AER Directive 054 – Scheme Performance Report

Hangingstone EXPANSION SAGD Project

Scheme Approval No. 11910, as amended
EPEA Approval No. 153105, as amended

GREENFIRE
RESOURCES

Disclaimer

This presentation contains forward looking statements and forward-looking information (collectively "forward-looking information") within the meaning of applicable securities laws relating to the Company's plans and other aspects of the Company's anticipated future operations, strategies and production results. Forward looking information typically uses words such as " anticipate", "believe" "project", "expect", "goal", "plan", "intend", "may", "would", "could" or "will" or similar words suggesting future outcomes, events or performance. Specifically, this presentation contains forward looking statements relating to our continued strategy of implementing industry production practices at Hangingstone Expansion Project and the Company's future optimization performance and plans.

Forward looking statements regarding the Company are based on certain key expectations and assumptions of the Company concerning regulatory developments, current and future commodity prices and exchange rates, applicable royalty rates, tax laws, industry conditions, future production rates, future operating costs, the timing and success of its optimization initiatives, the impact of competition and general economic and market conditions.

These forward-looking statements are also subject to numerous risks and uncertainties, certain of which are beyond the Company's control. Such risks and uncertainties include, without limitation volatility in oil prices; industry conditions; liabilities inherent in bitumen operations; environmental risks; the lack of availability of qualified personnel; and changes in income tax laws or changes in royalty rates and incentive programs relating to the oil and gas industry. Management has included the forward-looking statements above and a summary of assumptions and risks related to forward looking statements provided in this presentation in order to provide readers with a more complete perspective on the Company's performance and such information may not be appropriate for other purposes. The Company's actual results, performance or achievement could differ materially from those expressed in, or implied by, these forward-looking statements and, accordingly, no assurance can be given that any of the events anticipated by the forward-looking statements will transpire or occur, or if any of them do so, what benefits that the Company will derive therefrom. Readers are cautioned that the foregoing lists of factors are not exhaustive These forward-looking statements are made as of the date presentation and the Company disclaims any intent or obligation to update publicly any forward-looking statements, whether as a result of new information, future events or results or otherwise, other than as required by applicable securities laws.

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Section 1.0 – Background

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1.1 Background

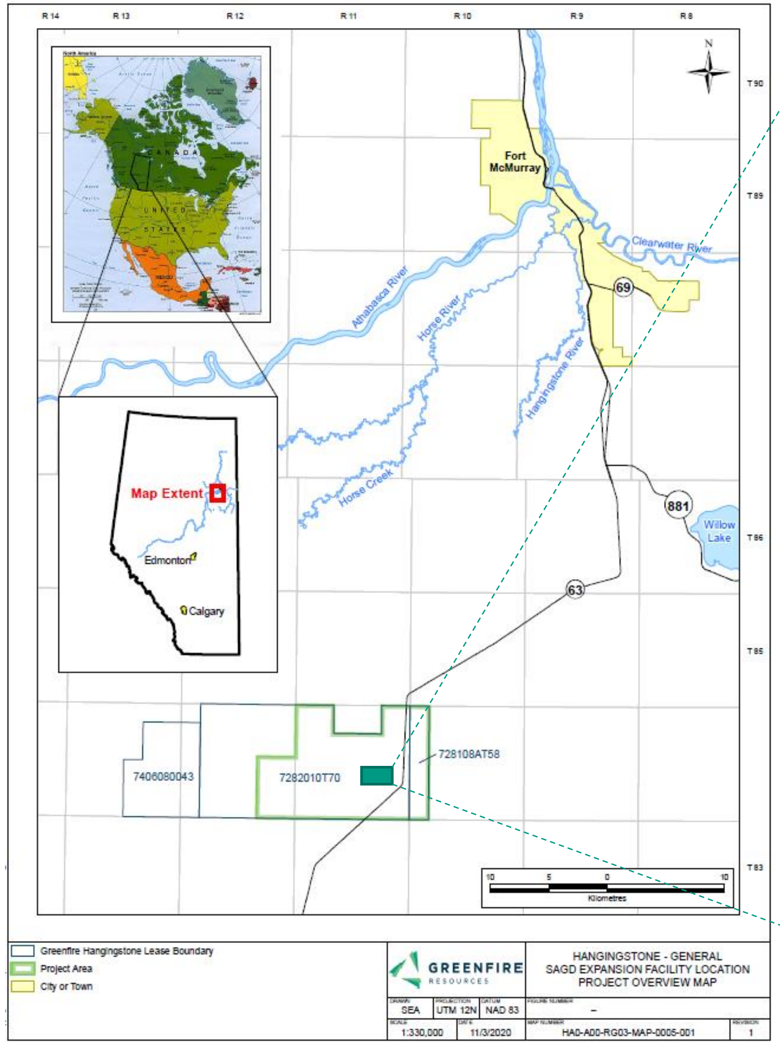
- Hangingstone Expansion Project (the "**Project**") has been in operation since 2017, with an approved production capacity of 4,800 m^3/day (~30,000 bbl/day)
- Alberta Energy Regulator Approvals:
  - EPEA Approval No. 153105, as amended
  - Scheme Approval No. 11910, as amended
- Project Operational History
  - First Steam – April 2017
  - First Production – August 2017
  - Transfer of Ownership to Greenfire – September 2021

