

John Hart Generating Station Replacement Project

July 2014 Community Construction Update Report #13

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Approximate Project Schedule

Project Status Update:

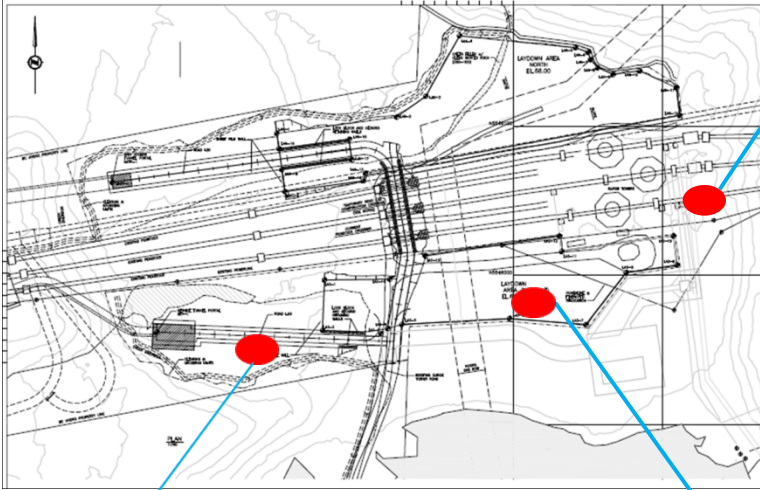
- Leave to Commence was granted by Comptroller of Water Rights – project construction work begins;
- Falling and clearing work starts to create work sites;
- Focus on pedestrian walkway and bridge work; and
- Blasting permits approved by City of Campbell River.

July-December 2014:

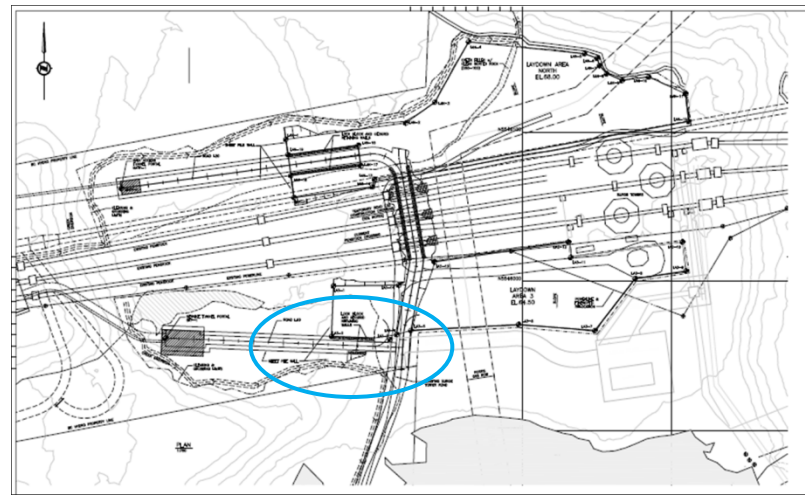
- July: Tree falling and clearing work;
- July: Pedestrian bridge over the penstocks;
- July/August: Road bridge over penstocks;
- September: Blasting begins on site; and
- October/November: Rock tunneling planned.



Construction Site Pictures



Construction Pictures Around the Portal Entrance



Work begins on south portal.



Noise and Site Blasting

The City of Campbell River has granted the project noise and blasting variances to allow for 24/7 construction.

BC Hydro and Aecon SNC-Lavalin (ASL-JV) are advising the Campbell River community that blasting will begin in September. This controlled, low-level blasting work is to create the underground tunnel for the water conveyance and generating station. Please note:

- Blasting will occur above ground for approximately two months before moving underground as the tunnel is developed;
- Blasts will be small, closely monitored and may occur day and/or night, seven days a week;
- Once surface blasting is completed it is anticipated that there will be minimal noise disruption; and
- All work will occur in safely fenced off areas. Please respect fencing and signage in the area.

