Geothermal Commissioning Update

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contact

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Geothermal commissioning update

Includes revisions to expected timing and capacity for Tauhara online

- Tauhara is a world-class geothermal development to build a multi-generational 174MW renewable baseload powerplant.
- Hot commissioning of the steam-field commenced in July 2023.
- Commissioning issues have emerged including underperforming steam-field valves and liquid handling systems and a steam hammer event.
- Some elements of the steam separation plant will require further design and modification.
- Tauhara is now expected online in Q3 2024 at least at the initial design capacity of around 152MW.
- The first planned outage (expected within a year from online date) will be an opportunity to undertake any further modification and debottlenecking that may be required to reach and maintain the full planned capacity of 174MW.
- A number of strategies are being applied to mitigate the deferral of this expected geothermal generation, in line with Contact's commodity risk framework.
- There is no change to Contact's FY24 normalised and expected EBITDAF guidance of $600m.
- Plant modifications will result in a cost increase of up to $40m, with the project still achieving an LRMC of around $75 per MWh.[1]
- This pack contains further context on the stages of commissioning of geothermal projects and the related risks and mitigations.

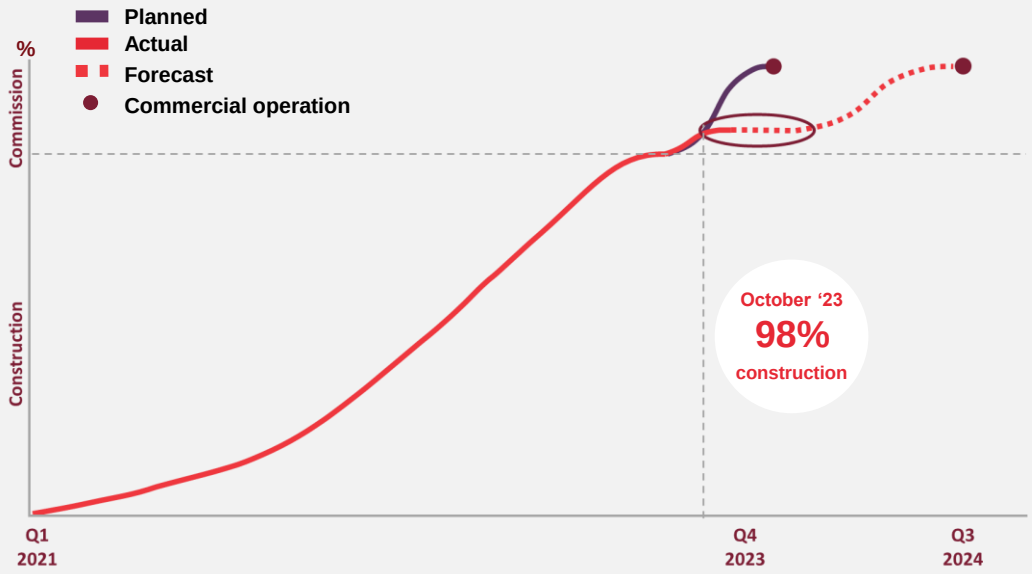
[1] Assumptions include a capital cost of $920m, broker consensus WACC of 7.5%; inflation of 2%; corporate tax rate of 28%; 35-year plant life; $15/MWh operating costs; ~$8m p.a. capex (with major mid-life capex smoothed) as at FID in February 2021.

Geothermal plants under construction

Contact currently has $1.2bn of geothermal projects under construction[1]

