

2 Project Description

2.1 Mining of Ore Deposit

Territory Iron Limited proposes to re-develop the Frances Creek Mine. The project area is on Pastoral Lease PPL 1111, NT Portion 695 (Ban Ban Springs Station) and Pastoral Lease PL 815, NT Portion 1630 (Mary River West Station).

The mine is expected to produce up to 1.5 Mt of product a year with a project life of three years. Several ore bodies would be mined simultaneously to facilitate blending of the material. The ore would be crushed and screened and no chemicals will be used in the process. A new railway siding (Roney Siding) would be constructed adjacent to the Alice Springs to Darwin Railway to allow transport of product to the Bulk Storage Facility at East Arm Wharf in Darwin Port. The iron ore is destined for export by ship to China.

Australian Groundwater Technologies (AGT) have described the iron deposits in the project area occur as semi-continuous lenses. They are haematitic ironstones with isoclinal folds in the lower member of the Wildman Siltstone. The deposits crop out as prominent, discontinuous ironstone ridges up to 50m high over a strike length of 15 km (AGT, 2006 as cited in MBS Environmental, 2006a). The largest bodies of ore occur from south to north being Helene, Thelma 2, Ochre Hill and Saddle deposits (BMR, 1987 as cited in MBS Environmental, 2006a).

Territory Iron Limited has advised that the location of economic ore deposits has determined the pit locations. It is proposed to mine five pits: Helene 5; Helene 6/7; Jasmine East; Ochre Hill; and Thelma Rosemary. Three of these pits are in existence from previous mining and would be extended in the new proposal, while Jasmine East and Ochre Hill have been identified as new ore bodies. The pits are all located at or near the top of hills. Final pit floors would be between about 130 and 200m AHD, and the maximum depth below the original ground surface would be about 100m at Helene 6/7, 70m at Thelma Rosemary and Helene 5 and 50 to 55m for the other two pits.

Pit	Category	Fe (%)	SiO₂ (%)	P (%)	Al₂O₃ (%)
Helene 5	Probable	59.3	8.84	0.09	3.50
Helene 6/7	Probable	63.7	5.19	0.03	2.10
Jasmine East	Probable	59.3	7.87	0.07	3.99
Ochre Hill	Probable	59.5	9.30	0.09	2.81
Thelma Rosemary	Probable	62.6	4.44	0.20	2.95
Total	Probable	61.1	7.09	0.10	2.90

Table 1: Indicative ore composition by pit (MBS Environmental, 2006a).

Dimensions	Helen e 5	Helene 6/7	Jasmine E	Ochre Hill	Thelma Rosemary
Length (m)	770	280	230	560	650
Width (m)	170	300	180	120	220
Area (ha)	10.6	8.7	2.6	6.4	10.3
Max. Pit Depth (m)	70	100	52	55	72
Pit Base RL (m AHD)	160	130	200	152.5	185

Table 2: Proposed pit dimensions (MBS Environmental, 2006a).

2.2 Existing Site Layout and Proposed Development

Portions of the Frances Creek Project area have been subject to disturbance from previous mining activities. The historic features from previous mining operations are in the southern end of the project area. The proponent states that the location of open pits, the processing plant, waste stockpiles, site access road and other infrastructure were selected after careful consideration of environmental factors. In doing so, the chosen location and project design has considered existing disturbances from historical mining. Most infrastructure and site access roads would be in areas previously disturbed by mining to minimise new disturbance. Figures 3 – 6 provide images detailing the proposed layout and development of the Frances Creek Project.