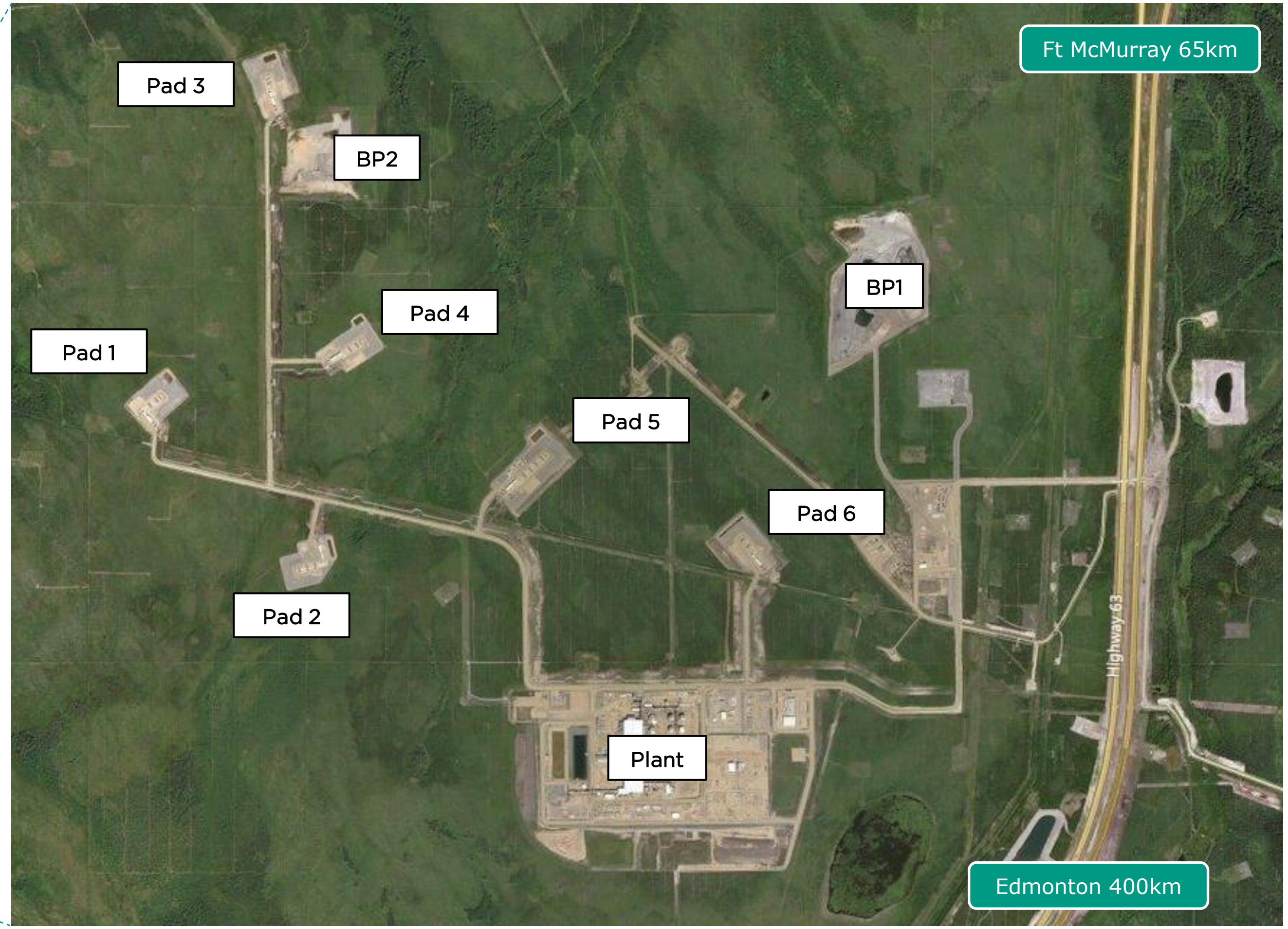
NOTE:

*The subject report includes information from January 1, 2021, to December 31, 2021. This period covers the period from the last Directive 054 report to the end of the 2021 calendar year and is noted as the "**reporting period**" throughout.*

