UR1979_15 1/15

1979/15. East Coast coal project gravity survey. Preliminary report. Part 2. First progress report, December 1978 - June 1979.

D.E. Leaman

Abstract

Extended qualitative analysis of the basic survey detailed in Leaman (1978) has enabled some refinement of the original interpretation, particularly in the region west of Fingal and south of the Denison Rivulet. In addition, the basic coverage of the survey has been extended to the south-west to include Lake Leake and quantitative interpretation begun. Due to computer failure and lack of funding for computing, this report includes only the dimension of the extension and the procedures being used for interpretation.

INTRODUCTION

The basic details for the East Coast coal project gravity survey have been presented in an earlier report (Leaman, 1978) and will not be included here. This report should be considered as an extension of the previous report and figures have been numbered consecutively; thus Figures 1-10 refer to figures in Part I (Leaman, 1978), whilst Figures 11-13 refer to new figures included here.

Part I provided an interpretation (fig. 7) based on the 16 x 16 km regional (fig. 5). A residual Bouguer anomaly separation based on the 4 x 4 km regional (fig. 4) was not prepared in time for inclusion. It is included in this report (fig. 11) with a revised interpretation and extended discussion.

The reconnaissance survey has been extended to the south-west in order to confirm regional anomalies and evaluate the potential of the area between Mt Henry [EP825675], Snow Hill [EP692590] and Lake Leake [EP690500]. At the time of writing field work is virtually complete and more than 300 stations await reduction when funding permits.

Improvements on the interpretation presented in this or the previous report depend on two factors - quantitative interpretation and increased detail. It is intended that a detailed coverage of the Fingal Tier region be begun as soon as the reconnaissance extension is complete, equipment and weather permitting.

In order to extract as much information as possible from the observations, quantitative interpretation has been commenced. The procedure is discussed below but no results can yet be presented as lack of funds has forced a temporary halt in calculation of mass co-efficients.

REGIONAL SEPARATION

It was noted in Part I (leaman, 1978, p.5) that the use of the 4 x 4 km regional may provide a more reliable residual anomaly map. Such a residual map is presented as Figure 11. Inspection of this map will confirm that the separation has removed much basement interference and improved the definition of all features marginal to the Permo-Triassic basin. In particular, it will be noted that the effect of the granitic stock west of Bicheno has been minimised, allowing the near surface features, including cupolas, to be readily identified.

The residual Bouguer anomalies derived from the small-grid regional anomalies include a much higher proportion of effects due to near surface features and comparison of either the two regional maps or the two residual maps enables evaluation of the particular features which are below the zone of interest.

DESCRIPTION OF RESIDUAL ANOMALIES

The discussion contained in Part I remains valid except that the absolute value of many anomalies has been varied. In general, the anomalies west of Bicheno and north-east of Cranbrook are more neutral than previously evaluated, due to removal of much of the effect of the granite stock centred on Lynes Sugarloaf.

The deviation of anomaly values has been summarised in Figure 12. The sign of the deviation indicates the residual anomaly difference or the residual value derived from the coarse grid when compared to that of the fine grid. The difference is stated in $\mu m/s^2$.

Figure 12 was derived by direct comparison of Figures 4 and 5. As noted in the legend of Figure 12, care must be taken in respect of the sign convention of the anomalies shown. Due to the means of production, the sign of the anomalies opposes that of the density contrasts producing them. For example, the 16 km grid regional understated the effect of the Llandaff granite stock by at least 50 $\mu m/s^2$ when compared with the 4 km grid regional. As a result the residual anomaly values derived from the 16 km grid regional are 50 $\mu m/s^2$ too low. The 4 km grid regional compensates for this major upper crustal density disturbance much more satisfactorily. The proximity to perfection of the compensation cannot be estimated however.

Thus two residual Bouguer anomalies can be analysed; the near surface anomalies (fig. 11) and the upper crustal anomalies (fig. 12). Consider the upper crustal features of Figure 12. The area may be divided into two parts, with or without granite. The granite areas produce anomalies with wavelengths of 10-15 km and amplitudes of $>\pm 50 \mu m/s^2$. The style and character of the intruded rocks is also clearly different and doubtless there is high relief on the unconformity with the Parmeener Super-Group. The north-eastern half of the area is almost non-anomalous, suggesting that the density assumption of $2.67 t/m^3$ is valid and that the materials are structurally uniform. The anomaly range is ± 10 $\mu m/s^2$.

The explanation of the near surface anomalies should follow the discussion outlined in Part I with some exceptions, as described below and revised for Figure 13.

The Mt Nicholas anomaly discussed at length in Part I would now appear to be due to the sedimentary materials above the river plain. Clearly no significant basement effect is implied, although it must be admitted that a relatively small feature may have been missed by the filter. Only features which extend their effects over areas in excess of a 6-8 km square would be incorporated in the smaller grid filter. Confirmation of filter sensitivity and anomaly resolution could be evaluated by drilling this feature.

