-cancer and cancer endpoints. Natural gas flaring can produce many hazardous chemicals including polycyclic aromatic hydrocarbons, (PAH's, including naphthalene), benzene, toluene, xylenes, ethyl benzene, formaldehyde, acrolein, propylene, acetaldehexane. Glycol dehydrators, used to remove water from natural gas can produce BTEX leaks into the air." <sup>44</sup>

- Most of the hazardous chemicals associated with gas production are well documented to produce adverse health effects in humans. <sup>45</sup>

- Further information on the health effects of CSG mining can be seen on Youtube. There is a short video clip called "Gasland". The movie, "Gasland", is an award winning documentary covering the devastating health effects of gas mining in the U.S.A. <sup>46</sup>
- Methane is extremely flammable and forms an explosive mixture with air. Naked flares in the air in Queensland were shown on the 60 Minutes program "Undermined" on May 14, 2010. There was also footage of a man lighting his bore with a resulting explosion. <sup>47</sup>
- "The Gas Bore Experiment" on Youtube, also filmed in Queensland, has footage of the capture of methane from bore water in a black plastic bag, which is then lit. <sup>48</sup>
- Victoria is rated the highest fire danger area in the world and North East Victoria is much hotter and drier than the southern part of the State. The climate is predicted to become increasingly hotter and drier. We have already experienced horrendous bushfires in the past decade and these are predicted to increase.
- We are very frightened about the prospect of open flares of methane gas burning. What will happen on a hot, northerly wind day in the middle of summer? An inferno?
- Greenpower Energy Ltd in the 2007 Prospectus states "Migration. Extraction can lead to methane leakage along fractures into ground water and to the surface." <sup>49</sup>
- What will happen in a typical summer in North East Victoria? It will become an inferno if a bush fire is ignited by lightning, human activity etc and then lights the leaking methane.
- Greenpower Energy Ltd also states "Reports from the 1800's documenting gas bubbles in water wells, in streams and in fields after heavy rains suggest that this migration has always occurred." <sup>49</sup> This is extremely misleading. I have never heard of this happening in our local area. And if it does occur, the methane leakage will be miniscule compared to the methane leakage if an exploration licence is granted.
- "Methane gas is a greenhouse gas in the atmosphere and it acts to trap heat and contribute to global warming." <sup>50</sup> Greenpower Energy Ltd then states that "extraction of methane from coal seams may actually reduce methane emissions in the atmosphere by removing the methane that is otherwise released along natural fractures and during coal mining." <sup>51</sup> Once again, Greenpower Energy Ltd fails to mention the scale of the leakage caused by extraction compared to leaving it in the ground. Also methane is 21 times greater greenhouse gas than carbon dioxide. Isn't the Victorian State government supposed to be reducing greenhouse emissions?
- "Because CBM wells are generally not as productive as conventional gas wells, more wells may be required to achieve a production target." <sup>52</sup> "Coal seam gas extraction requires considerably more drilling (up to 5 times more) than conventional natural gas." <sup>53</sup>
- We are extremely concerned about the impact the drilling will have on our land and whether the land could ever be restored to its pre drilling condition. Also what impact will all the drilling holes across the licence areas have on the surface and ground water systems and the environment?
- Coal seam gas infrastructure will interfere with natural water flows across the land and the floodplain. Infrastructure includes roads, trenching (subsidence), wells and gas and water pipelines and power conduits (if required for power). This infrastructure could cause change of water flow, erosion, silting of watercourses and rivers, resulting in serious environmental and economic damage.
- The land taken up for well sites, 40m x 60m, plus additional area that may be required for the storage of pipes and drilling fluids pits, plus all the associated infrastructure mentioned above, will have a huge impact in a closely settled farming community with small landholdings.
- We live in a rural landscape and do not wish this to be converted to an industrial mining landscape. We do not want to look at drill rigs, gas wells, pipelines and other

infrastructure associated with coal seam gas extraction. We do not want roads built across our land.

- We are also concerned about the increased noise pollution associated with coal seam gas mining. Noise from gas exploration activities include noise from drilling, well pumps, compressors, heavy machinery and increased vehicle traffic.

- There will also be increased traffic and deterioration of our roads.

- We are also concerned about the loss of land available for farming in a prime agricultural area. Highly productive land will produce food for eternity and should be protected from any damaging activities. The King Valley has highly productive agricultural land and the King river flows through it. Our immediate area is well known in Australia and overseas as a valuable wine and gourmet food producing locality and tourism destination. There is a current proposal to make this a Food Bowl area. How is mining for coal seam gas compatible with food production? Australia increasingly has a lack of productive land to grow food. It is crazy to jeopardise this valuable land with an unproven mining industry, which will have irreversible impacts on the land, water and environment forever.