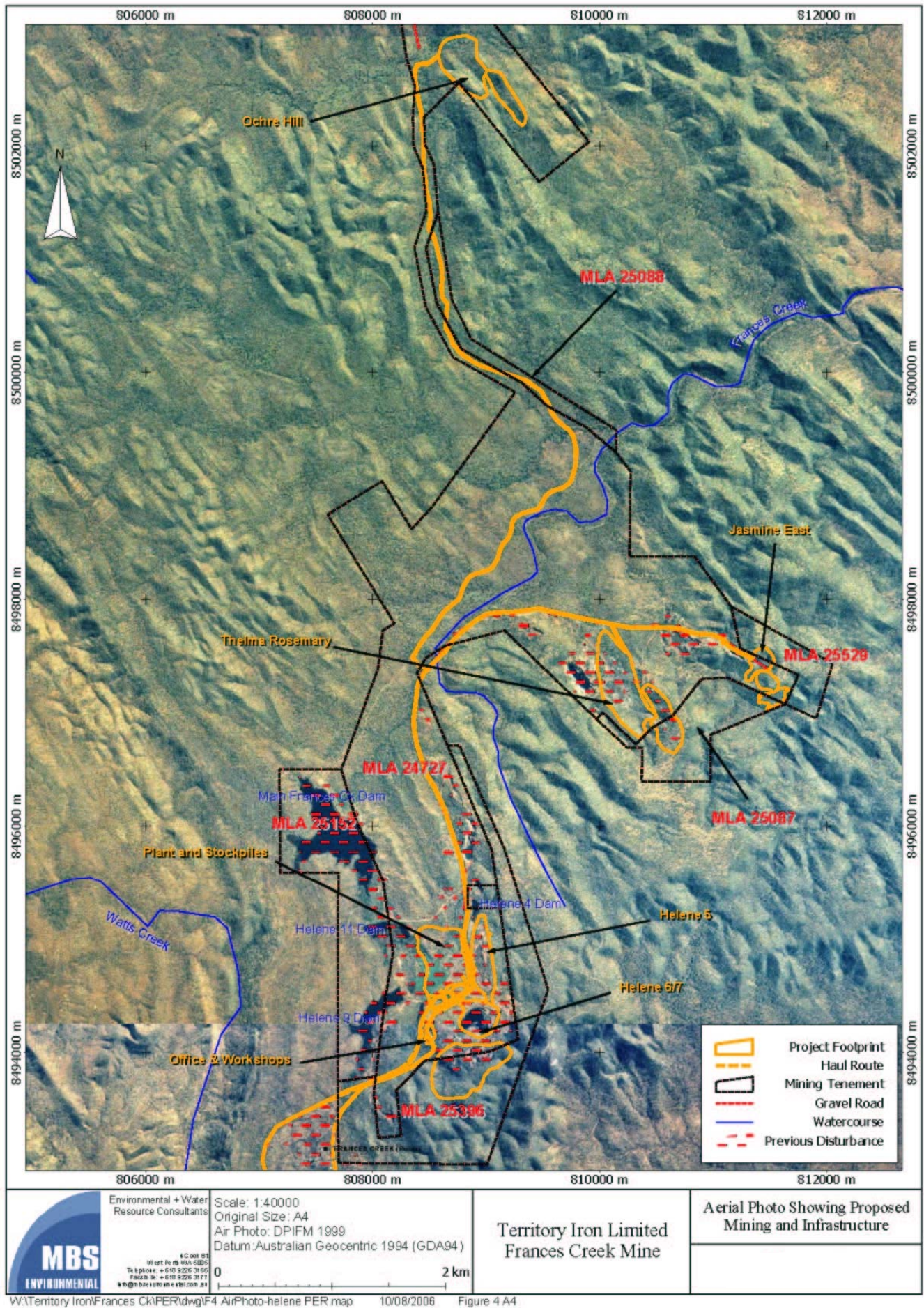


Figure 3: Proposed mine layout (MBS Environmental, 2006a)