REVISED RESIDUAL INTERPRETATION

The general principles of qualitative interpretation enunciated in Part I apply to Figure 11 as well as Figure 6. The derived provisional interpretation (fig. 13) may be directly contrasted with Figure 7.

Some significant differences are apparent.

(*a*) Within the Mt Nicholas region three small areas of positive anomaly have been noted (+10 to +15 $\mu m/s^2$). These may be very broad basement residual effects although shown in Figure 13 as dolerite features. Basement effects were stated as the source in the original interpretation (p.8). Comparison with Figure 12 indicates that upper crustal contributions are not relevant.

(*b*) Two similar positive anomalies have been noted south of the Break O'Day River; one south of St Marys and another north-east of the Duncan mine at Fingal. The latter most probably reflects a small feeder but the former may again be a very shallow basement effect (see also Part I, p.12), although Figure 12 does not obviously support such a conclusion for moderate depth.

It should be noted here that where the observations were made at low level and near the basement interface that the basement contribution to such readings will be more pertinent than for observations in the same small area at much higher elevations. This is the basic dilemma for interpretations of high quality in areas of high relief.

(*c*) On Fingal Tier (east) the shape of the two feeder systems has been revised and in one case slightly extended.

(*d*) On Fingal Tier (west) the interpretation is markedly different. The early interpretation suggested only one significant window in a major capping sheet. The present interpretation suggests three, with the largest north-west of Merrywood. The latter may prove to be very misleading, since the sheet cap as mapped would appear to exceed 200 m and the granite basement reaches the Permian basal unconformity at high altitude. The sedimentary wedge is also very thin. The negative anomalies at Mt Foster and north Merrywood may reflect abrupt cupolas only and imply nothing about the capping dolerite. This difference was clearly indicated in Figure 7 and appears confirmed by Figure 12. The Mt Foster region cannot be recommended for exploration on this basis.

(*e*) North and east of Mount St John to Maclean Bay and Seymour the resolution of the Upper Apsley, Nicholls Cap and Seymour dolerite feeders has been improved and the thickest parts of the sheet cap defined.

(*f*) Thick dolerite sheets and six feeders have been confirmed south of Mt Henry and west of the Swan River.

(*g*) Three feeders have been confirmed west of the Denison Rivulet, but the interlocking sheet appears more patchy than previously thought.

(*h*) The area around Glen Albyn, Lynes Sugarloaf and Llandaff offers the greatest change in interpretation. With the interference of the granite stock more fully appreciated, it may be noted that the contribution of major dolerite bodies is minimal.

(*i*) The structures around Moulting Lagoon, including three feeders, are confirmed.

In summary, given the present level of geological mapping, drillhole control and seismic profiling, Figure 13 offers the best guide to site prospects within the coal measures section. The shaded areas should not be drilled until further work has evaluated or confirmed the particular structures.

One other feature may be noted at this stage. Several exceptional negative anomalies have been noted within the coal measures basin. They are -70 μm/s^2 at the Duncan mine, -80 μm/s^2 at Mt Nicholas, -70 μm/s^2 at Gray West, -55 μm/s^2 at Lochaber East, -65 μm/s^2 at Douglas River and -65 μm/s^2 at Denison Rivulet. Other anomalies of -60 μm/s^2 at Merrywood North are more obviously related to granite basement than those listed which correlate directly with coal measures sections and which are often bounded by dolerite bodies.

It is difficult to account for the magnitude of these anomalies. Consider a typical section of 150 m of Permian rocks and 400 m of Triassic coal measures;

Anomaly contribution:	Permian at 2.5 t/m^3 average:	-10 μm/s^2
	Triassic at 2.4 t/m^3 average:	-50 μm/s^2
	Total	-60 μm/s^2

The density values selected may be regarded as absolute minima. Consequently values of >-60 μm/s^2 imply complete and light sections. In the case of Mt Nicholas, Duncan mine and Gray West this is not so. Detailed density analysis is required however.

QUANTITATIVE INTERPRETATION

As noted in Part I, much information is locked in the Bouguer anomaly maps and cannot be accessed simply. This is due to the target anomalies being largely confined with an observational surface of high relief above the geoid reference surface. The normal reduction and interpretation processes cannot reliably or accurately cope with this situation. In addition, the interpretation must be three dimensional in order to evaluate the form, contribution and interference of all likely mass sources. Clearly any decision to proceed will be a costly one. A decision not to proceed must leave the survey in a relatively unproductive limbo. The cost of the survey to the present date is estimated at $80 000 (or the equivalent of three holes) and comprehensive evaluation is likely to cost as much again (spread over three annual iterations of improved control). A total of six holes equivalent; yet it has the potential to save holes and direct those drilled to optimum sites.