Minister Bill Bennett Event – July 18

- Bill Bennett, Minister of Energy and Mines and Minister Responsible for Core Review, helped kick off construction on the John Hart Generating Station Replacement project. John Hart is the largest infrastructure project undertaken by BC Hydro since the 1980s and will take five years to complete.



Speeches event at the base of the three surge towers.



Minister Bill Bennett Event

A news release was issued on July 18 to celebrate the start of construction.

Bill Bennett, Minister of Energy and Mines and Minister Responsible for Core Review

“The John Hart facility is 67 years old and is an example of the type of investment required in B.C.’s electrical system to ensure BC Hydro can deliver safe, reliable power today and for decades to come. The 10-year rate plan for BC Hydro provides certainty to British Columbians that our growing population will continue to be served, while ensuring that BC Hydro can make the investments in the system it needs to in a cost-effective way.”

Jessica McDonald, President and CEO, BC Hydro

“This is a significant project for BC Hydro and for the Campbell River community and it will help provide reliable service to Vancouver Island for decades to come. We have worked with First Nations and the local community to earn their support for the renewal of this important asset. The new facility features an innovative P3 model and design that will make it stronger seismically, more reliable and will also better protect fish habitat downstream.”

Alfred Hanna, Senior Vice-President, Hydro Division, SNC-Lavalin

“We are excited to have this fascinating project underway and we are up to the challenge. This is a major undertaking and we look forward to working with BC Hydro and the Campbell River community in making the John Hart replacement a success.”

Minister Bill Bennett Event – Site Tour



Tour of the John Hart generating station facilities.

Minister Bill Bennett Event – Speeches



From left to right: Emcee Don McRae, Minister Bennett, Jessica McDonald and Alfred Hanna.
Celebratory cake and coffee was served afterwards.



Minister Bill Bennett Event

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Power trio

Provincial government and BC Hydro bigwigs were in Campbell River Friday morning to officially begin construction on the \$1 billion project to rebuild the John Hart Generating Station with a 2.1 kilometre tunnel and an underground power plant. Pictured here (from left) are Comox Valley MLA Don McRae, Minister of Energy and Mines Bill Bennett and the brand new president and CEO of BC Hydro Jessica McDonald. Read the full story in Friday's Mirror.

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Standing on the viewing platform under construction for the re-aligned Station View Trail. Special thanks to InPower BC for shutting down the construction site from 10:15 am to 11:30 am to hold the celebratory event.

Visit to the John Hart Interpretive Centre



Minister Bennett and Jessica sign the guest book.



John Hart Project Interpretive Centre

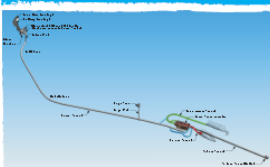
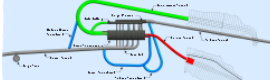
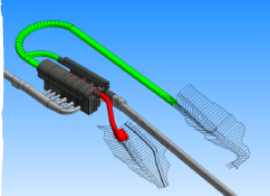
JOHN HART PROJECT DESIGN AND CONSTRUCTION

OVERVIEW:

In February 2016, BC Hydro awarded the contract to InPower BC to design, build and partially finance (40%) the John Hart project. InPower BC's innovative design has been well received by the wider Campbell River community. The replacement hydroelectric facilities will all go underground and be barely noticeable, and will benefit the surrounding Elk Falls Provincial Park by better fitting into the surrounding lands.

The underground tunnel from the dam will supply water to an underground generating station (three units), about 1,000 metres downstream of the dam and 600 metres up the pipeline corridor from the existing station. The water bypass facility has been designed into the generating station and is also underground. The generating station cavern is about 99 metres high with the top of the cavern about 60 metres from the ground surface. The only noticeable facility elements will be the two access tunnels, upstream of the surge towers situated in the generating station, and the water discharge outfall opening out of the rock and in to the river at the entrance to Elk Falls Canyon. The white surge towers are not needed and will come down with the exception of the south tower given the attached communications equipment had to be installed to the support. The existing administration office for staff and the substation will remain in place post-project.