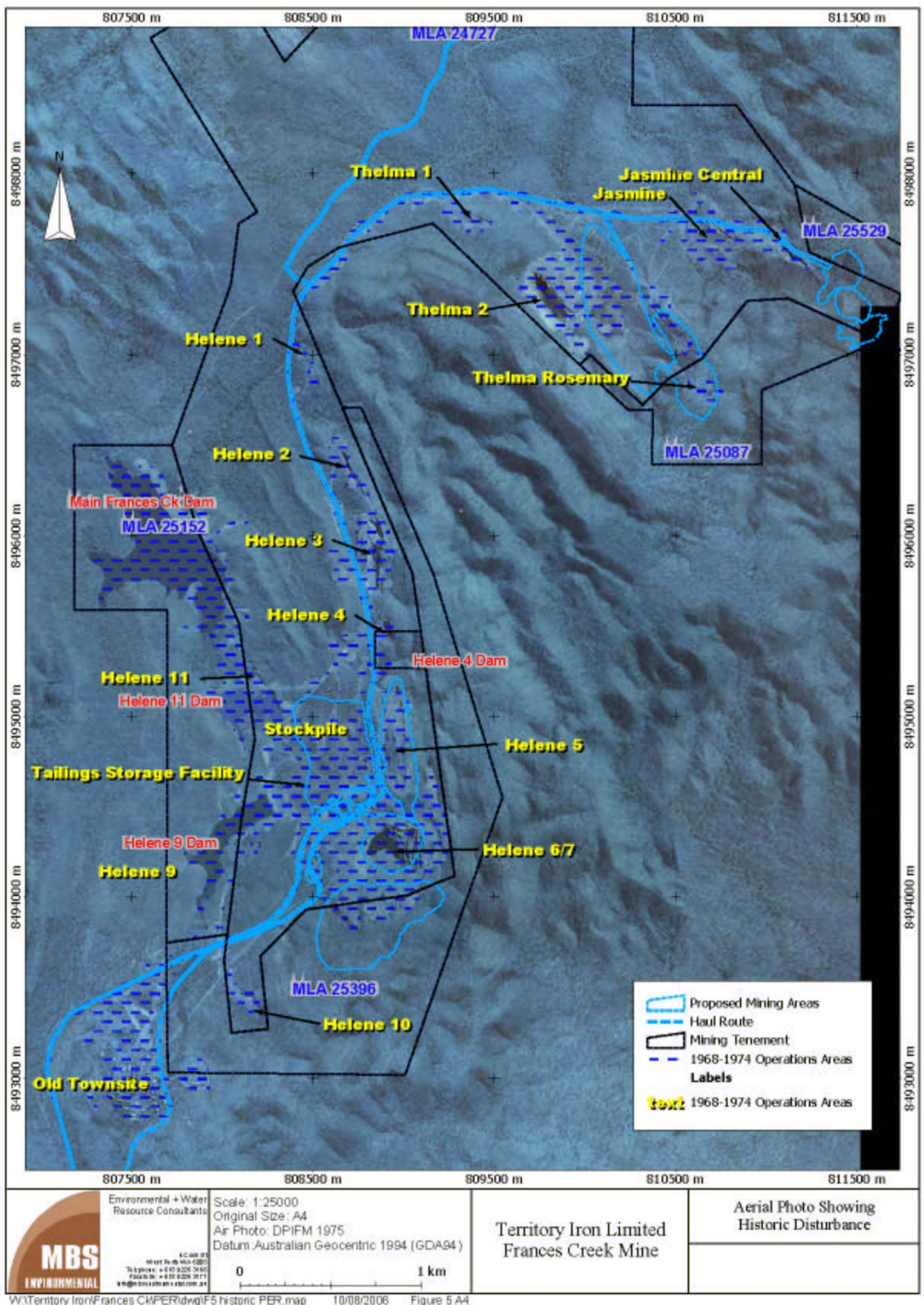


Figure 4: Proposed mining areas showing haul routes (MBS Environmental, 2006a)

