ANNUAL REPORT
EPM 18222
FOR PERIOD ENDING
21st May 2011

Tenure Holder: Michael Leu
Author: Michael Leu

Date Submitted: September 2011

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Summary, Work Performed

The holder of EPM 18222 previously has explored and discovered unreported commercially viable diatomite/opal-CT deposits east of Rolleston, central Queensland, specifically on EPMs 15363, 15727 and 15728. Field traverses and air photo interpretation during the current reporting period has identified areas with potential large deposits of diatomite within EPM 18222. Investigation was initiated following a report on the occurrence of diatomite on 'Planet Downs' in Dunstan, B., 1916: Queensland Mineral Deposits. A Review of Occurrences, Production, Values and Prospects. No. 7 Diatomite (Tripolite). *Queensland Government Mining Journal*, 17, p.585.

XRF, XRD and petrographic analyses have established that the diatomite deposits east of Rolleston predominantly comprise varying ratios of opaline silica (opal-CT and diatom frustules), clays (predominantly smectite and lesser kaolinite) and carbonates. Note the term diatomite, for convenience, herein refers to diatomaceous shales with varying ratios of opal-CT, diatom frustules, clays and secondary Ca and Mg carbonates.

Research and development has established the diatomite east of Rolleston has many specific uses including:- reactive-silica source, light weight aggregates, additive for cement and concrete (pozzolan), anticaking agent, absorbents (oil/chemical absorbers, pet litters), soil amender (including mine rehabilitation), potting mix component, hydroponic medium, source of plant-available silicon (fertiliser, carbon sequestration), carrier for agricultural chemicals (fertilisers, pesticides, herbicides), carrier for soil wetters, desiccant manufacture, fillers (for paint, rubber, plastics), insulating material, mild abrasive, catalyst carrier, refractory and filtration media (swimming pools, food and beverage manufacturing). R & D has been ongoing, especially with Cement Australia who are evaluating the diatomite as a partial substitute for silica sand in cement manufacture.

The recently discovered diatomite deposits of central Queensland have the potential to become a significant component in mine rehabilitation, especially for the major coal mines that have a topsoil deficiency. R & D is planned to determine the application rates and benefits of using diatomite as part of the rehabilitation protocol. The aim being to develop a prescription based method for determining the application rates of diatomite. The benefits would be measured in improvements in water holding capacity, rewetting, air filled porosity, nutrient retention and plant vigour, i.e. improve success rate of regrowth.

Exploration during the first year of EPM 18222 has focused on open file data review, regional reconnaissance and air photo interpretation to locate potential diatomite deposits. The potential diatomite deposits within EPM 18222 appear widespread and on-going exploration is being conducted to characterise the various deposits in terms of suitability for the markets identified above. Sampling during the coming exploration term will establish the continuity of the chemical and physical properties of the diatomite. Exploration will focus on regional and local detailed mapping through EPM 18222 to establish the lateral and vertical characteristics of the diatomite. A range of particle sizes will be assayed to determine variations in chemistry and cation-exchange capacity with particle sizings. Bulk density and absorbency will be measured for vertical intervals and specific particle sizes from samples. The holder of EPM 18222 has and continues to amass a comprehensive technical library to assist research and development.

Tenement: EPM 18222

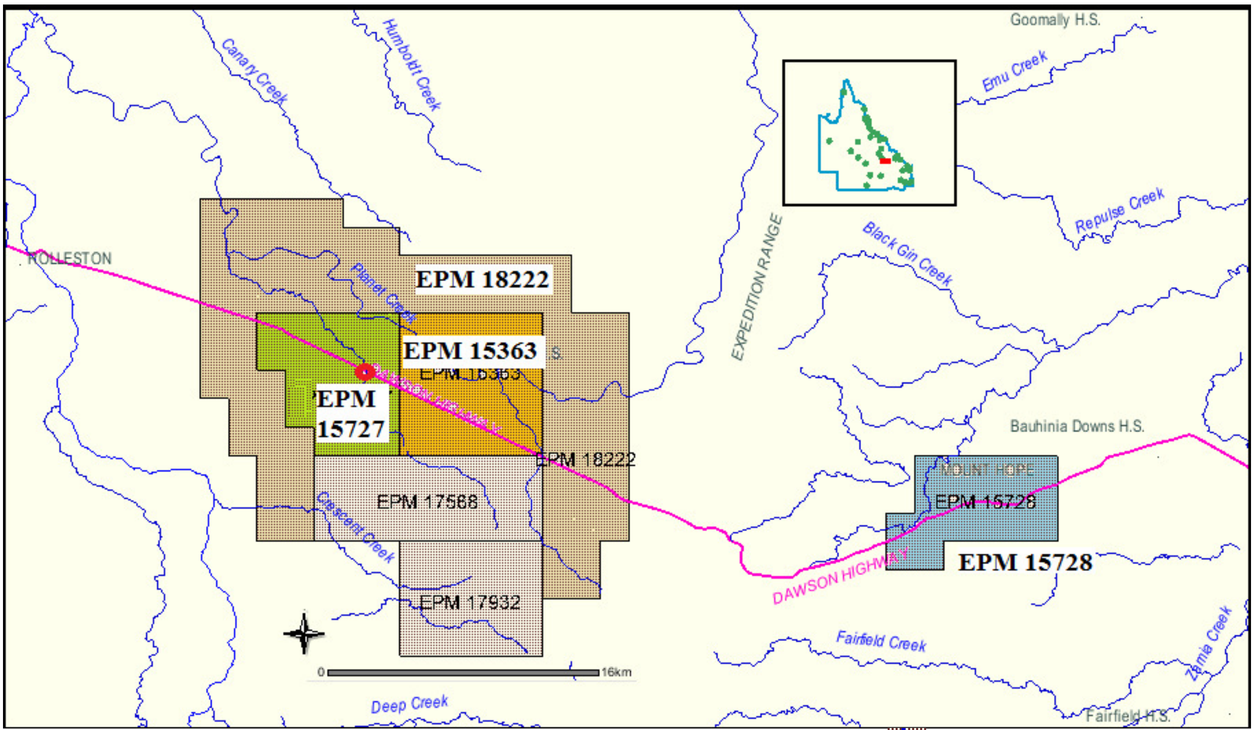


Figure 1: Location of EPM 18222 relative to EPMs 15363, 15727 and 15728. Red Centre Dawson Highway Bridge crossing Racecourse Creek (683843mE, 7285590mN)

