Ref. 2012/51

4 December 2012

New Hope Group
P.O. Box 47
Ipswich
4305

Att. Mr. Ross Bennett

Re: **DESKTOP MINING STUDY AT ROSEWOOD - PART OF ML 4584 AND ALL OF ML 4699**

1.0 INTRODUCTION

The work in this report was carried out at your request (O/N 8202120 of 27.11.12) and in general accordance with the details in our email of 27 November 2012.

It is understood that this study is required to establish details on the geology and past underground mining associated with the two above-described leases (not any mining that predates these leases), so that a commentary can be provided on the stability of the workings and any potential surface subsidence effects. It is further understood that the study is required for the purpose of surrendering these mining leases across the area of interest to this study.

Work in this report has included a review of available information on our database, obtaining mine plans, preparation of plans in electronic format and reporting by the undersigned Engineering Geologist. Taylor Mining Services P/L have also assisted in this study. The site area was not inspected as requested as the area of interest is not owned by the company.

The following 1:10,000 scale plans are attached to this report:

1. site plan
2. contour plan
3. aerial photograph
4. geology plan
5. mining lease plan
6. underground mining (pre-1980) plan

7. underground mining (post 1980) plan
8. constraints plan

2.0 INVESTIGATION RESULTS

2.1 SITE

Plan 1 attached shows that the site under investigation in this report comprises Lots 1 on RP35706, 2 on RP35707, 2 on RP35742, 2 on RP 839880, 3 on RP839880, 36 on RP213735 and 451 on CH31411.

Plan 2 attached shows the contour landform from a 1972 plan. The plan essentially shows an elevated ridge line at 265m AHD to 285m AHD along the central to northern side of the site, with the land mainly sloping to the south down to 140m AHD and also locally down to the west to 190m AHD.

Plan 3 attached shows that a large part of the site is tree-covered with cleared areas centrally and in the western areas. The scarp line along the most elevated ridge is clearly seen as a distinct linear vegetation change.

2.2 GEOLOGY

The 1:100,000 geology map of the area indicates that the bedrock in the area of the site essentially comprises sedimentary rocks (sandstone, shale, siltstone and coal) of the Walloon Coal Measures in the lower elevations whereas a capping of Tertiary rocks exists in the upper elevations. Quaternary alluvium (clay, silt, sand and gravel) also exists towards the Bremer River in the south. Tertiary rocks include both sedimentary dolomite, claystone, siltstone and sandstone as well as volcanic basalt.

The geology and underground mining in the area is described in some detail in GSQ publication numbers 272, 309, 310, 311, 312 and 344. The earliest publication (1922, by Mr Reid) has concentrated on the geology, whereas publications 309 – 312 concentrated on underground mine areas. The latest publication (344) has attempted to correlate the locally different named coal seams that were mined by underground methods in the Rosewood, Walloon and Jeebropilly district.

The Walloon Coal Measures in the area of interest to this study has been described as having sedimentary beds including sandstone, siltstone and coal. The productive coal measures are located in the middle third of the whole formation, the lower and upper parts being devoid of coal. The beds of the productive measures dip gently to the south and south east at angles in the order of 2 – 3 degrees. The beds in addition are stated to be relatively fault free with some north west to south east trending faults with maximum throws in the order of 10m. Some igneous intrusions through the coal seams occur in the area of Mt Marrow.

Eighteen coal seams, suitable for underground mining purposes, were correlated (GSQ 344) across the district, of which the uppermost of the seams are of interest to the site area. The names of the correlated seams are used in this report. The full set of seams, in increasing age and depth, were named the Hall, Hardie, John, Gunthorpe, Trewick, Little Jim, Roots, Joynson, Boughen, Butler, Rule, Cowell, Stewart, Kathage, Wass, Haenke, Bruce and Rea. The uppermost Hudson Seam was generally not mined, whereas the Rule Seam is an additional productive seam that was named after the GSQ 344 publication. These seams are generally 1.0m to 2.0m thick and are found evenly distributed through a 150m sequence of shales, siltstones and fine grained sandstones. The Gunthorpe, Butler and Cowell Seams are of specific interest to this report.

Plan 4 attached (from Reid 1922) shows that the site is covered with Tertiary rocks including dolomite. These rocks overlie the Walloon Coal Measures. The Walloon Coal Measures, including the crop of coal seams, are also shown to the immediate west and south east of the site.

2.3 MINING LEASES

Plan 5 attached shows the locations of the mining leases covering the site area, i.e. part of ML 4584 and all of ML 4699 on this site as well as ML's on adjoining areas.

Mining Lease 4584 (previously ML 387-Ipswich) is a current mining lease, under renewal, held by New Oakleigh Coal Pty Ltd that was due to expire on 31 March 2005. The mining lease was originally lodged by Oakleigh Colliery in April 1951 and was officially granted on 8 March 1979. The current term of the mining lease, although expired, is currently "under renewal". The mining lease contains a total area of 161.6 ha of which 115.46 ha is held as "surface area", the remaining 46.14 ha being the underground component of interest to this report. New Oakleigh Coal currently proposes to surrender this eastern part of the mining lease (46.14 ha) where no surface area is held.

Mining Lease 4683 (previously ML 440-Ipswich) held by Roughrigg Colliery previously took out a small sub-lease from Oakleigh Colliery under part of Lot 1 RP 35706, i.e. in the north east part of ML 4584, to cover their workings in the Gunthorpe Seam. This ML is believed to have been surrendered in the past and is therefore not of significance to this study.