- Technology is not proven: The coal seam gas industry states that "CSG is essentially a hybrid, requiring expertise in both conventional coal and oil and gas exploration and development technologies. As such there are only a limited number of geologists and engineers with appropriate experience and understanding of these deposits."<sup>54</sup>

This lack of knowledge and experience will adversely impact on our land, water and environment. In Queensland, NSW and overseas communities are facing huge environmental problems from coal seam gas extraction. The gas companies and governments are dealing with huge environmental problems such as the waste water extracted and do not have solutions. Arrow Energy states: "it is likely that new technologies may develop and be applied in the field to improve outcomes for all parties."<sup>55</sup> The problems exist now and the damage has already been done. Any other industry would not get away with this.

- Impact on land values: coal seam gas mining reduces land values by over 20%. This will cause further economic hardship to landholders.

- Contamination problems will drastically impinge on the value of agricultural produce, further impacting on our economic viability.

- We are extremely concerned about the monitoring of the coal seam gas industry. In a submission to the Senate enquiry, December 2009, into the impacts of mining in the Murray Darling basin, the Environment and Property Protection Association (EPPA) from the Darling Downs in Queensland stated: "The EPA (Environment Protection Agency) is seen as an ineffectual organisation by the EPPA. Our association is asking for full independent monitoring of all coal seam gas activities. Currently monitoring of coal seam gas exploration is basically carried out by the companies themselves. Reports from contractors and other employees suggest 'cowboy' practices at best are sometimes carried out. The mining companies must be independently monitored for all facets of their operations in order to safeguard our environment."<sup>56</sup>

- There was a Senate Enquiry into the impacts of mining on the Murray Darling Basin in 2009. "The Senate Enquiry, The impacts of mining in the Murray Darling Basin, December 2009", states:

"Recommendation 4

3.69 ..... Urges all governments to maximise use of information and data from planning and research activities to ensure the coordinated analysis of regional water plans takes place, so as to better understand the cumulative impacts of mining in the Murray Darling Basin; and

Recommends that the Commonwealth Government works to ensure the prevention of new mines or extractive industries in the Murray Darling Basin if their impacts on water resources are inconsistent with the Basin Plan." <sup>57</sup>

- The King River flows into the Ovens River, which flows into the Murray River. The whole Murray Darling Basin is under threat from climate change, decreased rainfall, decreased water quality, declining groundwater, increased salinity, over consumption of water and increasing development and population.

- On what grounds can a high impact mining industry be guaranteed not to cause extreme environmental damage to this area, to the ecosystem and ultimately to the Murray Darling Basin?

- The lower sections of the Ovens River is classified as a Heritage River, the exploration licence approvals will impact on the Ovens River.

- The Victorian State government has invested money into a deep aquifer study for the Food Bowl proposal in this area, into a study of Riparian River Red Gums in the area covered by the licence applications and recently declared a new National Park, linking the Warby Ranges with the Ovens River. The granting of the exploration licences will jeopardise all of these projects and the money invested by the taxpayer will be compromised.

The reason this is such a long submission is that the coal seam gas industry is a new industry in Victoria and there is a perception that it is a 'clean and green' emerging industry. As has been detailed the coal seam gas industry is the exact opposite.

- The company applying for the exploration licenses, called Greenpower Natural Gas Pty Ltd, (parent company Greenpower Energy Ltd which was formerly a coal mining company called Gunnedah Coal Company Ltd), is surely a case in point. Is it trying to masquerade as a green company?

The Notices of Application For Exploration Licences placed in the local paper, 'The Chronicle' and in 'The Age' did not even mention what the company is drilling for and what they will extract.

- Furthermore a company representative, Mr King, stated in 'The Chronicle' on June 16, 2010, that "coal seam mining was relatively non-intrusive. We are not straight out coal-miners and we would not be digging a large pit. It's really just a hole in the ground." <sup>58</sup>

- The Greenpower Energy Ltd Prospectus, 2007, documents that approximately 1,900 boreholes have been drilled in one licence area (EL 4807) in Gippsland. This is an exploration licence. <sup>59</sup>

- The Greenpower Energy Ltd Prospectus, 2007, for prospective investors states: "Operating Risks:

The cost of drilling, completing and operating wells is often uncertain, and a number of factors can delay or prevent drilling operations, including:

well blowouts;

craterings;

explosions;

uncontrollable flows of natural gas or well fluids;

fires;

formations with abnormal pressures;  
pipeline ruptures or spills;  
pollution;  
releases of toxic gas;  
and other environmental hazards and risks." <sup>60</sup>

This is truly alarming and is totally consistent with the disastrous environmental outcomes that have been outlined in this submission. Why would the Victorian government grant Exploration Licences to a company when these are possible outcomes of coal seam gas extraction, endangering lives and causing environmental destruction in North East Victoria?