1.2 Location

The Project is located approximately 65km south of Fort McMurray, Alberta





Section 2.0 – Subsurface

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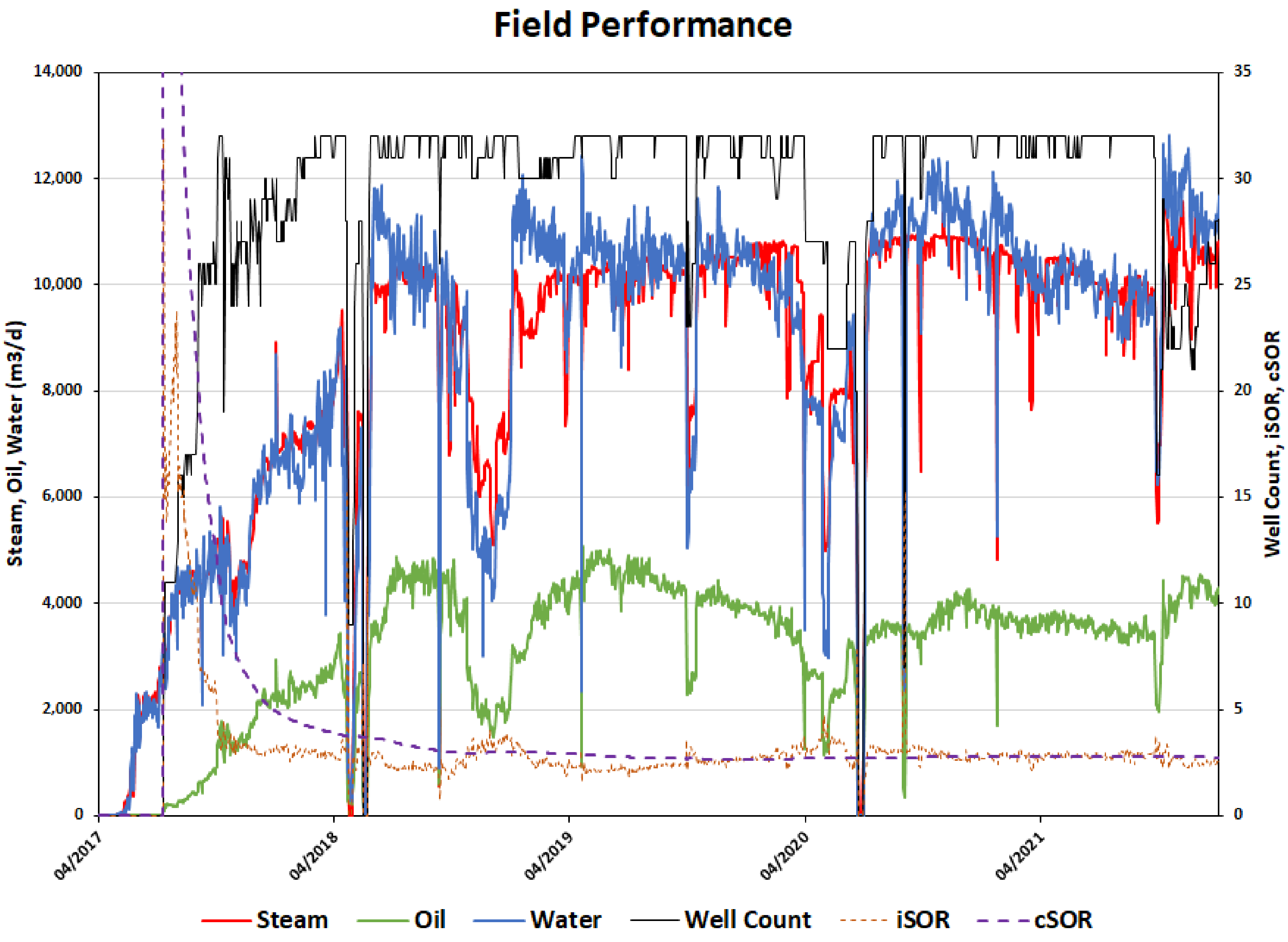
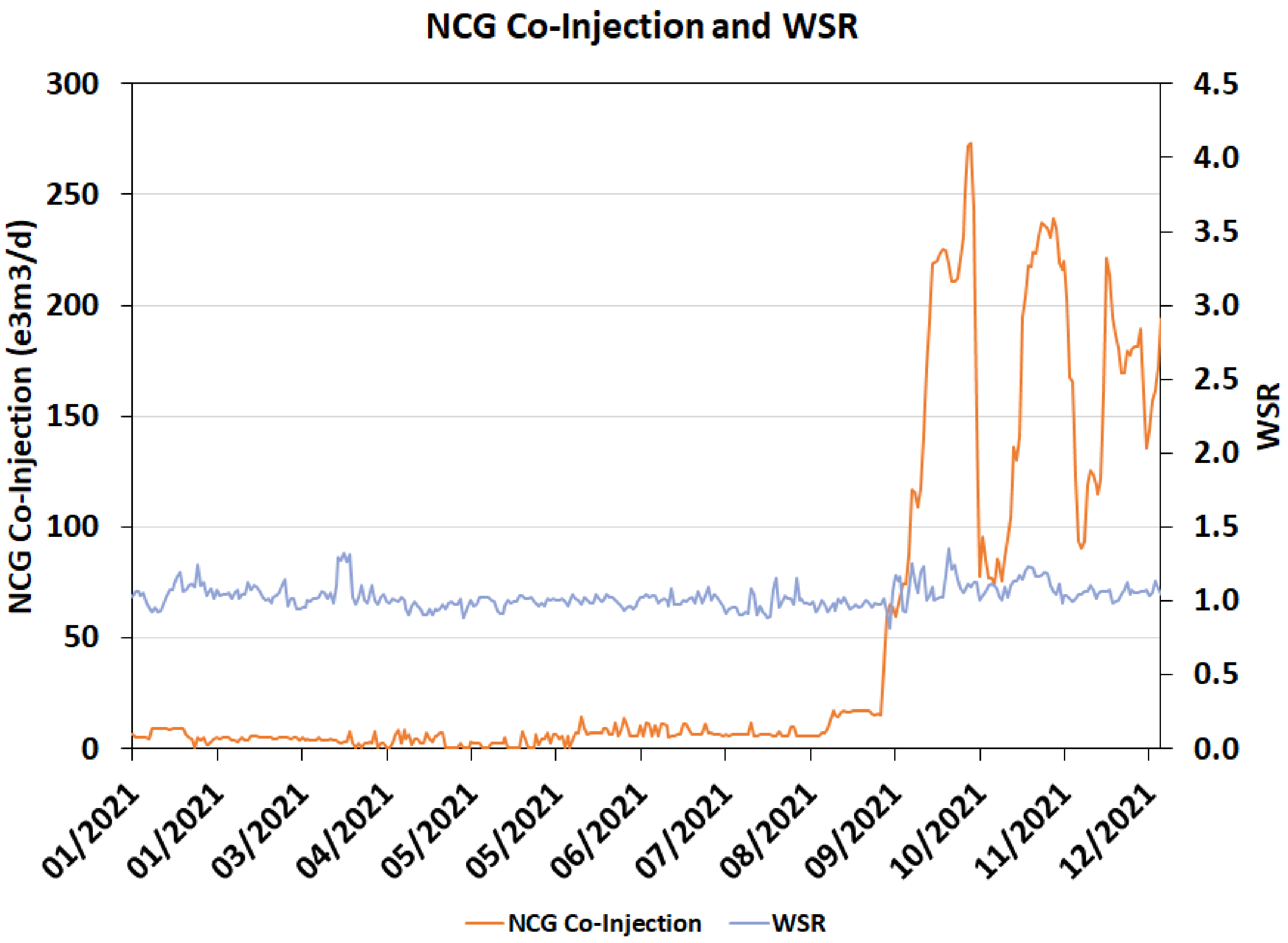
2.1 Lifespan Production: Field Performance