Mining Lease 4699 (previously ML 857-Ipswich) is a current mining lease, under renewal, held by New Oakleigh Coal Pty Ltd, that was due to expire on 31 August 2005. The mining lease was originally lodged by Oakleigh Colliery in July 1982 and was officially granted on 9 August 1984. The current term of the mining lease, although expired, is currently "under renewal". The mining lease contains a total area of 129.75 ha. New Oakleigh Coal currently propose to surrender the whole of this mining lease.

2.4 MINING

Mining by both underground and open cut methods has taken place in the area of the site. Underground mining commenced in the immediate area of the site in 1905 after Mr Hall discovered the main coal seams and set up the Glencoe Colliery. Part of the site has been impacted on by underground mining activities. Open cut mining, which commenced in the general area in the 1970s at the Normanton Colliery, has not taken place on this site.

2.4.1 Underground Mining

The underground mine plans shown below were obtained from Oakleigh Collieries about 10 years ago as these are not on the DNRM database.

Plan 6 attached shows the pre-1980 mining activities on this site from the Roughrigg Number 6 and 7 Collieries. The Roughrigg No. 7 Colliery worked the Gunthorpe Seam from 1949 to 1966 including a small area into ML 4584, under a sub-lease arrangement with Oakleigh Colliery. The mine also worked close to parts of the north eastern boundary of ML 4584. All these workings were mined between 1958 and 1959. The depth to these mine workings ranges between approximately 96m to 127m below ground level. The height of these workings was 1.8m and possibly up to 2m approx.

Plan 7 attached shows the post-1980 mining activities including the Oakleigh Number 3 and 4 Collieries and the Oakleigh Drift Tunnel workings. The Oakleigh Colliery underground mining operations closed in 1997 and was the last underground coal mine in this area. The colliery mined the Cowell Seam under the site between 1983 to 1997 with considerable areas of pillar

extraction having been carried out. The depth to these mine workings range between approximately 106m to 190m below ground level. The height of these workings was up to 2.4m approx. Plan 7 also shows the locations of the Oakleigh No. 6 Colliery Gunthorpe Seam tunnel (that took place after 1980) close to the north west corner of the site. A right angle turn was constructed to the south under the north west corner of the site before the tunnel was quickly abandoned due to the start of a creep, i.e. this is effectively an exploration tunnel only.

Oakleigh Colliery also mined the Butler Seam (see Plan 7) close to the south west corner of ML 4699 between 1982 and 1985 from the Oakleigh No. 3 and 4 Collieries. Whilst these workings do not enter this site they could have some potential influence on the surface of part of the mining lease. The depth to these mine workings ranges between 140m to 145m below ground level. The height of these workings was up to approximately 1.5m.

2.4.2 Open Cut Mining

Open cut mining activities were carried out within ML 4584 to the immediate west of the site but no such activities were carried out within the area proposed for surrender.

2.4.3 Tunnels and Shafts

Tunnels and shafts for either exploration activity or formal underground mining are not known to exist on this site.

3.0 COMMENT

In summary, the work in this report has established that:

1. the study area has underground mining leases only, i.e. the eastern part of ML 4584 and all of ML 4699

2. underground mining, essentially on one level of conventional bord and pillar workings, followed by extensive pillar extraction, has been limited to the western part of the site, i.e. under Lots 1 RP 35706, Lot 2 RP 35742, Lot 2 RP 839880 and Lot 3 on RP 839880. The cover depths to these workings range between approximately 105m and 190m below ground level.

3. tunnels and shaft entries, for exploratory or mining purposes, are not known to exist on the site. The nearest known tunnel and shaft entries are shown outside the site on Plans 6, 7 and 8 attached.

4. the land surface, other than from normal erosion processes and from probable past regional subsidence across the western side of the site, should still be at similar elevations to those shown on the 1972 plan

Plan 8 has been constructed with a view to rationalising the situation on this site. The plan shows the extent of the mining as well as an influence zone around the workings on the basis of an assumed 30 degree draw angle.

Consideration now needs to be given to the potential impacts of the past mining. The extensive pillar extraction indicates that regional subsidence in the order of 900mm should have occurred at the surface in the western part of the site during or shortly after the pillar extraction by about the year 2000. Any surface cracking from the pillar extraction would have been masked by the Tertiary rock cover or closed by infill from surface erosion in the intervening time. The remaining pillars are also liable to have been overstressed with resultant pillar crushing in the past. Importantly, the cover depth to worked height ratio (minimum 44) is well beyond the normal ratio of 4 and up to 10 in the Ipswich-Rosewood area for formation of sinkholes.

In conclusion, this study has revealed that underground mining in the 105m to 190m depth range has taken place under the western part of the site under ML's 4584 and 4699. Furthermore the extensive pillar extraction that took place is liable to have resulted in regional subsidence taking place at the surface no later than about the year 2000. Specifically, the formation of potentially hazardous features such as sinkholes and tunnel or shaft entries are not anticipated or known on this site.

Finally, any future development within the mined area and influence zone on this site will require a more detailed assessment of the prevailing conditions before any development takes place there.

4.0 LIMITATIONS

This report, which may contain attachments in the form of plans, borehole record sheets, laboratory test results etc, must be read in its entirety.

