

Deficiencies in the draft Application Information Requirements (dAIR) for Raven Coal Mine Project

General information needed

- ❑ Due to the full scope of this project, from the mine to the port of export (including effects on an internationally famous provincial park) this project demands a full panel review with public hearings. It is not right that these public meetings are the only opportunity for the public to ensure that its concerns are included in the final AIR and described in the proponent's EIS. As it stands right now, the dAIR and the public are missing a lot of information that should be subject to public review by the citizens and independent experts.
- ❑ The dAIR, as presented, contains significant deficiencies that should be corrected before the proponent proceeds to the Environmental Impact Statement (EIS). The deficiencies include, (but are not limited to) the following:
 - ◆ **mine plan and water management plan:** the public has not seen a detailed plan of the mine and proposed use and management of water. In the absence of this information, there is little basis for forecasting the extent of mine impacts, especially those relating to acid mine drainage.
 - ◆ **marine environment:** the dAIR/EIS should include ecological studies on all of Baynes Sound, Comox Harbour, the Courtenay Estuary, and the Alberni Inlet/Somass Estuary.
 - ◆ **groundwater and aquifers:** more information is needed about proposed studies of groundwater and aquifers
 - ◆ **hydrology and aquatic life:** the freshwater study areas for hydrology, fisheries, and aquatic life are too small (fig 5.4-1, p.88). It should cover the entire Raven coal tenure.
 - ◆ **fisheries:** current status of salmon, steelhead, and sea-run cutthroat populations of the Raven tenure should be determined as a benchmark.
 - ◆ **exported CO₂:** the exported coal will all be burned and the CO₂ will be released into the atmosphere, where it will contribute to global climate change.
- ❑ It is absolutely critical that there be aquifer mapping in an expanded Comox Valley Regional Study Area (RSA). Additionally, the well-testing program needs to be greatly expanded in area and over a longer time period.
- ❑ A number of terms used in the dAIR need to be defined in order to give the EIS the credibility it requires. As a start, these are: sustainability (whose definition?), cumulative effects, adequate (by whose standards and based on what criteria?).
- ❑ What is meant by "clean" coal? (see <http://www.nrcan.gc.ca/com/resoress/publications/carbone/coalcarbon-eng.php> and <http://www.time.com/time/health/article/0,8599,1870599,00.html>) How does the proponent claim this mine will produce "clean" coal?
- ❑ The delineations of the study areas for the different types of impacts (LSAs and RSAs) are far too narrow and will in no way encompass many of the most important effects—both environmental and social—should this proposed mine be approved.

Mine site information needed

- ❑ The BC government policy for metal leaching and acid rock drainage (ML/ARD) states that the goal is prevention. There is insufficient information in the project description about the treatment of both waste rock and coal rejects. There needs to be a full description of an effective ML/ARD program that is site-specific for this mine.
- ❑ There needs to be a description of the Environmental Effects Monitoring (EEM) program the proponent will put in place, for how long, and the need to make the data freely available to the public.
- ❑ The bond for restoration has to be based on restoration costs, which depend on the sampling and management (EEM) program. What dollar amount bond will the proponent be required to pay?
- ❑ What is the plan to deal with acid rock drainage (ARD)? What is the management plan for potentially acid-generating (PAG) material?
- ❑ The Closure and Remediation section of the project description makes no mention of post-closure monitoring, nor to measures to be taken for the long term ML/ARD prevention, mitigation, and/or treatment. This needs to be fully described in the proponent's Environmental Impact Statement (EIS).
- ❑ Is "abandonment" (in section 2.2.12) a recognised activity under any federal or provincial legislation? We don't consider "abandonment" acceptable; the end of mining operations should be the start of a long-term period of monitoring and possibly water treatment.
- ❑ A mine plan that prevents ARD production may cost more up front but will pay dividends in avoiding post-closure liabilities. Relying on subsequent neutralisation of ARD products by excess alkalinity in a blended waste dump may not prevent metal leaching, even if the seepage leaving the site is neutral or basic. Once the metal is mobilised, it may take costly, long term water treatment to remove it.
- ❑ The project description sites the coal refuse stockpiles and the coal processing facilities over six ephemeral tributary streams and a fish-bearing tributary to Cowie Creek, but shows no water diversions works and gives no detail regarding the settling pond design criteria, nor its size. The settling pond needs to be sufficient to treat all the process water, all the contaminated runoff from the coal processing yard, stockpile areas, and access roads during the most intense storm events. The plans need to show the design and locations of the polishing pond and catchment ditches, as well as a discussion on the use of flocculants for effluent treatment.
- ❑ A full set of baseline data needs to be collected as soon as possible in order to assess all future low probability-high consequence situations. Contaminants of high local concern, such as cadmium, need to be assessed in full detail.