R.G. Richardson and the author have searched the available literature for a procedure which could yield the required interpretation free of unnecessary ambiguity. The solution now in train is based on the equivalent source technique with some modification. The process operates on the actual observed values and generates a set of imaginary masses below the base level of the required interpretation. These masses must be able to generate the total field as measured without the effects of reduction. When these have been calculated the field may then be continued upward to a new reference level above the anomaly producing geology. In this way, the continuation process acts on field sources and does not attempt to continue the draped or reduced field. Three dimensional processing may then be undertaken from the new reference level. The first layer will be of air and the shape is known precisely. All other anomalous features can be readily modelled. It is proposed that the continuation be taken to more than one surface to allow full separation of sources. Details of the procedure as used on the Burroughs 6700 computer at the University of Tasmania are included in Appendix I.

At the present time the equivalent masses have not been calculated to the necessary precision although the iterations are convergent. As indicated in the attached computer procedure the process is time consuming and costly.

RECOMMENDATIONS

1) Density determinations of the coal measures sequence and local dolerites to confirm whether the values to be used in modelling should be varied as suspected from limited calculation.

2) Increased coverage around the Duncan mine to confirm the anomaly values.

3) Increased coverage at those places on Fingal Tier where gentle gradients bound anomalies of <-10 to >+10 $\mu m/s^2$, since these appear to reflect substantial thickening of the dolerite sheet to the positive side. Some faulting may be disguised in this way. Definition of the actual boundaries and hence parts of possible transection of the coal measures will greatly aid reserve estimation. The nominal 1 km station spacing of this survey is too coarse to undertake such estimates reliably.

4) Increased coverage around Piccaninny Point is essential to determination of the form of the granodiorite pluton.

5) The anomalies related to a possible granitic pipe at St Patricks Head and a small dolerite plug immediately east of the Duncan mine should be checked and better specified.

6) About 10 further deep drill holes to basement are required. These should be widely spaced and be sited to avoid thick accumulations of dolerite. One hole should be sited on Frodsley Estate to evaluate the Nicholas Range anomaly. Suggested sites are shown in Figure 9.

7) About 40 - 50 reflection soundings should be attempted to complement the drilling programme. Some sites are indicated in Figure 9. Such soundings serve two purposes; additional control for the gravity survey and fuller description of the section including recognition of coal content. Unfortunately the use of the method over much of this area will require extensive and demanding processing but sites accessible to analogue processing may be examined pending resolution of the complex problems at the other sites.

8) Quantitative processing of the results of this survey should proceed as soon as possible in order to provide improved definition and resolve many of the structural ambiguities discussed above.

9) The area must be mapped geologically and in detail sufficient for a reliable 1:25 000 map. Care must be taken to ensure location of as many of the small windows and roof remnants, which occur in such dolerite areas, as possible. They are important structural indicators. Textural variations in the dolerite should be noted and any evidence for multiple intrusion recorded.

Reliable mapping of many slopes incorporating dolerite, dolerite-talus and boundaries which are some combination of dolerite-coal measures-talus will not be possible without use of magnetic surveys undertaken as part of the mapping process. In some situations refraction surveys may also be needed.

10) The Mathinna Beds around Mt Nicholas should be examined for metamorphic effects which might indicate the presence of a significant intrusion in the area.

REFERENCE

LEAMAN, D.E. 1978. East Coast coal project gravity survey. Preliminary report. Part I. Survey details and qualitative interpretation. *Unpubl. Rep.Dep.Mines Tasm.* 1978/39.

[30th May, 1979]

APPENDIX 1

The equivalent source technique for the vertical continuation of gravitational data.

R.G. Richardson

Abstract

The equivalent source technique (Dampney, 1966; 1969) may be used to project gravity data acquired at irregularly distributed observation points with differing elevations onto a regularly gridded horizontal plane. A suite of FORTRAN programmes implements this method and were initially written to assist in the provision of a detailed interpretation of the data from the East Coast coal project gravity survey (Leaman, 1978).

INTRODUCTION

Computation time is long with the number of iterations in the approximation dependent on the distribution of observation points and on the anomaly wavelengths present. The gravity data is commonly corrected to yield the Bouguer anomaly at the point of observation. Prior computation of the A coefficients reduces the computation time by an estimated 80% and the use of bulk storage for these coefficients keeps memory requirements to a minimum. Recovery from system or programme crashes is provided by intermediate dumps to output files.

A cartesian co-ordinate system is used for position specification in all the programmes. Elevation is positive upward. Units of measurement must be consistent throughout the programmes as all calculations are dimensionless. Input and output formats and array bounds should be specified for each project.