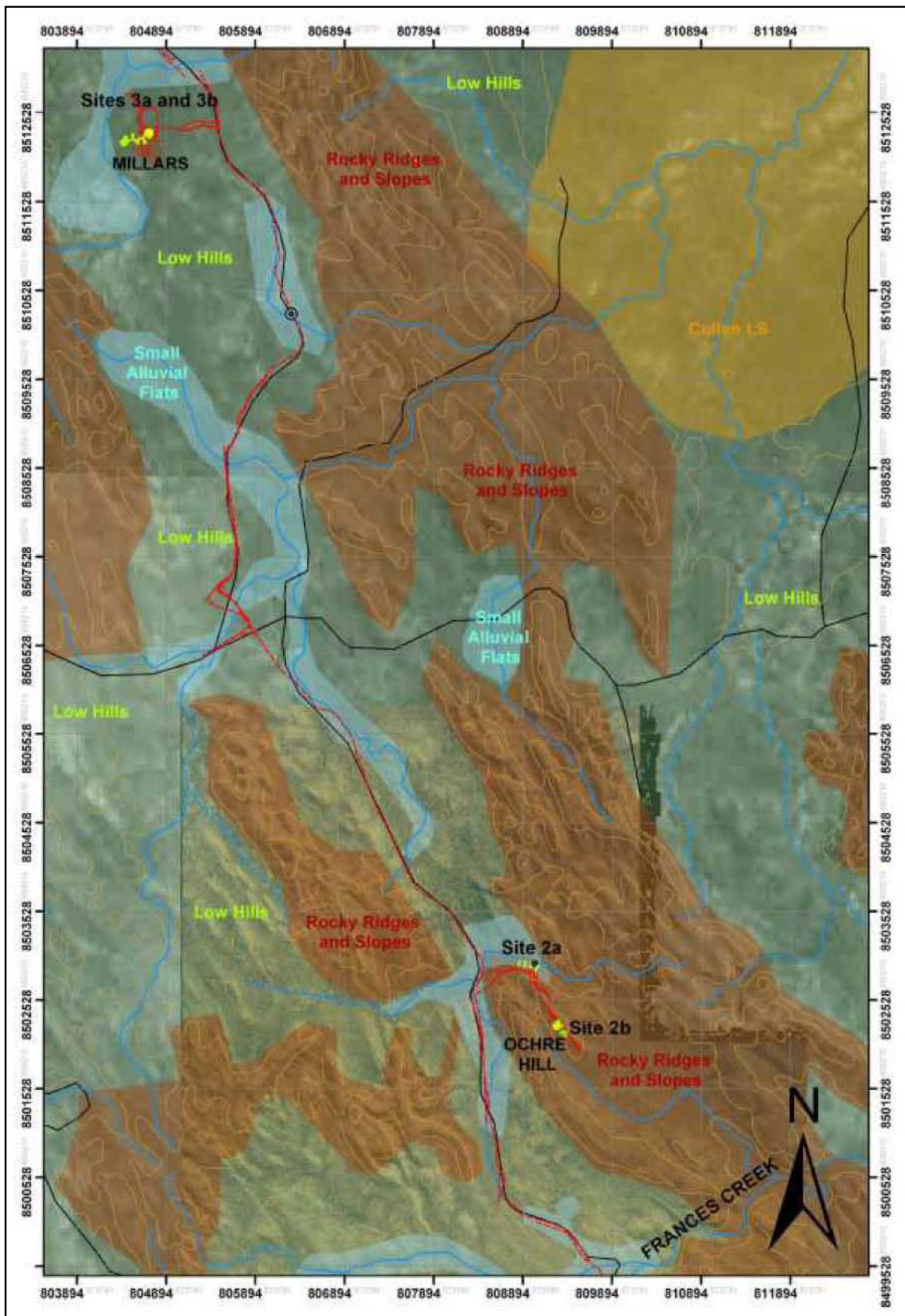


Figure 5: Land Units in the northern section of the proposed project area (Low Ecological Services, 2005)
(Refer to Figure 6 for legend)

