97-4063

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PASMINCO EXPLORATION

Bulgobac River EL19/94
Annual Report
Period Ending September 1997

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ANNUAL REPORT-BULGOBAC RIVER
EL 19/94 - PASMINCO EXPL.
F.C.MURPHY

CONTENTS

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SUMMARY

1 INTRODUCTION 1

2 TENURE. 2

3 REGIONAL GEOLOGY. 2

4 PREVIOUS EXPLORATION 3

5 WORK UNDERTAKEN 1996 - 1997 4
5.1 Bulgobac River Grid 4
5.2 Aeromagnetics 6
5.3 Prospectivity Review 6

6 CONCLUSIONS AND RECOMMENDATIONS. 10

7 EXPENDITURE. 11

8 REFERENCES. 12

9 KEYWORDS AND LOCATION 13

FIGURES

		Scale
1	Location Map	1:500 000
2	Land Tenure	1:50 000
3	Regional Geology	NTS
4	Stratigraphic Column	NTS
5	Geology	1:25 000
6	1:25k Geology Extant Grids, Drainage, Access and Drill Collars	1:12 500
7	Que Road '85 Magnetic Survey	1:25 000
8	Thematic Map of Rock Chips - Zn (ppm), Modified 1:25k Geology	1:12 500
9	Thematic Map of Rock Chips - Pb (ppm), Modified 1:25k Geology	1:12 500
10	Thematic Map of Rock Chips - Cu (ppm), Modified 1:25k Geology	1:12 500
11	Thematic Map of Soils - Zn (ppm), Modified 1:25k Geology	1:12 500
12	Thematic Map of Soils - Pb (ppm), Modified 1:25k Geology	1:12 500
13	Thematic Map of Soils - Cu (ppm), Modified 1:25k Geology	1:12 500
14	Thematic Map of Soils - Fe (%), Modified 1:25k Geology	1:12 500
15	Thematic Map of Soils - Ba (ppm), Modified 1:25k Geology	1:12 500
16	Thematic Map of Soils - Mn (ppm), Modified 1:25k Geology	1:12 500
17	Thematic Map of Soils - Au (ppm), Modified 1:25k Geology	1:12 500
18	Thematic Map of Soils - As (ppm), Modified 1:25k Geology	1:12 500
19	Que Rd Magnetic Survey, Tertiary Basalts, Faults, Drill Collars	1:30 000
20	1:25k Geology, Drill Collars and Drainage	1:30 000
21	Stream Sediment Sampling and Drainage	1:30 000
22	Extant Grid Lines and Refurbished Bulgobac River Grid	1:30 000
23	Soil Sample Points and Grid Lines	1:30 000
24	Rock Chip Sample Points, Drill Collars and Grid Lines	1:30 000
25	Stream Sediment Percentile Distribution - Zn	1:30 000
26	Stream Sediment Percentile Distribution - Pb	1:30 000
27	Stream Sediment Percentile Distribution - Cu	1:30 000
28	Coincident Pb/Cu/Zn in Streams	1:30 000
29	Soil Sample Percentile Distribution - Zn	1:30 000
30	Soil Sample Percentile Distribution - Pb	1:30 000
31	Soil Sample Percentile Distribution - Cu	1:30 000
32	Coincident Cu/Pb/Zn in Soils, RGB Image	1:30 000
33	Rock Chip Percentile Distribution - Zn	1:30 000
34	Rock Chip Percentile Distribution - Pb	1:30 000
35	Rock Chip Percentile Distribution - Cu	1:30 000
36	Coincident Zn/Pb/Cu in Rock Chips, RGB Image	1:30 000
37	Metallogenic Model, CVC, Structure and Geochemistry	1:30 000

APPENDICES

Appendix 1 Rock Chip Assays, Bulgobac River Grid
Appendix 2 C Horizon Soil Assays, Bulgobac River Grid
Appendix 3 1:25K geology lithostratigraphic codes and modification based on lithotypes

MAPS

Map 1 Bulgobac River Grid, Mapping and Rockchip Sampling

SUMMARY

Exploration work in the reporting period involved an assessment of the potential for mineralisation hosted in the Sock Creek sequence on the western margin of the Mt Charter Fault. This shows a more complex structure than previously thought and reveals some levels of Zn, Pb and Cu anomalism in soils and rock chips that warrant follow up programs.

An open file aeromagnetic survey (Que Road, 1985) was acquired, image processed and interpreted. This helps to position the extent of Tertiary Basalts and some of the major faults, including the Mt Charter Fault.

A tenement-wide compilation and review, involving GIS analysis and metallogenic modeling, was undertaken. This shows how lightly explored the tenement has been in the past, reflecting the perceived deep potential (Que-Hellyer Horizon). Some stream sediment anomalism in the Que Road area, in the north of the tenement, is evident which warrants follow up in next year's program.

1 INTRODUCTION

This report details work carried out on the Bulgobac River EL 19/94 from December 1996 to September 1997.

The EL covers an area of Cambrian rocks belonging to the Mt Read volcanics. The Que-Hellyer Volcanics which host the Hellyer and Que River mines extend into the EL. Hellyer mine lies 5km to the east of the EL boundary (Figure 1).

No outcropping mineralisation has been located in the area. Previous work on the licence includes geological mapping, VFL-EM, IP, CSAMT & gravity surveys by CSR and DHEM, UTEM and magnetic surveys by Aberfoyle. Recent work by a Placer-Aberfoyle Joint Venture included the completion of five diamond drill holes, all of which intersected the Que-Hellyer Volcanics at depth (Richardson, 1994). None of the holes contained mineralisation or significant alteration.

Exploration by Pasminco has been carried out in conjunction with exploration on the neighbouring Bulgobac Hill EL 37/89. During the 1994-95 year a lithogeochemical study was undertaken by Dr Tony Crawford to define the depth at which the Mixed Sequence occurs in drill holes on the eastern side of the Mt Charter Fault. The study showed that the Mixed Sequence occurs at depths of greater than 900m.

During 1995-96, exploration by Pasminco involved a regional aeromagnetic interpretation to try and locate any large alteration zones associated with Rosebery-style mineralisation on the western side of the Mt Charter Fault that could be traced from High Point northward into EL 19/94. If the fault could be located then there may be potential to find the Que-Hellyer Horizon at depths of less than 900m.

During the 1996-97 reporting period, a grid at Bulgobac River was refurbished and sampled for C horizon soils and rock chips. The focus of work was to target the Mt Charter Fault and the potential for shallow mineralisation in the Sock Creek Sequence on the western side of the fault. In addition, a major data compilation was undertaken for the

tenement during the year as part of a regional assessment of prospectivity in Western Tasmania using a GIS analysis. The results of this work are shown here for the Bulgobac River tenement.

2 TENURE

Bulgobac River EL 19/94 covering 21km^2 was granted to Pasminco Australia Limited in January 1995. The licence is renewable annually on the 6th January.

The licence is on unallocated Crown Land, designated as multiple use forest (Figure 2).

3 REGIONAL GEOLOGY

Two major groups of rocks occur within EL 19/94. One group consists entirely of Tertiary basalt flows which are considered to have low prospectivity to host base metal mineralisation. The second group consists of Cambrian rocks belonging to the Mt Read Volcanics. This group can be divided into distinct packages occurring on either side of the major structure within the EL, the NNW-SSE trending Mt Charter Fault (Figure 3).

Figure 4 shows the rock types occurring within these two packages and their stratigraphic relationship with one another. The Que and Hellyer ore bodies occur within the Mixed Sequence, which is part of the Que Hellyer Volcanics and is found on the eastern side of the Mt Charter Fault. The fault itself is a highly significant structure, characterised by a zone of shearing, fracture, vein and pug development up to 10m wide in places. The difference in thickness and type of Cambrian units either side of the fault may indicate that it was active as a growth fault during Cambrian times.

The dips on either side of the fault are low angle (5-45°) and mostly dip to the northwest. Open folds and considerable faulting disrupt the stratigraphy on the eastern side of the fault. The thickness of the Southwell Subgroup and Que River Shale, coupled with the low angle dips on the eastern side of the fault prevent the Que Hellyer Volcanics from outcropping within the EL. They are observed at surface beyond the eastern boundary.

Volcanic units do outcrop on the western side of the Mt Charter Fault. Although these are believed to be time equivalents of the Que-Hellyer volcanics, they are not thought to be geochemical correlates (A Crawford, pers.comm. to Purvis JG, 1995).

No significant alteration or mineralisation has been identified within the EL boundaries (Lorrigan,1995).

4 PREVIOUS EXPLORATION

Previous work on the licence includes geological mapping, VFL-EM, IP, CSAMT & gravity surveys by CSR and DHEM, UTEM and magnetic surveys by Aberfoyle. Recent work by a Placer-Aberfoyle Joint Venture included the completion of five diamond drill holes, all of which intersected the Que-Hellyer Volcanics at depth (Richardson, 1994). None contained mineralisation or significant alteration.

Exploration during 1994-95 that specifically involved the Bulgobac River EL included a lithogeochemical study undertaken by Dr Tony Crawford (Purvis,1995). The purpose of this study was to define the depth at which the Mixed Sequence occurs in drill holes on the eastern side of the Mt Charter Fault. Although the position of the sequence can be determined geochemically, it is difficult to recognise visually and, as the study showed, has often been incorrectly logged even by geologists familiar with the area (Lorrigan, 1995).

The study utilised data from drill holes on the Bulgobac River, Bulgobac Hill (both Pasminco) and Mackintosh (Aberfoyle) Els. On the Bulgobac River EL, data from the drill holes BRD01, 02 and 05 was examined. The location of these is shown in Figure 5. Of the three holes, it was found that only BRD01 had completely tested the Mixed Sequence (from 856-1025m). Another (BRDO5) entered the sequence at 1046m and was stopped within it at 1181m. BRD02 was stopped in Hellyer Basalts (above the Mixed Sequence) at 676.6m (Lorrigan, 1995).

Exploration by Pasminco during 1995-96 was carried out in conjunction with exploration on the neighbouring Bulgobac Hill EL 37/89. The target in these two tenements is Que-Hellyer type deposits within Que-Hellyer Volcanics. Work related specifically to EL 19/94 included a regional aeromagnetic interpretation and a lithological/mineralisation study of the Que-Hellyer style involving a Hellyer Mine visit.