PROGRAMMES

INITIAL/MASS

Control of this programme is from the file Control/Masses which contains:-

N the number of observation points

H the depth of the plane of the point masses forming the equivalent source (negative below the datum).

> $2.5\Delta X < (Z_I - H) < 6\Delta X$ where ΔX is the average separation of observation points and Z_I is the station elevation.

EPS the error value at which the approximation is sufficiently good

> $EPS = N\sigma^2$ where σ is the mean variance in the observed data.

CON sets the minimum rate of convergence at each iteration. If convergence is too slow and the number of iterations is greater than LOOPS then A = C*A.

Try CON = 0.1

LOOPS is used to decide when to increase A

Try LOOPS = 2

C the factor by which A will be increased if convergence is not sufficiently fast.

Try C = 1.5

LIMA the upper value allowed for A

Try LIMA = 2.8

The above variables are passed to GRAVTWO/A and GRAVTWO/B for later use. The exact values of the above variables for a particular project are found on a trial and error basis.

Observed values of X,Y,Z and G(X,Y,Z) for the N data points are read from file 2.

Output is disk files G2FA, G2FB and G2FC which are used as initial data files by GRAVTWO/A and then as dump files.

The A coefficients are stored on magnetic tape in blocks of N words using unformatted writes.

For N=1013, processor time on a B6700 was approximately 330 seconds.

GRAVTWO/A

This program uses as input the output from INITIAL/MASS or data dumped from a previous run. The tape file of A coefficients is copied to disk but where system restrictions are imposed the file could remain on tape with the random access calls being replaced by rewind statements.

Iterative adjustment of the point masses proceeds until the sum of the squares of the difference between the observed and approximate anomaly values at each point is less then EPS. The actual value is printed at each iteration. Provision is also made for dumping intermediate results and terminating the programme gracefully after a predetermined processor time.

For N = 1013 the processor time on a B6700 may be considerably in excess of 42 000 seconds. Input-output time could be up to treble this.

GRAVTWO/B

This program has a small control file (G2B/CONTROL) and reads

Z_1 the height at which the gravity values are to be calculated.

GSPACE the grid spacing at which the values are to be calculated

The output from GRAVTWO/A constitutes the remaining input. The grid ranges are specified within GRAVTWO/B.

For 625 grid points the processor time on a B6700 is approximately 250 seconds.

CONCLUSIONS

The programmes discussed above are somewhat machine dependent but provide a general and easily adapted technique to assist in the interpretation of gravity data, particularly in areas of rough terrain.

REFERENCES

DAMPNEY, C.N.G. 1966. *Geophysical studies in Tasmania.* M.Sc. thesis, University of Tasmania : Hobart.

DAMPNEY, C.N.G. 1969. The equivalent source technique. *Geophysics* 34:39-53

LEAMAN, D.E. 1978. East Coast coal project gravity survey. Preliminary report. Part I. Survey details and qualitative interpretation. *Unpubl.Rep.Dep.Mines Tasm.* 1978/39.

APPENDIX 2

Logs of boreholes

A series of stratigraphic/coal wildcat/control holes has been commenced in the southern portion of the gravity survey area. The sites chosen fulfil certain restricting conditions. It is intended that each hole provide an indication of the coal measures section in previously unassessed areas and that the entire section to basement or dolerite be established so as to provide firm reference of seams and control of geophysical interpretations. Four holes have been completed to date.

The core was logged by R.H. Castleden, with the assistance of M.J. Clarke, C. Calver, N. Farmer and S. Forsyth in logging hole 5.

Bicheno BH4 [*EP992637*]

Depth (m)	*Description*
0 - 18.00	Soil, clay, pebbles, Triassic sandstone.
18.00 - 21.70	Coal measures (predominantly medium-grained lithic sandstone.
21.70 - 118.65	Grey siltstone, shale, limestone, grit, arkosic grit and conglomerate at base.
118.65 - 127.35	Green-red muscovitic granite.

Particular objective in this hole was confirmation of granite basement and type of granite. More coal measures were anticipated as coal exposures do occur in the Apsley River nearby. Some faulting is therefore implied in this area.

Bicheno BH5 [*FP040675*]

Depth (m)	*Description*
0 - 6.50	Loose soil, clay.
6.50 - 216.66	Upper freshwater sequence of Parmeener Super-Group.
216.66 - 430.50	Upper marine sequence of Parmeener Super-Group.
430.50 - 438.05	Mathinna Beds. Quartzite and siltstone, (slightly) hornfelsed, ferruginous staining, minor quartz veins, steeply dipping bedding where preserved.

TRIASSIC COAL MEASURES SEQUENCE (6.50 - 216.66 m)

This sequence consists of lithic sandstone (medium-grained, fine-medium-grained, fine-grained), siltstone (grey and carbonaceous) and mudstone (grey and carbonaceous and shaly in parts). Cross bedding is common. Occasional mud pellet conglomerate horizons, minor slickensides (dipping between 30° and 60°), minor claystone bands and occasional intervals rich in plant fossils or plant fossil fragments occur.