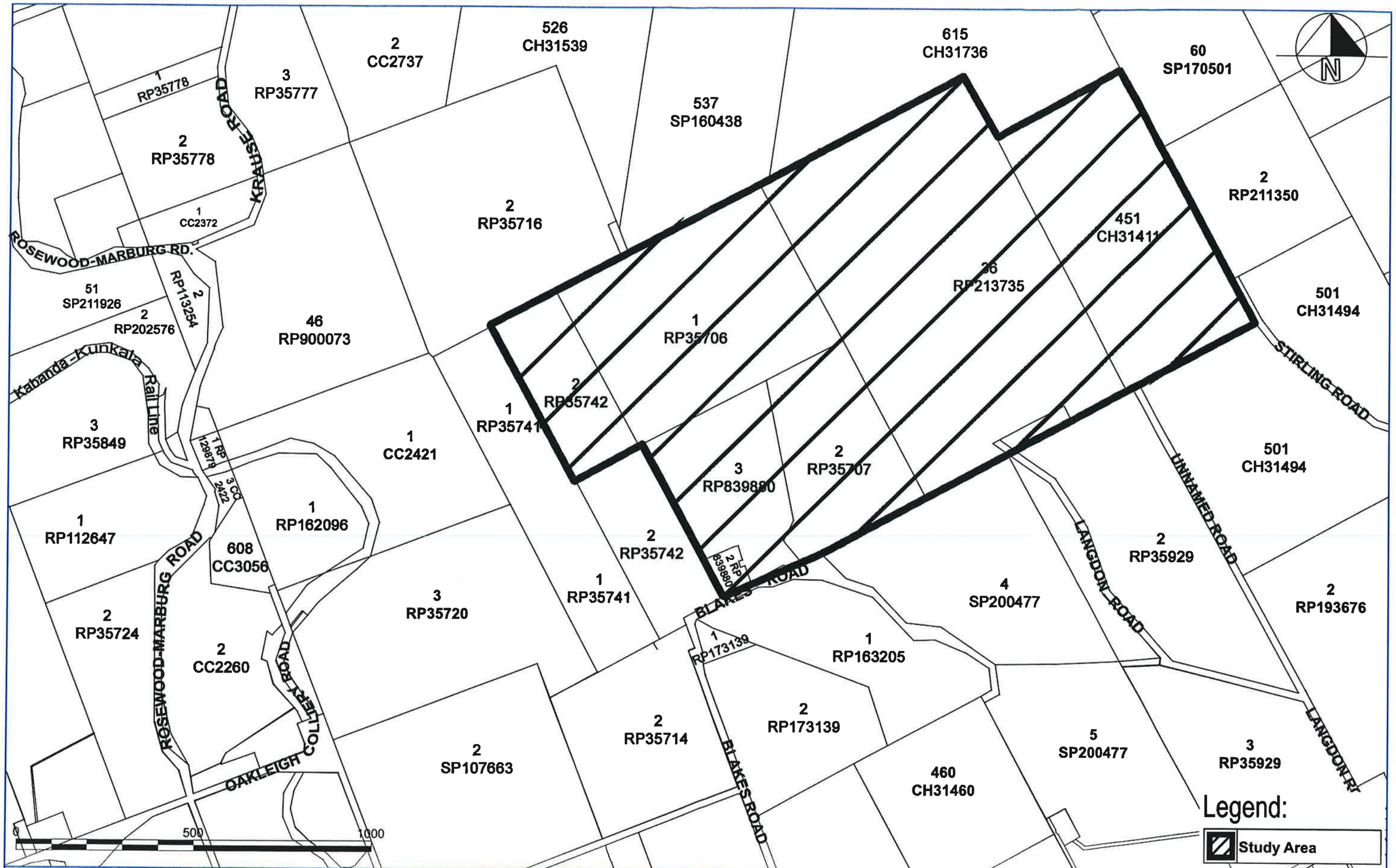
The work in this report was produced for the New Hope Group and their Associates on the basis of information available at the time of writing. This report will not contain sufficient information for other parties and purposes.

While care has been taken in producing this report, it needs to be said that there will always be some risk associated with building in these settings. Recommendations put forward in this report are aimed at minimising the risk.

This company accepts no responsibility for works which do not fully comply with the recommendations in this report.

MORETON GEOTECHNICAL SERVICES PTY LTD

K. B. GRUBB
M.App.Sc., MIE Aust., CP Eng., RPEQ 2811



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Desktop Mining Study
New Oakleigh Coal Pty. Ltd. - Rosewood, Qld.
Mining Lease Surrender of ML 4584 & ML4699
Plan 1 - Site Plan

Date:	Scale:	Sheet No:	Drawing No:
December, 2012	1:10000	One (1 of 8)	2012_M164_01