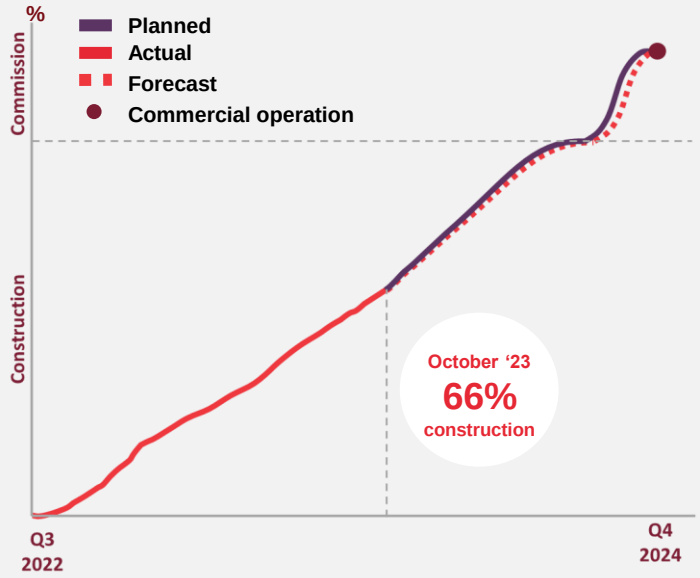
Project progress

Tauhara



Total expected project cost[2]	$920m
Spend to date (to 31 Oct)[2]	$775m
Project update	Commissioning stalled for remediation of steam-field issues. Plant expected online in Q3 2024 at least at the initial design capacity of 152MW, with full planned capacity of 174MW expected at the first planned outage.

Te Huka 3



Total expected project cost[2]	$300m
Spend to date (to 31 Oct)[2]	$191m
Project update	All major equipment from Israel has either arrived or is in transit, mitigating risks of supply disruption from conflict in the Middle East. Generator on track to be shipped from Europe by end 2023.

[1] Or $1.3bn of committed geothermal investment when including the $114m of pre-FID development costs for GeoFuture.
[2] Includes sunk costs. Excludes capitalised interest.

Recap on key project delivery roles

Geothermal developments are complex – Contact directly manages those project elements where it has deep expertise and works through expert partners as appropriate to manage risks

		Engineering	Procurement	Construction	Management
Wells & Resource	Tauhara	contact	contact	MB Century & others	contact
	Te Huka 3	contact	contact	MB Century & others	contact
Steam-field	Tauhara	J	contact	Various domestic specialist contractors	contact
	Te Huka 3	mtl	contact	Various domestic specialist contractors	contact
Powerstation	Tauhara	← Sumitomo Corporation →			
	Te Huka 3	← ORMAT →			
Transmission	Tauhara	← TRANSPOWER unison The Powerlines People →			
	Te Huka 3	← TRANSPOWER unison The Powerlines People →			

Geothermal commissioning

While commissioning challenges are common, especially with steam turbines, there are a range of mitigations available

Te Mihi (2014)
- » Commissioning issues identified and mitigated
- » Commercial online date (COD) deferred ~7 months
- » Full output achieved at first outage (+13 months from original COD)

Challenges faced	Mitigation
Cold commissioning – Lube oil flushing	Various mitigations including: • Remediation by owner • Remediation by OEM / EPC • Delay liquidated damages (LDs) • Insurance
Hot well pump	
Condenser performance	
Pedestal deflections in early operation	

Tauhara (today)
- » Commissioning underway
- » Expected online in Q3 2024 at least at the initial design capacity of 152MW
- » Full target output expected at first planned outage

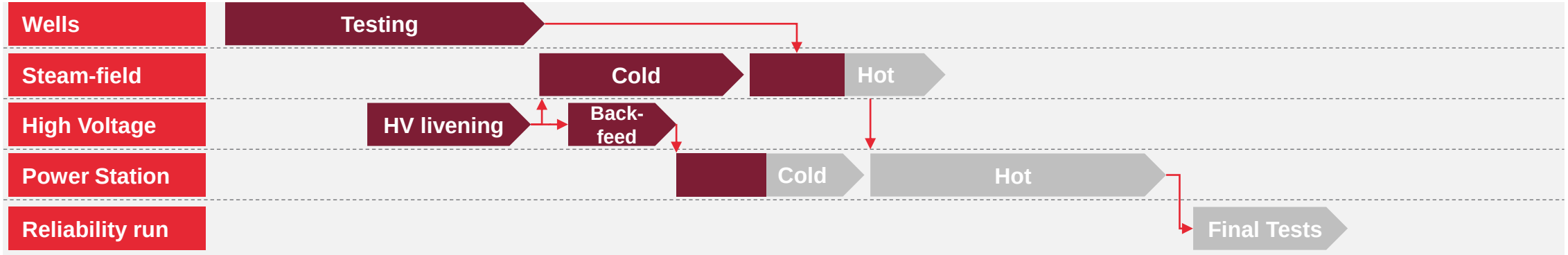
Challenge (to date)	Mitigation (likely)
Steam field valve performance	Valve remediation and replacement
Steam hammer event	Pipework modification & recompletion
Bottlenecks in liquid handling systems	Debottlenecking