Tenement Details

EPM 18222

Holder: Michael Roby Leu, 15 Gray Spence Crescent, West Pennant Hills, N.S.W., 2125; Phone (02) 98722766, Mobile 0427000600, Email: michael.leu@bigpond.com.au

Mining District: Department of Mines and Energy, Central Region, Emerald District Office (Mining Registrar) State Government Offices, 99 Hospital Road, Emerald, QLD., 4720; PO Box 245, Emerald QLD 4720; Phone: (07) 4987 9373, Fax: (07) 4987 9333. Mining Registrar, Nathan Brown; District Tenures Officer, Kevin Pokarier.

Environmental authority
The Environmental Authority ("EA") covering EPM 18222 is MIC200910109

Location (Figure 1):
Centre of EPM 18222 is located approximately 21km east of Rolleston along the Dawson Highway.

EPM 18222 was granted on the 21st May 2010 for a Period of Three Years; Total Sub-blocks = 84

Exploration Permit for Minerals (EPM) 18222		
BIM	**Block No.**	**Sub-block No.**
Char	417	J, K, O, P, T, U, Y, Z
Char	418	F, G, H, L, M, N, O, P, Q, R, S, T, U,V, W, X, Y, Z
Char	419	Q, R, S, T, U, V, W, X, Y, Z
Char	420	Q, V
Char	489	D, E, J, K, O, P, U, Z
Char	490	L, Q, V, W
Char	492	A, B, C, F, G, H, L, M, N, Q, R, S, V, W, X
Char	562	A, B, F, G, L, M
Char	564	A, B, C, F, G, H, L, M ,N, Q, R, V, W

Table 1: Block and sub-block description of Application for EPM 18222.
(BIM = Block Identification Map, Char = Charleville)

Climate

Most rain falls between November and April and a wet year can experience a rainfall of 50–75 centimetres. Summer months typically are hot and sometimes humid, while the winter months have mild to warm days and mild to cool to cold nights.

Topography, Physiography and Land Use

EPM 18222 occurs on the western side of the Expedition Range. This range forms a watershed divide and is 445 metres high where crossed by the Dawson Highway.

EPM 18222 is drained by the north-west flowing Crescent, Racecourse and Planet Creeks that are tributaries of the north-north-west flowing Comet River.

The potential diatomite deposits identified from field traverses and air photo interpretation occur in generally low relief terrain that has been extensively cleared in places for predominantly grazing cattle and to a far lesser extent, cereal/fodder cultivation. Extensive areas in the west and north-west of EPM 18222 comprise relatively flat lying grasslands-very open woodland trending around 230-270 metres ASL. Landforms slope gently westward through EPM 18222, with elevation reducing from 300 metres ASL near the western flank of the Expedition Range to 200 metres ASL around Rolleston.

Location and Access

EPMs 18222

Encompass portions of some of the following properties:

EPM 18222

'Planet Downs'

'Planet Downs' is situated 650kms northwest of Brisbane, comprises a quarter of a million acres (104,000 hectares) and stocks over 10,000 head of cattle. Entrance gate (elevation 284 metres, S24^0 33' 37.0", E 148^0 52' 18.8"): located 29km east of Rolleston immediately adjacent to the north side of Dawson Highway. Manager: Brian Edward Bloxsom, (as Tte for the Bloxsom Family Trust, Service Address: PO Box 415, Virginia, Qld., 4014). Property Address: Sunlight Road, Humboldt, Qld, 4702; Lot 8, SP122561, FH, Parish Leven, Planet. Local Government: Bauhinia. Robert Bloxsom (son, Manager), 0412559214, (07) 32655246 (Brisbane Office), Jason Richards (on-site Manager), Andrew Simpkin and Mick, (07) 49843154.

'Bellevue'

Entrance gate: located 24.3km east of Rolleston immediately adjacent to the south side of Dawson Highway. Owners: Bruce & Kay A. Burrows; Service Address: 'Bellevue', Rolleston, Qld., 4702. Property Address: Waylandia Valley Road, Coorumbene, Qld., 4702; Lot 10, CUE46, FH, Parish Foot. Local Government: Bauhinia. Rohan Burrows (son, on-site Manager), (07) 49843187.

Logistics

The Dawson Highway passes through EPM 18222, this major transport route services the coalfields and agricultural districts of central Queensland. The Dawson Highway provides all year weather access to the EPM 18222 in conjunction with reduced infrastructure costs for mine development. Very competitive back loading freight rates should be achievable. Rail freight lines for bulk shipments to the Port of Gladstone are located approximately 20 kilometres west of Rolleston and at Moura. The proximity of the deposits to the Blackwater and Moura mining districts enhances the potential of the diatomite to become a significant component in mine rehabilitation. Similarly, the same applies to the Emerald agricultural district and the coastal sugar cane regions.