Please send your comments/concerns **by 27 June 2011** to the government: BC: <http://www.eao.gov.bc.ca/pcp/forms/Raven.html> or the feds: raven@ceaa-acee.gc.ca or by fax to 250-356-6448, or mail to Rachel Shaw, BC EAO, PO Box 9426 Stn Prov Govt, Victoria BC V8W 9V1
Please also see the CoalWatch website: www.coalwatch.ca

- ❑ A benchmark NPR should be established to delineate between PAG and NAG rock. There is no consensus that an NPR of 2 will eliminate the potential for ARD (check with Wayne White to know more about this point).

Ecological information needed

- ❑ More information is needed about proposed studies of groundwater and aquifers. There needs to be conceptual, analytical, and numerical models describing the fate of water pre-, during, and post-mining. The models have to encompass the upland tenure (where mining will occur at and close to the surface) and in the lowland tenure (where mining will occur at depth). The detailed models should describe interactions between ground- and surface water for all surface water features that may be affected by direct and indirect effects of the proposed mine operations within and outside of the land tenures.
- ❑ The dAIR/EIS should include ecological studies on all of Baynes Sound, Comox Harbour, the Courtenay estuary, and the Alberni Inlet. The proposed marine study area (Fig. 5.6-1, p. 116) is much too small and the proposed baseline studies are too limited. In addition to the studies proposed by the proponent, there is a need to establish baseline levels of metals in tissues of representative organisms in the marine food web, from phytoplankton to shellfish, finfishes, and marine mammals.
- ❑ The Marine Environment Valued Components list (table 5.6-1, p. 109ff) for Baynes should include salmon, herring, and groundfish; clams and scallops; and wintering water birds.
- ❑ Although the dAIR states that it includes "rare and listed species" (5.8.2.1), several species of birds so listed are omitted as VCs (Table 5.8-1) although they are found within the Terrestrial RSA. Those species should be included as VCs. The temporal boundaries (5.6.1.2) should also be extended to cover a reasonable period after decommissioning the proposed development site; 1-2 years is insufficient to evaluate the response of birds to decommissioning and revegetation (Table 2.2-1).
- ❑ The freshwater study area for hydrology, fisheries, and aquatic life is too small (Fig.5.4-1, p. 88). The proponent proposes to study only the Cowie/Cougar Creek system. The study area should cover the entire Raven coal tenure, including the Tsable River, Wilfred (Coal) Creek, and all shoreline creeks and wetlands.
- ❑ There is no reference to birds in Baynes Sound in the dAIR. Baynes Sound is an Important Bird Area (IBA), and is recognised internationally as habitat for waterfowl, yet is not acknowledged. In addition, several species of provincial conservation concern (Blue-listed) are found in Baynes Sound. The Detailed Marine Baseline (5.6.2.1) needs to be expanded to include both the international important waterbirds and the blue-listed species as VCs and a plan developed to identify potential direct and indirect effects on them from the proposed development. To do this effectively, the Baynes Sound RSA (5.6.1.1) needs to be extended to reflect the normal movements of the populations of waterbirds. The temporal boundaries (5.6.1.2) should also be extended to cover a reasonable period after decommissioning the proposed development site. After the Fraser River estuary, Baynes Sound is BC's second most important IBA. The dAIR should require a plan to protect this status of Baynes Sound.
- ❑ The foreshore ecosystem of Baynes Sound, including the 130-hectare Fanny Bay Conservation Lands (Nature Trust designation), is fed by 23 small salmon-bearing creeks, one of which is Cowie Creek, which the proponent admits will be affected by the proposed mine. This area is BC's top shellfish mariculture producer. What studies have been done to prevent and/or mitigate any contamination/damage to this area, including prevention of ARD reaching the foreshore?
- ❑ The province of BC holds 2,800 hectares of various wildlife reserves in Baynes Sound. What does the *Wildlife Act* say in regard to preventing damage to these areas?
- ❑ Who/what agency has defined the "footprint of the mine" for the various areas (including LSAs, RSAs) to be potentially affected by the mine and transportation corridor (including both highway and marine shipping routes)? The dAIR states a "500 m buffer," which most certainly will not encompass a number of potential effects, such as air quality, disturbances to terrestrial and marine organisms caused by noise, dust, and other measurable parameters. The footprint needs to be expanded and all buffers need to be delineated with specificity for the organisms, whether plant or animal (including humans) that have potential to be affected.
- ❑ Why do the terrestrial LSA and RSA in the vicinity of the mine site only extend as far as the Inland Island Highway and not to the foreshore along Baynes Sound?
- ❑ The Tsable River should be added to the possible watersheds affected. The Tsable River estuary should be included in the LSA because of the potential for ARD or mine water seepage because of subsidence-induced connections to surface water; the RSA should include any watershed that may be subject to subsidence (e.g., Hindoo Creek).
- ❑ The detailed marine baseline should include tissue metal analysis of clams and oysters. Also a Mussel Watch program, a recognised bio-monitoring technique for accumulation of toxins by mussels and other shellfish, should be established to monitor any bio-accumulation of metals over time.
- ❑ Most Terrestrial Ecosystem Mapping (TEM) databases (upon which many industry consultants base their advice to clients) are outdated. What have been any activities to do current and thorough ground-truthing for the areas potentially affected by the proposed mine?