5 WORK UNDERTAKEN 1996 - 1997

Exploration work involved the following:

- Bulgobac River Grid: refurbishment, mapping, rock chip and soil sampling (Fig. 6).
- Aeromagnetics: acquisition and image processing of an open file aeromagnetic survey (Fig. 7; Que Road 1985 Survey).
- Prospectivity Review: compilation of open file data and GIS analysis involving metallogenic modelling of the data as part of a regional assessment of the Mt Read Belt prospectivity.

5.1 Bulgobac River Grid

A work program was undertaken to test the western side of the Mt Charter Fault (Fig. 6). This is an underexplored area containing the Sock Creek sequence (Fig. 4), along strike from the Sock Creek Prospect on EL37/89 (Fig. 5) and is an area with previously recognised stream sediment geochemical anomalism (Hall 1979). Comstaff followed up one area, Hash Creek (Fig. 6), with soil geochemistry (data not available) and ground geophysics (magnetics and Crone EM) but did not locate massive sulphides. A second area of weakly anomalous Zn and Pb in stream sediments is indicated from the Joint and Distant Creeks that drain southwards from the Tertiary Basalt plateau (Fig. 6). This was interpreted as sourced from the Tertiary Basalt (Hall 1979), rather than massive sulphides.

The existing NW trending grid lines, originally cut by Placer, were partially refurbished in the Bulgobac River catchment (Fig. 6). This involved ca. 20 line km which was subsequently mapped, rock chip sampled and C horizon soil sampled on 50m centres. Results are outlined below, to accompany Map 1 (in sleeve):

- Mapping and Rock Chip Sampling.

  There is relatively little primary exposure of rock on the grid, with much reliance being placed on boulder mapping, particularly in areas of inferred Tertiary Basalt outcrop.

The resultant map (Map 1) differs somewhat from the published 1:25,000 geology (Fig. 6), particularly the recognition of a NE trending fault that offsets the position of the sub-Tertiary unconformity, down stepping it to the SE. Further work is required to refine this interpretation.

Rock chip assays (Appendix 1) for Zn, Pb and Cu are shown in Figs. 8, 9 and 10 respectively. Coverage is sparse but there is significant variation in the assay results. The best Zn value (sample 165423; 298ppm) comes from a pyritic volcaniclastic sandstone in the NW part of the grid, adjacent to the interpreted NE trending fault cutting the sub-Tertiary unconformity (Fig. 8). Rock chip assays for Pb (Fig. 9) show some elevated levels towards the NW of the grid. Similarly for Cu (Fig. 10), with elevated responses peripheral to and within Tertiary Basalts.

- Soil Geochemistry

Soil assays are contained in Appendix 2. The distributions of Zn, Pb, Cu, Fe, Ba, Mn, Au and As are shown in Figures 11 to 18 respectively. The following preliminary observations are drawn from the data:

- There is a higher background level of Zn, Pb and Cu in areas peripheral to and within Tertiary Basalt areas of the NW part of the grid (Figs. 11, 12, 13). This area corresponds to higher Fe and Mn contents (Figs. 14 and 16), whereas Ba and As appear to show an antipathetic relationship to these element abundances (Figs. 15 and 18). Au shows slightly elevated levels in the Hash Creek area (Fig. 17).

- Further work is planned to investigate the nature of the seemingly anomalous results from the NW area of the grid. This will address the issue of whether the response from the Tertiary Basalt, the degree to which ground water flow at the basal unconformity could influence the results and, ultimately, whether a Lower Palaeozoic bedrock sulphide source might be involved.

5.2 Aeromagnetics

An open file aeromagnetic data set was acquired through the Mineral Resources of Tasmania (Fig. 7). This "Que Road" survey was flown in 1985 by CSR at 100m line spacing. This was image processed and hard copy produced at 1:25,000 scale (Fig. 7).

The main features of this are dominated by near surface, high amplitude responses from the Tertiary Basalts, with a regional gradient that gradually builds towards the SW. Fig. 19 shows a simple line interpretation of the data that incorporates the revised geological boundaries (Fig. 8) for the Tertiary Basalts and new fault positions (including the Mt Charter Fault) and the position of the Bulgobac River grid. There is a close correspondence between the geological boundaries and signatures and/or discontinuities in the aeromagnetics. The Mt Charter Fault appears to offset the interpreted NE trending fault to the north of the Bulgobac River Grid. There is little to be gleaned from the aeromagnetic signature of the Lower Palaeozoic (Fig. 19) although the southern position of the Mt Charter Fault appears to mark a gradient in the magnetic image.

5.3 Prospectivity Review

5.3.1 Background

Pasminco Exploration undertook a prospectivity assessment of its ground holdings in Western Tasmania during the past 12 months (Murphy 1997). The review employed a GIS (MapInfo) analysis of exploration data which, for the Bulgobac River EL was sourced from open file data and an existing Pasminco database held in Access, required substantial effort to validate and was then combined with the open file compilation. The integration of the various data sets formed the basis for largely geochemically-oriented metallogenic modelling and target area definition. Analysis was performed on Cu, Pb and Zn distributions as these elements provide the most coherent regional coverage. In essence, this identifies existing anomalies and significant gaps in coverage to date on the Bulgobac River tenement. Layers incorporated in the GIS are:

- modified 1:25,000 geology and mineral occurrences (Fig. 20). The geology was coded according to lithotypes (Appendix 3) eg. DGE = Dundas Group Equivalent, CVC = Central Volcanic Sequence.
- Stream sediment sampling and drainage (Fig. 21)
- Extant grids and access (Fig. 22)
- Soil sampling and grids (Fig. 23)
- Rock chip sampling and drill collars (Fig. 24)

5.3.2 Point Data Analysis

- The stream sediment sample points invariably plot off stream lines (Fig. 21) so catchment analysis was not deemed appropriate. In any case, where there is a high sample density the points approximate to small catchment areas. The data points were standardised and leveled accordingly to the underlying 1:25,000 geology polygon that contains them. Analysis was then made of the lithotype populations (eg. all CVC hosted samples) with statistical analysis performed on the log distributions and z-scores (x-mean (x) / st dev (x)) calculated for each point. The data was subsequently imaged using a search radius of 500m and grid cell size of 50m.

- The soil samples were standardised and leveled according to soil profile (A, B, C and 'unknown') and to major lithotype code (Appendix 3) of the underlying geology polygon, using the same statistical manipulations as with the stream data. The data was then imaged using a search radius of 100m and a grid cell size of 50m.

- The rock chip data was gridded in the same way as the soil data.

- Each of the 'surface' data sets (stream, soil and rock ship) were imaged for each of the three elements and displayed as percentile RGB images. The images are 'hot to cold' color coded according to the 99^{th}, 98^{th}, 95^{th}, 90^{th}, 80^{th}, 60^{th} and 40^{th} percentile of the z-score distribution.

- The high z-score values for each element were threshold as a composite RGB image to show levels of coincident anomalies. These are color coded according to: Red=Pb, Green=Cu, Blue=Zn, Yellow=Pb+Cu, Cyan=Zn+Pb+Cu.

5.3.3 Multielement Distributions

Preliminary observations can only be made at this stage, ie. qualitative statements that require quantitative analysis of the nature and robustness of the anomalies. They provide pointers for future work programs. The following observations are drawn from the data:

- Stream sediment images (Figs. 25, 26, 27, 28)

  - there is reasonably complete coverage of sampling in the eastern parts of the tenement and partial coverage in the west, with gaps in coverage in areas of Tertiary Basalt outcrop in the central part of the tenement.
  - areas of Zn anomalism occur in northern and central parts of the tenement. Some of these appear to be peripheral to or within areas of Tertiary Basalt outcrop.
  - areas of Pb anomalism show slight variations from the Zn distributions. Best responses are in the south, with two discrete anomalies, and in the north where there is a relatively strong anomaly within and fringing the Tertiary Basalt outcrop.
  - there are no well defined areas of Cu anomalism, however a low level anomaly in the south is apparent, again fringing the Tertiary Basalt outcrop.
  - the levels of coincidence of Zn, Pb and Cu anomalism is shown in Fig. 28. Of interest is a coincident multielement anomaly in the NW of the Bulgobac River grid. A Zn and Pb anomaly is also evident in the northern part of the tenement.

- Soil images (Fig. 29, 30, 31, 32)

  - coverage is restricted to the Bulgobac River grid.
  - there is low level Zn anomalism in the NW of the grid, with an elevated NE trend.
  - Pb anomalism is pronounced in the NW part of the grid, peripheral to and within areas of Tertiary Basalt outcrop.

- Cu anomalism is at a low level, with better responses in the N and NW of the grid.
- Fig. 32 shows the levels of coincidence in the three elements. Zn and Pb show some correlation of anomalism in the NW of the grid.

- Rock Chip Images (Fig. 33, 34, 35, 36)

  - coverage is limited to the Bulgobac River grid.
  - anomalous Zn results are seen in the NW and SW parts of the grid. The former anomaly is peripheral to the sub-Tertiary unconformity. Both this and the SW anomaly require follow up work to establish their context.
  - anomalous Pb correlates to the NW anomaly seen in the Zn distribution.
  - there is a weak Cu anomaly broadly coincident with the Pb/Zn anomaly in the NW of the grid.
  - Fig. 36 shows the levels of multielement coincidence.

5.3.4 Exploration Potential

The geochemical data allows an evaluation of the near surface potential and areas of 'leakage' from deeper sources. Clearly there is inadequate coverage, except for stream sediments, in the tenement. The perceived potential east of the Mt Charter Fault has traditionally been regarded as deep (ca 900m?) in the volcanosedimentary pile (Que - Hellyer Horizon; T Crawford in Lorrigan 1995). Stream sediments indicate a Zn/Pb anomaly in the northern part of the tenement, apparently within Tertiary Basalts. The background levels of metal abundances within the Tertiary Basalts need to be clarified so as to determine whether this is a 'formational' anomaly.

The NW part of the Bulgobac River grid has yielded some intriguing results that deserve immediate follow up. This area shows 'anomalous' Zn and Pb in soils, and a Zn/Pb stream sediment anomaly. Interpretation of the data is compounded by the proximity of the sub-Tertiary unconformity and poor exposure (mainly boulders).

