

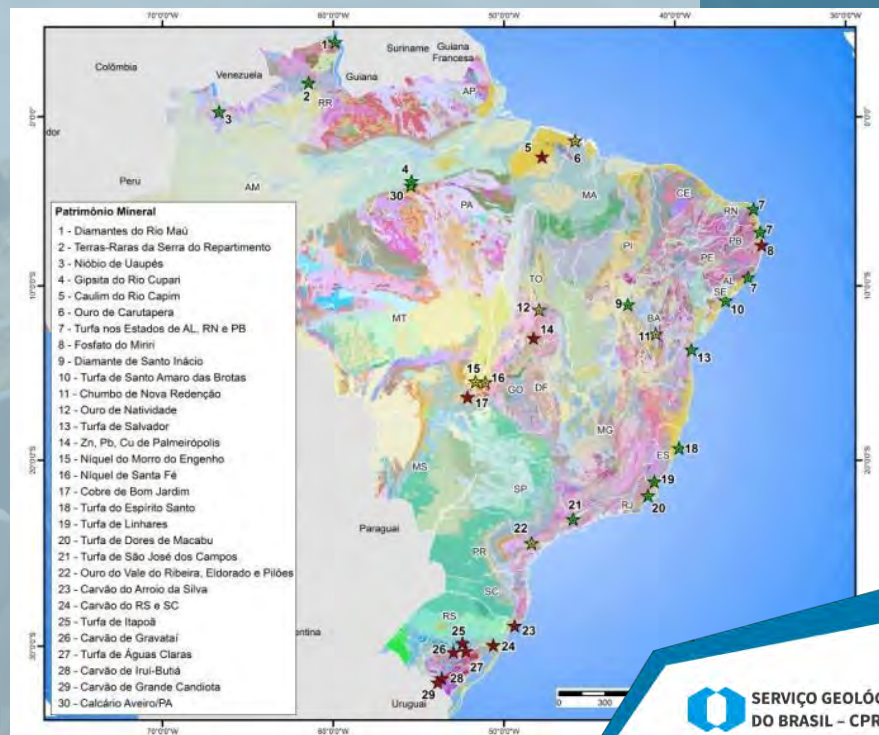
CPRM Kaolin Project



OVERVIEW

CPRM Mining Assets

- 332 mineral rights;
- 30 mining projects;
- Exploration works developed between 1970 and 1990;
- Mineral deposits with Final Mineral Research Report approved by Agencia Nacional de Mineração (ANM);
- Reassessment and certification of these projects according to nowadays international exploration, mineral resources and reserves codes.
- Partnership with Ministry of Economy through Investment Partnership Program (PPI) – Projects with National Priority for private investments.
- Objective: To generate a high added value collection, which can be a catalyst for new investments in mineral research.



