

January 23, 2009

**Sunshine Coast Conservation Association
Box 1969 Sechelt, BC V0N3A0**

**Submission to the BC Environmental Assessment Office:
Regarding the Stl'ixwim Hydro Corporation draft Terms of Reference for a
Hydroelectric Project in the Tzoonie River and Narrows Inlet Area**

Attention: Joanna Tombs, Project Assessment Director

Dear Ms. Tombs,

Thank you for this opportunity to provide comments about the draft Terms of Reference (dTOR) for the Stl'ixwim Renewable Energy Initiative Project in the Tzoonie River. For your information, the Sunshine Coast Conservation Association (SCCA) does not necessarily object to demonstrably “green” hydroelectric power projects if society’s obligations to affected First Nations are adequately addressed, if there is a verifiable need, if environmental assets are protected and there is a net environmental benefit in the area of the project. With these considerations in mind we offer the following comments on the Stl'ixwim project’s draft terms of reference.

1. ***Purpose of the Project*** (page 2). In the Preface, the proponents state that the purpose of the project is to provide renewable energy exclusively for the use of consumers in British Columbia. However, the proponents do not have a purchase agreement with BC Hydro. Even if they did, purchase agreements are not “in perpetuity”. Perhaps the proponent could clarify what administrative instrument or agreement with the province would ensure that power from this project will always be available for the exclusive use of consumers in British Columbia.

The purpose of the project is also described in the Introduction (page 15). Here, it says that the purpose is to provide “Green Electricity”. Is there a standard to which the proponents are referring? Hydroelectric projects are not necessarily “green”. The green, or sustainable, nature of a project depends in large part on the construction and operation of the facilities. Perhaps the dTOR should say that the proponents “intend to achieve” sustainability with reference to the specific standards that will apply. Also, it is not clear how the project would displace “brown” energy sources. Merely adding to the supply of energy does not necessarily reduce dependence on fossil-fuel energy sources.

2. ***Proponent Identification*** (page 16). We are not satisfied that the dTOR adequately describes the partners and parties involved in this project. As well, the proponents confused the issue substantially in the public meetings. When questioned from the floor at the Egmont meeting on January 14, the proponents implied that they had a partnering agreement with the Sechelt First Nation that defines their participation in the project and that this agreement is confidential. This is not correct.

3. **Reviewability under the BC and Canadian EA Acts** (page 24). The proponents state that the project would not trigger the “comprehensive study” level of a federal environmental assessment under CEAA. This is not necessarily accurate. The Minister responsible for Environment Canada has discretion to elevate the involvement of the federal government in a federal environmental assessment. The Minister may do this in response to an appeal from the public or as a response to a request from a First Nation. I am not aware of any examples where the Minister has ignored such a request from a First Nation. In any case, we will be watching decisions related to the level of federal involvement very closely and requesting written explanations from responsible authorities.

In regard to authorizations from Fisheries and Oceans Canada (FOC) related to alteration of fish habitat, we submit that the proponents have not adequately described the obligations of FOC in the dTOR. FOC does not merely authorize habitat alteration; Canada has long standing legal obligations to First Nations to maintain fish habitat. In this situation, the federal government’s recognition of the Sechelt Nation’s right to Tzoonie fish dates back at least to the establishment of Indian Reserve No.15 in 1876 (a fishing station at the mouth of the river). At the very least, FOC is obligated to protect the Tzoonie fishery and ensure that compensation for damages to fish habitat is adequate to maintain the resource. The current condition of the Tzoonie watershed has severely impacted the fishery and this is problematic for the proponents, society and government.

The proponents state that an application for an ecoENERGY grant will be forthcoming and that this federal funding also triggers federal involvement under CEAA. We suggest that there is an obvious need for a much higher level of federal government involvement and funding needed to support this project. The dTOR should commit to an effort seeking federal funding for Tzoonie watershed restoration to ensure that impacts from this power project will be minor and not result in further accumulation of harm to the fishery.