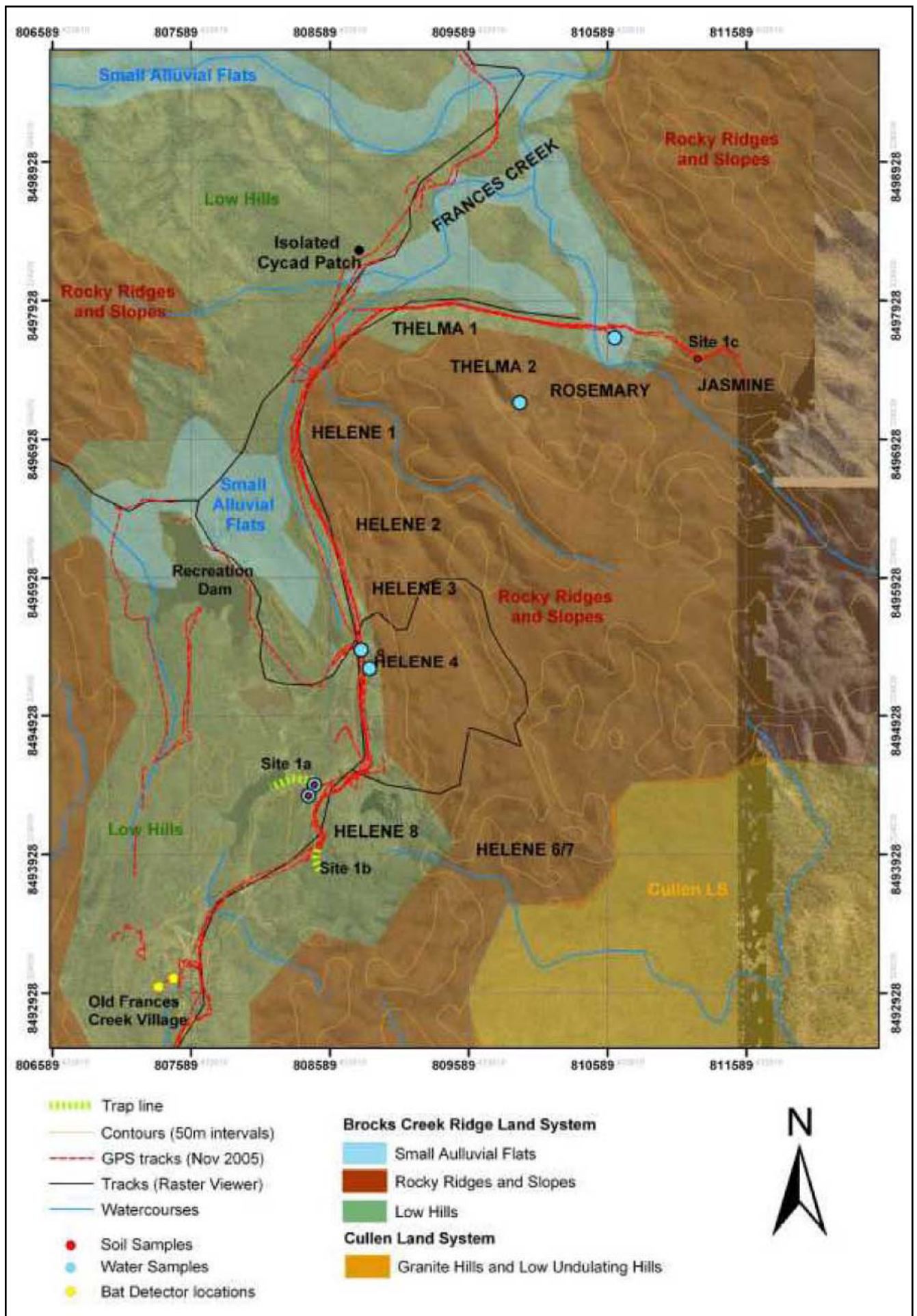


Figure 6: Land Units in the southern section of the proposed project area (Low Ecological Services, 2005)

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2.3 The Mining Process

A detailed explanation of the sequential mining process as provided by Territory Iron Limited is described below:

1. **Remove Vegetation:** Vegetation cleared for mining at the site will, where practicable, be stockpiled for use in later rehabilitation.
2. **Remove and Stockpile Topsoil:** The top 100 mm of topsoil will be removed using scrapers or other efficient earth moving machinery and placed in low stockpiles for later re-use.
3. **Remove and Place Overburden:** Typically the overburden depth varies between one and 40 m at a stripping ratio of about 4 m³ of overburden for every 1 m³ of ore removed. Overburden will be stockpiled adjacent to the pits.
4. **Dewatering:** The Helene 6/7 Pit will be dewatered by pumping to allow mining below the water table. Water removed will be used for dust suppression. During the wet season, excess water may overflow after dilution and settling to Frances Creek.
5. **Mining and Haulage:** A hydraulic excavator and a fleet of dump trucks will be used for extraction. Blasting will fracture the ore and waste rock sufficiently to allow excavation. Ore bearing material will be loaded onto haulage trucks and taken to a run of mine (ROM) stockpile close to the processing plant. Several orebodies will be mined simultaneously to facilitate blending of the material. The mine is expected to produce up to 1.5 Mt of product a year.
6. **Processing:** The iron ore will be transported to a small plant next to the Helene 6/7 Pit where it will be crushed and screened. No chemicals will be used in the process.
7. **Transport:** Road trains will transport the ore from the plant product stockpiles to a rail loading stockpile area at Roney Siding. Front-end loaders will load the ore onto trains for rail transport to Darwin Port.
8. **Management of Waste Rock:** Waste rock will be deposited in purpose-built stockpiles next to each pit. Waste rock stockpiles will be shaped to blend with the topography and will be topsoiled and revegetated. Waste rock stockpiles will be low in height with gentle slopes to facilitate controlled water shedding. Where practicable, stockpile locations will be selected so that they do not cross drainage lines. Opportunities to backfill pits with waste rock rather than increasing size of out of pit stockpiles will be explored and will occur where practicable.
9. **Rehabilitation:** Progressive rehabilitation will be undertaken. Overburden and topsoil will be progressively replaced over completed waste rock stockpiles and seeded or planted with local native species. Areas such as the plant and stockpile area, which cannot be rehabilitated during operations, will be rehabilitated at closure.