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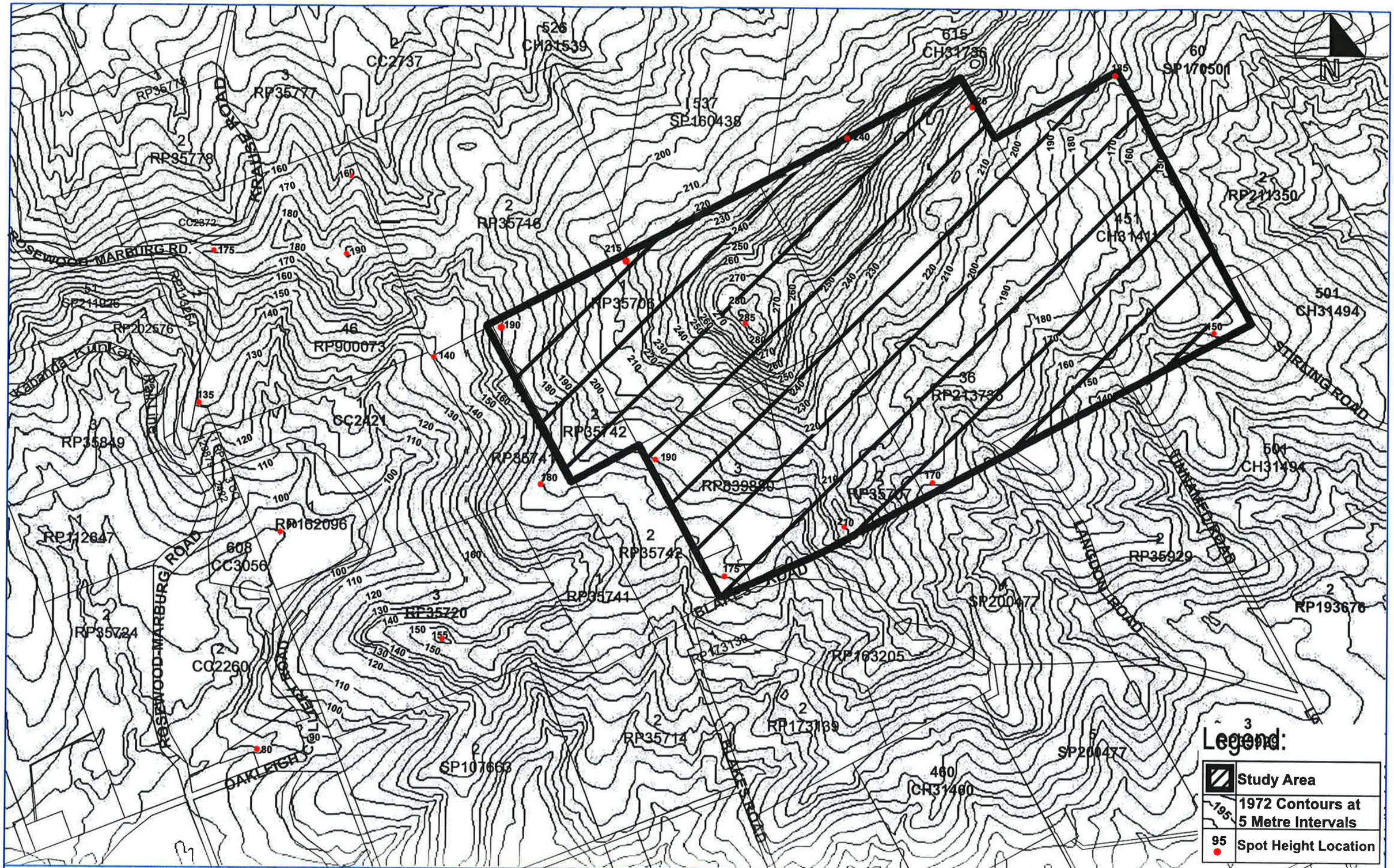

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Desktop Mining Study

New Oakleigh Coal Pty. Ltd. - Rosewood, Qld.
Mining Lease Surrender of ML 4584 & ML4699
Plan 2 - 1972 Contours - Mapview 5m Intervals

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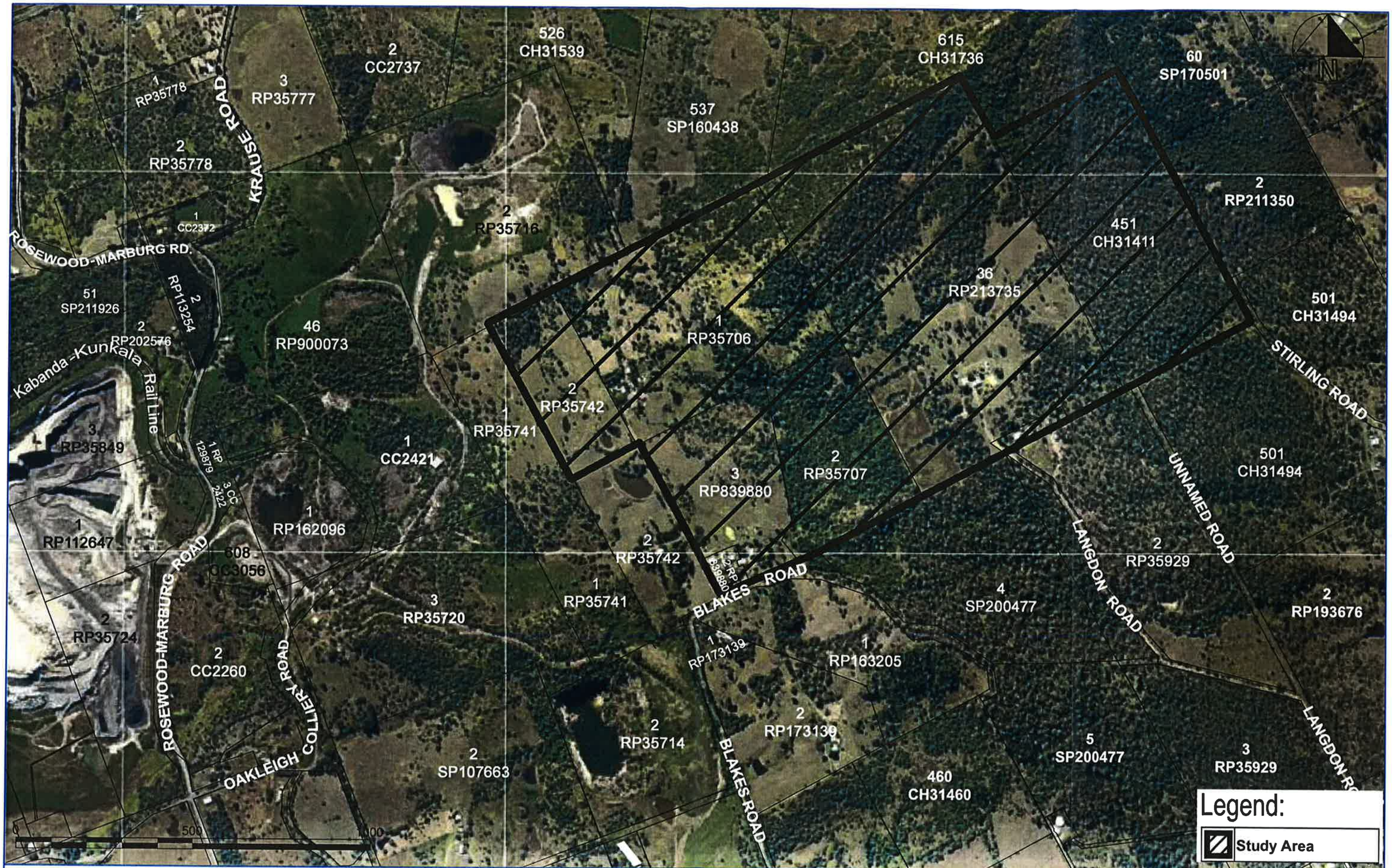