4. **Description of Proposed Project Components** (page 25). Attached to this submission are the recommendations of the Natural Resources Advisory Committee (NRAC) to the Sunshine Coast Regional District. These recommendations address project component issues of a more specifically technical nature. In addition to these concerns, we note that the dTOR contains very little discussion about alternatives to some of the more disturbing features of the project. Alternatives to tunnel drilling and diversions from one water course to another should be described and evaluated. Spoilage areas were a concern for NRAC; what are the alternatives to the proposed spoilage areas?

5. **Scope of the Assessment** (page 60). In our view, the scope of the assessment described in the dTOR is superficial. All parties would be better served if the scope was expanded to include all the cumulative impacts of industrial activity since 1876 (the date of designation of the Sechelt’s fishing station as an *Indian Reserve*). Realistically, the natural condition of the Tzoonie watershed represents the potential of the system to produce fish and support wildlife. The Tzoonie’s fish are the most important environmental asset in the project area and easily one of the most important assets in the entire forest district. The economic value of the fish in conjunction with their social and

cultural value vastly outweighs the economics of any other asset or land use.

The current condition of the Tzoonie watershed is very poor. The impacts from forestry carried out under a voluntary regulatory regime between approximately 1950 and 1994 (the date of implementation of the *Forest Practices Code Act of BC*) have greatly reduced annual salmon returns from hundreds of thousands to tens of thousands and are still limiting the potential of the system today.

Under what circumstances would impacts from a new land use be acceptable? We submit that a cumulative effects analysis covering the entire Tzoonie watershed should be required as part of the Terms of Reference. This study should include a hydrological evaluation of the condition of each road and tributary in each sub-basin of the watershed. The size and cause of each mass movement needs to be established and all the active sediment sources identified. This work should also be supported by terrain stability mapping. Additionally, the effectiveness of work carried out under Forest Renewal BC funding during the 1990s needs to be evaluated. With this information it is possible to intelligently approach the problem of restoration. With restoration under way, all parties can then be assured that hydroelectric development would take place within the context of steadily improving watershed function.

6. ***Study Area Boundaries*** (page 60). We believe that a broader commitment to evaluate all the impacts of the project should be reflected in the final Terms of Reference. The study area boundaries should be roughly analogous to the “foot print” of the project in all of its phases. The footprint of the project is the sum total of all impacts from the highest elevation disturbance through to the consumer.

7. ***Biophysical and Environmental Effects*** (page 60). There are three areas of concern that need to be more explicitly addressed in the Terms of Reference. The first relates to the movement within the Tzoonie watershed of the *gravel fractions* that provide the substrata of spawning habitat; the gravel budget of the system. Obviously no one wants to see spawning beds smothered in silt but it is equally important that the system delivers enough appropriate material to replenish and maintain spawning beds and rearing habitat of four salmon species as well as that of sea-run and resident Cutthroat, Steelhead, indigenous Rainbow and Dolly Varden trout. Each of these species has distinct spawning substrata and other environmental requirements. The proponents need to state in the Terms of Reference how impacts to the gravel regime of the system will be assessed and mitigated.

Secondly, the *nutrient regime* of the system is a limiting factor in the overall productivity of the watershed. Stream reaches above identified fish habitat play a critical role in providing the nutrient input that supports micro and macrobiotic life everywhere in the system. Micro and macrobiotic life, in turn, support the life cycles of the larger vertebrate species, most importantly the fish. How do the proponents intend to assess the impacts of the project, which includes 19 points of diversion, on the nutrient regime of the system? The Terms of Reference should deal explicitly with assessment of impacts to the nutrient regime of the Tzoonie and Ramona watersheds.

Thirdly, *water temperatures* have a major impact on the productivity of these watersheds in terms of nutrient cycling, abundance of macro and micro biota and actual survival and spawning capacity of fish species. In our view, water temperature regime impacts need to be much more explicitly addressed in the Terms of Reference. The blue-listed Dolly Varden, for example, has an especially limited tolerance for water temperature fluctuation. How do the proponents intend to assess the impacts of the project on water temperature regimes?

8. ***Natural Hazards*** (page 61). As noted above, one of the more important assessment tools that can be brought to bear is terrain stability mapping. The Terms of Reference should require terrain stability mapping and describe much more explicitly how natural hazards are going to be evaluated.