However there is sufficient geological information to identify a NE trending fault offset of the unconformity surface and the approximate position of the N trending Mt Charter Fault. The metal anomalism appears to correlate with an area where those two faults are interpreted to intersect. This could provide a good structural position for focusing mineralised fluids.

Figure 37 shows a metallogenic model of geochemical anomalism shown in relation to the underlying CVC polygon (in purple tones) and 'buffered' to the interpreted structural (fault/shear) framework. The buffer highlights areas of anomalism to within a 100m radius of the fault. Preliminary interpretation of this model suggests:

- anomalous geochemistry associated with the Mt Charter Fault, particularly in the northern part of the Bulgobac River grid.
- weak anomalism in the northern part of the tenement associated with a NW trending aeromagnetic linear.

Work is in progress to test the veracity and tenor of the identified anomalies.

6 CONCLUSIONS AND RECOMMENDATIONS

During the 1996-97 year, exploration work has advanced the evaluation of the mineralisation potential of the tenement, with a focus on the area around the Mt Charter Fault and a tenement-wide compilation and interpretation of other exploration data. Some interesting anomalism is identified near the northern extension of the Mt Charter Fault, in the vicinity of the Tertiary Basalt plateau. Further work is planned warranted to establish the source of this anomalism ie. a lower Paleozoic bedrock source beneath the Tertiary Basalts or hydromorphic flow process leading to enrichment along the sub-Tertiary unconformity. Comparative geochemistry of soil surveys that cross this unconformity elsewhere in the district would be a good starting point eg. Grid 19C in the Heazewood area (EL23/96).

The tenement-wide review has established the relatively light level of previous exploration stream sediments provide the only good coverage of surface geochemical dispersion patterns. This reveals a substantial level of anomalism in the Que Road area in the north of the tenement, apparently within/peripheral to the Tertiary Basalts. This deserves some follow up work. The lack of other surface data (soils, rock chips) reflects the perceived deep potential of the Que-Hellyer Horizon in the tenement which has been partly covered by electrical methods and drill tested in the past.

7 EXPENDITURE

Total expenditure for all work undertaken by Pasminco Exploration within Bulgobac Hill EL19/94 for the period ending 31 August 1997 was $89,578. A detailed expenditure statement is given below.

Personnel		15 308
Travel & Accommodation		806
Geological Consultants		395
Geophysical Consultants & Assays		7 739
Geophysical Surveys & Consultants		75
Other Consultants		21 177
Drilling		
Store & Supplies		15
Vehicles, Plant & Equipment		
Land		1 953
Computing		
Office		33 967
Administration Fee		8 143
	Total	$89 578

8 REFERENCES

Lorrigan, A.N., 1993. Annual Report, Rosebery Mine Lease and Rosebery Mines Lease Extensions, year ended 30 June 1993. Pasminco Exploration, internal report No. T94-6 August 1993.

Purvis, J.G., 1995. EL 37/89 Annual Report, August 1994 - August 1995. Unpub. Pasminco Exploration Report 1985.

Richardson, S., 1994. EL 39/85 Relinquishment Report. Unpub. Aberfoyle Resources Limited Report February 1994.

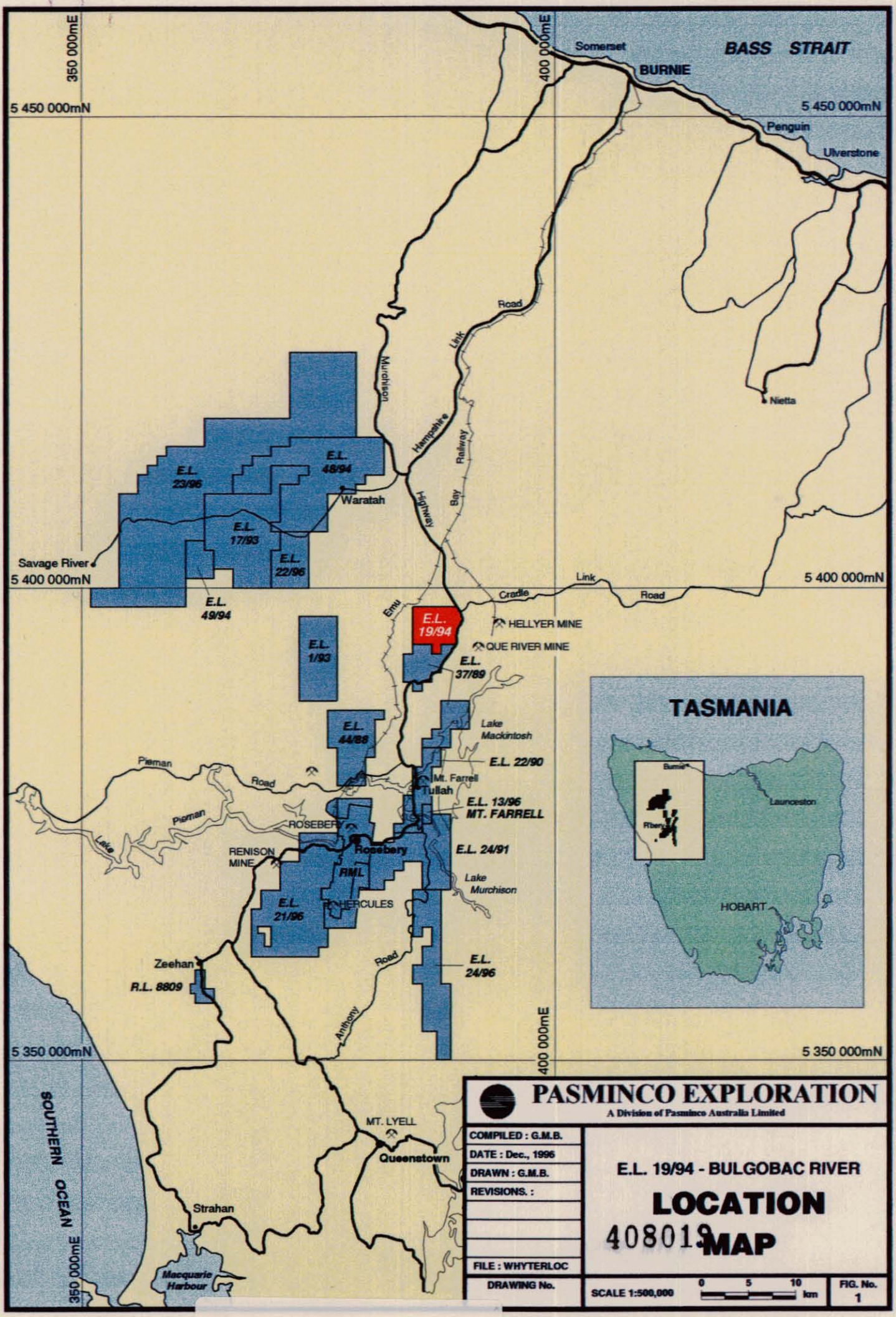
9 KEYWORDS & LOCATION

Keywords

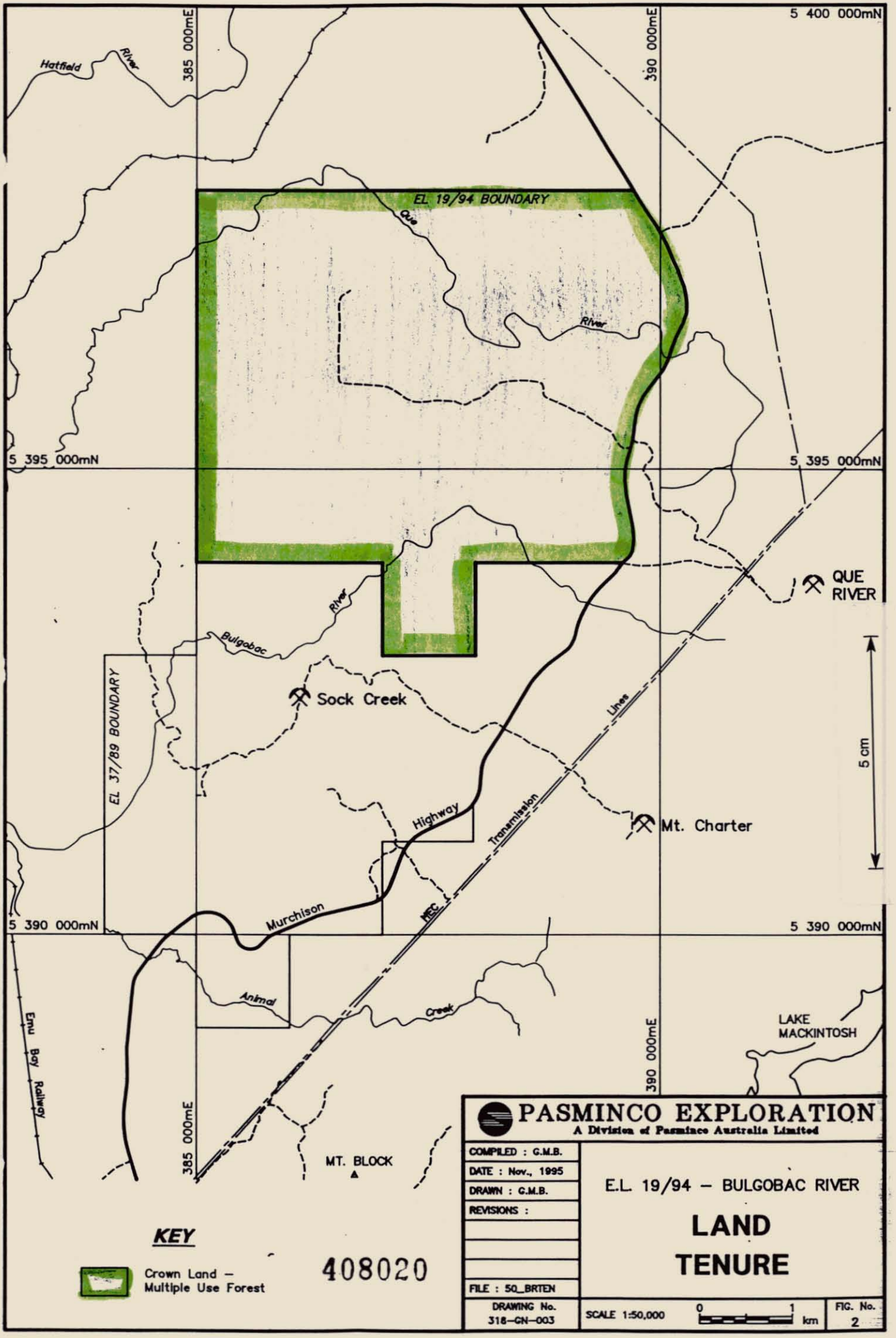
ZINC, STRATIGRAPHY, STRUCTURE, VOLCANICOGENIC, GEOCHEMISTRY, VOLCANOGENIC, GIS, AEROMAGNETIC