2.4 Waste Rock Stockpiles

Territory Iron Limited proposes to deposit waste rock and overburden in purpose built waste rock stockpiles next to pits. The total amount of land required to be cleared for

construction of waste rock stockpiles would be 116 ha. It is estimated that about 3Mt of overburden and waste rock would need to be moved annually. The proponent states that the potential exists to place waste rock as backfill in the pits. Several of the pits to be mined are located in close proximity to existing voids, creating an opportunity for waste rock to be backfilled directly into adjacent pits.

As outlined by the proponent, other than the Helene 5 waste rock stockpile, all waste rock stockpiles would be within 200 m of associated pits. Locations have been chosen to reduce haulage distances and to minimise the need to divert water courses. However, the siting of the Helene 6/7 and Thelma Rosemary waste rock stockpiles requires diversion of surface water (refer to Section 2.8.2).

2.5 Processing of Mined Ore

Ore processing would initially involve a 3 stage dry mechanical crushing, and dry screening. The mobile processing plant would be located west of Helene 5 pit, on an old waste rock stockpile next to the previous iron ore processing plant and stockpile area.

After the screening process, Lump (<35 mm to >6.3 mm) and Fines (<6.3mm) product would be stockpiled for transport.

No chemicals are to be used in the process. The plant incorporates diesel engines to power its operation and would not require any external power supply.

Depending on future market conditions and ore characteristics, it may become desirable to add a wet screening process later in the operation.

2.6 Product Storage and Transportation

A run of mine (ROM) stockpile and a product stockpile would be on either side of the processing plant (north-eastern side of the Helen 5 waste rock stockpile). Plant operation requires these stockpiles to be next to the plant.

A new railway siding is to be constructed for the Frances Creek Project (Roney Siding). Most roads, including the main haul road and the transport route to the rail siding, use existing culverts from previous operations. The haul road to Ochre Hill will require upgrading.

Road trains would transport product from the product stockpiles to a stockpile area next to the Alice Springs-Darwin Railway then loading onto rail carriages and transported by rail to the East Arm Wharf at Port Darwin for export. Procedures would be developed by Territory Iron Limited to address unloading of rail wagons and management of the product stockpiles East Arm Wharf.

2.7 Water Management

Frances Creek has three large surface water dams. These supplied water to the previous iron ore mine. A Tailings Storage Facility (TSF) from the previous mine is located between the water dams. The middle dam (Helene 11 Dam) receives runoff from the TSF surface and would most likely have been a decant dam for the TSF.