9. ***Aquatic Habitats and Fauna*** (page 62). In regard to "...potentially dewatered reaches..." we wish to state that dewatering of any stream in the project area is absolutely unacceptable, irresponsible and illegal. The Terms of Reference should clarify explicitly that dewatering of any stream, fish bearing or not, at any time of the year is not acceptable. The Terms of Reference should require a substantial plan showing how dewatering events will be avoided.

In regard to the statement "Rearing salmonid population standing stocks are determined in select diversion reaches..." our view is that it is also not acceptable to divert water from a fish bearing reach. The Terms of Reference should clarify that no diversion of fish bearing reaches will be designed into the project. Such a clarification would be consistent with the *Fisheries Act*.

Furthermore, the diversion of water from one non fish bearing stream reach to another is troubling. How will the impacts of such a diversion related to water temperatures, nutrient cycles and gravel budgets of such a diversion be assessed? Again, the Terms of Reference should clarify that impacts to lower elevation fish bearing reaches will not be acceptable.

10. ***Threatened and Endangered Species*** (page 64). The Terms of Reference should address the needs of all species and plant communities at risk in the in the project's footprint area, not just species with threatened or endangered status. Note that, as far as the province's Conservation Data Center (CDC) and the federal government's Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is concerned, plant communities at risk have the same status of concern and ranking as do individual species. The Terms of Reference should include a survey for plant communities at risk, or, more appropriately, a survey indentifying the host biogeoclimatic subzone forest site types that support these at-risk plant communities. For example, the Coastal Western Hemlock dry maritime subzone (CWHdm) is prominent in the project area. The 06 and 07 ecosystem types are the potential hosts of an endangered plant community (red-listed by the CDC). Disturbance of any mature expressions of CWHdm 06 or 07 ecosystems should be avoided.

At-risk species and plant communities are often rare by definition. This is problematic when trying to determine what impacts may result from a project. The Marbled Murrelet, for example, was common in the Narrows Landscape Unit only 30 years ago but is now rare, largely due to the loss of old growth stands which contained its nesting habitat. A simple “presence or absence” survey for this species is unlikely to be effective in determining impacts. A more realistic approach to assessing impacts on Marbled Murrelets would involve surveying for its nesting habitat, occupied or not, and subsequently avoiding disturbance in those areas. The same principle applies to the blue-listed Tailed Frog. Its habitat is non-fish bearing stream reaches (class 5) with steep gradients and relatively even flowing hydrological regimes. This species is highly sensitive to water flow fluctuations and scouring events. Extensive clear cut logging in the Tzoonie watershed has undoubtedly reduced Tailed Frog populations. Survey efforts should focus on identifying the streams with the most important characteristics for Tailed Frog habitat. The Terms of Reference should specify this level of survey and describe a strategy for avoiding disturbance to Tailed Frog habitat.

11. **First Nations** (page 65). The mission of the SCCA is to seek the protection of biodiversity in the greater Sunshine Coast region. We approach this task primarily through public education and communication with First Nations, other governments and citizens’ organizations. Essentially, we provide, whenever possible, advice to decision makers. The relationship between First Nations and other governments does not fall within our mandate. However, all citizens have an interest in the rule of law and a special interest in ensuring that relations with First Nations are honourable and respectful of the rule of law. In reading the proponents’ comments in this section, it is not apparent that they recognize and appreciate the decisions (some quite recent) of the Supreme Court of Canada and the BC Supreme Court. We believe that the obligations of the Crown and the proponent are much more comprehensive than is stated in the dTOR.

12. **Land Use Context** (page 67). Unfortunately, there is no overall strategic higher level planning direction from the provincial government for this forest district. Landscape Unit planning has not been completed and the effort has been largely abandoned. Species and plant communities at risk are not accounted for. For example: the recommendations of the federal Marbled Murrelet Recovery Team are being ignored as are some provisions of the Species-At-Risk Act. Regional Districts have been stripped of their authority to regulate independent power projects. There are no measures in law requiring cooperation between proponents to minimize impacts of transmission corridors. The dominant land use in the proposal area is logging. The “goals and objectives” of government as stated in the regulations of the Forest and Range Practices Act largely dismiss environmental obligations that conflict with the “flow of timber from Crown lands”. For this reason, the commitment of the proponent to identify and describe current or proposed planning initiatives is, in our view, disingenuous.