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New Oakleigh Coal Pty. Ltd. - Rosewood, Qld.
Mining Lease Surrender of ML 4584 & ML4699
Plan 3 - Aerial Image - Nearmap 16 May, 2012

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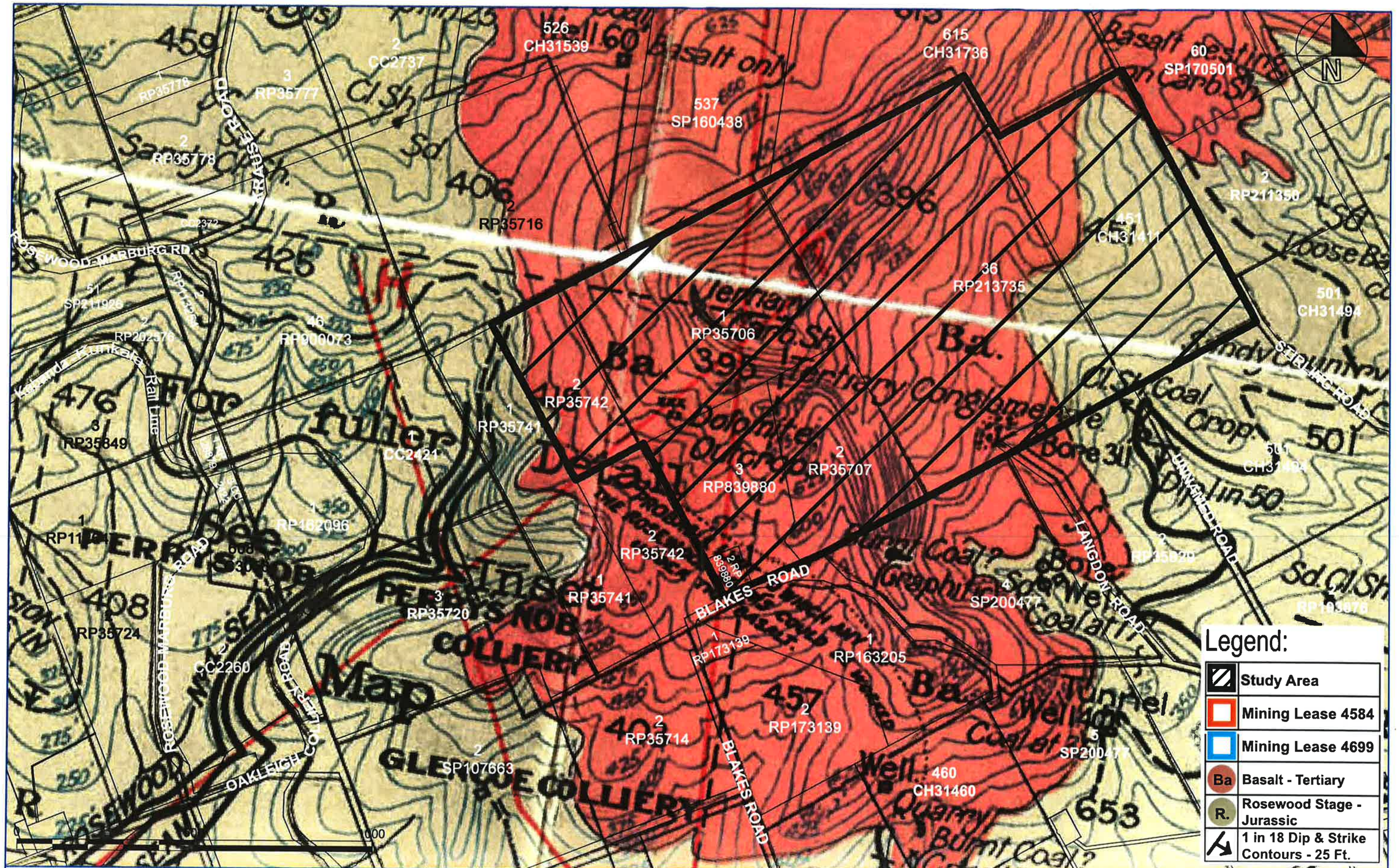

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New Oakleigh Coal Pty. Ltd. - Rosewood, Qld.
Mining Lease Surrender of ML 4584 & ML4699
Plan 4 - Geology - GSQ Pub. No. 272 - 1921 - J.H. Reid