2021 Field NCG Co-Injection & WSR

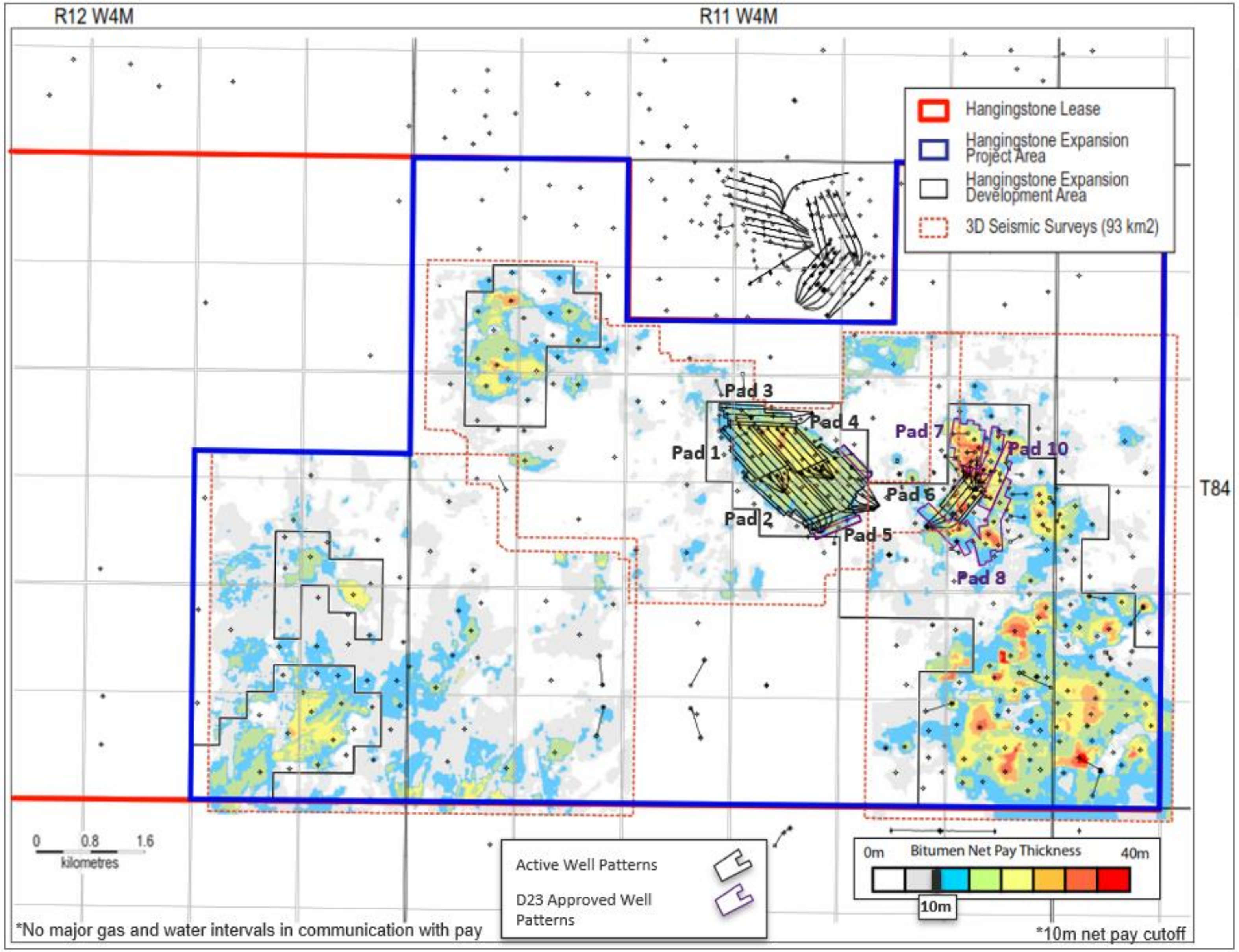


2.2 Net Pay/Drainage Pattern

McMurray Net Pay Criteria:
<60API Gamma Ray
>30% Porosity
>20 Ω·m Rt (>50% So)
< 30% Vshale
Muds <1m thick