Diatomite is extensively used as a growing medium for plants due to its high water-nutrient holding capacity and fast rewetting. Diatomite has many environmental benefits including significantly reducing water consumption and nutrient leaching. The agricultural market for diatomite is substantial because diatomite provides significant soil enhancing properties for many crops. Diatomite is a naturally high source of plant-available silicon, an essential plant nutrient that promotes plant growth and results in higher yields. The deposits described herein will provide exceptional nutrient retention due to high cation-exchange capacities. Production of agricultural grade diatomite involves basic processing of the diatomite i.e., crushing, screening and possibly drying of product. Bulk horticultural-soil amending grades could be delivered to mines and farms in central Queensland at a price competitive to topsoil.

Regional Geology

EPM 18222 is situated in east-central Queensland within the south-east portion of the Bowen Basin.

The major structural components comprise, extending east from the western hinterland of the township Rolleston to the township of Moura: the Denison Trough (consisting of at least 2,895 metres of folded Permian and Triassic sediments); the Comet Ridge (a basement ridge), comprising Devonian sediments overlain by gently folded Permian and Triassic sediments (around 1,448 metres thick in AFO drillhole Purbrook No. 1), flanks the Mimosa Syncline (dominant structural feature up to 129 kilometres wide). The syncline is a depositional downwarp that contains around 7,600 metres of Permian and Triassic sediments that were lightly folded in the late Triassic. A zone of tightly folded rocks (the Folded Zone) flanks the north-east portion of the Mimosa Syncline. Fold axes generally trend north-north-west parallel to the axes of the major structural features described above and the regional trend of the Bowen Basin (Olgers, 1966; 1:250,000 Geological Series Sheet SG/55-4).

The Tertiary sediments (fluvial and lacustrine) and basalts lie unconformably on Triassic fluvial sediments that in younging order comprise the Rewan Formation, the Clematis Sandstone and the Moolayember Formation. The uppermost basement rocks within 'Planet Downs' and 'Bellevue' comprise the Rewan Formation (Lower Triassic, red-bed unit consisting predominantly chocolate-brown mudstone and siltstone, greenish lithic and volcanic sandstone and minor quartz sandstone, Olgers 1966). These basement Triassic rocks are covered by Tertiary basalt and Tertiary-Quaternary alluvium within EPM 18222. Extensive deposits of black quaternary soils occur within 'Bellevue'. The north-south trending Expedition Range flanks the eastern margin of the Tertiary units within the EPM and forms the western limb of the Mimosa syncline. This range is comprised predominantly of Clematis Sandstone (medium-grained, cross-bedded quartz sandstone and micaceous siltstone) and some scattered remnants of Tertiary basalts north and south of the Dawson Highway.

The surface geology within the areas of interest described below is dominated by Tertiary-Quaternary basalt-sediment cover that is dissected by drainage channels. Geological interpretation of the area suggests that the lacustrine sediments were deposited in a fairly shallow basin. Tertiary basalt overlies the diatomite-bearing beds in places on 'Planet Downs', however it is not as widespread as shown on the 1:250,000 Geological Series Sheet SG/55-4 (1966).

Diatoms and Diatomite

Diatomite or Diatomaceous Earth is a sedimentary rock composed predominantly of the opaline silica skeletal (frustules) remains of microscopic, photosynthetic algae called diatoms. Under ideal conditions diatoms can flourish and their frustules can accumulate into a diatomite deposits several metres thick.

The proliferation of diatoms in bodies of water (lakes, rivers and oceans) is associated with an increase in soluble nutrients, especially silicon, nitrogen and phosphorus. Coeval volcanic activity can be the main source of these nutrients, and volcanic ash is a common constituent of diatomite deposits. Diatoms are classified into species based on shape and ornamentation.

The frustules of diatoms consist of a minute framework of opaline (amorphous) silica, and this provides the material with a number of unusual properties. Diatomite has an extremely high surface area per unit volume and an excellent capillary attraction, making the material a good absorbent. Commercial diatomite will readily absorb its weight in water.

Charles Darwin wrote in 1872 “Few objects are more beautiful than the minute siliceous cases of the Diatomaceae”. Diatoms are vital to humankind as they make up a quarter of the earth’s plant life and they produce at least a quarter of the oxygen we breathe.

Extract Wikepedia: Diatoms (Gr. dia ‘through’; tomos ‘cutting’, i.e., ‘cut in half’) are a major group of eukaryotic algae, and are one of the most common types of phytoplankton. Most diatoms are unicellular, although some form chains or simple colonies. A characteristic feature of diatom cells is that they are encased within a unique cell wall made of silica. These walls have a wide diversity in form, some quite beautiful and ornate, but usually consist of two symmetrical sides with a split between them, hence the group name.

There are more than 200 genera of living diatoms, and it is estimated that there are approximately 100,000 extant species (Round & Crawford, 1990). Diatoms are a widespread group and can be found in the oceans, in freshwater, in soils, and on damp surfaces. Most live pelagically in open water, although some live as surface films at the water-sediment interface (benthic), or even under damp atmospheric conditions. They are especially important in oceans, where they are estimated to contribute up to 45% of the total oceanic primary production (Mann, 1999).

Diatoms belong to a large group called the heterokonts, including both autotrophs (e.g. Golden algae, kelp) and heterotrophs (e.g. water moulds). Their chloroplasts are typical of heterokonts, with four membranes and containing pigments such as fucoxanthin. Individuals usually lack flagella, but they are present in gametes and have the usual heterokont structure, except they lack the hairs (mastigonemes) characteristic in other groups.

Most diatom species are non-motile but some are capable of an oozing motion. As their relatively dense cell walls cause them to readily sink, planktonic forms in open water usually rely on turbulent mixing of the upper layers by the wind to keep them suspended in sunlit surface waters. Some species actively regulate their buoyancy to counter sinking.

Diatom’s cells are contained within a unique silicate (silicic acid) cell wall comprised of two separate valves (or shells). The biogenic silica that the cell wall is composed of is synthesised intracellularly by the polymerisation of silicic acid monomers. This material is then extruded to the cell exterior and added to the wall. Diatom cell walls are also called frustules or tests, and their two valves typically overlap one another like the two halves of a petri dish.