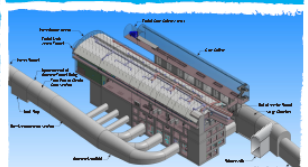
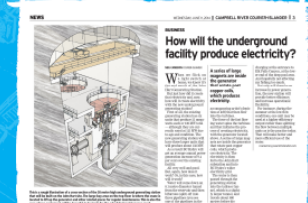
The goal for BC Hydro in all this was to get a highly technical, billion-dollar, essentially risk-free facility that allows for the ongoing generation of clean energy. This was achieved.

The top panel illustrates the overall project layout, showing the dam, surge towers, and the underground generating station. The middle panel shows a cross-section of the surge towers and access tunnels. The bottom panel shows a detailed view of the underground generating station cavern.

NEED TO KNOW:

- SHOLE (Shovel)
- Jacking (Shovel)
- Pile Driver (Shovel)
- Borehole (Shovel)
- Tunnel (Shovel)
- Concrete (Shovel)
- Steel (Shovel)
- Drilling (Shovel)
- Excavation (Shovel)
- Tunneling (Shovel)
- Construction (Shovel)
- Design (Shovel)
- Engineering (Shovel)
- Safety (Shovel)
- Environment (Shovel)
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- Adaptability (Shovel)
- Resilience (Shovel)

The larger three panels show the surge towers, access tunnels, and cavern. The top panel is a 3D cutaway diagram. The middle panel is an article snippet. The bottom panel is another article snippet.

TUNNELING AND EXCAVATION WORKS

OVERVIEW:

The first two years of the project will resemble a mining operation as the project will remove about 300,000 cubic metres of rock – enough to fill about 120 Olympic-sized swimming pools. The power tunnel is 8.2 metres high by 8.1 metres wide and will be developed from the generating station to the dam. The bypass tunnel is 10.7 metres high by 8.5 metres wide and will lead from the generating station to the Campbell River.






HOW'S THE WORK TO BE DONE?

- The method is controlled blasting and drilling – no boring machine.
- One-man blast per day.
- Two shifts, double shift on a day, the day is split.
- Remove about 200,000 cubic metres of rock per shift, or about 50 metres of tunnel length per shift, and
- Rock to be taken off-site as it is removed by about 120 tonnes dump trucks.

CHALLENGES WITH THE ELECTRICITY

Water management:

- Water from drill use.
- Water from seepage in the rock, and
- Pumping the water out for water treatment before being discharged.


The tunnel is designed to be mostly a steel mesh and reinforced concrete bedrock with good natural conductivity for water seepage. There is the potential for some #4 or #6 cables that are no longer used to be removed. However, the #4 cables are in place to deal with water seepage and rock stability issues. These cables are in place to deal with water seepage and rock stability issues.







Museum at Campbell River

Campbell River Watershed




Early Exploration & Development



Conservation & Restoration

Credits



On July 30 we hit a milestone of 1000 visitors going through the centre in one month. Three new panels (two shown above) have been added to the centre, and the Museum at Campbell River added a new touch screen kiosk (screen shown above). Go check them out.

City of Campbell River – Water Infrastructure

- On July 18, the City of Campbell River issued a news release about the City and BC Hydro confirming an agreement for domestic water supply construction. Campbell River City Council and BC Hydro have officially agreed to terms for funding, timing and construction of a new municipal water supply from John Hart reservoir.

“The City and BC Hydro have been working together since 2010 to plan for construction timing and funding for a new community water supply that will be in place before the John Hart Generating Station replacement project disconnects the City’s existing water supply in 2017,” explains Councillor Andy Adams, who holds the finance portfolio for Council and has represented Council on the BC Hydro liaison committee for the past five years.