Socio-economic information needed

- ❑ Sustainable development is a fundamental objective of the federal environmental assessment process, and the province of BC also says that is its goal. However, the Project's effect on sustainable development and the need for and purpose of the Project are not assessed in the EA process. We suggest these be assessed by developing Valued Components (VCs) that are part of the matrix for determining residual effects. These VCs would be determined based on existing community values and planning exercises already in place.

- ❑ Although the dAIR/EISG addresses greenhouse gas emissions and climate change in relationship to the Project activities, it does not address the contribution of the Project's production to GHGs and climate change. In our view, this is much too narrow and self-interested an approach. To deal with these issues, we propose changes to the dAIR/EISG.
- ❑ The Project's assessment of economic effects needs to incorporate information from all the other sectors evaluated in the EA, including lost opportunity costs, social costs and benefits, cultural costs and benefits, effects on other industries, and health care costs and benefits. Unfortunately, this is not the case in the current dAIR/EISG. We propose changes to incorporate these values into the economic cost-benefit analysis.
- ❑ Both Port Alberni and the Comox Valley have spent the last 15 years developing economic, social, and cultural plans leading to a vision of sustainability for their communities. Well over 100 studies and workshops have been undertaken, and hundreds of community members in both regions have participated. Yet the dAIR/EISG does not provide a means to critically evaluate the costs and benefits of the project to BC, the region, or the local communities. Instead, it relies heavily on GDP, which has no debit column. We require the proponent to conduct and report on a multiple accounts analysis in the EIS.
- ❑ We are deeply concerned that neither the Social Effects nor Health Effects analysis requires the use of the World Health Organisation Determinants of Health, although this is widely regarded as best practice. We propose changes to the dAIR/EISG to enable the use of these determinants, including a gender analysis.
- ❑ Although the current version of the dAIR/EISG makes reference to "design for closure," we are not assured that the EIS will address some key components. We make recommendations to strengthen the dAIR/EISG.
- ❑ Monitoring, follow-up, and adaptive management that can respond to failures and changes in expected outcomes are essential if the project is approved. We suggest changes in the dAIR/EISG to strengthen these components.
- ❑ The tracking of public comment is also of serious concern to us. Generally, process is tracked, not the nature of our comments. Overwhelmingly, to date, public comment has opposed the mine in its entirety, but our comments have been recorded as "issues" or "concerns." We want to be assured that the public opposition to the mine is noted in the official record. **NO means NO**, and the record should reflect what participants said, even if the facilitators feel the comment is not appropriate or is irrelevant.
- ❑ The Local Study Areas (LSA) and Regional Study Areas (RSA) described in the proponent's project description are far too small; they do not encompass the areas that will be affected by this proposed coal mine. They need to include the highway corridor from the mine to Port Alberni (including effects in MacMillan Provincial Park [Cathedral Grove], and be expanded to encompass the socio-economic, community health, and general environmental effects occasioned by a coal port in Port Alberni, including the length of the Alberni Inlet.
- ❑ Project benefits have to be weighed against the existing economy of Baynes Sound and any potential disruption that ML/ARD production could cause the local economy. Any mobilisation of cadmium is of particular concern because oysters from BC waters are already very close to the cadmium limits set by many countries for importing oysters. The proponent should assess this parameter from a no-increase-over-background-levels perspective, rather than meeting a set permit limit.
- ❑ The proponent issued a feasibility study on May 9, 2011. So far, it has not been made available to the public, and it should be.
- ❑ Other economics-related information needs to be detailed in the next iteration of the AIR and be evident in the EIS, including: What is the nature and extent of subsidies to the mine from federal, provincial, regional and municipal governments, including access to water, port fees, tax incentives and allowances, infrastructure support, costs for environmental assessment, road upgrades, etc? How many employees of the mine will be unemployed at the time of hire? How many will come from the local areas? What are the lost opportunity costs for resource users and the loss of country foods to First Nations? What are the estimated increased costs to federal, provincial, and municipal governments for increased social and health services, including emergency response to potential accidents at the mine, the port, and on highways 4 and 19?
- ❑ What is the amount of actual revenue to the government from the Mining Lands Tax and payment of resource licenses?
- ❑ The sections on Social and Health should provide tools to assess potential social and health effects, but they are very undeveloped compared to some other sections in the dAIR. For example, the VCs suggested do not reflect the Health Canada guidance on Health Impact Assessment or the World Health Organisation's Determinants of Health, a recognised best practice guide. This needs to be remedied in the EIS.
- ❑ The mine closure plan needs to include health, social, and economic considerations that will minimise any adverse conditions.