Typical commissioning stages and sequencing

The commissioning process is designed to test all functions of the geothermal well operations, steam field and power station under a range of conditions, including extreme emergency simulations

Stage	Well testing	Steam-field (cold)	High Voltage livening	Power Station (cold)	Steam-field (hot)	Power Station (hot)	Reliability run
Key elements tested	Completed via flowing output test to understand flow and energy.	Check piping systems, control system functions; check valve and safety system operation (without steam).	System configuration, protection schemes, key equipment performance. Back-feed Power Station.	Control system functions; valve and safety system operation, lube oil and control oil system tests (without steam).	Operating tests of plant; ensure integrity of plant and safety systems at maximum design conditions.	Steam blow of piping system, operating tests of plant; integrity of safety system; plant performance tests.	Reliability test of all combined systems and plant output.
Duration	2 - 3 months	2 - 3 months	1 month	1 month	1 month	1 - 2 months	1 month

Sequencing of commissioning stages:



Note: Arrows are not to scale

Tauhara key: Complete | Future activity | Sequencing dependency

Early plant life: Typical features

The early years after on-line date are characterised by a number of common features across geothermal plants

Ramp up to target output

- Plant can often be commissioned below long-term output target.
- Debottlenecking typically undertaken over first 1 – 2 years.
- Scale to target output (first major outage).

Initial major outages

- Necessary after 12 months of operation, and then plan to extend to 2 and then 4 year cycles (i.e. year 1, 3, 7, 11 etc).
- Regulatory requirement of pressurised steam systems such as a geothermal plant.
- Timeframes can vary dependent on scope of activities.

Role of insurance

- Coverage held for contract works and delayed start up rolls over into operational programme after online date.

Up front risk mitigation

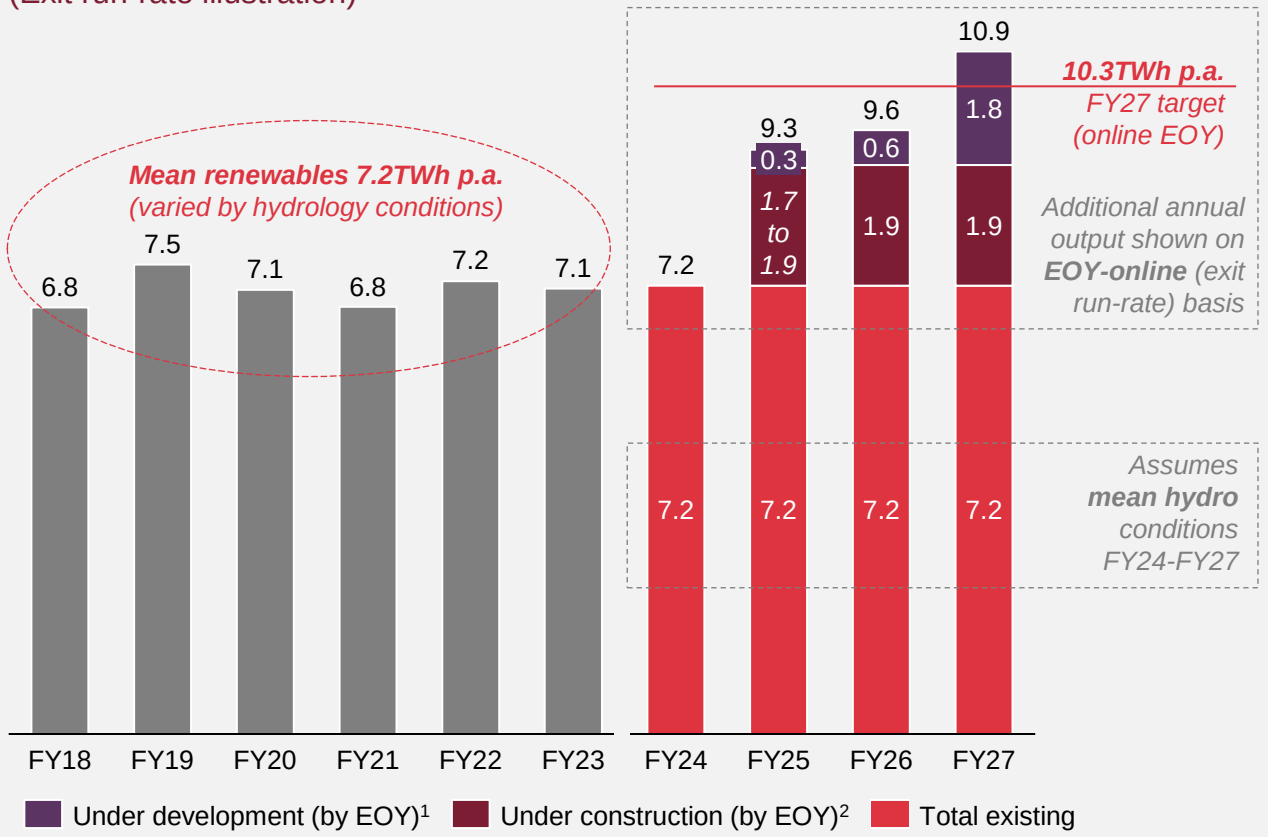
- PPAs linked to plant output and the plant being in service.

