

## 1985/14. The York Plains coalfield

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The York Plains coalfield, located in central eastern Tasmania, is of minor economic importance. The coal is of Triassic age and is similar in quality to other Tasmanian Triassic black coals. Two seams were worked in the last mining operation on the field, the mine closing in 1947. Due to the small lateral extent of the coalfield and the limited reserves available, the potential for further exploration is small.

## LOCATION AND ACCESS

The York Plains coalfield is centred around Coal Mine Hill [EP360180] six kilometres north-east of Oatlands in central eastern Tasmania. Access is by way of a road running east from the Midland Highway and passing through York Plains.

## GENERAL GEOLOGY

Coal at York Plains occurs within the Upper Parmeener Super-Group. The Upper Parmeener Super-Group has been disrupted by large scale Jurassic dolerite intrusions, faulting, and to a lesser extent by Tertiary volcanic complexes. That part of the area occurring in the Oatlands Quadrangle has been mapped by Forsyth *et al.* (1976) and the geology discussed by Forsyth (1984a). This work was revised with a map of the neighbouring area in the Interlaken Quadrangle by Forsyth (1984b). The accompanying geological map is based on the earlier work with some minor additions.

Excluding Permian horizons, most of the Upper Parmeener Super-Group stratigraphic units recognised by Forsyth (1984a) occur in the York Plains district (Forsyth, 1984b). These stratigraphic units are

- Rg - Volcanic lithic arenite with subordinate lutite and coal seams.
- Rsf, upper - Lutite and dominantly quartz-rich lithic arenite with minor coal seams.
- Rs<sub>q</sub>' - Quartz arenite and lutite with carbonaceous beds and subordinate lithic arenite and coal seams.
- Rs lower - Lutite with quartz-rich lithic arenite.
- Rs<sub>q</sub> - Quartz arenite and lutite, occasionally with quartz sandstone.
- Rm - Micaceous lutite and micaceous quartz sandstone, frequently with other silicified, bioturbated and mottled purple lutite.
- Rp - Quartz arenite with subordinate lithic-rich horizons.

The main coal seams occur within the uppermost sequence (Rg) although thinner coal seams have been recorded elsewhere in the Oatlands Quadrangle in the two underlying sequences (Rsf, upper and Rs<sub>q</sub>'). Exotic cobble-size clasts of Palaeozoic rocks including acid igneous rocks and fossiliferous Lower Parmeener Super-Group rocks were first recorded from the area by Nye (1921). These clasts are derived from what is considered to be the upper one-third of the volcanic lithic sandstone sequence (Rg). The occurrence of *Dicroidium odontopteroides* (Morris) Gothan, 1912 in quartz sandstone and in the volcanic lithic arenite sequence (Rg) at York Plains

indicates that the sequences (Rsq' and Rg) are in part in the age range of Late Anisian to Norian (Retallack, 1977). Microfloras in the lutite and quartz-rich lithic sandstone sequence (Rsf, upper) 20 km further south at Spring Hill belong to the *Craterisporites rotundus* Zone (de Jersey, 1975) and indicate a Karnian age (Forsyth, 1984a).

A major dolerite sheet probably underlies most of the area. At Vincents Hill [EP344225] and north of Mt Pleasant [EP408226] dolerite is exposed where it intrudes the volcanic lithic arenite sequence (Rg). Between these two areas remnant thermally metamorphosed quartz sandstone skins above dolerite indicate that intrusion occurs at lower stratigraphic horizons. Dolerite beneath the sequence (Rg) in Department of Mines DDH YP-2 [EP356318] may be part of this sheet, as may be dolerite in the sequence (Rg) in Capricorn Mining DDH YP-06. The dolerite sheet is exposed along the western margin of the area and may be responsible for thermal metamorphism in an uplifted area [EP338174]. Dolerite was also intersected in a water bore near EP372186.

A thin dolerite sheet caps the volcanic lithic arenite sequence at Mt Pleasant [EP403217], the hill immediately south of Mt Pleasant, and possibly two kilometres north-west of Mt Pleasant. Thin dykes of dolerite also occur [EP348195]. Dolerite occupies a fault-like fracture at EP338158.

Tertiary basalt flows and plugs are scattered throughout the area and volcanic agglomerate crops out on Pawtella Rd [EP393192]. Diamond drilling at Coal Mine Hill intersected 130 m of basalt and basaltic agglomerate [EP356182].

