

# Stockton Plateau Hydro Project

## Project Description, August 2008



Hydro Developments Ltd (HDL) is seeking resource consents and landowner approvals to build the Stockton Plateau Hydro Project on the tributaries of the Ngakawau River. The river flows to the Tasman Sea at Ngakawau, 31 km north of Westport within the Buller District of the South Island of New Zealand (see centrefold).

This project description has been prepared to provide a general overview of the project to assist in consultation with the community and affected parties. Consent applications and assessment of environmental effects are currently being prepared. The programme of consultation is helping shape the application, identifying aspects of the project that can be improved to provide greater benefits and aspects that can be modified to further mitigate effects.

### Overview

The Stockton Plateau Hydro Project will generate electricity by diverting drainage from the Stockton Plateau through a series of reservoirs, tunnels and power stations to an ocean outfall. The outfall will consist of a submarine tunnel connected to a diffuser built into the sea bed. The point of diffusion will be outside the wave break zone, approximately 600m offshore from the Lyric Theatre and south of Granity Stream mouth. At this point the diffusion will have no significant effect on the marine environment.

The project works will be located between the Ngakawau Ecological Area and the parts of the Stockton Plateau which have historically been the focus of mining activities. Two reservoirs and a number of diversion weirs and tunnels will be built to collect runoff from these areas. The reservoirs will be connected by tunnels driven deep underground. Power generation will occur in two power stations built at the outlets to the tunnels.

Access to the land is under negotiation. The reservoirs, power stations and diversion tunnels will be located on land currently in DOC stewardship. The outlet tunnels will pass beneath land owned by Solid Energy New Zealand Limited (SENZ), the Crown (railway, state highway and foreshore), Northern Buller Communities Society Inc (beside the Lyric Theatre), and Buller District Council (road reserve).

In terms of environmental effects, the reservoirs are the most significant components of the project. These are located beyond public view on areas modified by previous settlement and mining. The diversion tunnels and outfall tunnel will be buried over their entire length and will have minimal environmental effect.

The project is unusual for a hydro scheme in that it is built on the tributaries, not the main course of the Ngakawau River and will result in significant improvements to the Ngakawau River. The project will intercept 95% of the tributaries of the Ngakawau River affected by mining. This will result in a 17% reduction of the mean flow of the Ngakawau River at the river mouth; however, the reduction in mean flow is unlikely to be discernible. The most obvious change will be a dramatic improvement in water clarity and estuarine ecology. The visitor experience of the Charming Creek walkway which follows the river will be greatly enhanced. Flows over the Mangatini Falls will be reduced in volume but the quality will be significantly improved.

The project will generate in the order of 240 GWhr of renewable energy per year. The drop of more than 555m between the highest reservoir and ocean outfall means that large amounts of electricity can be generated from the relatively small volumes of water that will be diverted from the main river system (4 - 8 cubic metres per second). Harnessing this renewable energy will more than meet the needs of the Buller District and ensure that the West Coast region is less reliant on remote electricity generation.

When fully commissioned, the Project is expected to provide a continuous (24/7) base load in the order of 25MW. Stockton Mine may consume around 8MW. The remainder will be transmitted north to Karamea and south to Westport and beyond.

The Project has the potential to double the baseload output to around 50MW for short periods during and following heavy rainfall.

### Assessment of Effects

Activities that will affect the residents of Granity will be construction of the Granity tunnel entrance and the entrance to the ocean outfall tunnel. Both will be located within a construction yard north of Granity Museum. Granity tunnel entrance will take 6 months to build at the start of the project. Tunneling activities will then move underground for around 3 years. Construction of the ocean outfall will commence some 12 months before the completion of Granity tunnel and will involve construction of an access pit followed by underground boring. For both tunnels, residents will not be affected by the underground activities but will notice the regular coming and going of tunneling crews and trucks carting materials in and out of the

tunnels. Around 15-20 vehicle movements will occur each day.

All of the project components on Stockton Plateau can be constructed without interfering with mining operations. The project has been configured so that it will not constrain future mining operations within the mining licence area, nor will it quarantine any other coal resource. The project will produce surplus soil and granite which will be valuable in restoring mining areas. The project's activities on the Plateau will add a small number of additional vehicle movements on Millerton Road (10-15 per day) but will otherwise have no effect on the residents of Millerton.