 **SERVIÇO GEOLÓGICO DO BRASIL – CPRM**

SECRETARIA DE GEOLOGIA, MINERAÇÃO E TRANSFORMAÇÃO MINERAL

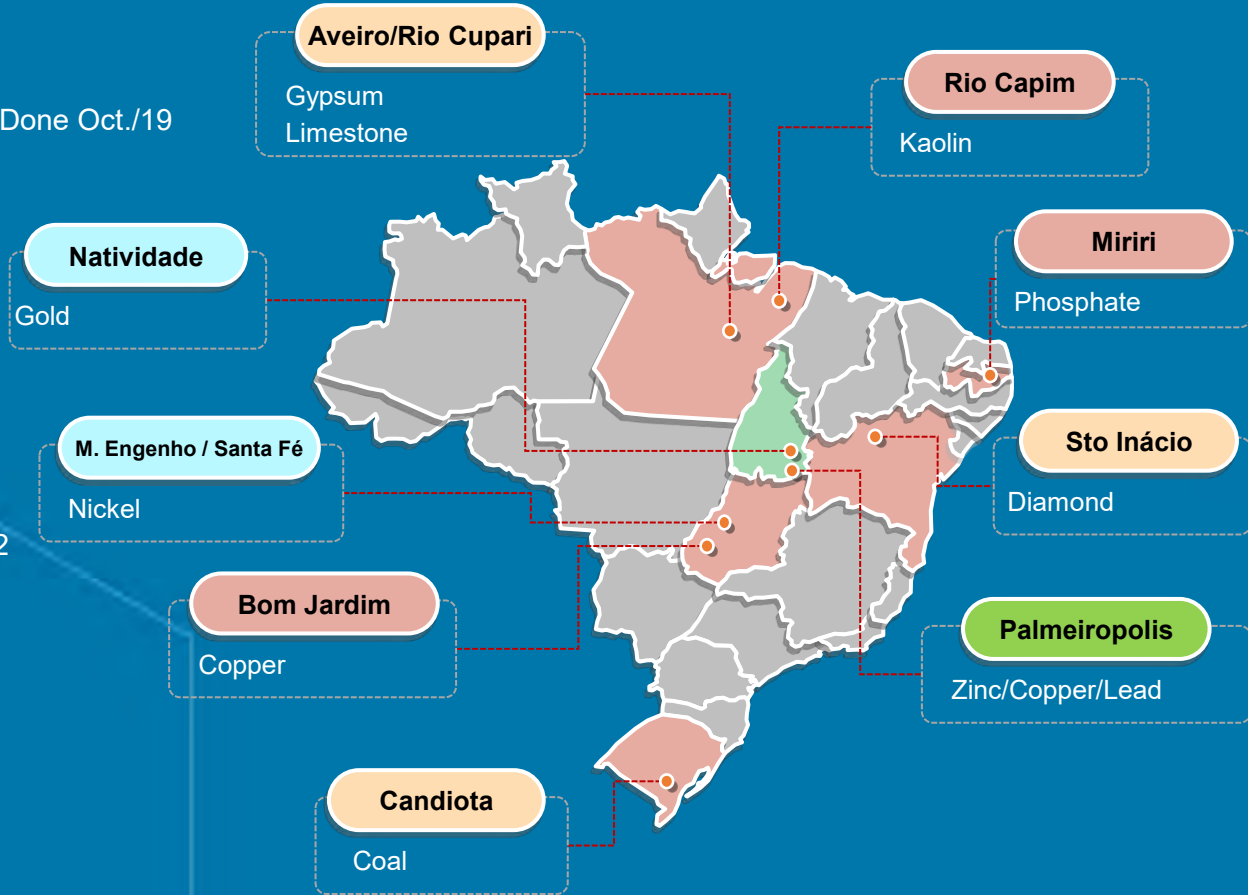
MINISTÉRIO DE MINAS E ENERGIA

 **PÁTRIA AMADA BRASIL**
GOVERNO FEDERAL

CPRM & PPI Partnership

- 8 mineral projects included until 2020;
 - Zinc/Copper/Nickel Palmeiropolis - Done Oct./19
 - Copper Bom Jardim - Jun/21
 - Phosphate Miriri - Nov/21
 - Kaolin Rio Capim - Nov/21
 - Diamond Santo Inácio - end/21
 - Limestone Aveiro - end/21
 - Gypsum Rio Cupari - end/21
 - Coal Candiota - To be schedule

- 3 mineral projects will be included in 2021
 - Gold Natividade
 - Nickel Morro do Engenho - 2021/22
 - Nickel Santa Fé