Superficial deposits include talus derived from basalt and dolerite, alluvial fans, cobble and organic silty alluvium, lag deposits derived from Tertiary or older rocks, and silty dunes. Many of the superficial deposits have not been mapped.

The only productive coal mine at York Plains was sited in a narrow graben that passes beneath Coal Mine Hill [EP355185]. The coal occurs in the volcanic lithic arenite sequence (Rg). The graben may continue northward to cross the Midland Highway. The occurrence of at least 130 m of Tertiary basalt and basalt agglomerate in DOM DDH YP-1 at Coal Mine Hill indicates the probable disruption of any coal seams extending beneath the hill.

An extensive area of volcanic lithic sandstone occurs about Mt Pleasant [EP403216], where coal has been exposed in an adit (Blake, 1936b) and intersected in several holes drilled as part of an exploration programme (Glenie et al., 1981). Dolerite was intersected in one drill hole on the northern slopes of Mt Pleasant at about 420 masl. This dolerite intrusion is assumed to rise towards the north where thermal metamorphism of sandstone is apparent and where dolerite is eventually exposed at the surface. Some dolerite intrusions in the area may be part of an overlying sheet, similar to the occurrence of an upper sheet at Mt Pleasant. Forsyth (1984b) inferred a fault between quartz and lithic sandstones [EP392179] but was uncertain whether the relationship could not have been conformable. If this fault exists it may form the south-western boundary of the main volcanic lithic arenite sandstone (Rg) area. Further south, a series of small faults progressively downthrows the basal beds of the volcanic lithic sandstone sequence (Rg). This sequence (Rg) may extend to the east of the mapped area but no coal has been noted from this possible extension.

The distribution of rocks in the plains area is poorly known because of insufficient exposure. A small area of the volcanic lithic sandstone sequence (Rg) has been inferred north of York Plains Road between the railway line and the Midland Highway [EP350208]. A larger area of volcanic lithic sandstone has been inferred east of the railway line, based on exposures near an underground water bore [EP370205] and cuttings in nearby water holes. The underground water bore log suggests it is the basal beds of the sequence (Rg) that are exposed here, as few thick sandstone beds were recorded in the log (2.0-64.0 m).

Lithic siltstone and sandstone crop out south of the York Plains Road between the railway line and Tin Dish Rivulet. The sandstone appears to be quartz-rich lithic in composition and probably belongs to the lutite and quartz-rich lithic sandstone sequence (Rsf, lower), but the existence of volcanic lithic sandstone (Rg) in the area cannot be totally dismissed. Recent underground water bores in this area intersected dolerite and possibly coal.

PREVIOUS MINING HISTORY

An outcrop of coal 380 mm thick was noted by Gould (1869) in Tin Dish Rivulet, 2.5 km north-east of Coal Mine Hill. Mining at Coal Mine Hill commenced some time before 1883. Johnston (1888) described two seams cropping out on the southern flank of Coal Mine Hill. The upper seam, 1.1 m thick, was worked from an ".....open main drive running in a southerly direction from which several lateral drives diverge."

The colliery was known as 'Lord's Coal Mine' until 1902, when operations ceased. Mining on the lower seam began in 1905, with the new mine being named the York Plains Coal Mine. The name was changed to Greggs Colliery in 1912. A number of adits were driven into the seams along the south and south-east flanks of the hill (Nye, *in Hills et al.*, 1922). Operations continued at York Plains until September 1947. The mine employed from two to four men and produced 600-800 t of coal per year. The coal mined was not washed, and was used in the boilers of hop kilns. Mining was by hand, on a modified longwall system. As mining was done down-dip on the seam, the influx of water caused problems throughout the mine life.

An outcrop of coal exposed in a cutting on the York Plains Road near the Mt Pleasant Saddle was noted by Nye (*in Hills et al.*, 1922) and inspected by Blake (1936b) after an adit had been driven in on the seam for a distance of 12 m. Blake (1936b) reported the seam to be 1.54 m thick.

Coal seams cropping out on the northern side of Coal Mine Hill were examined by Blake (1936a). Two seams, 300 mm and 460 mm thick respectively, had been opened up by trenching, and one seam was intersected in a prospecting shaft. Interest was expressed in 1949 in mining this coal, and hopgrowers entered into an agreement with the landowner to this end. Hughes (1949) reported on the extent of the coal and on possible mining access, but no mining eventuated.

A list of coal outcrops occurring in the area is given in Forsyth (1984a).