Diatomite as a Source of Plant-Available Silicon

Analytical tests by the University of Western Sydney have demonstrated that the diatomite is a source of plant available silicon, a belatedly identified essential plant nutrient.

The importance of silicon in plant nutrition and health has only recently been recognised. Silicon is a significant macro plant nutrient as vital as nitrogen, potassium and phosphorus. Although silicon is the second most abundant element in soils (after oxygen) very little of it is in the plant-available form of monosilicic acid.

Research and field experience show that silicon, in the form of plant-available monosilicic acid, can improve plant growth, mineral nutrition, mechanical strength and resistance to fungal diseases. Increased rooting of cuttings and nodulation of legumes has also been attributed to silicon fertilisation. Such benefits are well recognised by the rice and sugar cane industries in Australia and overseas, where silicon applications are standard practice and have significantly improved yields. Tests conducted by the University of Florida show that applications of silicon to ornamental crops increase leaf chlorophyll content and plant metabolism, enhance plant tolerance to environmental stresses such a cold, heat, drought and reinforce cell walls, thus offering protection against pathogens and insects (Lake, J. Nov. 2001, Australian Horticulture).

10 – 12mg/L of Mo Reactive Si in DTPA extract of growing mix is the minimum level needed to ensure plants obtain sufficient Si to gain growth benefits and protection against various fungal pathogens. The protective effects do not become evident until approximately three weeks after plants have been grown in mixes within sufficient plant available Si (Muir et al, 1999).

Muir, S., et al, 1999. Some Effects of Silicon in Potting Mixes on Growth and Protection of Plants Against Fungal Diseases. *'Silicon in Agriculture' Conference*, Florida, USA, 26-30 September 1999.

Diatomite – Natural Insecticide

Diatomite kills some insects by lacerating their outer waterproof membrane and absorbing fluids, thereby causing lethal desiccation. Diatomite works mechanically, consequently it should be nearly impossible for insects to develop a resistance. It has been used as an insecticide to protect grain in silos. It can also be sprayed on crops/garden plants, or used externally on domestic animals to control fleas, etc. The CSIRO has researched the use of diatomite for protecting grain and has determined that the advantages include: long-term protection (months to years), no chemical residues, maintenance of grain quality, safe for animal consumption and acceptance of some products meeting organic standards and certification.

Diatom Species Observed in Diatomite Deposits East of Rolleston (Specifically 'Planet Downs') EPM 18222 encompasses large portions of grazing property 'Planet Downs'.

Plate adapted from Crespin (1947) and Holmes (1989)

Cylindrical *Melosira granulata*, ovate *Pinnularia*, Naviculoid (boat-shaped) *Navicülla*, Rod-like *Eunotia.*