Human health information needed

- ❑ The coal mine and port facility may generate fine and ultrafine particulate matter (less than 2.5 microns in size). Particulates of this size are detrimental to human health, especially children, the elderly, and people with already developed respiratory and heart diseases.
- ❑ Port Alberni (the Alberni Valley in general) is well known to be one of the poorest locations for diluting and dispersing airborne pollutants.
- ❑ Coal facility, as proposed, seems to be representative of new and unproven technology and will be located 50 meters from an existing city neighbourhood. What safety measures does the proponent plan for the protection of residents' health and safety in such close proximity?
- ❑ Diesel exhaust emissions from coal haul trucks generate particulate matter, PAHs, and other airborne toxins.

Transportation Corridor

- ❑ There will be increased damage to highways and bridge structures from super "B" coal haul trucks.

- ❑ Fugitive toxic coal dust releases from trucks will contaminate roadsides; dust is washed downslope, largely due to precipitation, where it enters both marine and freshwater environments.
- ❑ Safety issues need to be addressed, including the increased potential of vehicle accidents, platooning effect, toxic coal spillage in Cathedral Grove (MacMillan Provincial Park).
- ❑ Heavy “rumbling” of coal trucks will be additive to high truck traffic already using highway; this is likely to create conditions causing trees closest to the roadway in Cathedral Grove to fall down.
- ❑ There is an Important Bird Area (IBA) at Mt. Arrowsmith and surrounding mountains. The proponent’s Environmental Impact Statement should address how it plans to mitigate risks to birds in this area.
- ❑ Highways congested with slower moving dusty coal haul trucks may result in reduced tourism and loss of service industry jobs.
- ❑ Considerably more studies (engineering, ecological, human health) need to be done on issues around the transportation corridor along Highway 4 to Port Alberni.