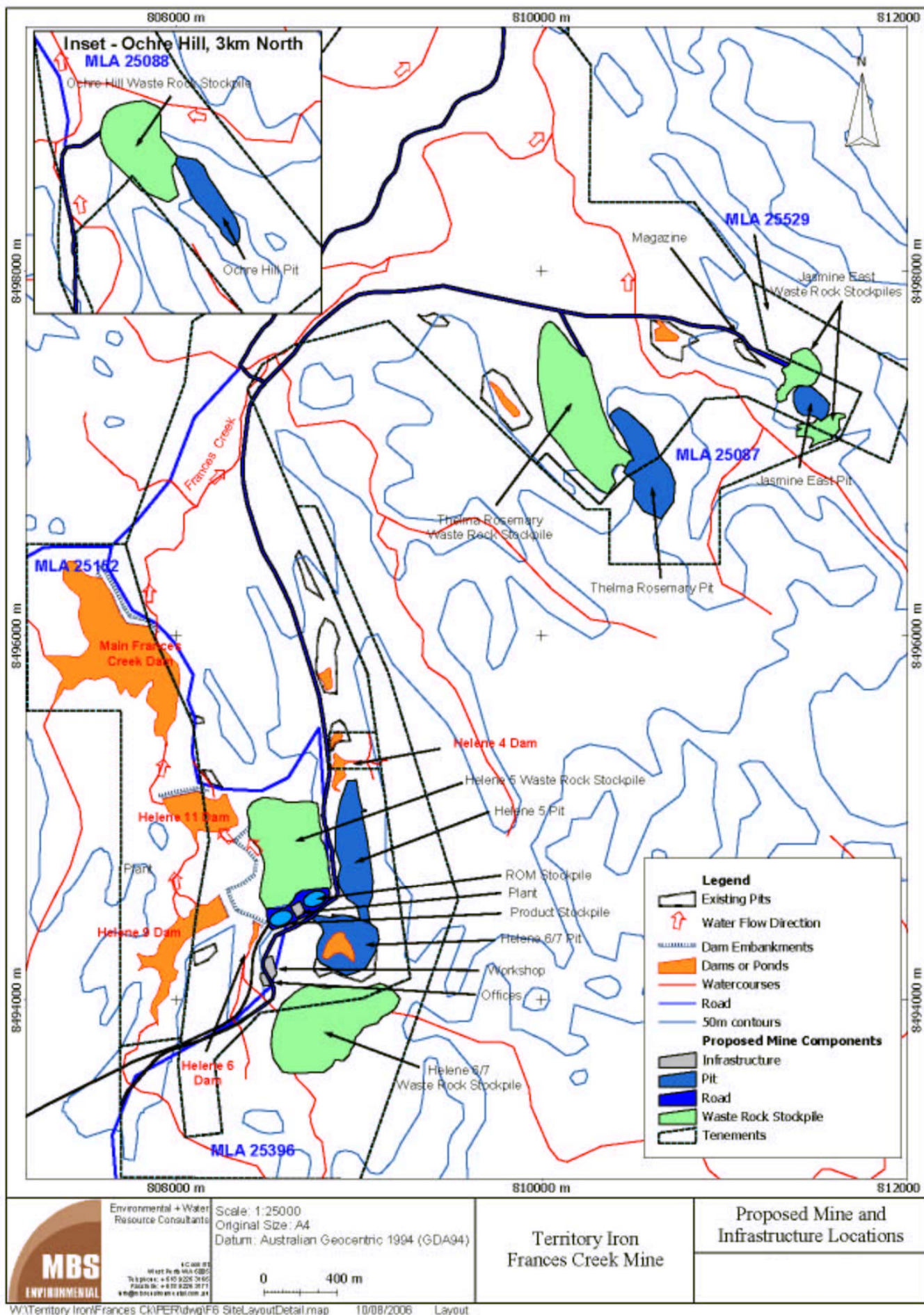


Figure 7: Map showing existing water bodies (MBS Environmental, 2006a)

2.7.1 Dewatering

The proponent has identified dewatering as a source of water for operational requirements. Historic pits contain varying volumes of water of differing qualities. Helene 6/7 Pit has been pumped dry for exploration drilling and dewatering is proposed to continue to allow mining. The water pumped from Helene 6/7 Pit would go to the Helene 11 Dam and be the primary source of water for dust suppression on site.

Other than Helene 6/7, Territory Iron Limited considers all other pits to be above the water table. These pits, however will collect direct rainfall in substantial quantities during the wet season. Rainfall runoff is to be collected in sumps within the pits and used for local dust suppression. It is likely that sufficient water would accumulate during the wet season that water will have to be pumped out of the pits to allow continued mining operations.

Excess stormwater in Jasmine East Pit is proposed to be pumped to Jasmine Pit as necessary to allow continued mining. Excess stormwater from Helene 5 Pit would be pumped to Helene 11 Dam along with Helene 6/7 water. Excess stormwater from Thelma Rosemary Pit is proposed to be pumped to the existing Thelma 2 Pit. It is proposed that excess stormwater from Ochre Hill Pit would be pumped to a settling pond and discharged to Maude Creek tributary next to the pit.

2.7.2 Diversions

All proposed pits and the Ochre Hill waste rock stockpile are proposed to be located on hilltops and would not require any diversion of surface water. The Helene 6/7 and Thelma Rosemary waste rock stockpile partially fill minor valleys with ephemeral water courses. These water courses would be diverted around the stockpiles. The Jasmine East waste rock stockpiles fill small steep valleys and would not require any diversion of water courses. The Thelma Rosemary waste rock stockpile has been positioned to bury the existing Thelma 2 waste rock stockpile. A small upstream surface water catchment would need to be diverted around this stockpile.

2.8 Rehabilitation and Closure

Territory Iron Limited indicates progressive rehabilitation would be undertaken wherever practicable. All rehabilitation would be performed in accordance with contemporary accepted industry best practice and conducted in accordance with an approved MMP (Commitment 8.1.2.1c). Rehabilitation would be completed to allow a return to pre-mining land use (pastoral) once full decommissioning is complete.

Territory Iron Limited intends using indigenous species of local provenance to rehabilitate disturbed areas. Ideally revegetation is to occur through careful management of topsoil and its contained seed resource. Supplementary seeding or planting may occur if rehabilitation monitoring demonstrates that revegetation is not proceeding in line with expected results.