Depth (m)	*Description*
27.88 - 28.72	Carbonaceous mudstone with minor dull and bright coal intervals.
134.64 - 135.06	Dull coal.

Depth (m)			Description
166.46	-	171.33	Dull coal, carbonaceous mudstone interbedded with abundant plant-fossils, minor dirty medium-grained lithic sandstone, siltstone and slickensides.

PERMIAN SEQUENCE

Depth (m)			Description
216.66	-	264.33	Dark monotonous siltstone with some bioturbated, dispersed, granular patches. Occasional pyrite on joints. Sandstone with pebbly base between 222.02 - 222.92 m.
264.33	-	265.73	Glauconitic sandstone.
265.73	-	282.05	Richly fossiliferous, dark-siltstone with thin subordinate limestone. Spiriferids, *etc.* Large granite boulder 266.80 - 267.13 m.
282.05	-	314.09	Limestone with subordinate siltstone, bioturbated, richly fossiliferous; costate spiriferids, *Stenopora*, fenestellids. 282.05 - 296.09 massive limestone with some stylolites, coarsely crinoidal in places; neospiriferids, *Deltopecten*, bryozoans. Some pebbles.
314.09	-	322.09	Predominantly dark, fossiliferous siltstone with subordinate limestone. *Martiniopsis*, fenestellids, *Stenopora*, spiriferids, *etc.*
322.09	-	327.07	Interbedded limestone and darker siltstone. Spiriferids, productids, fenestellids.
327.07	-	327.57	Coarse, pebbly granule conglomerate.
327.57	-	338.13	Light coloured bioclastic calcarenite limestone with minor darker siltstone layers and partings. *Deltopecten*, crinoid debris, spiriferids.
338.13	-	342.07	Richly fossiliferous siltstone passing up into limestone. Pebbles in both with marker band of pebbles at base of limestone. *Deltopecten*, *Wyndhamia*, *Stenopora*, fenestellids and many spiriferids.
342.07	-	360.61	Dark flaser-bedded siltstone with minor light coloured bioturbated granule conglomerate and sandstone.
360.61	-	386.13	Predominantly pebbly, arkosic grit with subordinate darker siltstone containing small dispersed granules.
386.13	-	430.15	Mathinna Bed siltstone and quartzite in granitic textured matrix.

Bicheno BH7 [*EP894497*]

Depth (m)			Description
0	-	8.20	Dolerite boulders, pebbles, alluvium.
8.20	-	49.40	Medium-grained lithic sandstone, grey, minor cross bedding (planar in places) carbonaceous mudstone, sparse slickensides, shaly in part. Grey mudstone. Hornfelsed from 44.2 - 49.4 m.

Depth (m)	Description
49.40 - 51.95	Grey dolerite, fine-medium grain size, glassy in basal 400 mm.
51.95 - 116.04	Continuation of coal measure sequence. (Hornfelsed in top 300 mm).
116.04 - 136.06	Grey, highly jointed dolerite. Calcite vein at 133 m.

Particular objective of this hole was examination of coal section partially exposed in Swan River and confirmation of dolerite at shallow depth in the section predicted by the initial gravity interpretation.

Bicheno BH10 [*FP045732*]

No detailed log is yet available but the following sketch provides the basic data.

Depth (m)	Description
0 - ~70	Triassic coal measures.
70 - 335	Permian siltstone, grit, limestone and conglomerate.
335 - 344	Siluro-Devonian Mathinna Beds.

Two sizeable seams were recorded (18.4 - 19.6 m; 66.5 - 68.2 m).

This hole was also logged by BPB (Aust.). The co-operation and generosity of the Shell Company is acknowledged. Coal quality, coal lithology, seam thickness, neutron-neutron and H.R. density logs were prepared.