The only higher level strategic land use plan in this area is *A Strategic Land Use Plan for the shishalh Nation (lil xemit tems swiya nelh mes stutula)*. Our organization was given an opportunity to review and comment on this plan. We applaud their foresight and we

support the plan itself because it contains a frank recognition of all the region's environmental challenges and proposes land use zones that are rational and responsible. The plan does not prohibit hydroelectric power development in Narrows Inlet. As previously stated, the SCCA does not necessarily oppose hydroelectric development, either, if it is carried out in an environmentally responsible way. In our view, the current state of Aboriginal law in Canada, i.e., the rule of law, strongly implies that the BC Environmental Assessment Office and the Stl'ixwim proponents need to recognize *A Strategic Land Use Plan for the shishahlh Nation* in the final Terms of Reference.

12. ***Climate Change*** (page 72). Our Association strongly supports consideration of the effects of climate change in the final Terms of Reference. Consideration of climate change should include both positive benefits and negative impacts such as the permanent loss of forest cover and unregulated proliferation of transmission line corridors.

13. ***Cumulative Environmental Effects*** (page 72). In this section the proponents state that the Application will include a Cumulative Effects Analysis, pursuant to Canadian Environmental Assessment Act, that "... will consider all residual effects of... past, present or reasonably foreseeable future projects or activities within the zone of influence of the Project." This is an appropriate commitment that we are pleased to support. Again, we call attention to the degraded condition of the Tzoonie watershed. This statement provides all the necessary authority to seek federal funding for evaluation and restoration of the Tzoonie watershed.

14. ***Environmental Management Plan*** (page 75). We suggest that an Environmental Management Plan be part of the final Terms of Reference, as the commitments made in this plan will have a profound impact during the construction phase of the project. We would like to see these commitments put before the public prior to submission of the Application.

Further to the issue of potential environmentally hazardous conditions during the construction phase, we are concerned about the use of old logging roads. Many of these roads were built prior to the introduction of the *Forest Practices Code Act of BC* in 1994. These were often constructed by bulldozers in an entirely haphazard way. Many of these roads have already collapsed and done extensive damage to the Tzoonie River and its tributaries. The final Terms of Reference should recognize this hazard and propose a strategy for ensuring that use of old roads doesn't create new hazards.

Thank you for your consideration of our submission.

Sincerely,

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Recommendations to the Sunshine Coast Regional District from the Natural Resources Advisory Committee concerning the Draft Terms of Reference for the Stl_ixwim Renewable Energy Initiative (the project)

Preamble

The Stl_ixwim Renewable Energy Initiative (the project) proposes to build six run-of-river power projects in the Tzoonie River watershed. Three of these projects will use alpine lakes as reservoirs to regulate water flows into powerhouses, while the other projects will draw water from free-flowing creeks. The power from these six proposed hydro facilities will be combined with that of the Tyson Creek power project and be transmitted through power lines to the Malaspina substation.

The project proponent must obtain different permits and licenses. It is subject to review by various Federal and Provincial agencies under the auspices of the BC Environmental Assessment Office (EAO). At present stage of its review, the EAO seeks to identify issues of concern. Afterwards, these issues will be assessed to determine if the project will have detrimental socio-economic and environmental effects.

The present document is prepared by NRAC in response to a referral from the Regional District. NRAC was tasked with reviewing the proponent's Draft Terms of Reference (dToR: project description and list of issues) and making recommendations on issues that should be included in the formal assessment. These issues we have identified are presented below.

Introduction

The Tzoonie River is located at the head of Narrows Inlet about 20 miles from Porpoise Bay in Sechelt. It is one of the largest and most productive river systems in the Sunshine Coast Forest District. In the past, the Tzoonie supported large runs of Chinook, Chum, Coho, Pink and Sockeye salmon as well as regionally significant populations of Cutthroat, Dolly Varden, Rainbow and Steelhead trout. The river produced salmon and trout by the hundreds of thousands, contributing to sport and commercial fisheries that supported the settlement of the Sunshine Coast region.