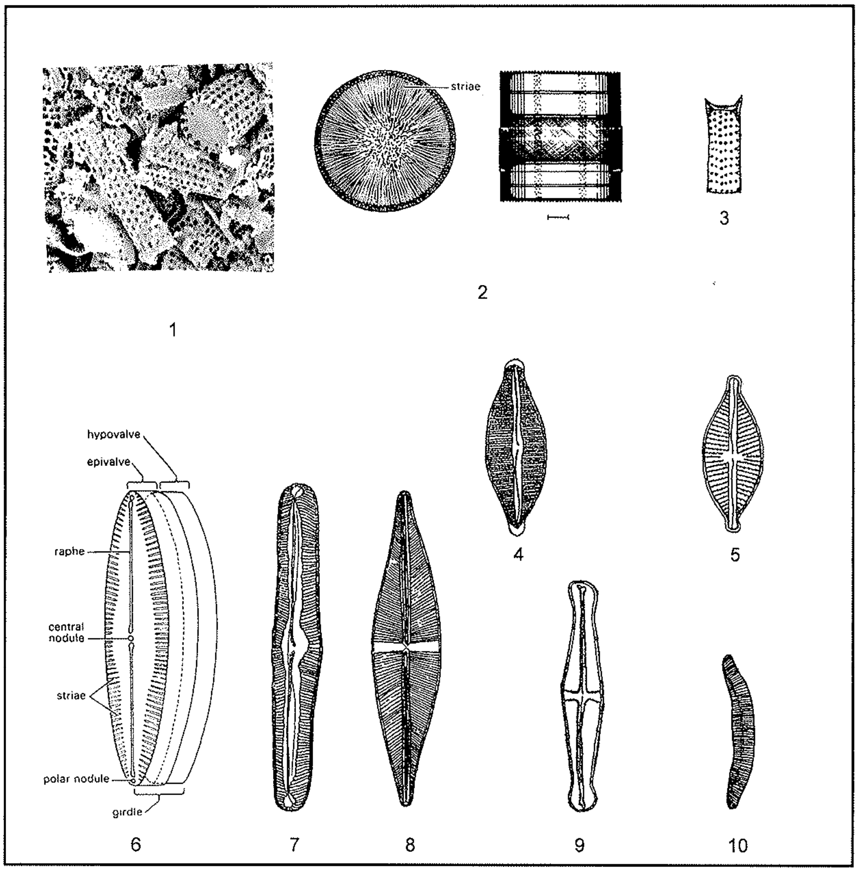


Plate 1. Examples diatom genera (all general generic level other than *Melosira granulata**) observed in diatomite deposits on 'Planet Downs', central Queensland, by Crespin, 1947. **Figure 1:** *Melosira granulata*, Wyrallah near Lismore, N.S.W., X1,600 (after Holmes *et al.*, 1989). **Figure 2:** *Melosira* sp., centric diatom, valve view (left) and girdle view of colony (right), about X340 (after Holmes *et al*, 1989). **Figure 3:** *Melosira granulata*, Chalk Mountain, Bugaldie, N.S.W., X1,270 (after Crespin, 1947). **Figure 4:** *Navicula cuspidaria* var. *ambigua*, Ewart's Swamp, Grassmere, W.A., X715 (after Crespin, 1947). **Figure 5:** *Navicula maculata*, Ewart's Swamp, Grassmere, W.A., X1,270 (after Crespin, 1947). **Figure 6:** *Pinnularia* sp., pennate diatom, oblique view with raphe, X320 (after Holmes *et al.*, 1989). **Figure 7:** *Pinnularia nobilis*, Lillicur, Vic., X410 (after Crespin, 1947). **Figure 8:** *Stauroneis phonenicentron*, Lillicur, Vic., X715 (after Crespin, 1947). **Figure 9:** *Stauroneis anceps*, Little Badgerup, Waneroo District, W.A., X715 (after Crespin, 1947). **Figure 10:** *Eunotia major*, Lillicur, Vic., X435 (after Crespin, 1947).**Melosira granulata* (Ehrenburg) Ralfs is regarded by many recent workers as a synonym of *Aulacoseira granulata*.

Al_2O_3 as an indicator of the opal-CT/clay contents, speculation on mineralogy based on XRF Data

The diatomite from central Queensland comprises a variable mix of diatoms and opal-CT (amorphous silica), montmorillonite and kaolinite and potentially minor calcite, siderite and limonite, and minor amounts of feldspar and quartz.

Of the above minerals, the following will be contributing to the Al_2O_3 content of the material:-

Diatoms- In theory $SiO_2.nH_2O$ but with minor amounts of other elements. Diatoms appear to contain 3-4% Al_2O_3 and possibly a high H_2O content (diatom frustules can contain up to 10%H_2O)

Kaolinite- $(Al_4Si_4O_{10}(OH)_8)$

Montmorillonite- A very variable mineral with a basic analysis of (Al, Mg)8(Si4O10)3(OH)10.12H_2O, but with significant substitution common, particularly with additional Ca, Na or Fe. (Na, Ca)(Al, Mg)6(Si4O10)3(OH)6 - nH2O, Hydrated Sodium Calcium Aluminum Magnesium Silicate Hydroxide