Fluid Interactions:
No Top Gas
No Bottom Water
No Lean Zones

Min Pay Thickness: 10m

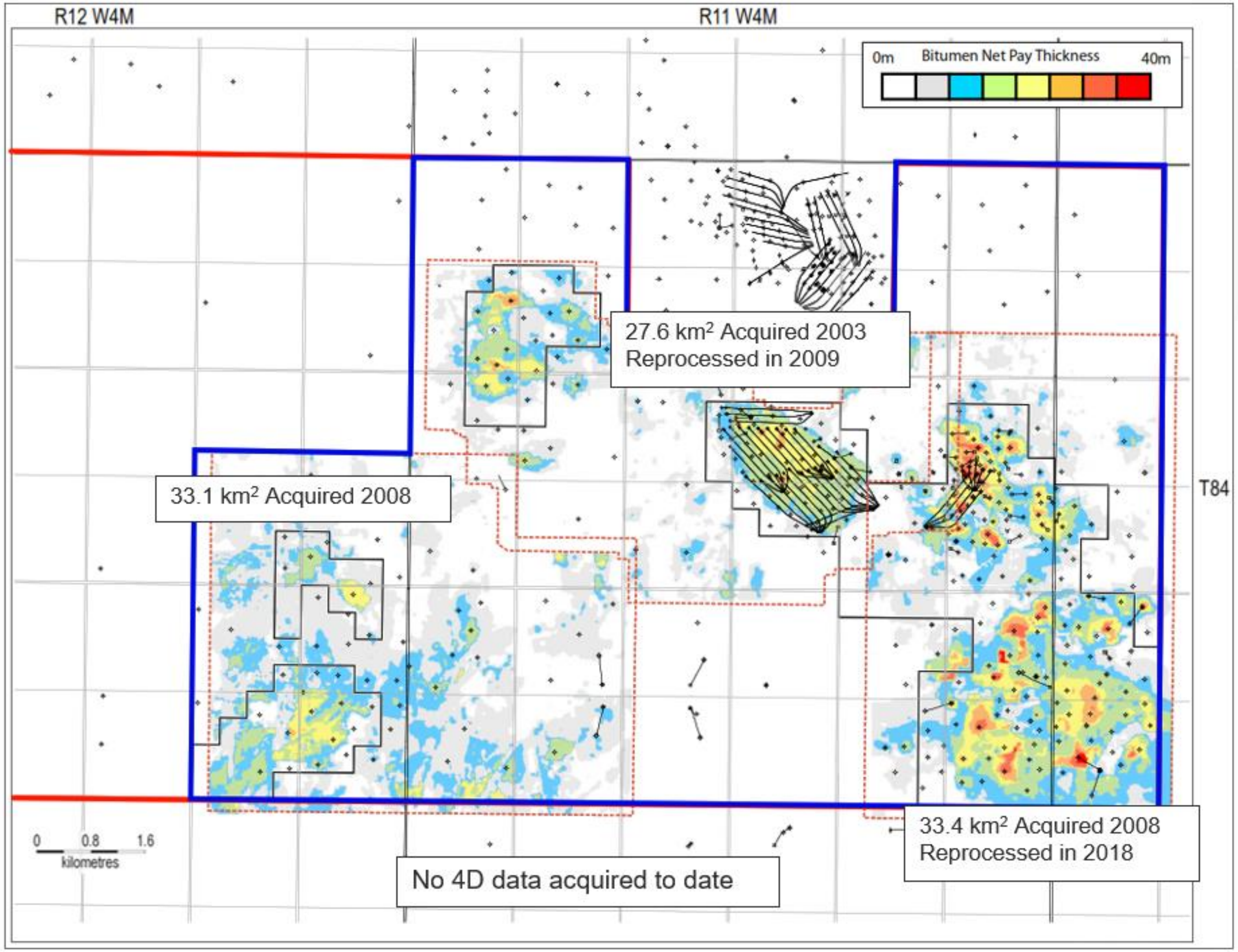


2.3 Geomechanical Summary

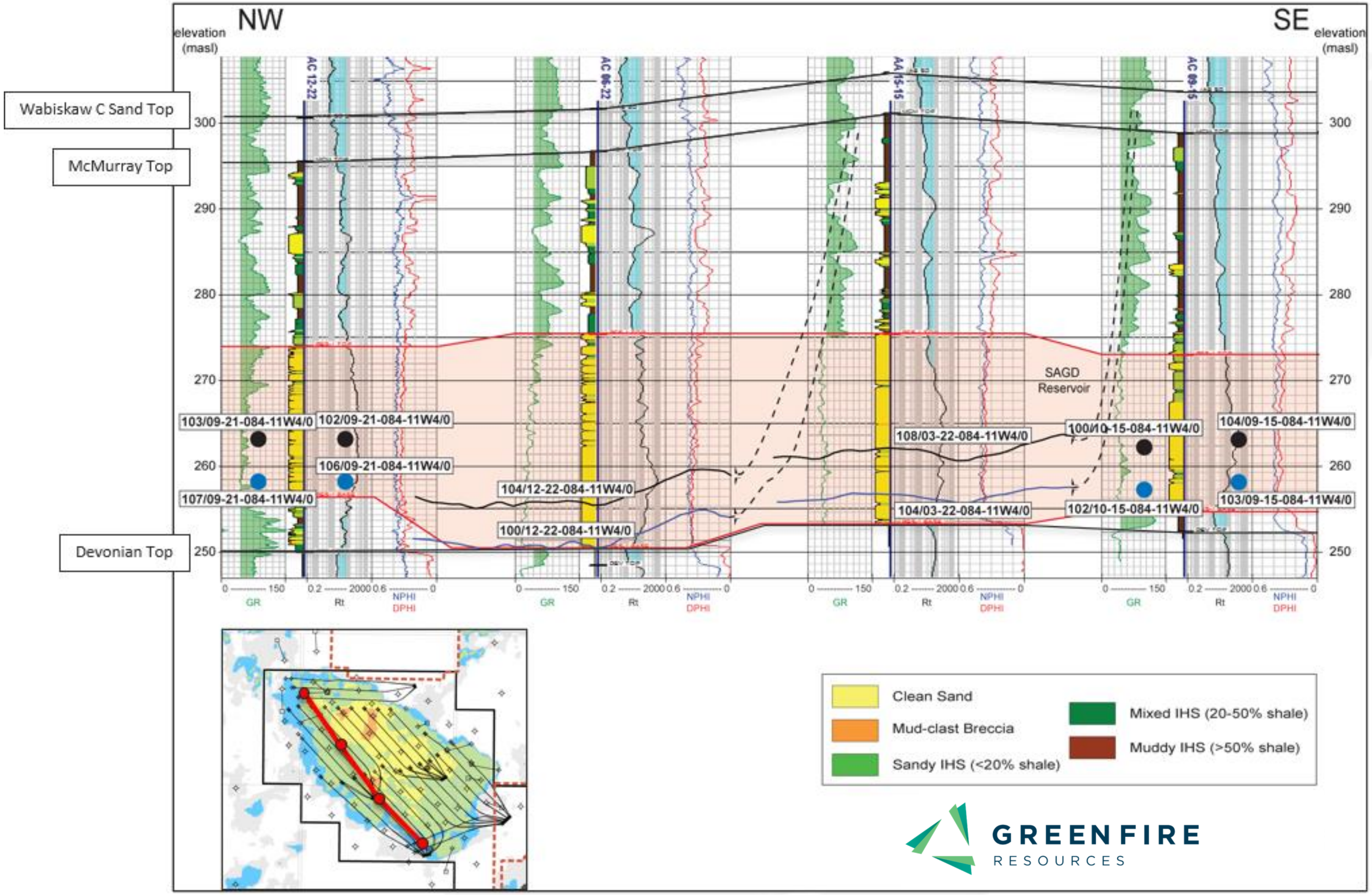
- No change in caprock integrity analysis since August 2018
- Original injection pressures determined by mini-frac tests in the 1980s
- The Project conducted mini-frac testing in 2010 and exhibited consistent results to original data
- 5 MPa determined to be maximum wellhead injection pressure (80% of fracture pressure)
- Reservoir pressure is monitored through blanket gas pressure readings in the casing annulus

	Depth	Min. Stress		Vertical Stress		Stress Regime
Formation/Lithology	TVD (m)	Mpa	kPa/m	Mpa	kPa/m	
Clearwater Shale	272.0	5.39	19.82	5.73	21.07	Horizontal Fracture
Wabiskaw Shale	297.0	6.17	20.77	6.26	21.08	Horizontal Fracture
McMurray Shale	314.5	5.55	17.65	6.64	21.11	Vertical Fracture
McMurray Sand	327.0	5.59	17.09	6.91	21.13	Vertical Fracture

2.4 Seismic Summary



2.5 Well Cross Section (1)



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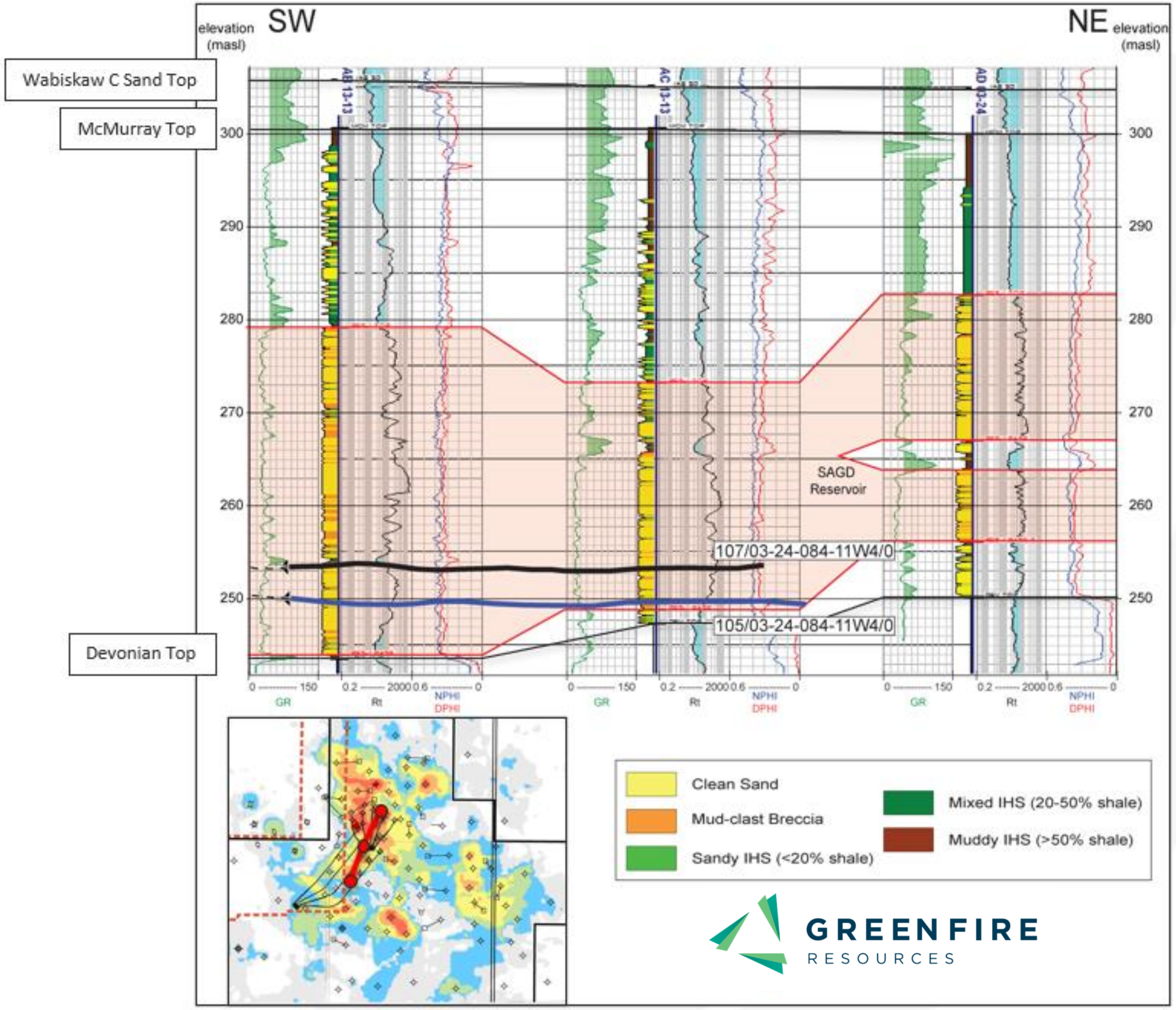
2.5 Well Cross Section (2)