Locality

BURNIE SK55-3; BULGOBAC RIVER, HELLYER, QUE RIVER


350 000mE
400 000mE
5 450 000mN
5 400 000mN
5 350 000mN
BASS STRAIT
Somerset
BURNIE
Penguin
Ulverstone
Nietta
Murchison Highway
Hampshire Bay Railway Link Road
Waratah
Savage River
E.L. 23/96
E.L. 48/94
E.L. 17/93
E.L. 22/96
E.L. 49/94
E.L. 1/93
E.L. 19/94
E.L. 37/89
E.L. 44/88
E.L. 22/90
E.L. 13/96 MT. FARRELL
E.L. 24/91
E.L. 21/96
E.L. 24/96
Emu
Cradle Link Road
HELLYER MINE
QUE RIVER MINE
Lake Mackintosh
Pieman Road
Mt. Farrell
Tullah
ROSEBERY
Rosebery
RML
RENISON MINE
HERCULES
Lake Pieman
Lake Murchison
Zeehan
R.L. 8809
Anthony Road
MT. LYELL
Queenstown
Strahan
Macquarie Harbour
SOUTHERN OCEAN
TASMANIA
Burnie
Launceston
HOBART
PASMINCO EXPLORATION
A Division of Pasminco Australia Limited
COMPILED : G.M.B.
DATE : Dec., 1996
DRAWN : G.M.B.
REVISIONS. :
FILE : WHYTERLOC
DRAWING No.
E.L. 19/94 - BULGOBAC RIVER
LOCATION MAP
SCALE 1:500,000
0 5 10 km
FIG. No. 1
5 cm

408019


5 400 000mN
385 000mE
390 000mE
Hatfield River
EL 19/94 BOUNDARY
Que River
5 395 000mN
QUE RIVER
Bulgobac River
Sock Creek
EL 37/89 BOUNDARY
5 cm
Lines
Highway
Transmission
Mt. Charter
5 390 000mN
Murchison
HEC
Animal Creek
Emu Bay Railway
LAKE MACKINTOSH
MT. BLOCK
KEY
Crown Land – Multiple Use Forest
408020
PASMINCO EXPLORATION
A Division of Pasminco Australia Limited
COMPILED : G.M.B.
DATE : Nov., 1995
DRAWN : G.M.B.
REVISIONS :
FILE : 50_BRTEN
E.L. 19/94 – BULGOBAC RIVER
LAND TENURE
DRAWING No. 318–GN–003
SCALE 1:50,000
0 1 km
FIG. No. 2

PASMINCO EXPLORATION

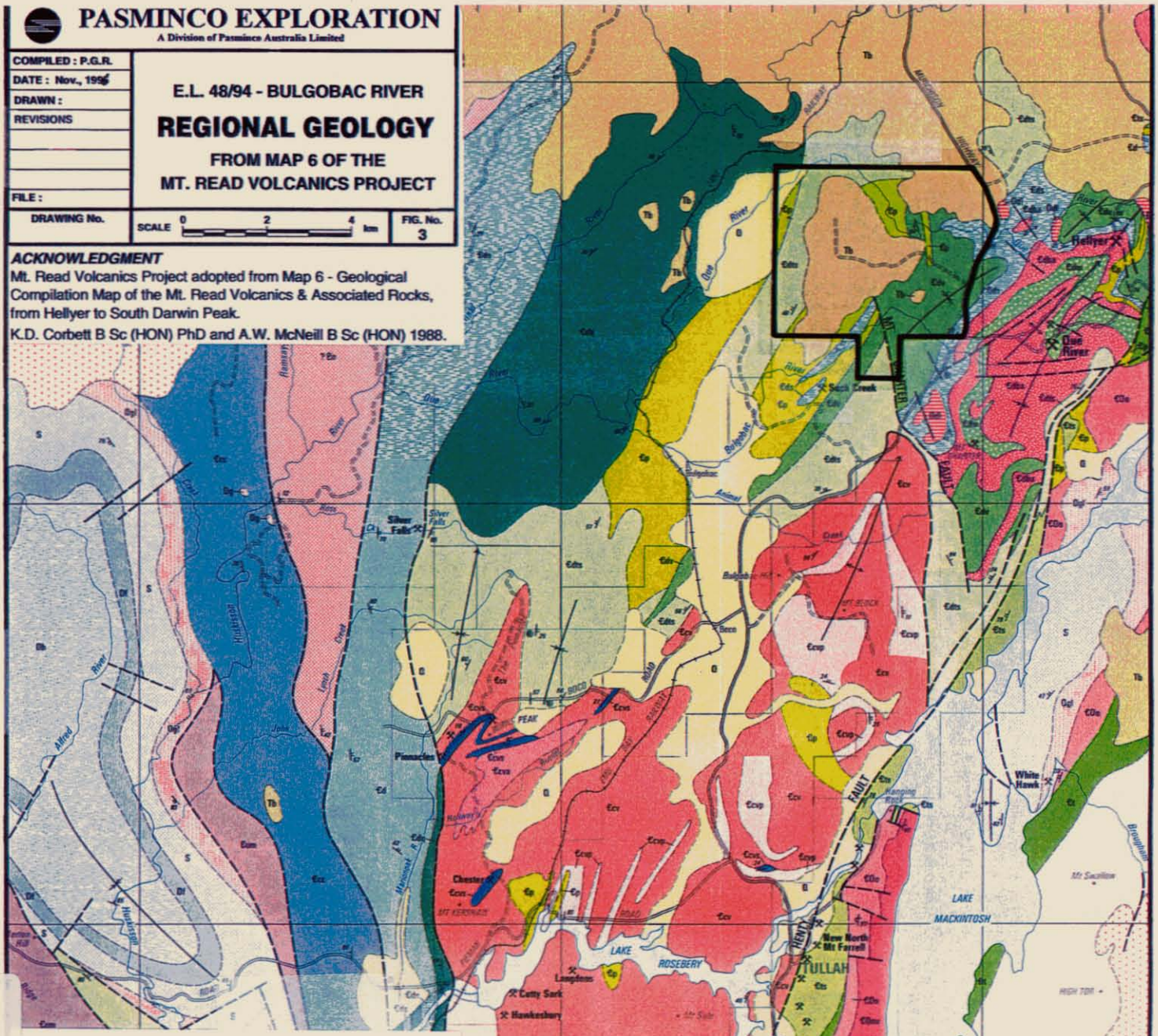
A Division of Pasminco Australia Limited

COMPILED : P.G.R.	E.L. 48/94 - BULGOBAC RIVER
DATE : Nov., 1995	**REGIONAL GEOLOGY**
DRAWN :	FROM MAP 6 OF THE
REVISIONS	MT. READ VOLCANICS PROJECT
FILE :	
DRAWING No.	SCALE 0 2 4 km — FIG. No. 3

ACKNOWLEDGMENT

Mt. Read Volcanics Project adopted from Map 6 - Geological Compilation Map of the Mt. Read Volcanics & Associated Rocks, from Hellyer to South Darwin Peak.

K.D. Corbett B Sc (HON) PhD and A.W. McNeill B Sc (HON) 1988.



5 cm

QUATERNARY — Q — Glacial deposits, alluvium, etc.

TERTIARY — Tb — Basalt; Ts — Sediments – gravel, sand, clays

JURASSIC — Jd — Dolerite

PERMIAN – CARBONIFEROUS — P — Undifferentiated

DEVONIAN — Dd — Dolerite; Dg — Granite

DEVONIAN – SILURIAN — S-D — Db — Bell Shale; Df — Florence Sandstone; S — Silurian

ORDOVICIAN — Ogl — GORDON GROUP limestone

EARLY ORDOVICIAN – LATE CAMBRIAN — €Oou — Upper sandstone sequence including Pioneer Beds (€Oou); €Oo — Undifferentiated conglomerate and sandstone (€Oo); €Oon — Newton Creek Sandstone (€Oon) – interbedded sandstone siltstone and conglomerate with marine fossils

MT. READ VOLCANICS

NORTH AND WEST OF HENTY FAULT

DUNDAS GROUP AND CORRELATES

- €p — Quartz–feldspar porphyry, mostly intrusive
- €ds — Mostly sedimentary rocks – greywacke, siltstone, conglomerate
- €dts — Interbedded tuffs and sedimentary rocks
- €d — Quartzwacke–slate–siltstone units, e.g. Stitt Quartzite
- €dv — Mostly felsic volcanics – mainly tuffs
- €dm — Mixed felsic and mafic volcanics and epiclastic breccias, Que–Hellyer area
- €dba — Basaltic to andesitic volcanics

CENTRAL VOLCANIC COMPLEX

- €cv — Mainly feldspar–phyric volcanics — dacite, rhyolite, minor andesite (€cv)
- €p — Felsic porphyry, mainly intrusive
- €cvp — Mainly pyroclastic rocks
- €cvs — Sedimentary rocks, mainly shale and sandstone
- €cva — Andesitic volcanics

SOUTH AND EAST OF HENTY FAULT

TYNDALL GROUP AND CORRELATES

- €t — Mainly sed. rocks, incl Farrell Slates
- €t — Mainly quartz–feldspar–phyric volcanic and volcaniclastic rocks (€t)
- €tc — Mainly volcaniclastic congl. and sandstone
- €mp — Slicht Range Beds – sandstone, siltstone, siliciclastic conglomerate