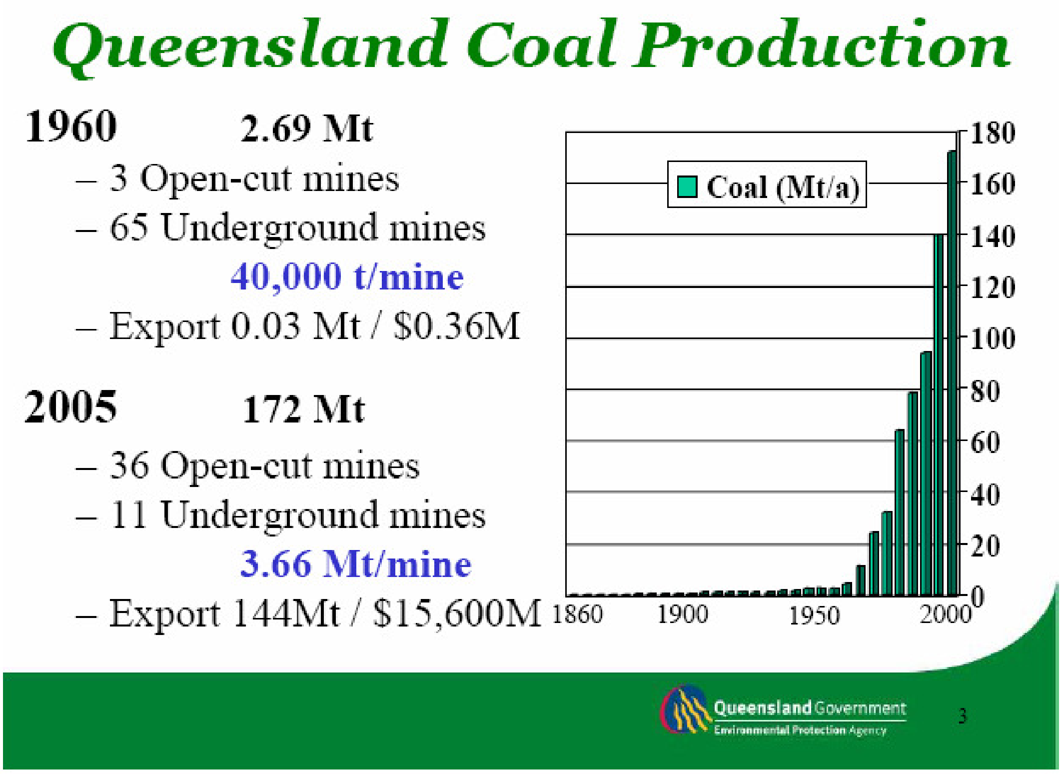
Based on the above, simplistically,

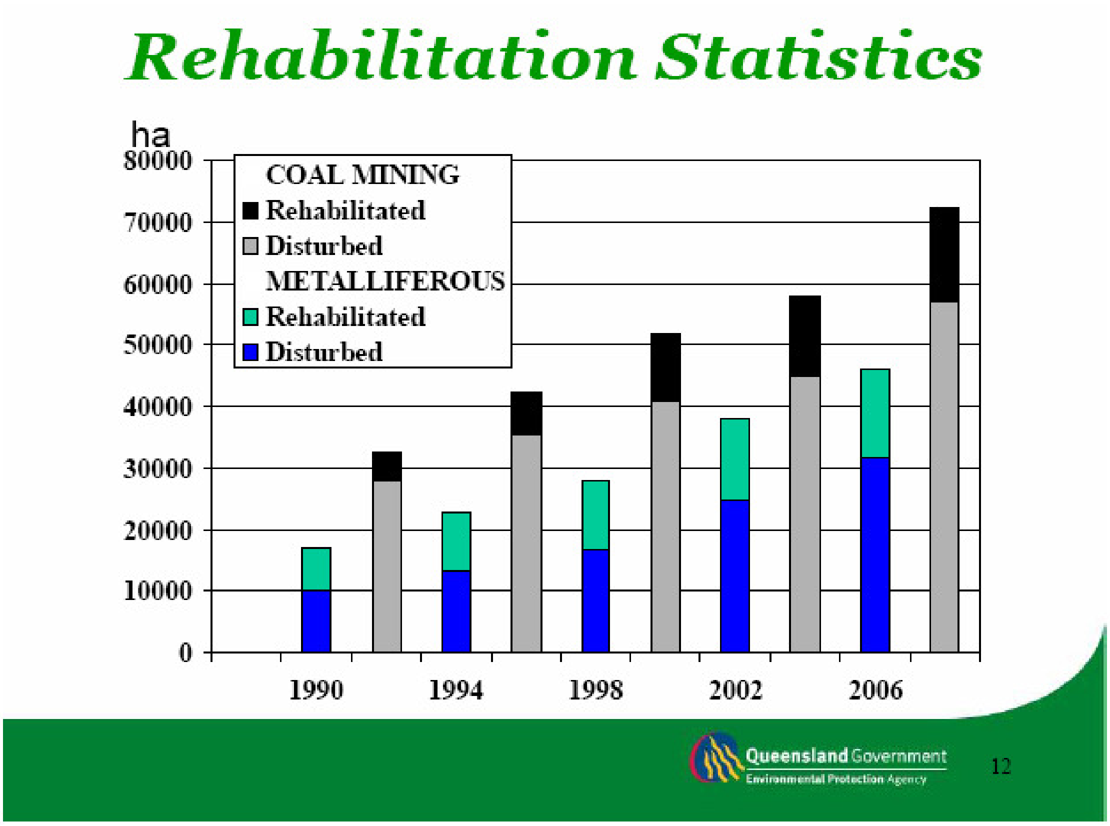
The diatoms are 92%SiO_2, 4%Al_2O_3 and, say, 4%H_2O,

The kaolinite is 50%SiO_2, 42.5%Al_2O_3 and 7.5%H_2O,

The montmorillonite is 40%SiO_2, 34%Al_2O_3, 9%MgO and 17%H_2O.
Note that these are very variable figures but they provide a reasonable method to estimate mineral percentages.

To establish the Al_2O_3 content in any combination of these minerals it is clear that each 1% of diatoms in the combination adds 0.04%Al_2O_3; each 1% of kaolinite adds 0.425%Al_2O_3; and each 1% of montmorillonite adds 0.34%Al_2O_3 .


Queensland Coal Production
1960 2.69 Mt
– 3 Open-cut mines
– 65 Underground mines
40,000 t/mine
– Export 0.03 Mt / $0.36M
2005 172 Mt
– 36 Open-cut mines
– 11 Underground mines
3.66 Mt/mine
– Export 144Mt / $15,600M
Coal (Mt/a)
180
160
140
120
100
80
60
40
20
0
1860
1900
1950
2000
Queensland Government
Environmental Protection Agency
3


Rehabilitation Statistics
ha
80000
70000
60000
50000
40000
30000
20000
10000
0
COAL MINING
Rehabilitated
Disturbed
METALLIFEROUS
Rehabilitated
Disturbed
1990
1994
1998
2002
2006
Queensland Government
Environmental Protection Agency
12

The above bar graph depicts that around 2006 there was approximately 118,000 hectares of land affected by mining activities in Queensland and of this 29,000 hectares has been rehabilitated and 89,000 hectares (57,000ha coal mines; 32,000 metalliferous mines) remained disturbed. The diatomite deposits located east of Rolleston are well situated to service a significant proportion of some the largest open cut coal mines in Queensland.

Some preliminary R & D has been conducted by Southern Cross University on potential substrates available for rehabilitation of Hunter Valley coal mines. The advice received from State Mineral Resources Environmental Officers and their equivalents employed by the major coal mines is to conduct R & D to determine the application rates and benefits of using diatomite as part of the rehabilitation protocol. The aim being to develop a prescription based method for determining the application rates of diatomite. The benefits would be measured in improvements in water holding capacity, rewetting, air filled porosity, nutrient retention and plant vigour, i.e. total success and rate of regrowth.

There are literally thousands of hectares of unrehabilitated land on the coal mining leases surrounding the central Queensland diatomite deposits. Campaign crushing and screening through the Terex Findlay plant should produce large stockpiles for bulk tipper loading, trucking and direct spreading and ploughing into resurfaced overburden; should be able to deliver per metre at or below the cost of top soil and sand. Mines are continuously striving for best practices; researched and promoted properly this application will consume annually thousands of tonnes of both diatomite.