As part of obtaining all permits necessary to start mining, Territory Iron Limited are required to submit a security bond to DPIFM in case of any unplanned failure of the project. The size of this security bond would be regularly reviewed in conjunction with DPIFM to ensure it remains consistent with level of disturbance caused by the project at any specific time.

Once the project has started, the proponent would begin rehabilitation to re-establish pre-mining land use over completed areas. The total area of disturbance is anticipated to have a footprint of about 172 ha.

Annual monitoring would establish the effectiveness of rehabilitation. Monitoring would consider physical stability, erosion, minimisation, vegetation establishment (species diversity, density, cover) and weed presence (**Commitment 10b**).

2.9 Issues not Included in this Environmental Impact Assessment

It should be noted that there are a number of issues associated with this proposal that are not within the scope of the current environmental assessment process. These are: product handling at East Arm Wharf; inclusion of wet screening for ore processing any future expansion of mining activities and construction of Roney railway siding.

2.9.1 Darwin Port

Trains carrying iron ore product from the mine are expected to run daily (365 return trips per year). They would be unloaded at the bulk handling facility at East Arm Wharf. Conveyors would transfer the ore to a stockpile area. Trucks and purpose-built port facilities would load ore from the stockpile area onto ships.

Impacts associated with the use of the bulk handling facilities at East Arm Warf are not considered in this Assessment Report and would be the subject of a separate application.

2.9.2 Wet Screening of Ore

Wet screening and tailings storage were not included in the Notice of Intent for the project, the PER or Supplement, because it will not occur in at least the first year of mine operation. Depending on future market conditions and ore characteristics, it may become desirable to add a wet screening process later in the operation. If a wet screening process is added in future, detailed wet screening plant design will be prepared and discussions held with regulatory authorities to determine the need for additional approvals (MBS Environmental, November 2005).

2.9.3 Future Expansion of Mining Activities

This assessment does not include an assessment of a possible future expansion of the mine. Any future mining proposal would be subject to a separate assessment process under the Environmental Assessment Act.

Currently Territory Iron Limited has indicated an operation life of three years, but may continue after this depending expected on exploration success. Until further deposits are proven, extensions to the mining operation would be speculative and could not be confirmed at this stage (MBS Environmental, 2006b). If mining operations expand beyond what was described in the PER and the Supplement on which this assessment is based, Territory Iron Limited will need to submit a new application.

2.9.4 Construction of Roney Siding

Territory Iron Limited has entered into discussion with FreightLink on the most suitable location of Roney Siding. FreightLink would own and operate rail haulage

from Roney Siding to the Port of Darwin. Construction of the siding has not been included in this assessment.

3 Regional Setting

The following information has been provided by MBS Environmental (2006a)

The project area known as Frances Creek is:

- 180 km south-east of Darwin;
- 25 km north of Pine Creek;
- About 30 km south of Mary River National Park and 19 km west of the Kakadu National Park boundary; and
- Within the Mary River catchment.

By road the project area is about 30 km north of Pine Creek, which is situated on the Stuart Highway approximately 180 km south-east of Darwin (see Figure 1).

The Frances Creek project area is in the headwaters of the upper Mary River catchment. The Mary River catchment covers 8 000 km², draining north-west into the ocean at Van Diemen Gulf, about 100 km east of Darwin.

Facilities currently available in Pine Creek include:

- A community library and museum;
- Numerous sporting facilities, including indoor/outdoor sports centre;
- Multi-resource centre and community hall;
- A supermarket and two licensed premises;
- Three fuel outlets and a take-away food outlet;
- A police station;
- Health clinic with two permanent nurses and visiting doctor from Katherine once a week; and
- Primary school including pre-primary.

Many other facilities are available in the regional centre of Katherine - 90 km away, or Darwin - 150 km away.

3.1 Land Use

The project area is on Pastoral Lease PPL 1111, NT Portion 695 (Ban Ban Springs Station) and Pastoral Lease PL 815, NT Portion 1630 (Mary River West Station). The NT Land Corporation owns the former rail spur line corridor which may be used for the haul road.

Ban Ban Springs pastoral station covers 1 800 km² and is used for cattle breeding and grazing. The Frances Creek Dam is occasionally used for water skiing. The proposed project area is not being used for grazing cattle or tourist accommodation.

Rangeland grazing of cattle occurs on Mary River West Station which adjoins Kakadu National Park and borders the Mary River. Access through this property is needed along the Mount Wells road to reach the project area.