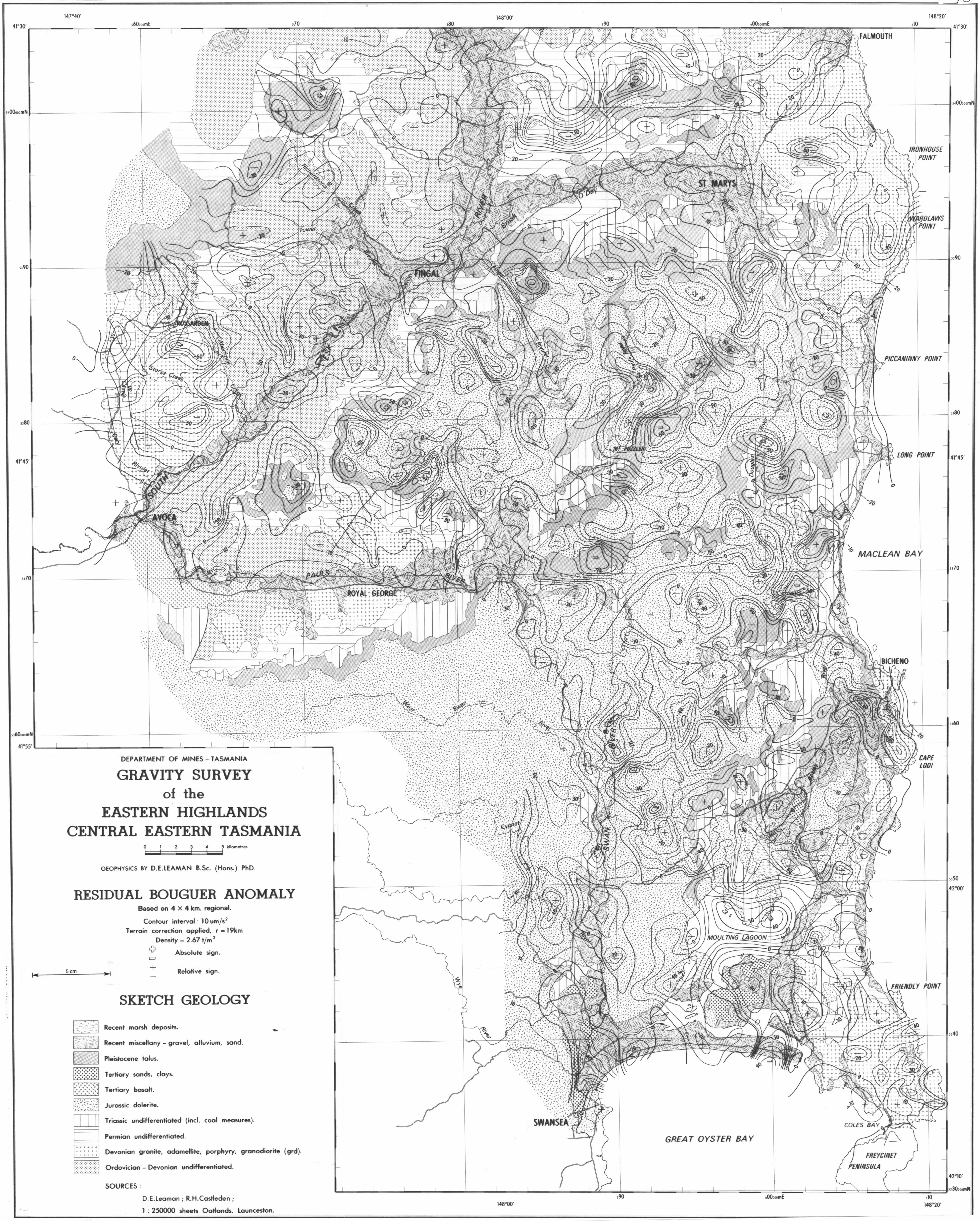
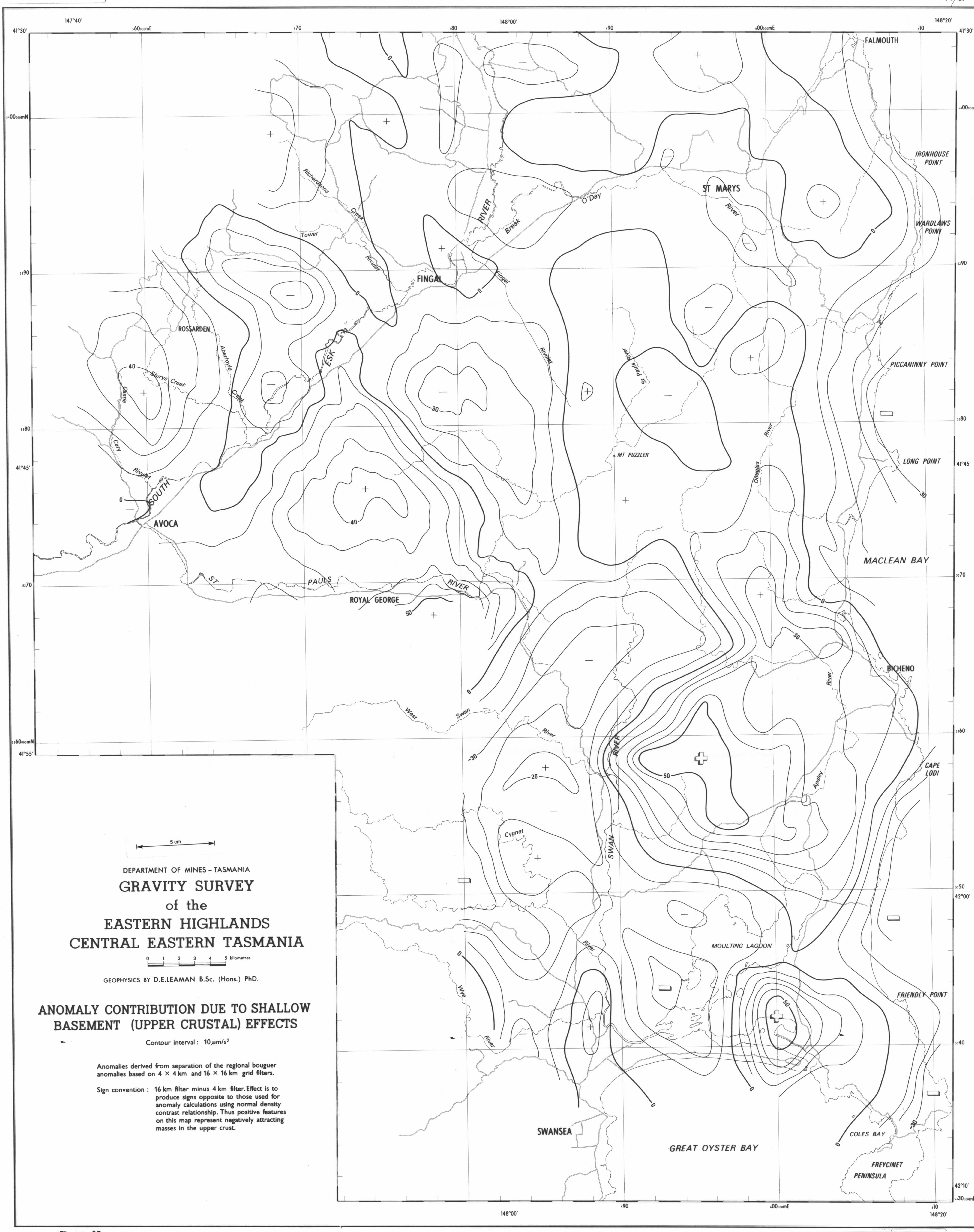