- Coal seam gas production will result in an unacceptable level of social, economic and environmental impacts.
- There has been no consultation with the community and the process seems to ensure that the approval of the licenses is a fait accompli. The Victorian government has decided to develop the coal seam gas industry with little or no thought of the impacts, of environmental issues, or regard for landholders, the local community and for the future of clean drinking water and food production.
- Despite the mountains of documentation about the devastating environmental outcomes of the coal seam gas industry in Australia and overseas, why is the Victorian government heading down this path?
- Why would the Victorian government jeopardise our most precious resource, water, when there is enough natural gas from Bass Strait for the next 30 years?

Yours sincerely,

Ms Sarah Minifie

Mr David Minifie

Mrs MJ Minifie

## NOTES

1. George Tlaskal. "Impact of Mining in the Murray-Darling Basin - Public Inquiry Submission." pp. 2-3
2. Queensland Government. "Blueprint for Queensland's LNG Industry" p. 4
3. Arrow Energy "Working together" p. 9
4. The Senate. Environment, Communications and the Arts References Committee. "The Impacts of mining in the Murray Darling Basin." December 2009. p. 16
5. *ibid* p. 16
6. Queensland Government. "Blueprint for Queensland's LNG Industry." p. 4
7. Queensland Government. "Management of water produced from coal seam gas production." May 2009. p. 6
8. *ibid* p. 7
9. *ibid* p. 7
10. Agracom. [www.ccag.org.au](http://www.ccag.org.au)
11. The Senate. Environment, Communications and the Arts References Committee. "The Impacts of mining in the Murray Darling Basin." December 2009. p. 18
12. Queensland Government. "Management of water produced from coal seam gas production." May 2009. p. 9
13. Greenpower Energy Prospectus, 2007. 3.2
14. 60 Minutes. "Undermined" May 14, 2010.
15. Mal Helmuth. "Scoping Study: Groundwater Impacts of Coal Seam Gas Development - Assessment and Monitoring." 2008. p. 5
16. *ibid*
17. *ibid* p. 47
18. *ibid* p. 36
19. Greenpower Energy Prospectus, 2007.
20. Mal Helmuth. "Scoping Study: Groundwater Impacts of Coal Seam Gas Development - Assessment and Monitoring." 2008 p. 33
21. Northern Geoscience "(Draft) Report on Hydrogeological Investigations, Dooralong and Yarramalong Valleys, Wyong, Central Coast, NSW." January 2005. p. 5.
22. *ibid* pp. - I - & -2-
23. *ibid* p. 28
24. *ibid* p. - ii -
25. *ibid* p. 28
26. *ibid* p. 29
27. Greenpower Energy Prospectus, 2007. 3.2. p. 17
28. Northern Geoscience "(Draft) Report on Hydrogeological Investigations, Dooralong and Yarramalong Valleys, Wyong, Central Coast NSW." January 2005. p. 6
29. *ibid* p. 5
30. C.M. Atkinson. "Coal Bed Methane Hazards in New South Wales. January, 2005 p. 3
31. *ibid* p. 3
32. Northern Geoscience "(Draft) Report on Hydrogeological Investigations, Dooralong and Yarramalong Valleys, Wyong, Central Coast NSW." January 2005. p. - ii -
33. George Tlaskal. "Impact of Mining in the Murray-Darling Basin - Public Inquiry Submission." p. 2
34. *ibid* p. 3
35. *ibid* p. 3
36. *ibid* pp. 2-3

## NOTES

37. Lisa Bracken. "Welcome to my primer on hydraulic fracturing, or, as I like to call it. 'How to Destroy the Earth's Water Supplies Without Anyone Finding Out'." 2007-2008 p.14
38. George Tlaskal. "Impact of Mining in the Murray-Darling Basin - Public Inquiry Submission." p. 3
39. Lisa Bracken."Welcome to my primer on hydraulic fracturing, or, as I like to call it.'How to Destroy the Earth's Water Supplies Without Anyone Finding Out.'" 2007-2008 p. 2
40. George Tlaskal. "Impact of Mining in the Murray-Darling Basin - Public Inquiry Submission." P. 6
41. Lisa Bracken."Welcome to my primer on hydraulic fracturing, or, as I like to call it. 'How to Destroy the Earth's Water Supplies Without Anyone Finding Out.'"2007-2008 p.2
42. "Potential Exposure - Related Human Health Effects of Oil and Gas Development: A Literature Review (2003-2008) p. 2
43. ibid p. 3
44. ibid p. 3
45. ibid p. 3
46. "Gasland" A short video clip on Youtube.
47. 60 Minutes. "Undermined" May 14.
48. "The Gas Bore Experiment" on Youtube.
49. Greenpower Energy Prospectus, 2007. p. 17
50. ibid p. 17
51. ibid p. 17
52. ibid p. 29
53. James McKibben. "Coal Seam Gas - to be or not to be? Part One."
54. ibid
55. Arrow Energy "'working together.'" p. 28
56. Bruce Derrick, Chairman EPPA, "Submission for Senate Enquiry re: Mining Issues in the Murray Darling Basin." December 2009 p. 2
57. The Senate. Environment, Communications and the Arts References Committee. "The impacts of mining in the Murray Darling Basin." December 2009 pp. 40 -41
58. "The Chronicle" June 16, 2010. p. 4
59. Greenpower Energy Prospectus 2007 p. 31
60. ibid p. 71