2.6 Original Bitumen in Place (OBIP)

Reservoir Parameters	Value
Initial oil saturation (%)	81
Porosity (%)	33
Average SAGD Pay Thickness (m)	22
Vertical Permeability, Kv (mD)	4,050
Horizontal Permeability, Kh (mD)	5,800

OBIP Calculation Method

$$\mathbf{OBIP} = \mathbf{Rv} \times \boldsymbol{\phi} \times (\mathbf{1\text{-}Sw}) \times \mathbf{FVF}$$

Where:
OBIP: Original bitumen in place
Rv: Rock Volume
ϕ : Porosity
Sw: Initial water saturation
FVF: Formation volume factor (1.001)

	Original Bitumen in Place (e^6m^3)	Cumulative Production (e^6m^3)	Recovery Factor (%)
Operating Area	15.5	5.3	34.2
Development Area	64.7		8.2
Project Area	108.9		4.9

2.7 Well Patterns

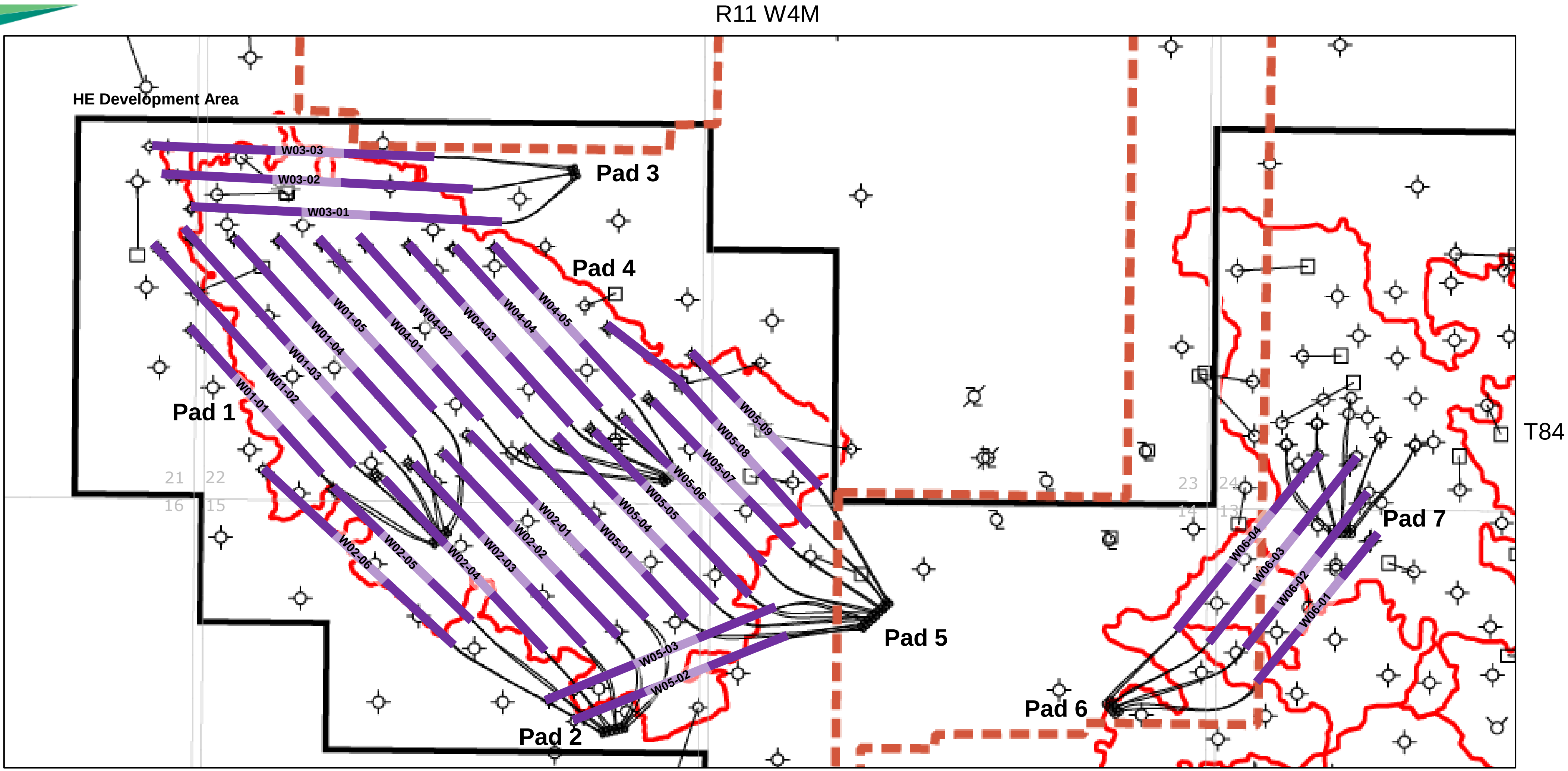
Pad	Area (m^2)	Average Net Pay (m)	Porosity (%)	Oil Saturation (%)	Vertical Permeability (mD)	Horizontal Permeability (mD)	OBIP (e^3m^3)	PBIP (e^3m^3)	Cumulative Bitumen (e^3m^3)	Current OBIP Recovery (%)	Current PBIP Recovery (%)	Ultimate Recovery (%)
1	445,154	21.5	33	81	4,050	5,800	2,560	2,448	1,001	39	41	70-80
2	526,091	21.8	33	81	4,050	5,800	3,070	2,946	1,030	34	35	70-80
3	295,421	17.5	33	81	4,050	5,800	1,390	1,295	155	11	12	55-65
4	412,779	24.9	33	81	4,050	5,800	2,740	2,584	936	34	36	65-75
5	671,778	20.1	33	81	4,050	5,800	3,620	3,370	1,759	49	52	70-80
6	254,952	30.6	33	81	4,050	5,800	2,080	1,937	435	21	23	60-70
Operating Area	2,606,175	22.7	33	81	4,050	5,800	15,460	14,580	5,316	34	36	65-75