DEPARTMENT OF MINES – TASMANIA
GRAVITY SURVEY
of the
EASTERN HIGHLANDS
CENTRAL EASTERN TASMANIA
0 1 2 3 4 5 kilometres
GEOPHYSICS BY D.E.LEAMAN B.Sc. (Hons.) PhD.
RESIDUAL BOUGUER ANOMALY
Based on 4 × 4 km. regional.
Contour interval : 10 um/s²
Terrain correction applied, r = 19km
Density = 2.67 t/m³
Absolute sign.
Relative sign.
5 cm
SKETCH GEOLOGY
Recent marsh deposits.
Recent miscellany – gravel, alluvium, sand.
Pleistocene talus.
Tertiary sands, clays.
Tertiary basalt.
Jurassic dolerite.
Triassic undifferentiated (incl. coal measures).
Permian undifferentiated.
Devonian granite, adamellite, porphyry, granodiorite (grd).
Ordovician – Devonian undifferentiated.
SOURCES :
D.E.Leaman ; R.H.Castleden ;
1 : 250000 sheets Oatlands, Launceston.
FALMOUTH
IRONHOUSE POINT
WARDLAWS POINT
ST MARYS
FINGAL
ROSSARDEN
AVOCA
ROYAL GEORGE
MT PUZZLER
PICCANINNY POINT
LONG POINT
MACLEAN BAY
BICHENO
CAPE LODI
MOULTING LAGOON
FRIENDLY POINT
COLES BAY
FREYCINET PENINSULA
GREAT OYSTER BAY
SWANSEA
147°40'
148°00'
148°20'
41°30'
41°45'
41°55'
42°00'
42°10'

Figure 11



5 cm

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GRAVITY SURVEY of the EASTERN HIGHLANDS CENTRAL EASTERN TASMANIA

0 1 2 3 4 5 kilometres

GEOPHYSICS BY D.E.LEAMAN B.Sc. (Hons.) PhD.