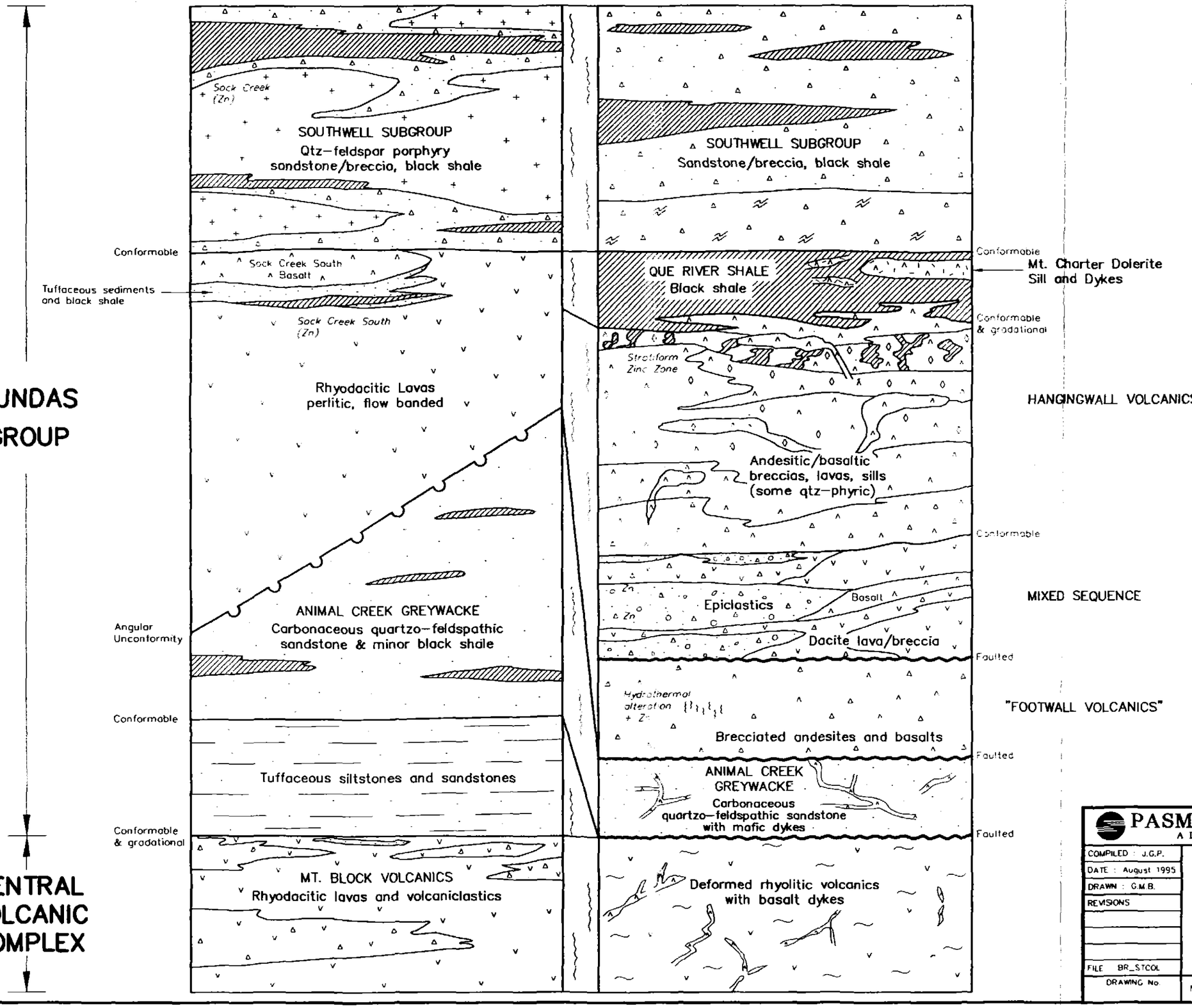
CAMBRIAN INTRUSIVE ROCKS

- €gr — Granite
- €p — Felsic porphyry
- €g — Gabbro
- €um — Ultramafic rocks & serpentinite

PRECAMBRIAN

- Pz — Quartzite–slate sequences — correlates of Oonah Formation
- Pm — Metamorphosed sequences of Tyennan Reg
- Major lithological boundary trends shown