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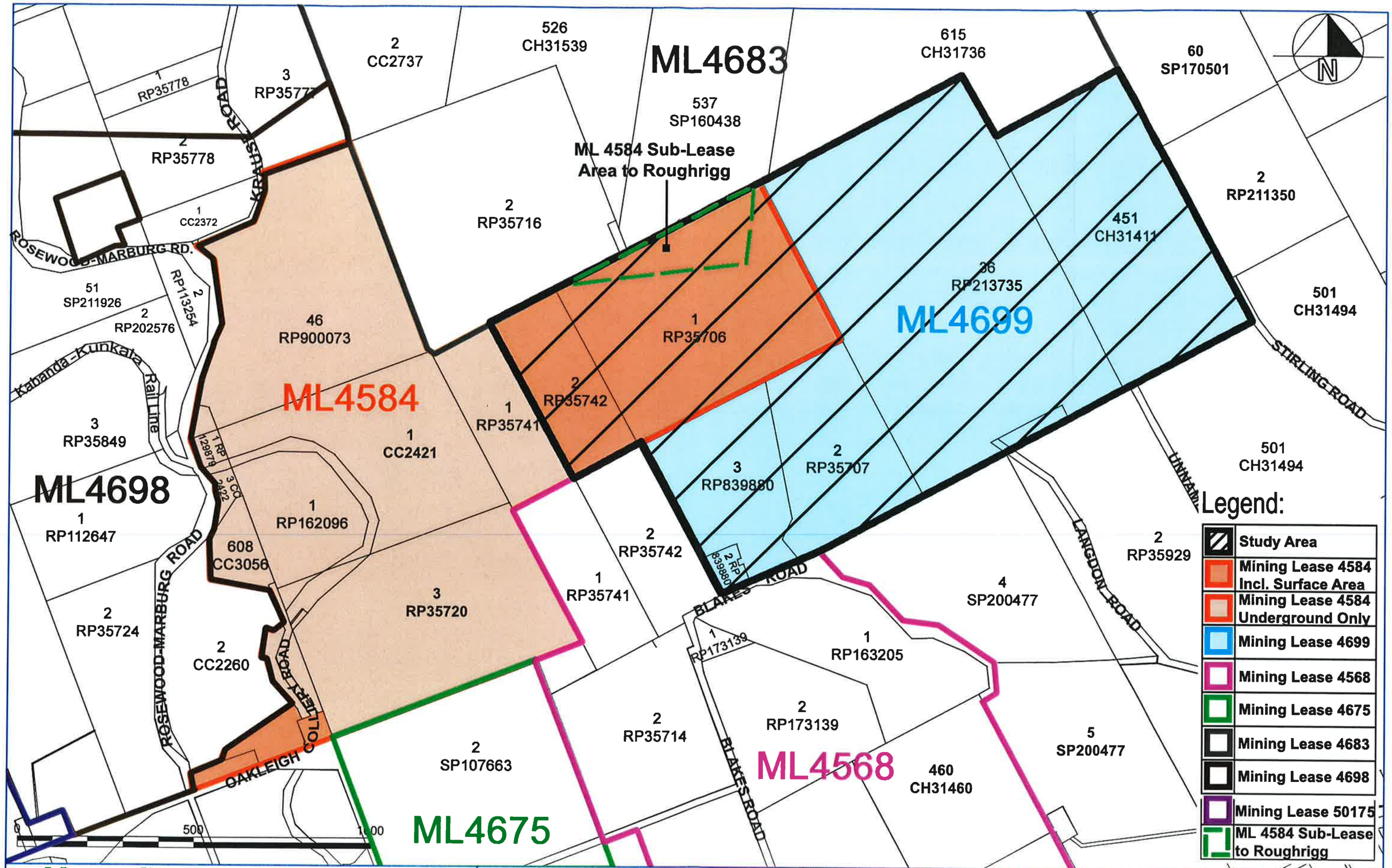

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Desktop Mining Study
New Oakleigh Coal Pty. Ltd. - Rosewood, Qld.
Mining Lease Surrender of ML 4584 & ML4699
Plan 5 - Mining Lease Plan