2.8 Co-Injection Summary

- The Project is approved for full field NCG co-injection (pipeline fuel gas) up to 25,000 sm^3/d per well
- Recovery is estimated at ~10 – 15% of injected volumes
- The table provides NCG co-injection carried rates for January to December 2021 by pad
  - Average project injection for 2021 was 43 $e3m^3$/d
  - Cumulative co-injection for 2021 was 15,842 e^3m^3
- Greenfire intends to continue with NCG co-injection to assist with reservoir pressure maintenance, pending market conditions, as it helps to keep pressure in the reservoir while allocating steam around the field
- Greenfire has observed no negative impacts from the use of NCG. No decreases in oil production or increase in SOR have been shown from use of NCG.

Pad	Average Per Well (sm3/d)	Cumulative Injection (sm3)
1	1,508	2,752,430
2	1,229	2,692,075
3	452	495,045
4	1,536	2,803,999
5	1,842	6,052,069
6	1,771	2,585,115

2.8 Co-Injection Well Locations



Wells with NCG Co-injection in 2021

15m Net Pay Boundary

Section 3.0 – Surface

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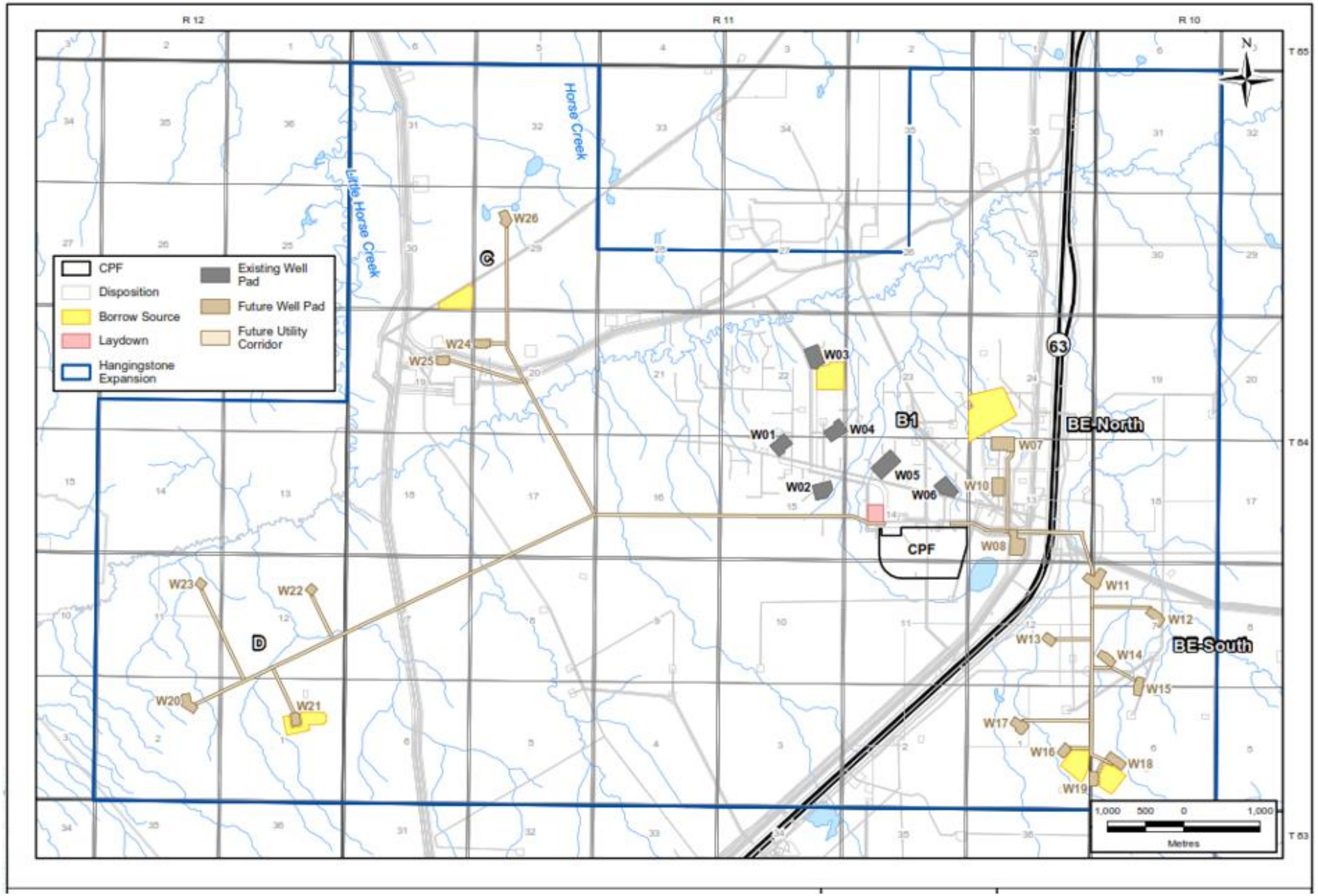
3.1 Infrastructure Map



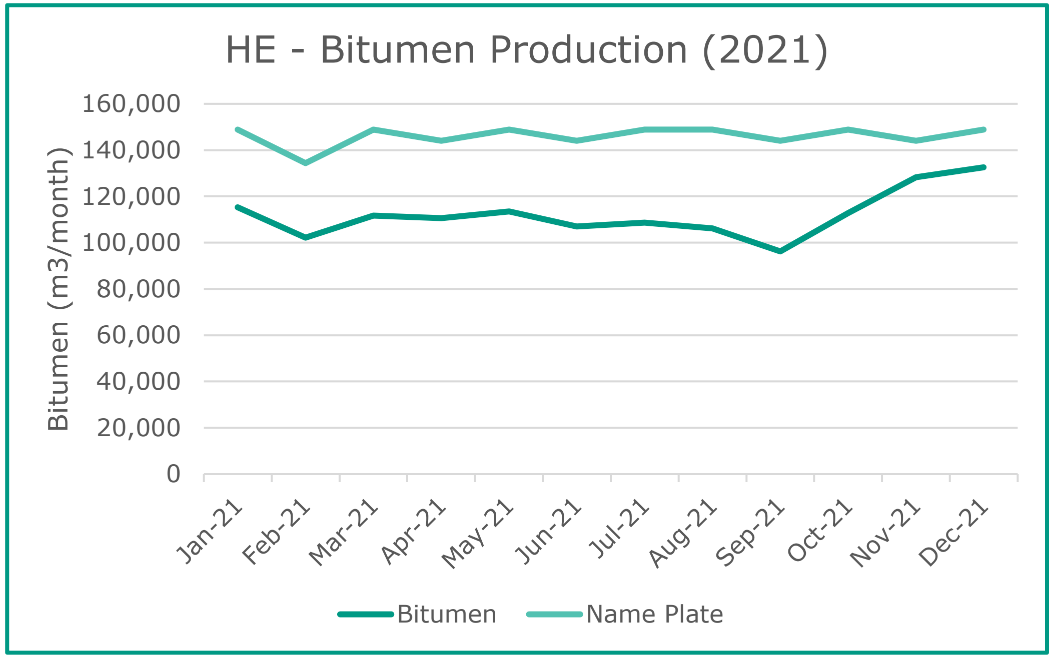
The noted future/planned well pads and utility corridors noted in the subject map were developed by the previous operator of the project. Greenfire is evaluating these plans and may adjust if deemed necessary.