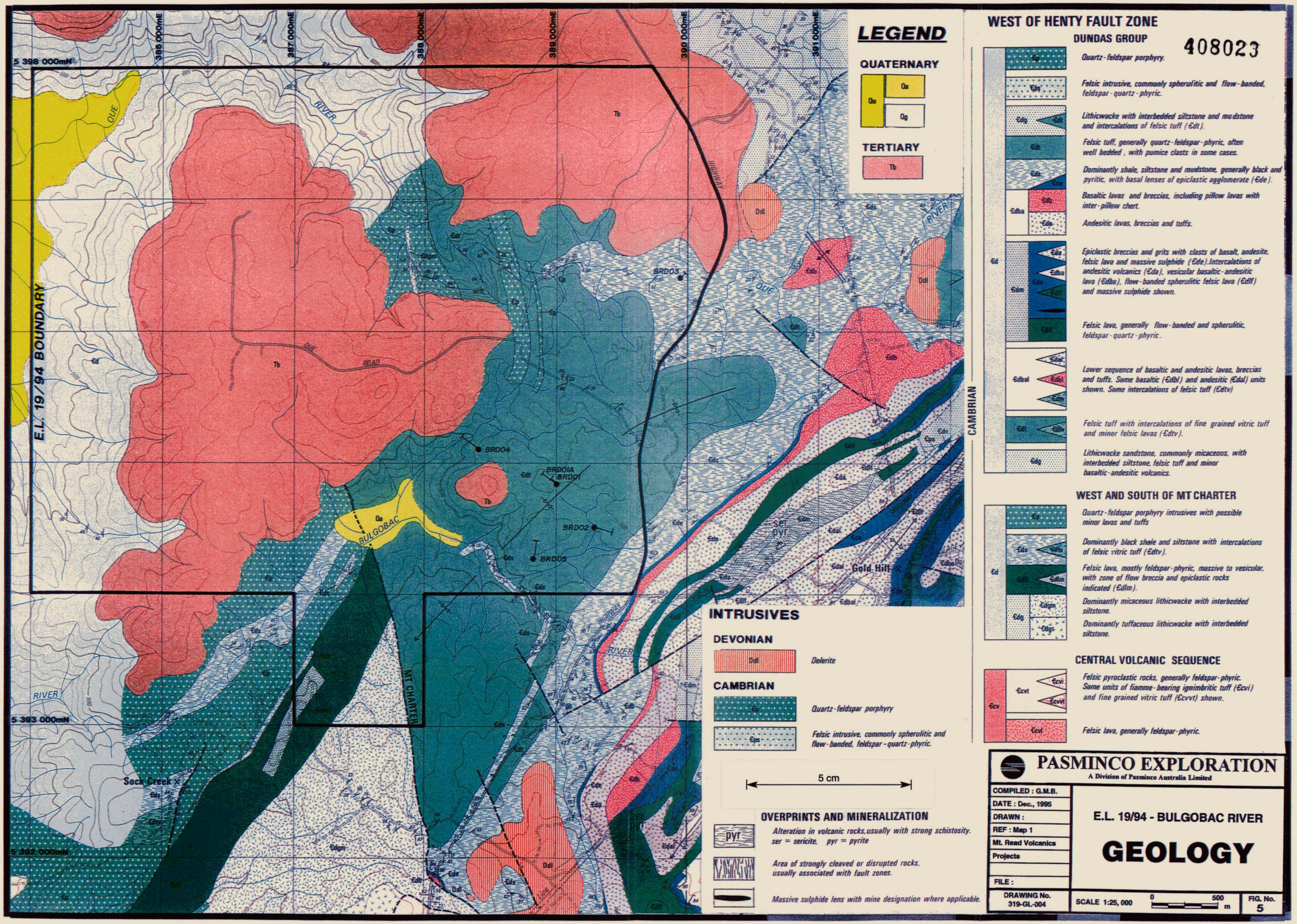
408021



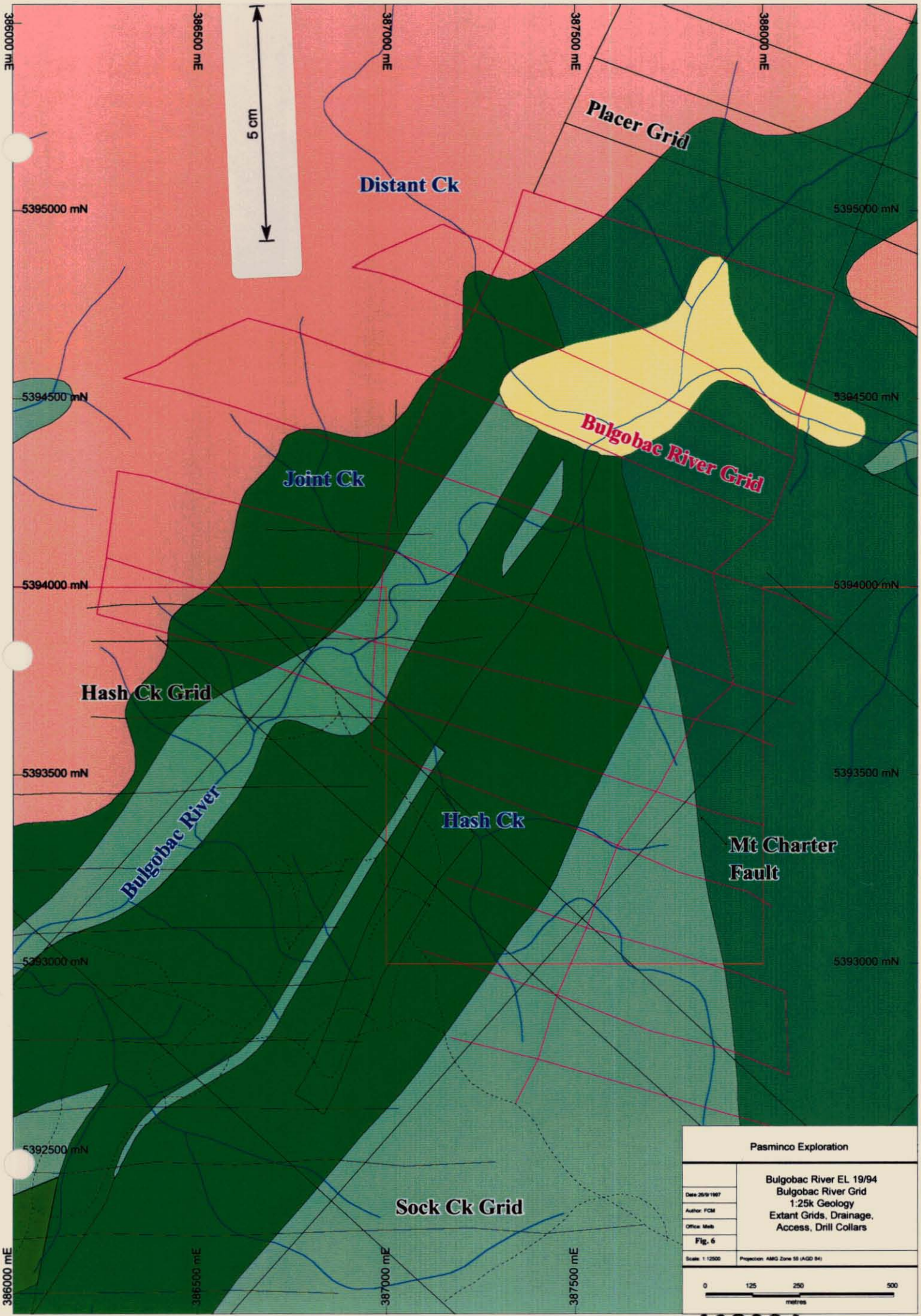
408022

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

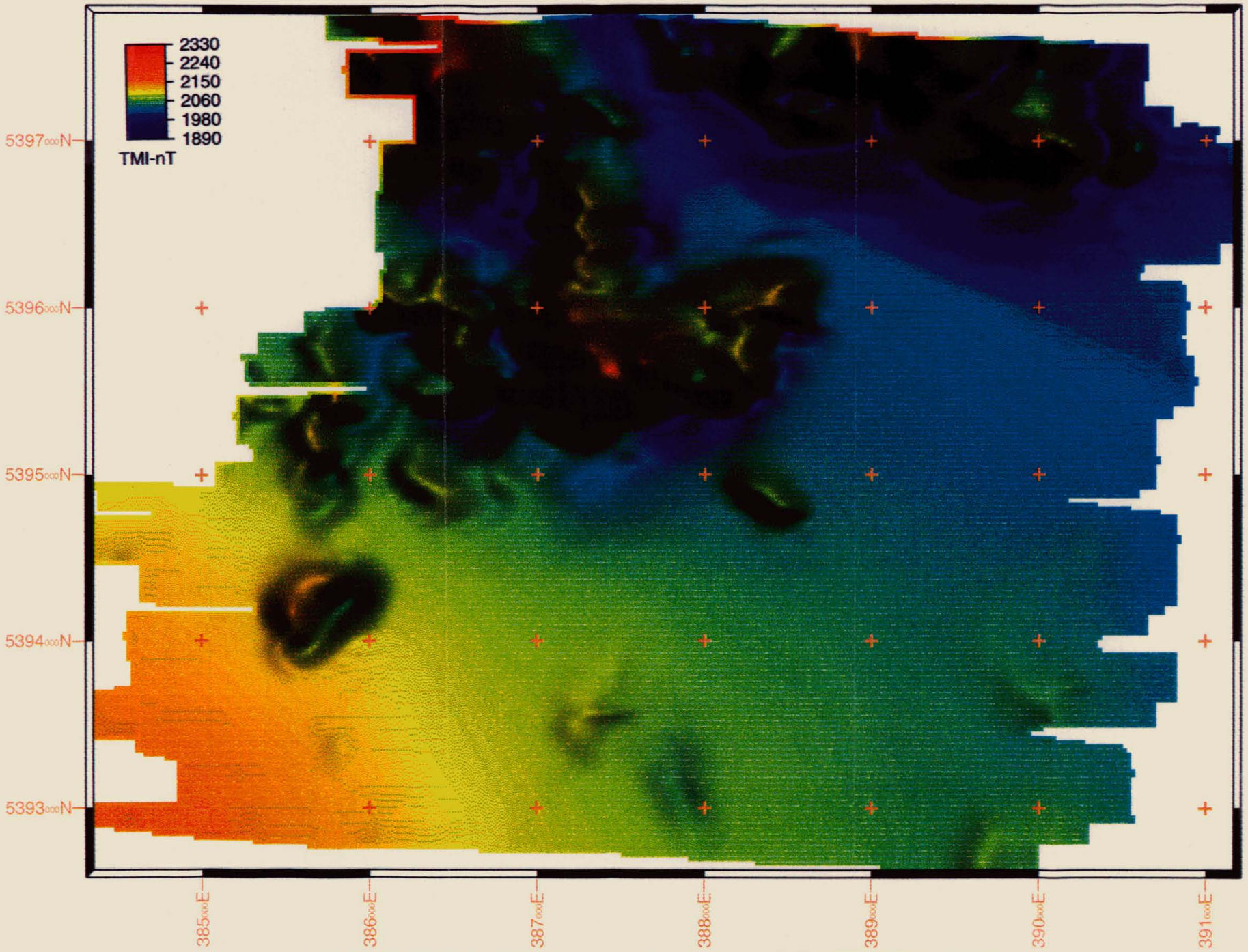
COMPILED : J.G.P.	E.L. 19/94 – BULGOBAC RIVER
DATE : August 1995	**STRATIGRAPHIC COLUMN**
DRAWN : G.M.B.	
REVISIONS	
FILE BR_STCOL	
DRAWING No.	NOT TO SCALE — FIG. No 4



408023
LEGEND
QUATERNARY
Qa
Qu
Qg
TERTIARY
Tb
WEST OF HENTY FAULT ZONE
DUNDAS GROUP
Quartz-feldspar porphyry.
Felsic intrusive, commonly spherulitic and flow-banded, feldspar-quartz-phyric.
Lithicwacke with interbedded siltstone and mudstone and intercalations of felsic tuff (€dt).
Felsic tuff, generally quartz-feldspar-phyric, often well bedded, with pumice clasts in some cases.
Dominantly shale, siltstone and mudstone, generally black and pyritic, with basal lenses of epiclastic agglomerate (€de).
Basaltic lavas and breccias, including pillow lavas with inter-pillow chert.
Andesitic lavas, breccias and tuffs.
Epiclastic breccias and grits with clasts of basalt, andesite, felsic lava and massive sulphide (€de). Intercalations of andesitic volcanics (€da), vesicular basaltic-andesitic lava (€dba), flow-banded spherulitic felsic lava (€dlf) and massive sulphide shown.
Felsic lava, generally flow-banded and spherulitic, feldspar-quartz-phyric.
Lower sequence of basaltic and andesitic lavas, breccias and tuffs. Some basaltic (€dbl) and andesitic (€dal) units shown. Some intercalations of felsic tuff (€dtv)
Felsic tuff with intercalations of fine grained vitric tuff and minor felsic lavas (€dtv).
Lithicwacke sandstone, commonly micaceous, with interbedded siltstone, felsic tuff and minor basaltic-andesitic volcanics.
CAMBRIAN
WEST AND SOUTH OF MT CHARTER
Quartz-feldspar porphyry intrusives with possible minor lavas and tuffs
Dominantly black shale and siltstone with intercalations of felsic vitric tuff (€dtv).
Felsic lava, mostly feldspar-phyric, massive to vesicular, with zone of flow breccia and epiclastic rocks indicated (€dlm).
Dominantly micaceous lithicwacke with interbedded siltstone.
Dominantly tuffaceous lithicwacke with interbedded siltstone.
CENTRAL VOLCANIC SEQUENCE
Felsic pyroclastic rocks, generally feldspar-phyric. Some units of fiamme-bearing ignimbritic tuff (€cvi) and fine grained vitric tuff (€cvvt) shown.
Felsic lava, generally feldspar-phyric.
INTRUSIVES
DEVONIAN
Ddl
Dolerite
CAMBRIAN
Quartz-feldspar porphyry
Felsic intrusive, commonly spherulitic and flow-banded, feldspar-quartz-phyric.
5 cm
OVERPRINTS AND MINERALIZATION
pyr
Alteration in volcanic rocks, usually with strong schistosity. ser = sericite, pyr = pyrite
Area of strongly cleaved or disrupted rocks, usually associated with fault zones.
Massive sulphide lens with mine designation where applicable.
PASMINCO EXPLORATION
A Division of Pasminco Australia Limited
COMPILED : G.M.B.
DATE : Dec., 1995
DRAWN :
REF : Map 1
Mt. Read Volcanics
Projects
FILE :
DRAWING No. 319-GL-004
E.L. 19/94 - BULGOBAC RIVER
GEOLOGY
SCALE 1:25, 000
0
500
m
FIG. No.
5
E.L. 19/94 BOUNDARY
5 398 000mN
5 393 000mN
5 392 000mN
386 000mE
387 000mE
388 000mE
389 000mE
390 000mE
391 000mE
QUE RIVER
QUE ROAD
BULGOBAC
MT CHARTER
Gold Hill
Sock Creek
BRD01A
BRD01
BRD02
BRD03
BRD04
BRD05


386000 mE
386500 mE
387000 mE
387500 mE
388000 mE
5 cm
Placer Grid
Distant Ck
5395000 mN
5394500 mN
Bulgobac River Grid
Joint Ck
5394000 mN
Hash Ck Grid
5393500 mN
Bulgobac River
Hash Ck
Mt Charter Fault
5393000 mN
5392500 mN
Sock Ck Grid
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
1:25k Geology
Extant Grids, Drainage, Access, Drill Collars
Fig. 6
0 125 250 500
metres