“This agreement is an outcome of a healthy partnership between the City of Campbell River and BC Hydro, and BC Hydro’s contribution will enable the City to maintain reliable water delivery to the community throughout the John Hart Generating Station Replacement Project,” says Ron Neufeld, deputy city manager and general manager of operations.

Station View Trail

- Construction is well underway at the pedestrian bridge that will re-route the Station View Trail;
- The bridge will take trail users over the three penstocks and provide a unique viewpoint over the generating station and back towards the penstock corridor;
- Fencing and signage has been updated to keep trail users informed of ongoing work; and
- The trail is planned to re-open on August 15.



Station View Trail



Pedestrian bridge construction.

Economic Opportunities

Site workers: About 50 full-time people.

Hiring Process Developed:

- During these preliminary stages there is limited worker requirements on the site – but as construction ramps up that is expected to change;
- Hiring will be handled by the design/build contractor ASL-JV, and all skilled trades will be hired through representative unions. Different trades will be needed at different periods of construction;
- A union agreement has been concluded to simplify the hiring process, offer competitive and fair wages across the board, provide local workers with first opportunities and provide fair access to work;
- Tradespeople should contact their union for upcoming opportunities. North Vancouver Island Aboriginal Training Society, North Island Employment Foundations Society and the Campbell River Chamber of Commerce have been provided the contact information for those unions as of July 31 and will make it available on their web sites and to interested job seekers; and
- Some administrative positions will also be posted online under the careers section at www.snclavalin.com.

Environment – Water Quality

Water Quality Monitoring:

- Six water quality sondes have been installed – three in the reservoir and three in the river;
- Sondes will measure temperature, dissolved oxygen, conductivity, pH, turbidity;
- Currently measuring baseline in advance of any discharge; and
- Monitors will remain in place during entire construction period and for two-three years after.



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Environmental Reporting

- A bird survey was completed in July and found two bird nests in areas set for tree removals;
- During the tree falling process an error was made in the boundary or taped zones;
- A Swainson's thrush nest with chicks was accidentally taken out during tree-falling activities;
- An incident report was provided and a review was done of procedures to prevent any future incidents;
- Among the protocols put in place to prevent future incidents is increased measures to ensure environmentally-sensitive areas are marked clearly both on plans and in the field, and requiring the direct supervision of a Qualified Environmental Professional during any survey work of such areas; and
- For the second nest, the robin's eggs have now hatched and the nest is being monitored. Once the chicks have fledged, the area will be preserved for a further period of time to ensure they have moved on before trees are removed.



Swainson's thrush

People Profile – Larry Johnson

About Larry:

- **Background:**

A carpenter for 42 years with experience in many projects in BC and Alberta – notably in Campbell River the original No. 5 Paper Machine, the CoGen Plant and Museum at Campbell River buildings.

- **Home:**

Born and raised in Campbell River, with extensive family still in the area (including his parents).

- **Hobbies:**

Taking care of the large property he lives on in Oyster River – the same land his grandfather bought in 1932 (for \$200) and keeping his two Border Collies busy.

- **Project responsibility:**

Building the pedestrian bridge that will cross the penstocks as part of the rerouted Station View Trail – and then hopefully onto other parts of the project.

“It’s cool – this is a real showpiece. Half the people I know walk this trail and we want to do a knock-up job so everyone will be proud of it.”



Construction – Point of Interest

Each month, BC Hydro and InPower BC will provide a construction fact, occurrence, or situation.

Protecting the area in extreme heat: The high heat of early July affected everyone – including crews at the John Hart site.

- As per regulation, site crews adjusted work hours following three days of high fire danger warnings – ending any activities categorized as high fire risk by 1:00 pm;
- An observer was put in place for after-work hours to monitor the site in case of any early signs of fire; and
- A water truck was inspected and tested, and then stationed on site during the days of significant fire risk.