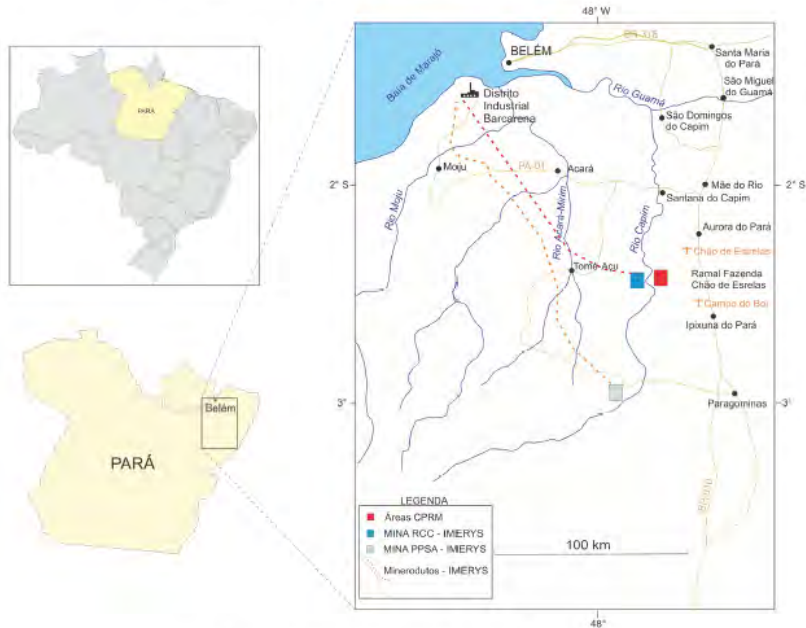


Kaolin Project – Rio Capim (PA)



Kaolin Project – Rio Capim (PA)

Figura 1 - Localização dos depósitos caulínicos da CPRM.

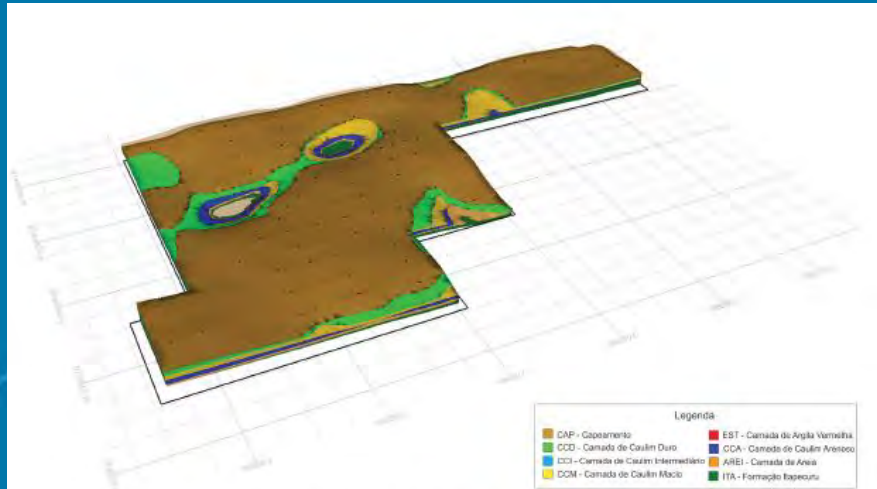


Fonte: Elaborada pela equipe do projeto, 2015.

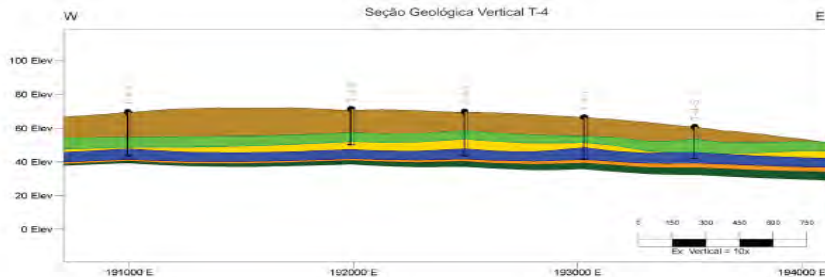
KAOLIN RIO CAPIM

- Located on northeast of Pará state, municipality of Ipixuna, 270 km from the capital Belém;
- Road access departing from Belém through Santa Maria do Pará and following the BR-316 and BR-010 highways;
- Fluvial access, by small or medium vessels, initially navigating about 120 km along the Guamá river and then another 120 km along the Capim river.

Kaolin Project – Rio Capim (PA)



Fonte: Elaborada por Eduardo M. Grissolia, 2017.



MINING RESOURCES

- Resources: 792 Mt @ 79,7% of *in situ* whiteness,
- Processing studies indicate that the product can be sold in paper, paint and ceramic market;
- Previous feasibility study carried out by an independent consultancy.