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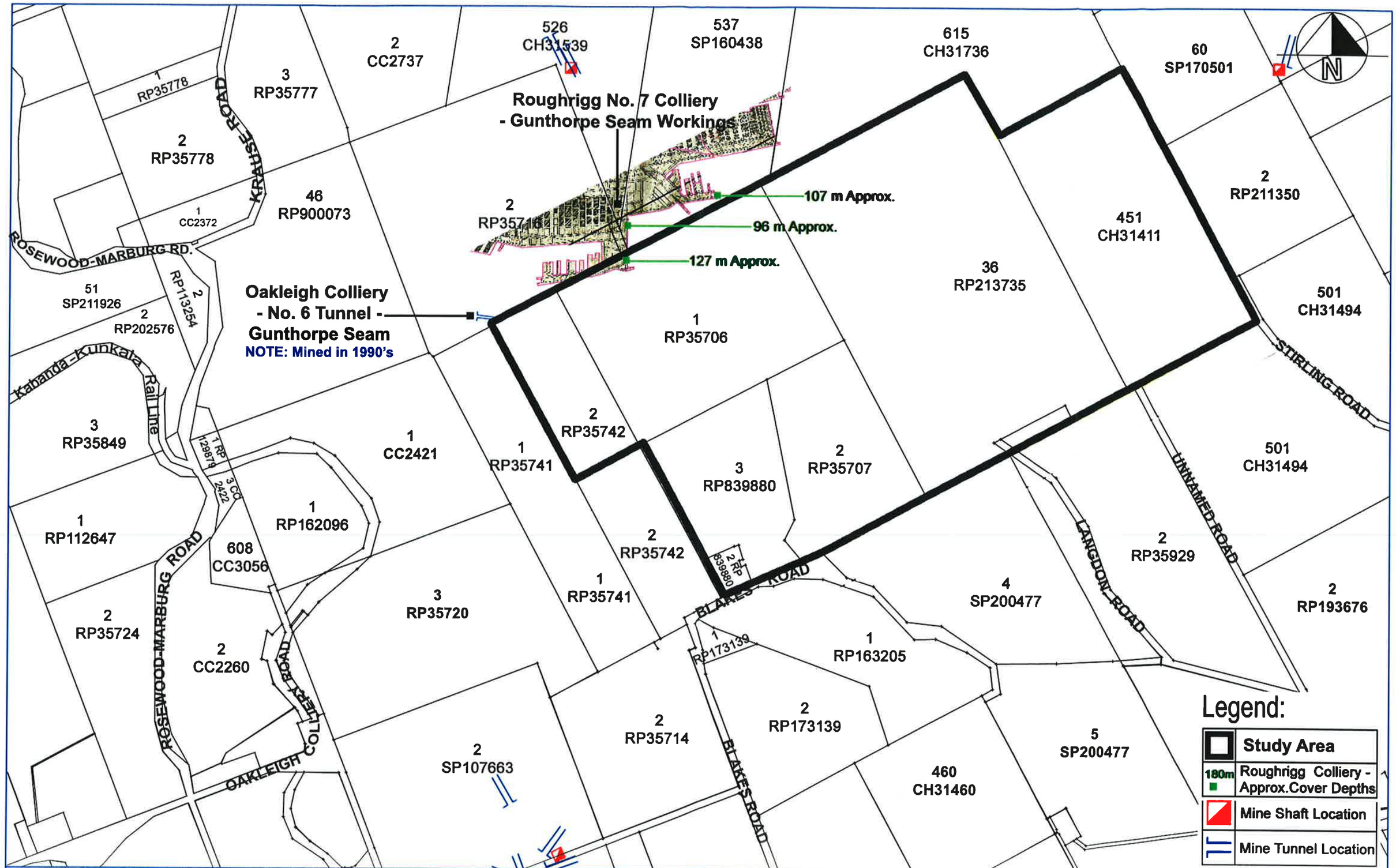

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Desktop Mining Study
New Oakleigh Coal Pty. Ltd. - Rosewood, Qld.
Mining Lease Surrender of ML 4584 & ML4699
Plan 6 - Underground Mining Plan - Prior to 1980

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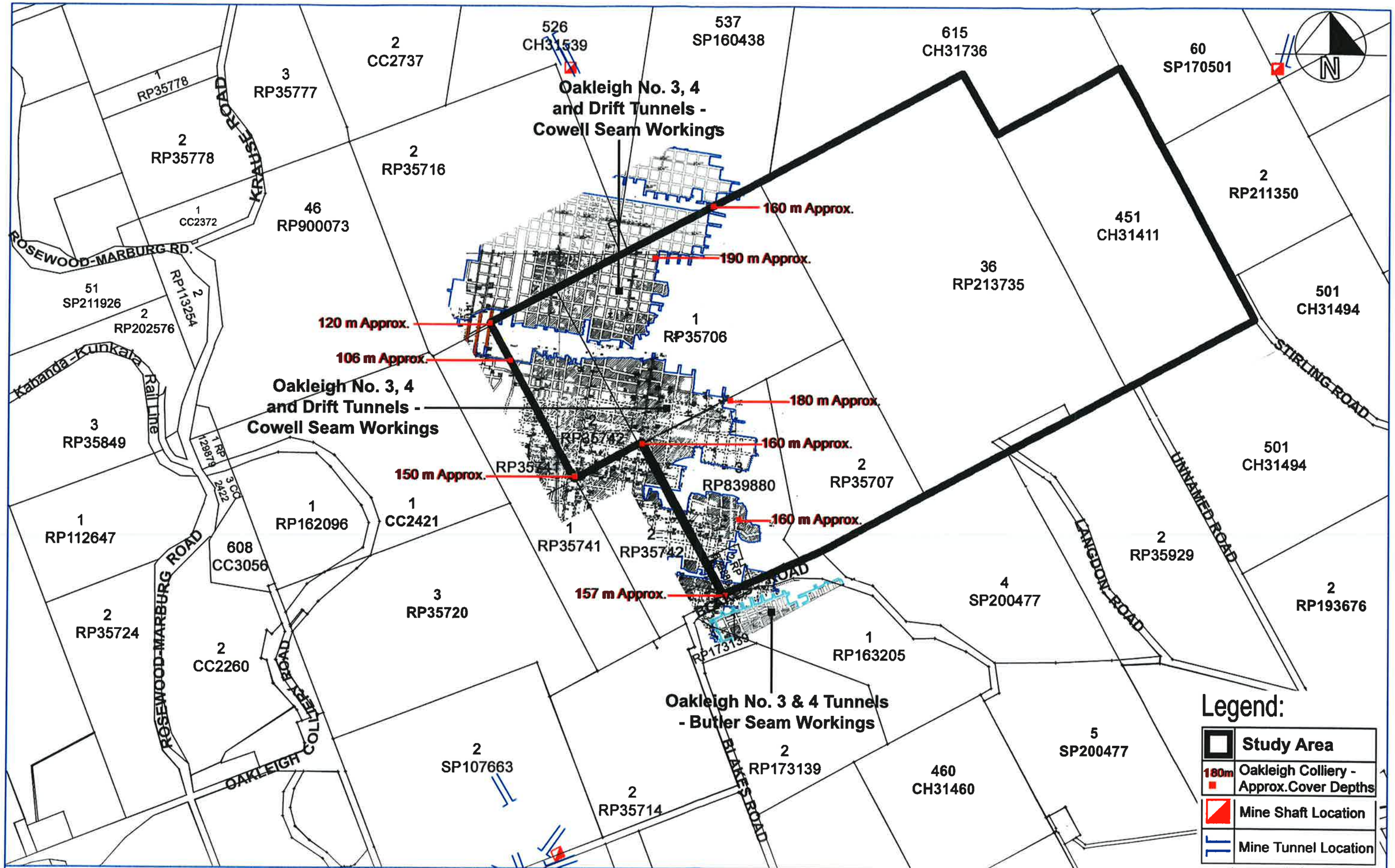