Almost a hundred years of intense timber harvesting has severely degraded the Tzoonie's fisheries and reduced wildlife populations. By the end of the 1980's, the Tzoonie and Chickwat watersheds looked very much like the Chapman Creek watershed, with a legacy of clearcuts, land slides and old often collapsing logging roads.

The 1994 implementation of the Forest Practices Code and general decline in logging activity in the region have helped to stop this degradation. Today, the Tzoonie system is in recovery. Grizzlies have returned and remnant but viable populations of most historic runs still exist. This indicates that, with careful management, the Tzoonie system could eventually return to full productivity. The proposed hydro electric projects in the Tzoonie River watershed must be very carefully scrutinized to ensure that this recovery is not impeded.

Issues

Potential Conflict of Interest

- The web site for Renewable Power Corporation, one of the two companies belonging to the Stl_ixwim joint venture, lists Mssr. David Bates and Dan Soprovich as members of “The Renewable Power Corporation team” [latest news, Jan 24/08: Who we are; link: <http://www.renewablepowercorp.com/?p2=modules/blog/viewcomments.jsp&bid=3>]. The statement gives the impression that these individual consultants are not independent of the company. In particular, Dan Soprovich appears to be a relative of Marc Soprovich, the company president. Given that these individuals will make judgements about potential negative impacts of the project, we recommend that their work be evaluated, at the company’s expense, by independent third parties with expertise in their respective fields.

Project Description

- Section 2.2 of the dToR states that: ”energy available in Chickwat Creek that is being captured and put to use in only 19% of the total runoff energy of the creek. The remaining 81% of the creek runoff energy is not captured and is permanently lost”. The proponent must specify if these statements pertain to every flow condition, or only for periods of low, mean or high flows. In general, this qualification must be made in every discussion by the proponent pertaining to flows.
- The description of precipitation patterns (Section 6.2.3) seems limited, given the central role precipitation plays for the entire project. The proponent must be much more explicit in its description. The proponent must identify all the databases and assumptions used to calculate monthly minimum, average and maximum precipitation for a 1-year, 10-year, and 25-year return period. The proponent must explicitly identify the projected regional trends and assumptions underlying the effects of climate change on precipitation patterns during the life of the project. Finally, the proponent must report the degree of uncertainty associated with these projections.

- The hydrology of the Tzoonie River and its tributaries will be altered by the project. The overall effect of these alterations is difficult to evaluate because effects will occur at many different places, at different times of the year, and during different climactic periods (e.g., dry months or wet months of the 25-year return period maximum dry or wet year). Moreover, anticipated impacts from climate change add uncertainty to the projected maxima and minima for these respective 25-year return periods. We request that, during the impact assessment, the projected hydrology of the Tzoonie River and its tributary be represented graphically for the entire system, to clearly show where and how flows are altered from baseline conditions under different climactic scenarios (Section 6.3.4). The same projections (for system hydrology) should then be used to graphically represent the anticipated changes in nutrient inputs, sediment loads and deposition, etc., within the system.
- The proponents claim that water levels for CC, Ramona and SS Lakes may decrease by as much as 20 metres and may rise by as much as 5 metres. It is disconcerting that no information on lake bathymetry is provided to confirm that there is a minimum of 20 m depth to these lakes, or detailed topography showing that lake levels can actually rise by 5 m without extensive damming. Comprehensive studies will be required in describing these lakes (Section 6.3.1) and their fauna (Section 6.3.2) in order to assess the environmental impacts of these extreme water level fluctuations under every plausible climactic scenario for the region, including long-term scenarios of possible decreased or increased seasonal precipitation resulting from climate change.