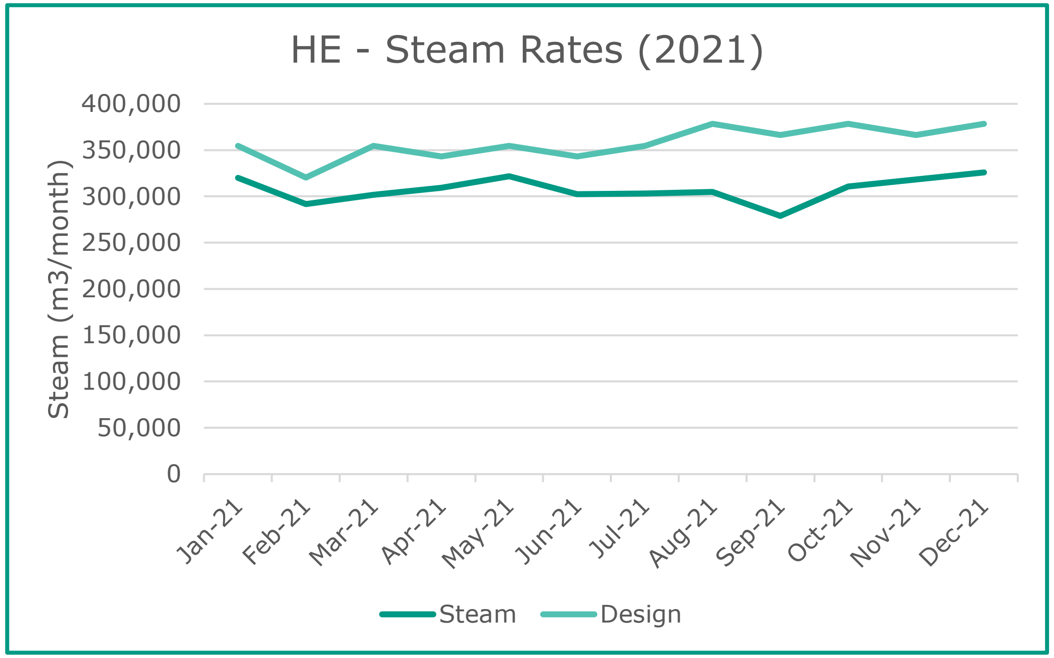
3.2 CPF Modifications

There have been no modifications to the Projects central processing facility for the reporting period that have required an AER approval.

3.3 Bitumen/Steam Rates

The following are the steam and bitumen rates for the Project for the Reporting Period. The rates matched the forecasted profiles.





***Plant Turnaround in September 2021*

Licenced Nameplate = 4,800 m^3/day

Steam Rate Design = 11,440 tonnes/day (80% quality)

Section 4.0 – Historical & Upcoming Activity

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4.1 Suspension & Abandonments

- There were no suspension or abandonment activities completed in 2021.
- The Project conducted annual turnaround activities in September 2021.
- There are no well patterns with active blow-down or ramp down

4.2 Operational & Regulatory Changes

- Regulatory Approvals for the Reporting Period

Application No.	Description	Approval Date
Scheme Approval 11910I	Application to Install SRU	September 2, 2021
Scheme Approval 11910J	Scheme Transfer from JACOS to Greenfire	December 20, 2021
EPEA Amendment 153105-00-07	Update to Steam Generator Conditions	February 1, 2021
EPEA Amendment 153105-00-08	SO2 Limit Conditions Update	September 2, 2021

- The following are event(s) for the reporting period that could materially affect scheme performance or energy or material balances:
    - Change to NCG Co-Injection Strategy (increase in overall injection rates for all pads)
    - SRU installation has been deferred due to SO2 limit condition update (Sept 2021)
- There were no pilots or major technical innovations conducted at the Project during the reporting period.

4.3 Project Lessons, Successes, Issues

- Successes
  - Successful turnaround, which occurred shortly after the ownership change
  - Steam production increases after the turnaround
  - Steam OTSG were re-rated
  - Positive results from chemical trials for water and oil treatment
  - Positive results from the change in NCG co-injection strategy
  - Plant operating as expected
- Issues
  - WAC internal liner damage was discovered during TA. Replacement ongoing
  - Two OTSGs are showing signs of corrosion on external panels. Inspection and replacement to be completed in 2022.

4.4 Compliance History

- Reportable Incidents
    - March 2021: Surface runoff over boarding without testing
    - October 2021: Leak from boiler blowdown tank. Leak within secondary containment. Controls installed. It will be repaired during the 2022 turnaround
- Contraventions
    - February 2021: CEMS availability issues due to failure of transducers in the stack
    - October 2021: SO2 limit exceedances
        - Improper calculations by the previous operator lead to potential exceedances
        - Additional Greenfire review noted the issue, and it was determined that no exceedances occurred during the month
    - December 2021: Missing CGA Test
        - Could not locate any records of a second CGA test conducted in 2021

4.5 Future Plans

- Greenfire will focus on obtaining regulatory approval and the subsequent commissioning and start-up of its Clearwater disposal scheme that was submitted to the AER on April 11, 2022. The disposal scheme is anticipated to beneficially alter the overall performance and energy/material balance of the scheme
- Greenfire is installing a truck loading facility at the Project to accept bitumen from the Hangingstone Demonstration Project
- Greenfire continues to evaluate numerous central processing facility and well pad debottlenecking opportunities that could alter the overall performance of the scheme
- At this time, Greenfire has not conclusively evaluated the following development types over the next five years: delineation, seismic, well patterns, etc.
- Greenfire submitted its *EPEA* renewal application for regulatory review and approval in July 2022.