Quadro de Recursos - Proj. Rio Capim

Bloco	Tipo de minério	Classificação	Volume (m ³)	Densidade	Tonelagem Bruta	Índice de Alvura média (%)	Espessura média minério (m)	Relação Estéril/Minério média	Rendimento % (Recuperação de Lavra)	Q (Mt) - Recuperação de Lavra	REM - Recuperação de Lavra		
Norte	CCM	Inferido	214.027.875	1.55	331.743.206	80.81	11.84	1.02	66.16	219.482.518	3.41		
	CCA	Inferido	147.646.587	1.64	242.140.403	81.12	4.49	1.19	63.92	154.772.012	3.48		
Subtotal			CCM + CCA	Inferido	361.674.462	1.59	573.883.609	80.94	8.74	1.10	65.21	374.254.530	3.44
Sul	CCM	Inferido	4.995.768	1.55	7.743.441	76.60	2.27	0.69	66.49	5.148.785	1.55		
	CCA	Inferido	128.367.677	1.64	210.522.991	76.62	7.23	0.52	66.66	140.342.303	1.29		
Subtotal			CCM + CCA	Inferido	133.363.445	1.64	218.266.431	76.62	7.05	0.53	66.66	145.491.088	1.30
Recurso Inferido Total					495.037.907	1.60	792.150.040	79.73	8.27	0.94	65.61	519.745.619	2.84

Fonte: Elaborada por Eduardo M. Grissolia, 2017.

Kaolin Project – Rio Capim (PA)

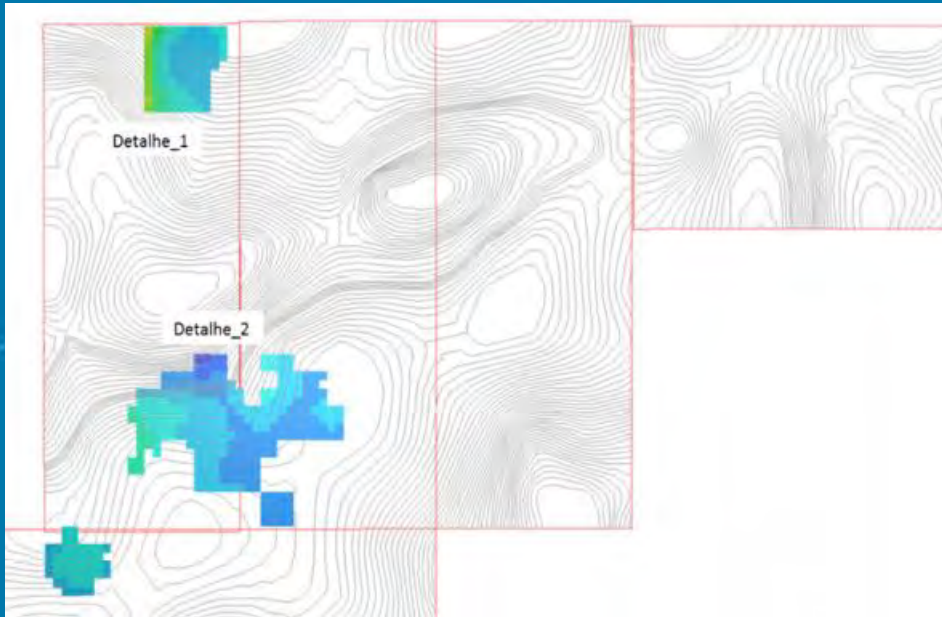
PRE FISIBILITY STUDIES

- **Capex**
 - Plant: R\$ 973 millions;
 - Mine and Infrastructure: R\$ 376 millions;
 - Mineroduto: R\$ 600 millions;
 - Working Capital: R\$ 80 millions;
 - **Total: 2,03 billions.**
- **Assumptions:**
 - Production: 750 k t/year (20 years);
 - Recovery: 55%;
 - OPEX: R\$ 370/t
 - Average selling price: R\$ 880/t
- **Results**
 - **VPL:** R\$ 761 millions (8% p.y.);
 - **TIR: 12,5%;**
 - **Payback:** 6,4 years.