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New Oakleigh Coal Pty. Ltd. - Rosewood, Qld.
Mining Lease Surrender of ML 4584 & ML4699
Plan 7 - Underground Mining Plan - After 1980

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December, 2012	1:10000	Seven (7 of 8)	2012_M164_07

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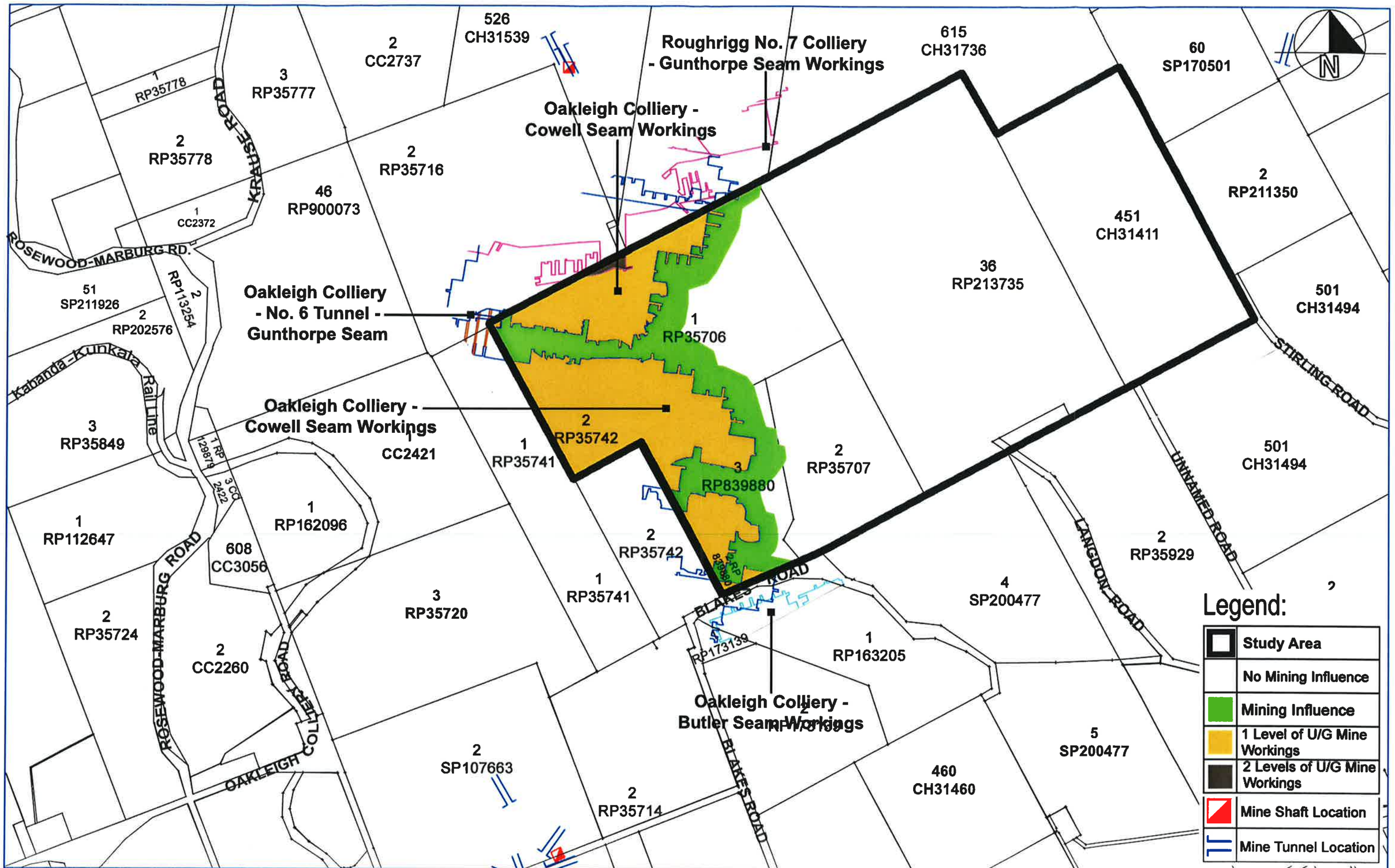

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Desktop Mining Study
New Oakleigh Coal Pty. Ltd. - Rosewood, Qld.
Mining Lease Surrender of ML 4584 & ML4699
Plan 8 - Constraints Plan

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December, 2012	1:10000	Eight (8 of 8)	2012_M164_08

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