Traverses through EPM 18222, outcrop exposures and landmarks
All co-ordinates (UTM 55J; WGS84; GPS, Garmin GPSmap 60CSx, accuracy ±4 metres)

Code		Feature	mE	mN	Elevation (m)
WQ		White Quartz pebbles, Injune Road, 2km south of Rolleston, main road sheeting	**663721**	**7292841**	**207**
ISIR		Intersection Springsure, Injune Road	**664025**	**664025**	**206**
IBRDH		Intersection Blackwater Road and Dawson Highway	**665105**	**7293273**	**220**
LBQR		Large basalt quarry, east of Rolleston, north side of Dawson Highway, near Blackwater turnoff, laminated basalt overlain by red soil and perched river gravel	**665766**	**7292949**	**224**
OGPDH		Origin Gas Pipeline, Dawson Highway	**669604**	**7291777**	**239**
BQR		Basalt quarry	**669513**	**7291492**	**238**
BQ		Basalt quarry	**673205**	**7290618**	**257**
DHHEB		Dawson Highway, elevated terrain, basalt	**674315**	**7290133**	**257**
IBPRDH		Intersection of Broken Plains Road and Dawson Highway, traced for several kilometres, basaltic high	**691091**	**7281597**	**304**
BSQDH		Basalt quarry, Dawson Highway	**680399**	**7287493**	**254**
GGNSDH	**Diatomite**	Gate Grid north side of Dawson Highway, diatomite gravel presumably excavated from diatomite exposure near Planet Creek	**680582**	**7287426**	**261**

Table 2: Field traverse through EPM 18222. Log codes plotted on satellite images following.

South-east view from basalt quarry at location LBQR (west of western boundary of EPM 18222; 665766mE, 7292949mN, Elevation 224 metres).

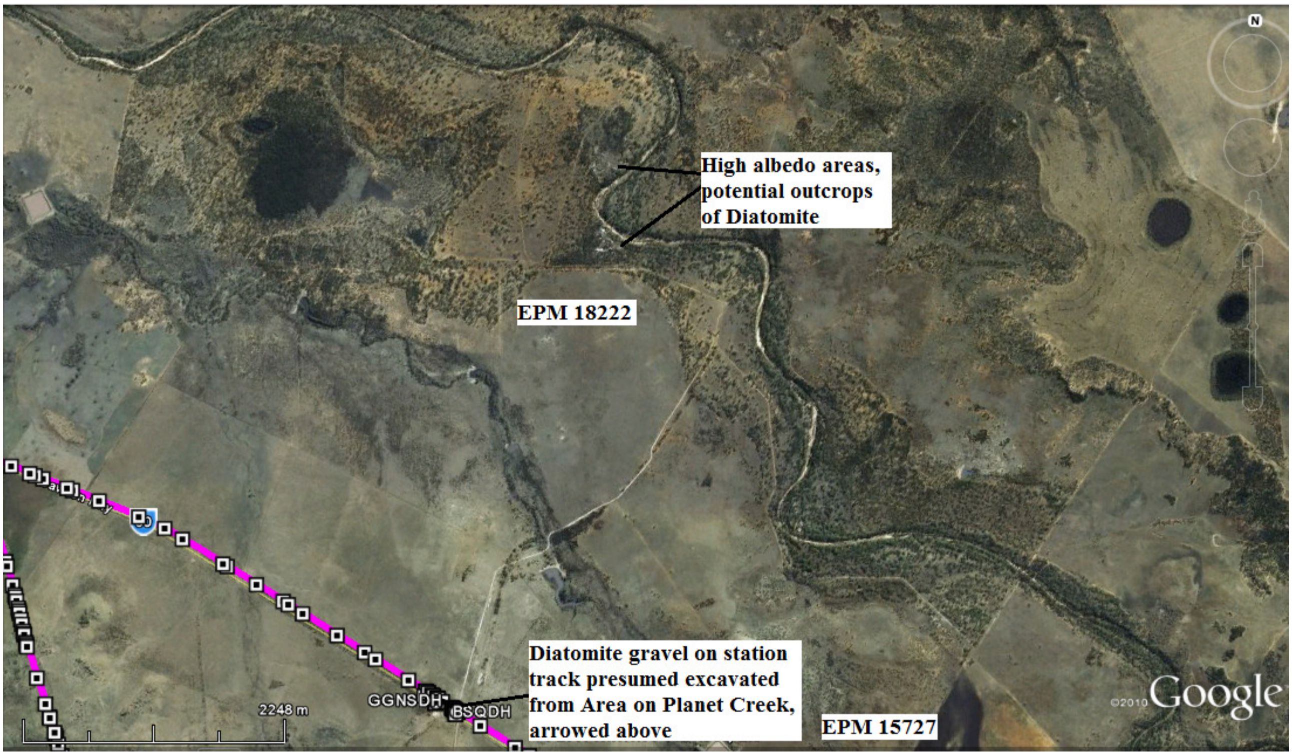
From location GGNSDH, basalt quarries were observed within and to the west of EPM 18222 along the Dawson Highway to the town of Rolleston. A basalt quarry near location GGNSDH (BSQDH, 680399mE, 7287426mN) occurred at an elevation of 254 metres, the potential diatomite outcrops within EPM 18222 (shown in satellite images above) occur around 15 metres stratigraphically below this basalt at 239 metres ASL.

Potential Diatomite deposits within EPM 18222 in relation to known deposits on ‘Planet Downs’ – shown in figure below.

Significant deposits of diatomite are considered to occur (around 55J, 681703.85mE, 7291444.58mN, arrowed in satellite image above) on EPM 18222, 10 kilometres north-east of the small open cut on ‘Planet Down’ (55J, 681703.85mE, 7291444.58mN). Exploration of this area will be reported in Annual Report for Year Ending 21 May 2012.

White and black squares show traverse routes, refer to Table 2 for Key to localities.

Location GGNSDH (Table 2, 680582mE, 7287426mN, Elevation 261 metres), gate grid north side of Dawson Highway, diatomite gravel presumably excavated from diatomite exposure near Planet Creek, shown in satellite images below.



Potential Diatomite deposits within EPM 18222.

Potential Diatomite deposits (white, high albedo areas) within EPM 18222.