ECONOMIC VALUATION

- **Estimated asset value: R \$ 67.3 millions (TIR=12%);**
- **Corresponds to 1.2% royalty over 20 years;**
- Suggestion to use royalties between 1% to 1.5% of gross operating revenue as a criterion for bid judging;
- Increases attractiveness with payments only in the future and if successful

Kaolin Project – Rio Capim (PA)

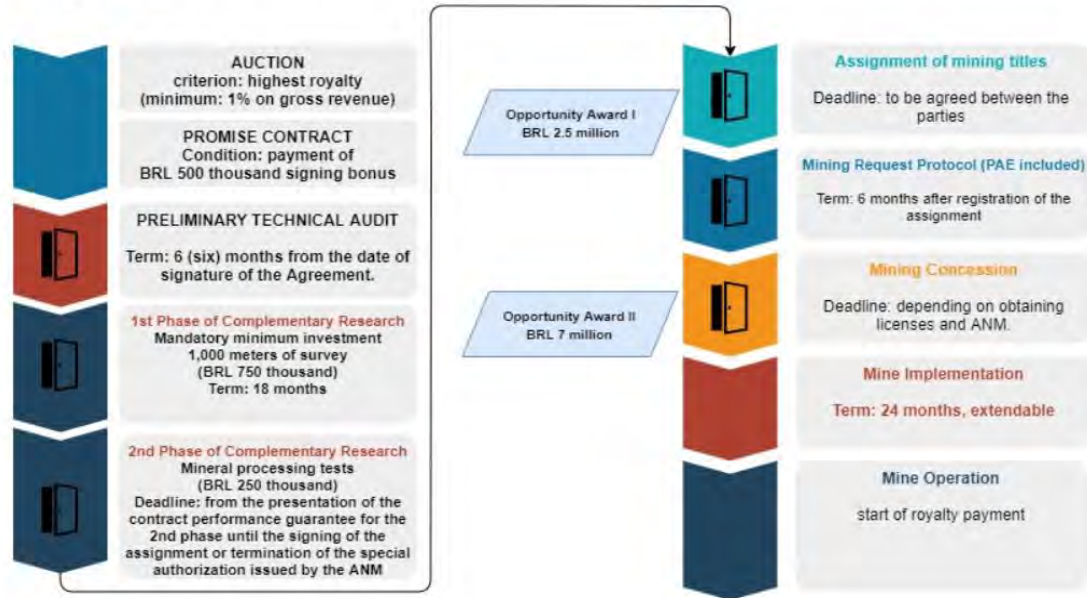


COMPLEMENTARY GEOLOGICAL RESEARCH

- **Two phases**
- **Drillings on “detalhe_2” area**
 - 250 x 250 m;
 - 39 drillholes of 26 meters = 936 meters;
- **Ore processing tests**
 - Granulometric classification;
 - Magnetic separation;
 - Bleaching;
 - Viscosity and pH;
 - Processing (bench testing).
- **Term: 3 years;**
- **Estimated costs: R\$ 1,5 M (US\$ 285 k)**
- **The complementary survey plan can be changed according to the company's justification and approved by CPRM.**

Kaolin Project – Rio Capim (PA)

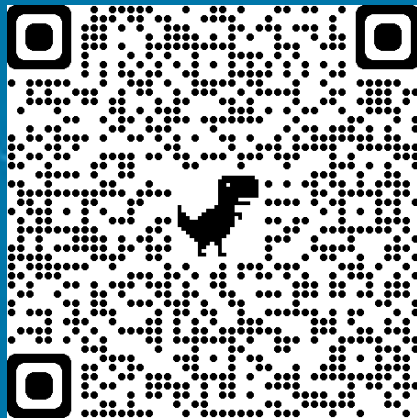
AUCTION MODELING - RIO CAPIM KAOLIN PROJECT



Possibility of exit at the end of the phase, without committing to future payments.

CPRM MINERAL ASSETS

For more information, questions or clarifications access the page of the auctions through the QR code below:



To schedule a meeting with the SGB technical team, send an email to ppi.mineracao@cprm.gov.br

 SERVIÇO GEOLÓGICO
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