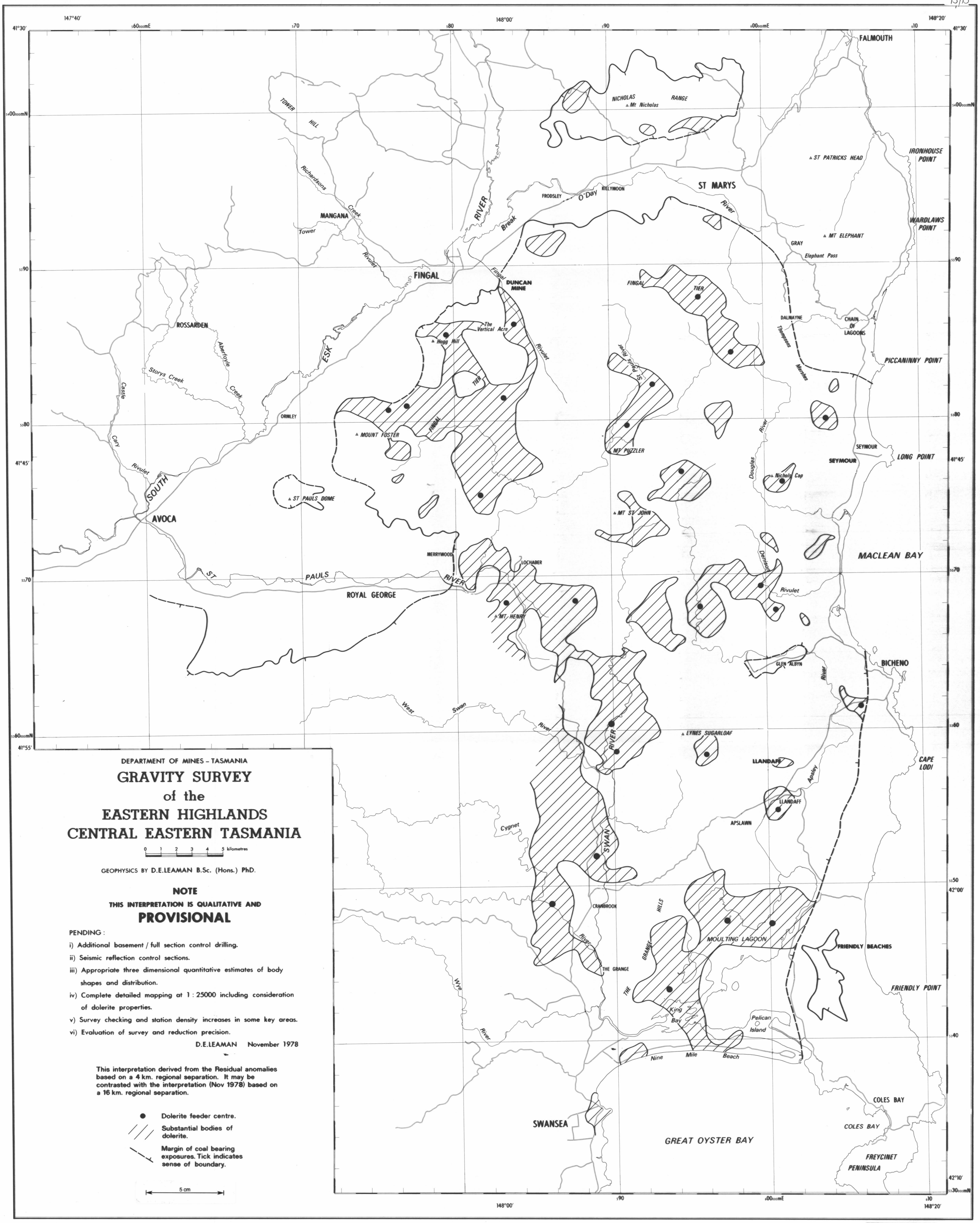
ANOMALY CONTRIBUTION DUE TO SHALLOW BASEMENT (UPPER CRUSTAL) EFFECTS

Contour interval: 10 $\mu m/s^2$

Anomalies derived from separation of the regional bouguer anomalies based on 4 × 4 km and 16 × 16 km grid filters.

Sign convention: 16 km filter minus 4 km filter. Effect is to produce signs opposite to those used for anomaly calculations using normal density contrast relationship. Thus positive features on this map represent negatively attracting masses in the upper crust.

Figure 12



DEPARTMENT OF MINES – TASMANIA

GRAVITY SURVEY of the EASTERN HIGHLANDS CENTRAL EASTERN TASMANIA

0 1 2 3 4 5 kilometres

GEOPHYSICS BY D.E.LEAMAN B.Sc. (Hons.) PhD.

NOTE

THIS INTERPRETATION IS QUALITATIVE AND

PROVISIONAL

PENDING:

i) Additional basement / full section control drilling.
ii) Seismic reflection control sections.
iii) Appropriate three dimensional quantitative estimates of body shapes and distribution.
iv) Complete detailed mapping at 1 : 25000 including consideration of dolerite properties.
v) Survey checking and station density increases in some key areas.
vi) Evaluation of survey and reduction precision.

D.E.LEAMAN November 1978

This interpretation derived from the Residual anomalies based on a 4 km. regional separation. It may be contrasted with the interpretation (Nov 1978) based on a 16 km. regional separation.

● Dolerite feeder centre.

/// Substantial bodies of dolerite.

Margin of coal bearing exposures. Tick indicates sense of boundary.

5 cm

Figure 13

1979/15 Fig. 13 (4516-13)