Construction Phase

- The area for depositing waste rock drilled below Ramona Lake is shown to be located on a steep hillside. This material cannot possibly be retained stably in this area. The proponent must identify another area and conduct appropriate studies to demonstrate its suitability in permanently retaining this material. In general, the proponent must indicate the total tonnage and volume of material excavated for the intake tunnels proposed for CC, Ramona, and SS Lakes and conduct adequate geotechnical and geochemical studies to demonstrate that they will not produce unacceptable environmental impacts, including release of large volumes of settleable and non-settleable material, and release of acid rock drainage, metals or metalloids to the streams below, under all foreseeable climate scenarios.
- There appear to be few and limited water sources available for drilling the intake tunnels proposed for CC, Ramona, and SS Lakes. In their description of drilling operations, the proponent must describe where and how they intend to obtain the water necessary for this drilling and how it will be returned safely to the receiving environment. The proponent must provide a plan to manage the fines and drilling

muds produced during the excavation of intake tunnels. Finally, the Construction Phase Environmental Management plan must describe the monitoring plan that will be implemented to detect any unintended discharges and measures to mitigate impacts from these discharges.

- The proponent states that it will follow MoFR and MoE standards for road construction in this project. The proponent should demonstrate that these standards are adequately protective for all the material loads and activities proposed in the projects, including the heaviest materials and equipment hauled during the project.

Impact Assessment

- The proponent must demonstrate that the proposed lake bottom water intakes proposed for CC, Ramona, and SS Lakes will not increase sediment loads into the Tzoonie River system under all foreseeable climate scenarios.
- The loss of water energy caused by the project diversions and turbines may increase sediment deposition rates within the Tzoonie and its tributaries. The proponent must quantify the changes in sediment deposition rates brought about by the project and determine the impact of these changes. Similarly, we are concerned about the effect of the projects on water temperature and request that the proponent evaluate effects on water temperature under all foreseeable climate scenarios.
- Several laydown/spoil deposition areas are identified for this project. Many of them represent the only flat areas in otherwise steep terrain. These areas may play unique ecological functions for resident flora and fauna and migrating species, and their disturbance have a disproportionately large effect on their populations. The proponent must devote special attention to:
 1. Identify their ecological function for resident and migratory species, and
 2. Determine the localized and cumulative regional impacts from disturbing these areas within the entire project area during construction, and during operation of the power projects.
- We are greatly concerned that the impact assessment will be flawed if it does not account for the considerable damage done by logging in the Tzoonie River watershed. Therefore, the impact from the Project should be based against baseline conditions described by the proponent in Sections 6.3 and 6.4, but should also consider conditions as they existed before the above disturbances occurred. Impacts from the existing Tyson Creek power project must also be taken into account during this analysis. We feel it would be best for the proponent to document the recovery of the fisheries and wildlife in the watershed that has occurred since the mid-90's and to confirm that the Project will not impair this recovery in any way.

- Cumulative impact analysis must consider all foreseeable future projects in the Tzoonie River watershed for the life of the Project. We recommend that these include projects with active water licence applications in the Tzoonie watershed. It is possible that some projects with an active application will not proceed to full-scale construction and operation. To be prudent, we recommend that the proponent consider two scenarios in their analysis: a reasonably conservative scenario (i.e., err towards the side of caution) that is negotiated within the project Working Group for this analysis, and a scenario in which every application is granted and every project proceeds to full-scale construction and operation. In this analysis of these scenarios, we recommend that the proponent identify a mechanism for allocating restrictions of water flows among different parties during periods of low flows.
- A literature review on impacts of transmission lines on wildlife, including mammals and invertebrates, should be conducted to provide a basis for selecting animals to be surveyed. They need to be specific to the terrain that these transmission lines will go through. Mountain goats for example, have important winter range and escape habitat near the proposed line. The Tzoonie Narrows is a famous area in the Forest District for mountain goat viewing.

Environmental Monitoring

- The project provides for controlling water levels in three small lakes, thereby affecting river flows. Given the remoteness of the sites, we recommend that the company establish a remotely-operated monitoring network for flows, water levels and temperature and that its data be made available to the public in real time. This could be done by establishing a watchdog/monitoring body (which includes company, government, First Nation and public representatives) overseeing the environmentally-sound operation of the run-of-river hydroelectric facilities.