Port Alberni

- ❑ Fugitive toxic coal dust releases from trucks may contaminate roads and be washed through the storm sewer system and into the adjacent marine and freshwater environments.
- ❑ Six super “B” train coal haul trucks (includes return) each hour 24/7 going past the hospital and through residential neighbourhoods to the coal storage facility could pose risks to air quality, pedestrian safety, other drivers, etc.
- ❑ Coal haul trucks may negatively impact city roads and bridge structures; costs will be borne by city taxpayers.
- ❑ The coal export and storage facilities are to be located within 50 meters of an occupied residential city neighbourhood; this may be a precedent in Canadian context.
- ❑ Coal dust may be generated at the port facility by coal haul trucks, accumulations from spillage, leakage, accidental discharge, technology failures, human error, entrainment during transport from mine site, etc.
- ❑ A coal port presents a degree of risk from fire and explosions.
- ❑ Will the proponent guarantee that the technology used at the proposed coal export terminal for Port Alberni will not harm the health of local residents? Will it guarantee that the marine environment will not be impacted?
- ❑ The bottom sediments in the Port Alberni Harbour, including the Somass estuary, may contain high concentrations of PCDD/Fs (dioxins and furans) and the TEQ (2,3,7,8, TCDD). Dredging as proposed will likely re-suspend PCDD/Fs allowing them to become bioavailable, exposing human and non-human life to known carcinogens. The construction of the coal export terminal proposal indicates dredging and bottom sediment disturbance.
- ❑ The water jet produced by tugboats and ship propellers will agitate potentially contaminated sediments allowing for resuspension of contaminants, resulting in bio accumulation and biomagnification of the regional food chain.
- ❑ Re-dredging to mitigate accidental coal spills will also allow for resuspension of potentially contaminated sediments.
- ❑ The proposed mine and coal export terminal are to be located in a highly active earthquake zone. The proposed coal terminal is also located in a high probability tsunami zone.
- ❑ There is a need to consider both the environmental and socio-economic effects of large and very large ships traversing up the Alberni Inlet. For example, the Inlet/Somass/Stamp/Sproat Lake/Great Central Lake system is the third richest salmon-producing region of British Columbia. As well, there are two Important Bird Areas (IBAs) at the entrance to Barkley Sound. There is also shellfish aquaculture along the Inlet, as well as commercial and sport fishing in the general area. What studies has the proponent done on the issues of invasive species, fish and bird migrations, and other marine creatures using the length of the Inlet?
- ❑ The Barkley Sound coastline is the “Graveyard of the Pacific;” the threat of coal ships running aground is real, as is the risk of an oil spill.
- ❑ There may be major coal mine expansion plans that the proponent denies, yet the infrastructure they want to construct at the proposed coal port doesn’t seem to warrant great expense unless they go ahead with the other two mines (Bear and Anderson) at a later date.
- ❑ The proponent does not seem to give the required weight of consideration to the effects of using Highway 4 as a transportation corridor, nor to the potential for serious environmental, environmental, and human health effects of locating a coal export terminal in Port Alberni.
- ❑ Diesel exhaust is carcinogenic. What additional health risks are there for people exposed to constant emissions of the coal transport fleet?
- ❑ Pollutant exposures near major roadways are linked to increased heart and lung disease. How many people live within 150m of the coal truck transport route? Does each company being considered to transport coal have fleets equipped with the best emission reduction technologies?
- ❑ How much time will ships be in Port. How long will they be idling? How long does it take to load a ship?
- ❑ What are the main pollutants from Bunker C exhaust? What volumes of these pollutants will be produced from all in Port ship activities?
- ❑ What are the potential exposure levels in Port Alberni, especially downwind of the coal site, and especially during inversion conditions?
- ❑ Will ships use best technologies and port protocols to minimise ship exhaust?

Meteorological and Air Quality Baselines

- Which way do the prevailing winds blow at the mine site and at the Port Alberni coal port/storage facility site? How do these change during the seasons?
- How far can fine and ultrafine particulate matter travel on these winds?
- Shouldn't the air quality study area be linked to wind direction and speed and potential exposures?
- Where and how many meteorological sites will be established in Port Alberni?
- The usefulness of air quality modelling is dependent on the quality of data inputs. There is no good, meteorological data for the Port Alberni coal port site. How many years of baseline met data and air quality assessment are proposed for robust and scientifically defensible air quality monitoring?
- Which pollutants will be selected for baseline studies? What equipment will be used to produce the baseline data? Where will the equipment be deployed and for how long?
- Why is there no mention of the Air Quality Council in Port Alberni, or of the work they and the BC Ministry of Environment have done there for the last decade?
- Why is there no mention of Port Alberni as an extremely sensitive receiving environment? Or of its exaggerated and isolated climate conditions that can only be understood through very specific, detailed, and complex scientific studies?

Coal Dust

- What is the potential coal dust escapement from under the truck tarps in calm and stormy conditions?
- There is no safe level of airborne fine particulate matter, especially fine particulate with known toxic components. What are the toxic and carcinogenic components of coal dust?

Health –possible real or perceived decline in physical and mental health due to coal port

- Would you like to live beside a large pile of coal constantly being moved by heavy machinery?
- In a time of climate change crisis, what psychological damage is done to citizens whose town chooses to stockpile coal for burning somewhere else?
- How effective will local climate change action and social marketing be when every small greenhouse gas benefit we can muster is compromised by direct participation in the old and extremely damaging coal-burning paradigm?
- From a health point of view, older people are more likely to respond negatively to increased noise and pollution. The settled and incoming demographic for Port Alberni is in the older range. What is the benefit for them from a project like this?
- Competing with heavy commercial traffic on local roads not only reduces safety but causes and increases driver stress and anxiety. What is the projected increase in vehicular accidents related to the constant coal traffic?
- What is the projected decline in tourism due to the unappealing nature of the heavy commercial traffic, especially on the treacherous approach to Port Alberni?

Please send your comments/concerns **by 27 June 2011** to the government:

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