## REFERENCES

Academics from the University of Colorado Denver and Colorado State University, 'Potential Exposure-Related Human Health Effects of Oil and Gas Development: A Literature Review (2003 -2008), August, 2008.

Agracom, [www.ccag.org.au](http://www.ccag.org.au) 'Methane Gas Projects Will Risk Town and Land Water Supplies'.

Arrow Energy, 'Working together', Coal seam gas development guidelines.

Atkinson, C.M., 'Coal Bed Methane Hazards in New South Wales, January 2005.

Bracken, Lisa, "Welcome to my primer on hydraulic fracturing, or, as I like to call it, 'How to Destroy the Earth's Fresh Water Supplies Without Anyone Finding Out', 2007-2009.

Derrick, Bruce, Chairman EPPA, Submission for Senate Enquiry re: Mining Issues in the Murray-Darling Basin.

Greenpower Energy, Prospectus, 2007.

Helmuth, Mal, Department of Infrastructure and Planning, Queensland Government, commissioned: "Scoping Study: Groundwater Impacts of Coal Seam Gas Development - Assessment and Monitoring', document researched by Centre for Water in the Minerals Industry, Sustainable Minerals Institute, University of Queensland (CWMI).

McKibben, James, 'Coal Seam Gas to be or not to be? Part One', Australian Journal of Mining, [www.theajmonline.com.au](http://www.theajmonline.com.au) 9/03/2010.

Northern Geoscience, '(Draft) Report on Hydrogeological Investigations Dooralong & Yarralong Valleys Wyong, Central Coast, NSW', January 2005.

The Senate Environment, Communications, and the Arts References Committee, 'The impacts of mining in the Murray Darling Basin, December 2009.

Taskal, George, 'Impact of mining in the Murray Darling Basin - Public Inquiry Submission', (to the Senate).

Queensland Government, 'Blueprint for Queensland's LNG Industry', Department of Employment, Economic Development and Innovation.

Queensland Government, 'Management of water produced from coal seam gas production', Discussion paper, May 2009.

Queensland Government, 'Queensland coal seam gas', Department of Mines and Energy.

## REFERENCES

Queensland Government, 'Queensland coal seam gas overview'. Department of Employment, Economic Development and Innovation. Geological Survey of Queensland, April 2010.

Victorian Government, 'Accessing Victoria's brown coal resources', Department of Primary Industries. Minerals and Petroleum Division.

Victorian Government, 'Our coal our Future - Future opportunities for brown coal', Department of Primary Industries, Minerals and Petroleum Division.

## MAPS

Maps of the Exporation Licence Areas supplied by Elletson Mining Consultants Pty. Ltd.

## NEWSPAPER ARTICLES

'The Age' Business Day, page 3, July 14, 2010.

'The Chronicle', Wednesday June 16, 2010, pp 1 & 4.

'The Chronicle', Friday June 25, 2010.

## PUBLIC NOTICES

Notices of Application For An Exploration Licence, Numbers 5250, 5251 and 5252 were in 'The Chronicle' on Friday, June 25, 2010 and 'The Age' on Wednesday June 30, 2010.

## RADIO

ABC Radio National, Background Briefing, June 20, 2010.

ABC Radio National, PM, July 16, 2010.

## TELEVISION

ABC TV, Landline, 'Pipedreams', May 2, 2010

ABC TV, Landline, 'Risk Management', May 9, 2010.

ABC TV, 7pm News, July 16, 2010.

Win TV, 60 Minutes, 'Undermined', May 14.

## WEBSITES

Everything mentioned in the References is available on the internet.

## YOUTUBE

'Gasland'.

'The Gas Bore Experiment'.

'CSG Imagine If'

And many more films documenting the impacts of coal seam gas mining in Queensland.