HDL believes that the Stockton Plateau Hydro Project will provide a valuable source of renewable energy for Buller District.

- The electricity generated will meet the needs of Buller District and beyond.
- The project will produce carbon credits which will offset emissions and costs.
- The overall design of the project is robust and can withstand shocks from natural disasters (extreme rainfall and earthquakes).
- A large part of the project (tunnels and Granity power station) will be built underground. Construction effects will be minor. There will be no lasting effects on the environment.
- The remainder of the project will be located in areas of low environmental value. Construction and long term effects will be minor.
- Power generated by the scheme will be embedded into the local transmission network thereby minimising transmission losses.
- The project can be extended to intercept water from all areas of the Stockton Plateau as and when agreement is reached with landowners.
- Construction of the project will improve water quality and reduce flood risk in the Ngakawau River. The Ngakawau River will re-establish its natural character within several years of commissioning the project. Disposal to ocean results in no ecotoxicity or smothering effects. The method of treatment is internationally proven and effects are predictable.
- During construction \$200M will be spent within the Buller District over a five year period providing employment opportunities for up to 50 construction workers. The project promoter is a local company strongly supported by the local community.

Consent applications for the construction of the Stockton Plateau Hydro Project will be lodged shortly. If you wish to discuss any aspect of the project with the Project Team please contact:

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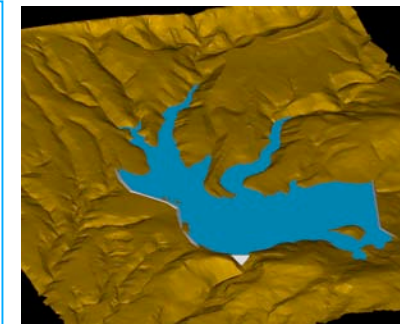
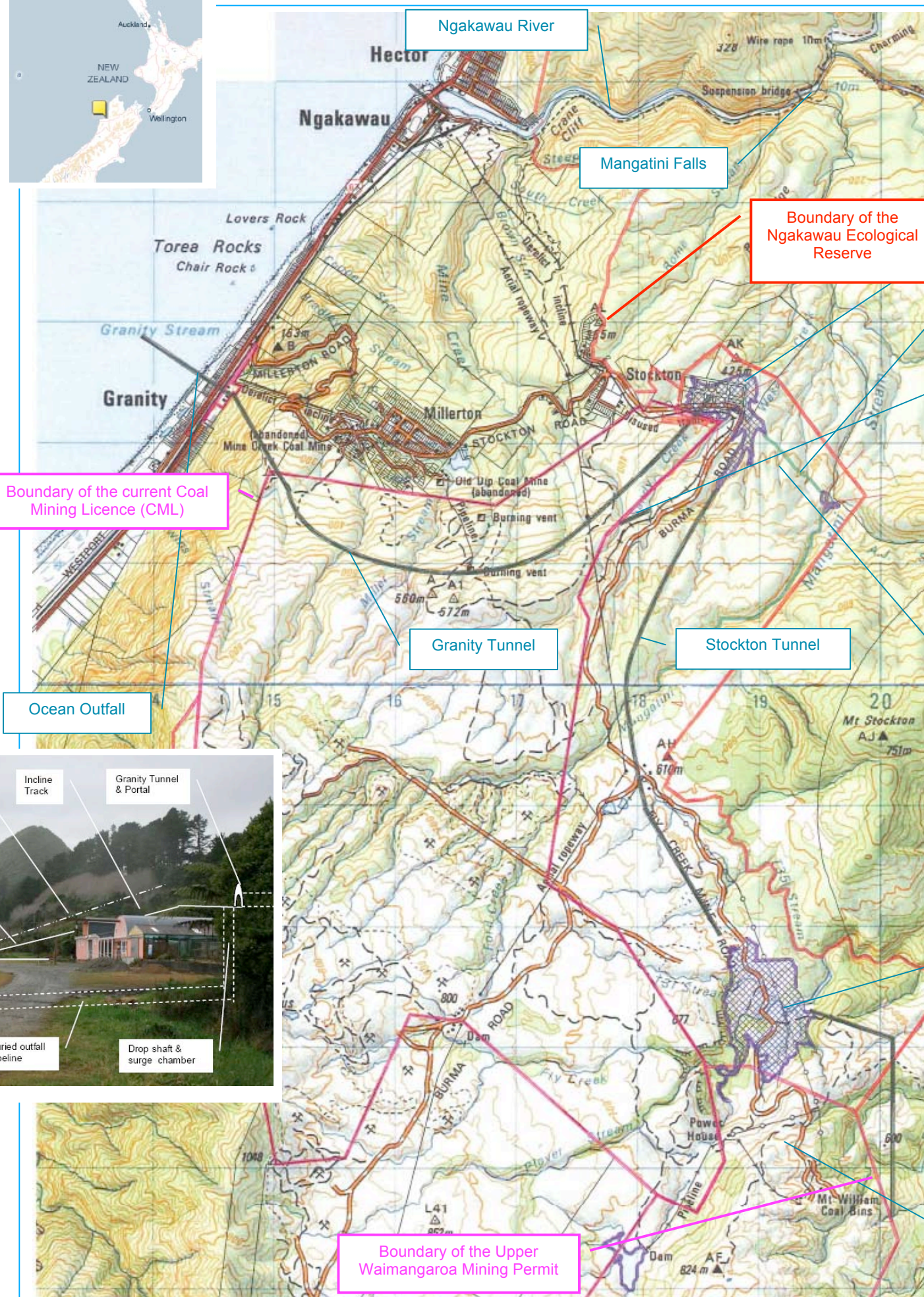
## The core components of the project are:

- Mt William reservoir will be formed below the confluence of the Plover and Fly Streams on the St Patrick Stream to the east of Mt William. The storage reservoir will inundate an area of approximately 50 hectares.
- Five streams will be captured and diverted into the Mt William storage reservoir being: T31, Fly, Plover, St Patrick and Darcy streams.
- Weka reservoir will be formed below the confluence of Weka and Sandy Creeks near Tin Town corner and will inundate an area of approximately 28 hectares.
- Five streams will be captured and diverted into the Weka storage reservoir being: Weka, Sandy, Upper Mine, Mangatini and A.J. streams.
- The Stockton tunnel, some 3.5 km long, will connect the Mt William reservoir and the Weka storage reservoir. The Weka Power station will be built at the outlet to this tunnel.
- The Granity tunnel, some 4 km long, will connect the Weka reservoir to the ocean outfall at Granity. The Granity Power station will be built just inside the tunnel outlet, located in the hill-side just above and to the north of the Granity Museum. The Granity tunnel will be driven through granite, over 250m beneath the historic Millerton and Old Dip mines.
- An ocean outfall "microtunnel" will be driven beneath the sea bed to intersect a diffuser sunk into the sea bed beyond the wave break zone approximately 600m offshore. The microtunnel will be driven from a pit below Granity Tunnel outlet to the diffuser, passing beneath the railway, state highway, bare land immediately north of Lyric Theatre, road reserve, foreshore and seabed.

## Works at Granity

Access to the Granity tunnel outlet will be from the State Highway adjacent to the war memorial, and will require construction of a temporary crossing over the railway line. Construction at the tunnel outlet will include a headwall some 10m wide and 5m high, an apron, and an access ramp. The Granity power station will be built within the tunnel. North of the tunnel outlet, the area between the railway line and hill will be used for storage of construction plant, equipment and stockpiles of pipelines, building materials and aggregates. The site will largely be hidden from view and is some distance from most of the residential buildings in Granity.

An emergency outflow pipeline from the Granity Tunnel to the Granity Stream is a necessary component of the project. This will be used for drainage during construction of the tunnel and will be used to divert flows in the extremely unlikely event that the outfall is blocked. The emergency outflow pipeline will be buried in the access ramp and will discharge to a sediment trap before flowing through a diffuser into Granity Stream. Use of the emergency outfall will create flows in Granity Stream similar to the very small freshes which occur on a regular basis. This will have no effect on the stream channel.



Weka Reservoir

Diversion of Mangatini stream flows to Weka Reservoir via a tunnel

Diversion of Mine Creek flows to Weka Reservoir via a tunnel to Sandy Creek



View across Weka Reservoir – haul road to the left



Mt William Reservoir



View from above the Mt William Reservoir along the route of the Stockton Tunnel