Contact expects to deliver near term uplift in renewable generation and EBITDAF

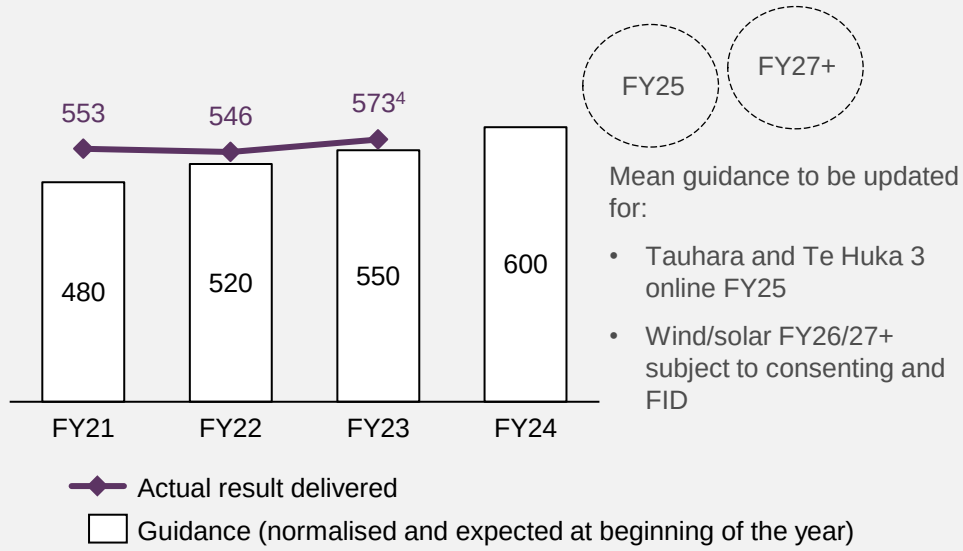
Further substitution of baseload gas generation for low cost geothermal to drive EBITDAF margin uplift

Renewable generation – Annual output (TWh)

(Exit run-rate illustration)



EBITDAF Guidance vs Actual ($m)[3]



Mean guidance to be updated for:

- Tauhara and Te Huka 3 online FY25
- Wind/solar FY26/27+ subject to consenting and FID

Strong track record of delivering performance above guidance

Hydrology swing of +/-$50m EBITDAF remains

[1] Includes two grid scale solar projects (0.3TWh p.a. each) and the Southland wind project (0.9-1.2TWh p.a.). Each is progressing through consenting and development processes and remains subject to final investment decision. Also includes the consented GeoFuture project, for the replacement of Wairakei A&B geothermal station (net 0.4TWh p.a. uplift in output based on ~170MW replacement plant), subject to final investment decision.

[2] Includes geothermal plants under construction at Tauhara (1.4TWh p.a.) and Te Huka (0.4TWh p.a.) and uplift from the planned refurbishment of hydro turbines at Roxburgh (0.05 TWh p.a.).

[3] Refer to slide 43 of FY23 results presentation for reconciliation of EBITDAF.

[4] Underlying EBITDAF excludes non-cash accounting item: onerous contract provision expense of $113m.