Conclusions

The holder of EPM 18222 previously has explored and discovered unreported commercially viable diatomite/opal-CT deposits east of Rolleston, central Queensland. Exploration during the first year of EPM 18222 has focused on open file data review, regional reconnaissance and air photo interpretation to locate potential diatomite deposits. The potential diatomite deposits within EPM 18222 appear widespread and on-going exploration is being conducted to characterise the various deposits. Sampling during the coming exploration term will establish the continuity of the chemical and physical properties of the diatomite. Exploration will focus on regional and local detailed mapping through EPM 18222 to establish the lateral and vertical characteristics of the diatomite. A range of particle sizes will be assayed to determine variations in chemistry and cation-exchange capacity with particle sizings. Bulk density and absorbency will be measured for vertical intervals and specific particle sizes from samples.

The potential diatomite deposits within EPM 18222 lie juxtaposed to the Dawson Highway, a major transport route that services the coalfields and agricultural districts of central Queensland. The proximity of the deposits to the Blackwater and Moura mining districts enhances the potential of the diatomite to become a significant component in mine rehabilitation (soil amender with high water-nutrient holding capacity, fast rewetting, high plant-available silicon). Similarly, the same applies to the Emerald agricultural district and the coastal sugar cane regions.

The nature of the weathering profile predicts consistent high SiO_2 and low (leached) Al_2O_3 contents will be widespread in the lower exposed portions of the deposit. The diatomite deposits currently discovered on 'Planet Downs' and 'Bellevue', within adjoining EPMs, extend at least 4.3 x 4.08 kilometres, 17,500,000 square metres, suggesting an inferred resource of tens of millions of tonnes. Based on observed exposures, geological and topographic data it is reasonable to postulate that the depositional environment of the diatomite may have comprised a shallow basin that extended beyond the current mapped limits of diatomite exposures. The potential diatomite outcrops located within EPM 18222 support the existence of extensions beyond previously mapped limits. The lateral and vertical extent of diatomite occurrences within EPM 18222 will form the basis of the 2011-2012 exploration program.

Ongoing Exploration

Exploration will focus on characterising the lateral and vertical properties of the diatomite. Samples will be collected from natural exposures and costeans. In all instances a coned and quartered portion of the entire sample interval will be sent for XRF and XRD analyses. In some instances additional particle sizings will be screened from some intervals principally to determine the variation of Si versus Ca and Mg with particle size. The rationale will to determine if simple screening can upgrade the percentage of either Si and Ca-Mg carbonates within specific size fractions. This will partially be done to establish if the calcium and magnesium contents of 'earthy lime/dolomite' can be enhanced by crushing and screening to produce an ag-lime product.

A particle size breakdown will be measured for excavated samples to determine indicative 'as mined' sizings.

Moisture content (% w/w @ 150^0c), absorbency (%w/w of sample dried @ 150^0c) and bulk density (loose and tapped expressed both as grams/cm^3 and Litres per Kg) will also be measured. Moisture content in particular impacts on value and freight costs. Bulk density and absorbency will be measured for particles sizing -7.00mm+1.0mm for 'Raw Ore' (as excavated, moist) and dried (150^0c) samples.

The following Multi-element Analyses will be undertaken: SiO_2 (ME-XRF12p), Al_2O_3 (ME-XRF12p), Al (ME-ICP61), Fe_2O_3 (ME-XRF12p), Fe (ME-ICP61), CaO (ME-XRF12p), Ca (ME-ICP61), MgO (ME-XRF12p), Mg (ME-ICP61), Na_2O (ME-XRF12p), Na (ME-ICP61), K_2O (ME-XRF12p), K (ME-ICP61), Ti_2O (ME-XRF12p), Ti (ME-ICP61), MnO_2 (ME-XRF12p), Mn (ME-ICP61), Ag (ME-ICP61), As (ME-ICP61), Ba (ME-ICP61), Be (ME-ICP61), B1 (ME-ICP61), Cd (ME-ICP61), Co (ME-ICP61), Cr (ME-ICP61), Cu (ME-ICP61), Ga (ME-ICP61), La (ME-ICP61), S(ME-ICP61), P_2O_5 (ME-XRF12p), Mo (ME-ICP61), Ni (ME-ICP61), P (ME-ICP61), Pb (ME-ICP61), Sb (ME-ICP61), Sc (ME-ICP61), Sr (ME-ICP61), Th (ME-ICP61), U (ME-ICP61), V (ME-ICP61), W (ME-ICP61), Zn (ME-ICP61), LOI (ME-GRA05).

Costeaning is necessary to accurately determine the commercial characteristics of the diatomite deposits. The methods and parameters that will define Proven Reserves are:

- Costeaning (sampling 1 metre vertical intervals) to establish the continuity of chemical and physical properties.
- Detailed measurements of absorbency and bulk density.
- Collection of samples for XRF chemical analyses (Australian Laboratory Services) to determine SiO_2, Fe_2O_3, Al_2O_3 content, etc.
- Measurement of cation-exchange capacity and exchangeable cations (Australian Laboratory Services).
- Lateral and vertical mapping of especially SiO_2, Fe_2O_3 and Al_2O_3 contents.
- XRF and mineralogical analyses of samples obtained through costeaning to classify the various deposits in terms of diatom frustule contents (mineral weight and volume percentage determinations will be calculated from elemental oxide percentages).
- Precise mapping of the stratigraphic succession (as fine as 10-30cm vertical intervals) of most deposits to determine the variation in weight percentage of diatoms.
- Accurate determination of the lateral and vertical continuity of the weight percent of diatoms, frustule integrity, and gangue (clay, carbonate and iron) content. Determination of diatomite grade thickness. Three dimensional mapping and generation of grade thickness contour maps.
- Test for zeolites in diatomite intervals with a high pyroclastic content.
- Soluble metal levels, particularly iron determination.
- Cristobalite content.
- Refining of overburden/interburden to ore ratios (OB/IB:Ore). It can become uneconomic to excavate when the overburden to ore ratio (OB:Ore) exceeds 1.

Continue research and development in order to further commercialise the deposits.

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