408021



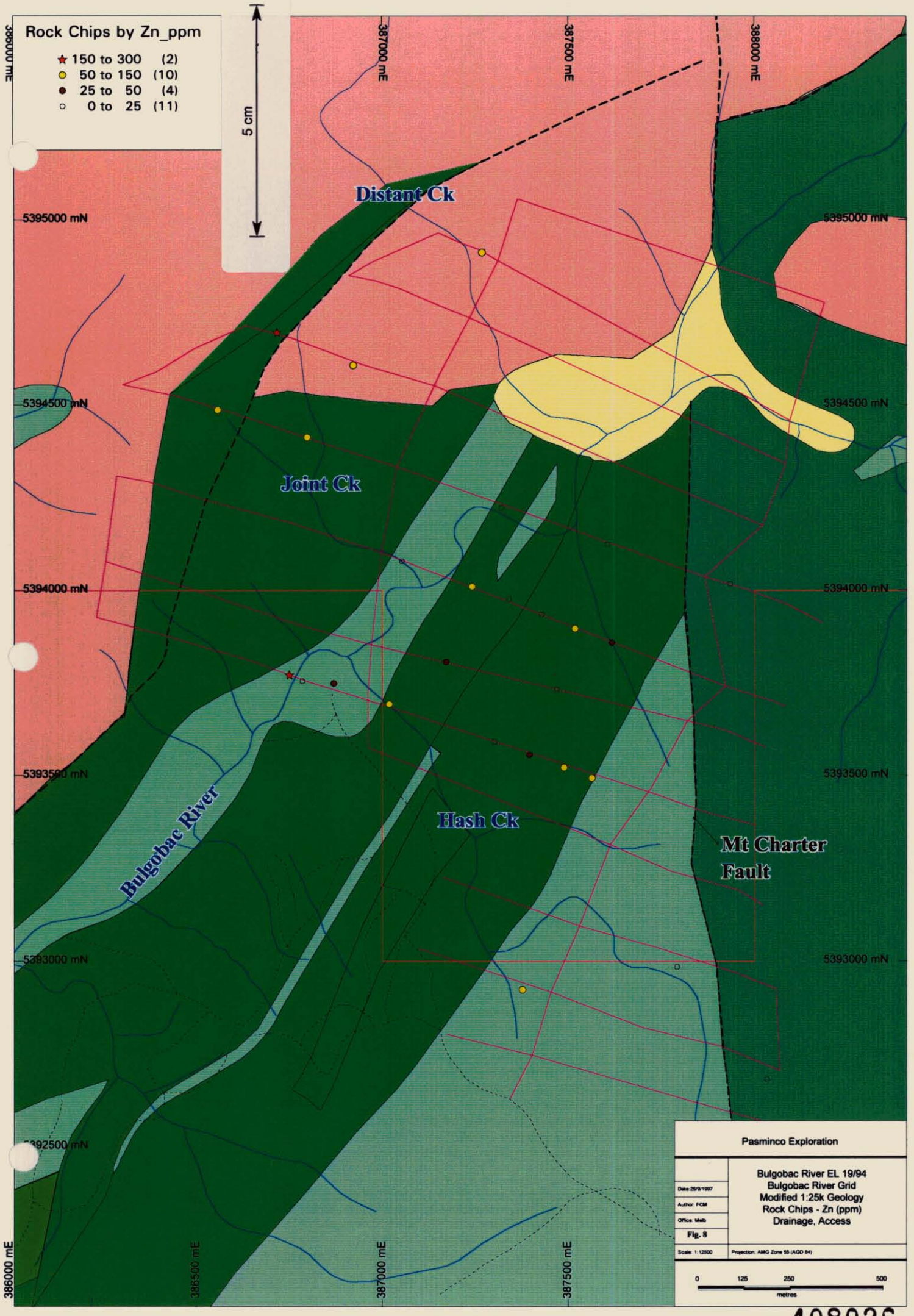
Pasminco Australia Ltd

Melbourne - Exploration

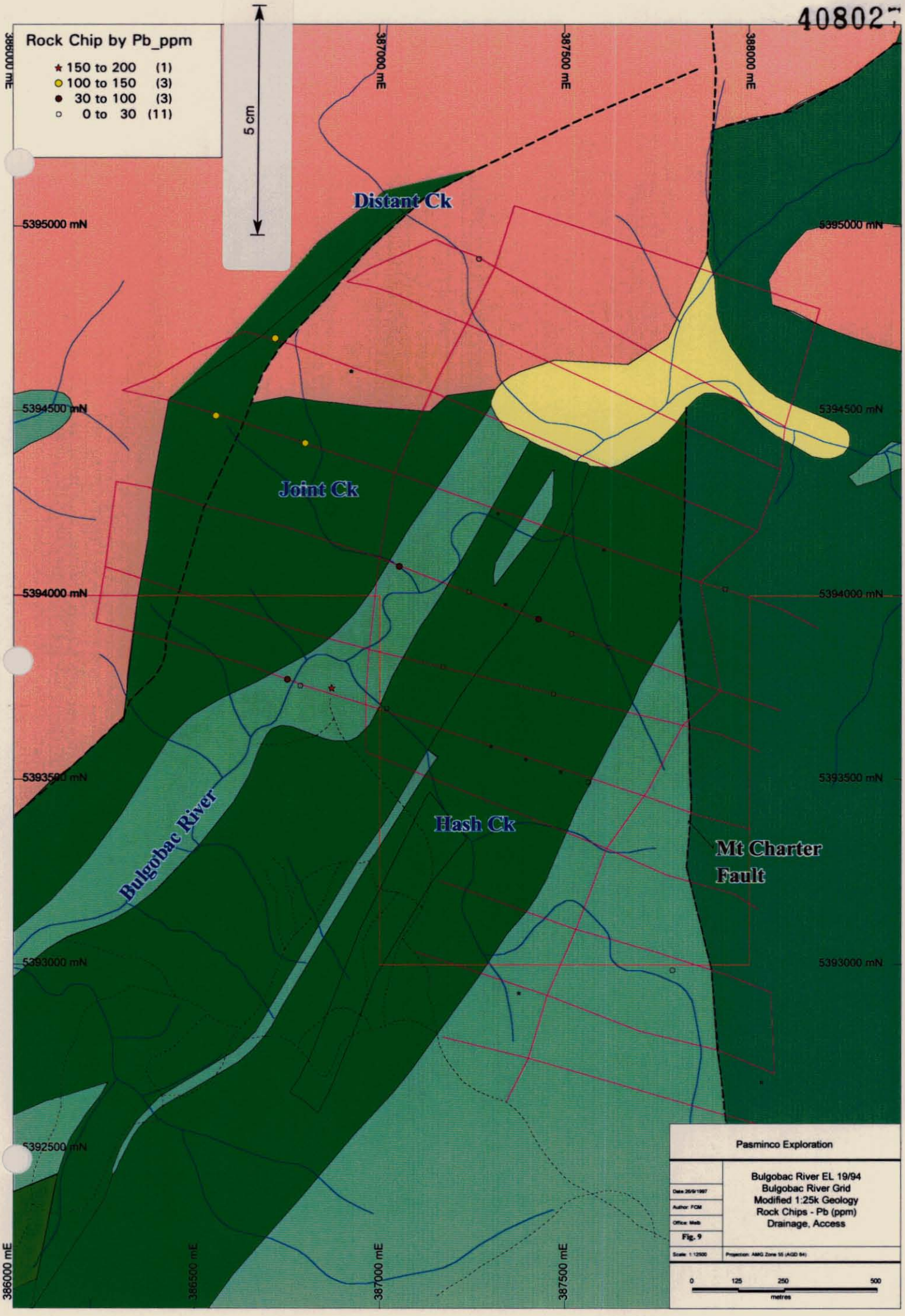
REVISIONS				TASMANIA MAGNETICS **Que Road '85 Survey** **Colour Drape, Pseudo, Sun NE 45 75** que_rd_85_mag_cd_ne_25.alg		Compiled: AMR
Init.	Date	Init.	Date			Printed: Novajet111
						Traced:
Map Projection: TMAMG54						Checked:
Geodetic Datum: AGD66						
Location Code:				Scale: 1:25 000	Date: 6 May 1997	Plate No. Fig.7