COAL QUALITY

The coal at York Plains is similar in quality to Triassic black coal found elsewhere in the State. The raw ash content of the coal is 25-30%.

Analyses of the coal are reproduced below:

|                            | 1    | 2     | 3     | 4     | 5     | 6     | 7     |
|----------------------------|------|-------|-------|-------|-------|-------|-------|
| Moisture (%)               | 1.7  | 1.80  | 1.19  | 8.4   | 2.8   | 2.5   | 2.2   |
| Ash (%)                    | 25.7 | 27.60 | 24.52 | 21.48 | 5.4   | 28.5  | 20.5  |
| VCM (%)                    | 15.8 | 13.28 | 13.55 | 21.3  | 12.2  | 11.7  | 12.7  |
| FC (%)                     | 56.8 | 57.32 | 60.74 | 48.82 | 59.5  | 57.3  | 64.6  |
| Sulphur (%)                | -    | 0.46  | 0.48  | 0.32  | 0.37  | 0.49  | 0.52  |
| Specific energy<br>(MJ/kg) |      |       |       | 19.41 | 23.94 | 23.14 | 26.02 |
| RD                         |      |       |       |       | 1.58  | 1.60  | 1.52  |

1. Sample from Lords Upper Seam (Seam A) (Johnston, 1888)
2. Whole seam sample from Lower Seam (Seam B) including bands (Hills et al., 1922).
3. Whole seam sample from Lower Seam (Seam B) excluding bands (Hills et al., 1922).
4. Grab sample, from adit near Mt Pleasant saddle (Blake, 1936b)
5. Whole seam composite, Seam A, DOM DDH YP-1, 1984, core sample.
6. Whole seam composite, Seam B, DOM DDH YP-1, 1984, core sample.
7. Seam excluding dirt bands, Seam B, DOM DDH YP-1, 1984, core sample.

RECENT EXPLORATION

Five holes were drilled in the York Plains area in 1981. The results of this exploration are detailed in Glenie et al. (1981) and summarised in Forsyth (1984a). The Department of Mines drilled a hole on Coal Mine Hill in 1984 to provide stratigraphic control for part of a regional mapping programme. Petrographic characteristics of coal seams encountered in this drilling are described in Bacon (1985). During company exploration in 1984 the area was included in a survey of the coal resources of the Midlands. The area is currently held under exploration licence.

FUTURE POTENTIAL

Due to the restricted lateral extent of the coalfield and the thin nature of the seams, the area is of limited interest for further exploration potential. The inferred reserves of black coal in the coalfield are small.

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APPENDIX 1

AMG references of boreholes and adits in the York Plains coalfield

DEPARTMENT OF MINES DIAMOND DRILLING

| <i>Hole</i>   | <i>AMG reference</i>  | <i>Altitude (m)</i> |
|---------------|-----------------------|---------------------|
| York Plains 1 | 535568 mE, 5318193 mN | 513                 |
| York Plains 2 | 535984 mE, 5317944 mN | 422                 |

ADITS

|     | <i>AMG reference</i>  | <i>Altitude (m)</i> |
|-----|-----------------------|---------------------|
| (1) | 535976 mE, 5317980 mN | 423                 |
| (2) | 536023 mE, 5317888 mN | 396                 |
| (3) | 535815 mE, 5317871 mN | 417                 |
| (4) | 535779 mE, 5317872 mN | 418                 |
| (5) | 535723 mE, 5317875 mN | 422                 |
| (6) | 535681 mE, 5317876 mN | 426                 |

GEOLOGICAL SKETCH MAP

# YORK PLAINS COALFIELD

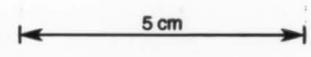
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Geology by S.M.Forsyth

Contour interval 20m



LEGEND



QUATERNARY

- Alluvium
- Lag deposits
- Talus; Basalt talus (Qtb), Dolerite talus (Qtd)

TERTIARY

- Ferricrete
- Basaltic agglomerate
- Basalt

JURASSIC

- Dolerite

TRIASSIC

- Lithic arenite
- Quartz-rich lithic and quartz arenite with interbedded lutite (Rsfu);
- Dominantly quartz-rich lithic arenite and lutite (Rsf);
- Quartz-arenite (Rsq); Quartz-arenite with lutite and carbonaceous beds (Rsq')
- Quartz arenite

UPPER PARMEENER SUPER-GROUP

- Geological boundary, position approximate
- Fault, position approximate, downthrown side indicated
- Diamond drill hole
- Mine Workings

