Lake Margaret – A hydroelectric power scheme

Industrial obsolescence and rebirth

Presented by Sarah Waight
Lake Margaret

- One of Tasmania’s oldest hydro-electric power schemes
- On a site of over 2100 hectares
Early years

- Early recognition of water power potential
- Not implemented for eighteen years
- Access required through inhospitable country

Surveying for the Lake Margaret Power Station
Construction

- Commissioned in 1914 by the Mt Lyell Mining and Railway Company Limited
- Only generated power for the mine
- Three years in construction

Living and work conditions were wet and harsh.
Site features

- Built on the Yolande River with six distinct eras of development
- Headworks and dam
- Water intake and low pressure pipeline (woodstave)
- High pressure pipeline
- Power station
- Village
Headworks

- Small mass concrete gravity dam
- Extended, stabilised and recently modified
- Ongoing repairs required
Woodstave pipeline

- First woodstave pipeline built from Oregon pine but lasted only 24 years
- 2.2 km long, internal diameter of four feet
Woodstave pipeline

- Second woodstave built from local King Billy pine
- Built in 1938, lasting 68 years
- Woodstave pipelines have a lifespan of 40 to 50 years
Woodstave pipeline

- Had become an inefficient, an OHS risky and failure prone asset
- An exciting feature in a dramatic setting
Penstocks

- Original, later era and current equipment all remain in situ

Old and new penstock

Miss Australia 1975, Kerry Doyle, visits Lake Margaret
Power station

- Commissioned in 1914 with 4 Pelton wheels
- Two additional generator sets added in 1918
- Seventh Pelton wheel added in 1930

The power station c.1914

The power station 2008
Power station interior

- Each phase of development is still visible
- Some equipment sound
- Others requiring total replacement

Original fitout of the generator sets

Current view of an alternator
The village

- Built to replace a tent city
- Isolated and accessible by tram till 1964
- Included houses and a community hall – most remain

Lake Margaret Village c.1914

Lake Margaret Village c.1970
Lower station

- Built in the 1931
- Equipped with a single Francis wheel
- Second woodstave pipeline which failed

The lower station woodstave pipeline, 2008

The lower station, 2008
Heritage assessments

- Acknowledged heritage values
- Commissioned a cultural heritage study in 1994 by Godden Mackay, &
- CMP by Paul Davies Pty Ltd in 2006
- Established internal HT heritage processes and procedures

Pipeline damaged by rock slide, c.1970
Shutdown

• Commitment to preserve three woodstave sections
• Criticism from Council, engineering heritage groups and a failure to communicate key issues
• Community pressure
• Heritage listing

Rockwall collapse ended in the shutdown of the pipeline three days earlier than planned.
Redevelopment

• Changes in communication
• Changes in management structures
• Changing electricity market and automation
• Extensive analysis of costings and options
• Altered rainfall patterns
• Growing appreciation of heritage
Heritage outcomes

• Three sections of the 1938 woodstave pipeline preserved in situ
• King Billy pine may be made available
• A greater awareness of Burra Charter principles and heritage legislative processes
• Better relations with community
New woodstave

• Construction commenced in 2008 using Alaskan yellow cedar with class 1 durability.
• Commissioning due soon
• Training of locals in skills to build and maintain the woodstave.
Current redevelopment

- Establish internal process to mitigate heritage impacts
- Comprehensive documentation
- ‘No prudent and feasible alternative’
- Acknowledgement of regulatory requirements and stakeholders
- Alignment of the ‘planets’
The future

• A significant project for the State and the business - $14.7 million in value
• The upper station to be recommissioned within weeks
• Revitalistation of lower station by 2010
• Managed change for sustainable energy outputs
The end

Riley and Vauxhall trams at Lake Margaret, 1942 (Also known as Romeo and Juliet)

Construction of the second woodstave

Photographs by Hydro Tasmania, Hydro Tasmania Consulting, Lake Margaret Collection, Sarah Waight, Frank Martin, Viv Crocker, Ken Woolley and Rick Quarmby. Mr P Thomas and Peter Ralph