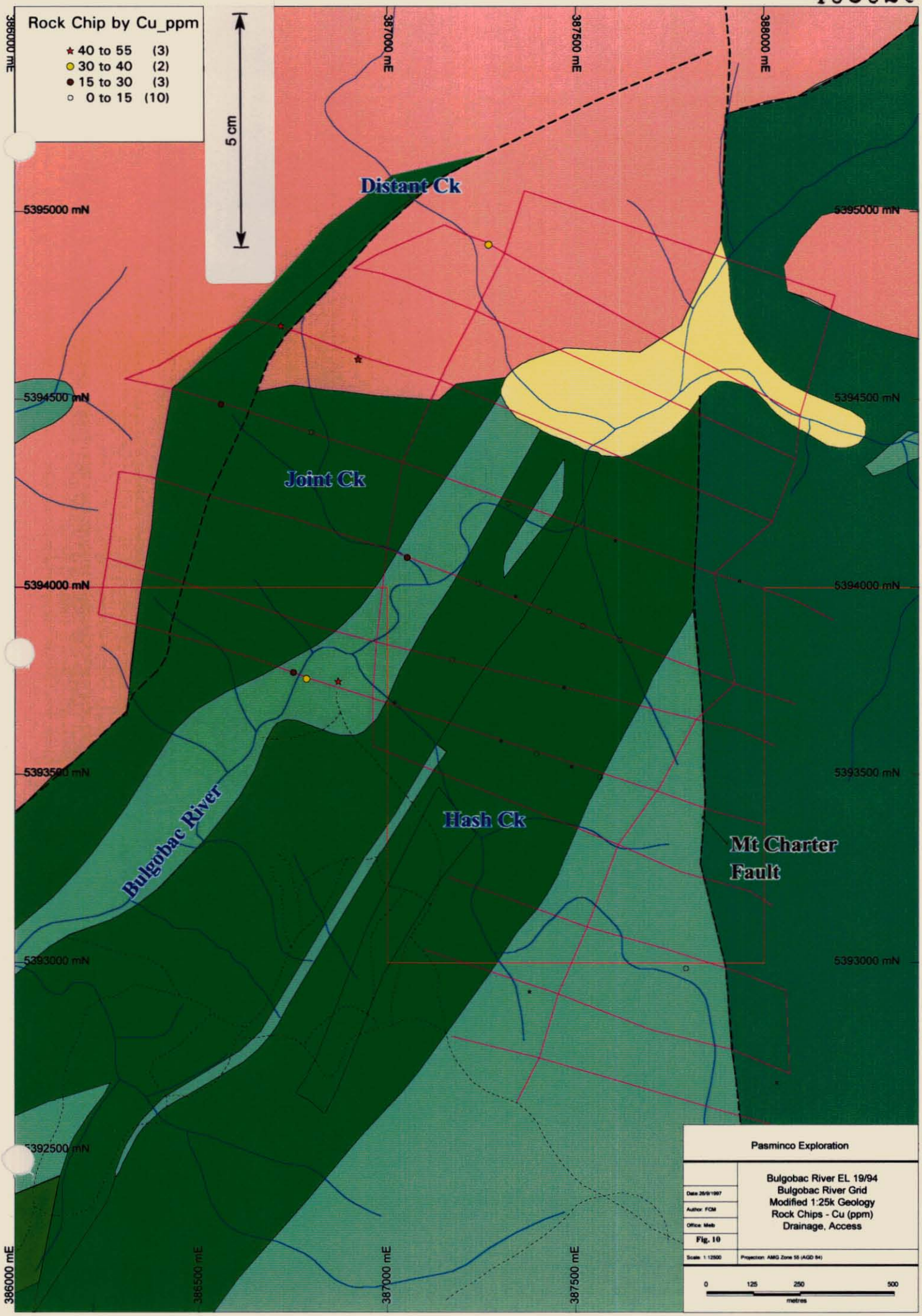
5 cm

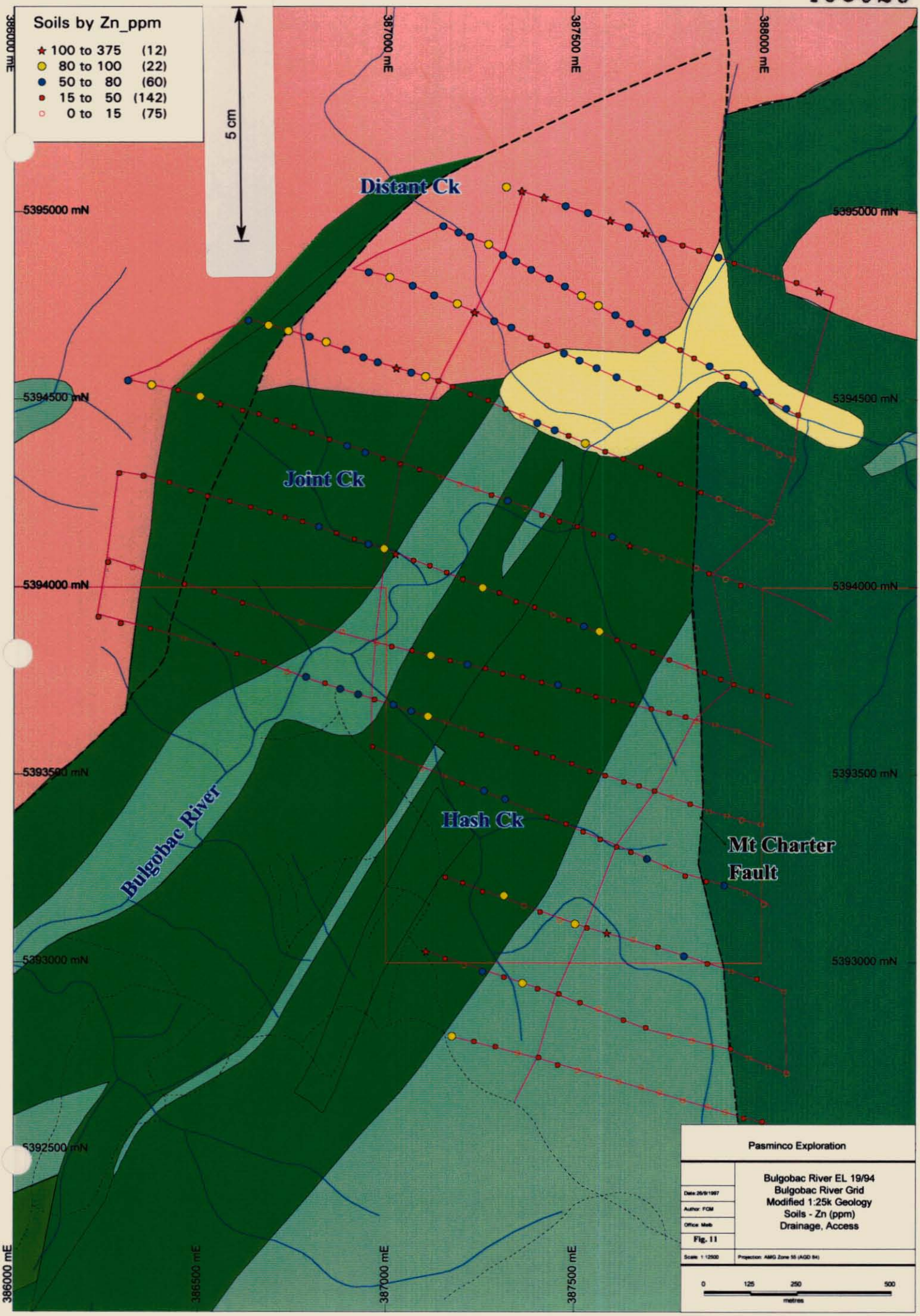
408025


Rock Chips by Zn_ppm
150 to 300 (2)
50 to 150 (10)
25 to 50 (4)
0 to 25 (11)
5 cm
386000 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Rock Chips - Zn (ppm)
Drainage, Access
Date: 26/9/1997
Author: FCM
Office: Melb
Fig. 8
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)
0 125 250 500
metres

408026


Rock Chip by Pb_ppm
150 to 200 (1)
100 to 150 (3)
30 to 100 (3)
0 to 30 (11)
5 cm
386000 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Rock Chips - Pb (ppm)
Drainage, Access
Fig. 9
0 125 250 500
metres


Rock Chip by Cu_ppm
40 to 55 (3)
30 to 40 (2)
15 to 30 (3)
0 to 15 (10)
5 cm
386000 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
386500 mE
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Rock Chips - Cu (ppm)
Drainage, Access
Fig. 10
Date: 26/9/1997
Author: FCM
Office: Melb
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)
0
125
250
500
metres

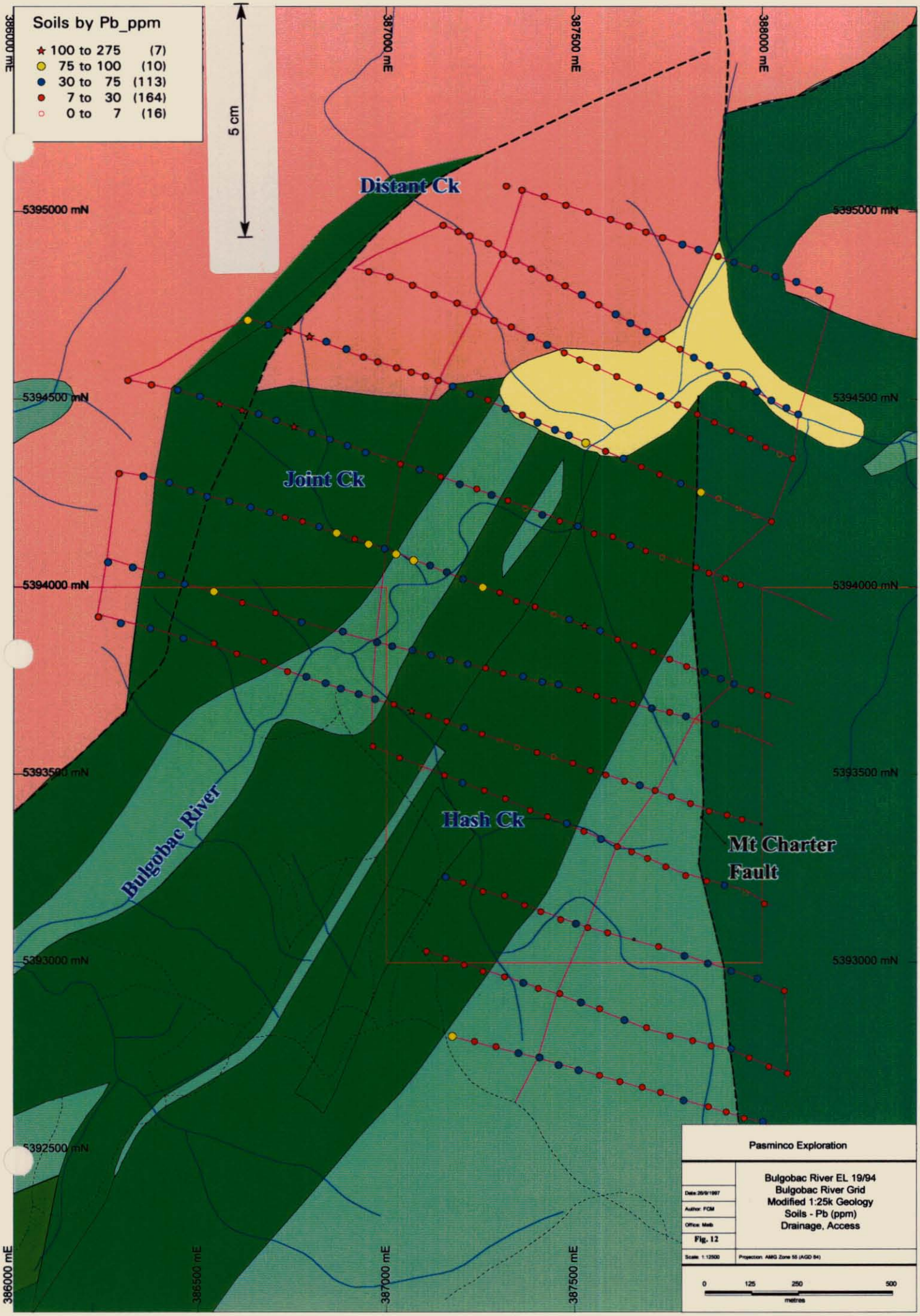


Pasminco Exploration

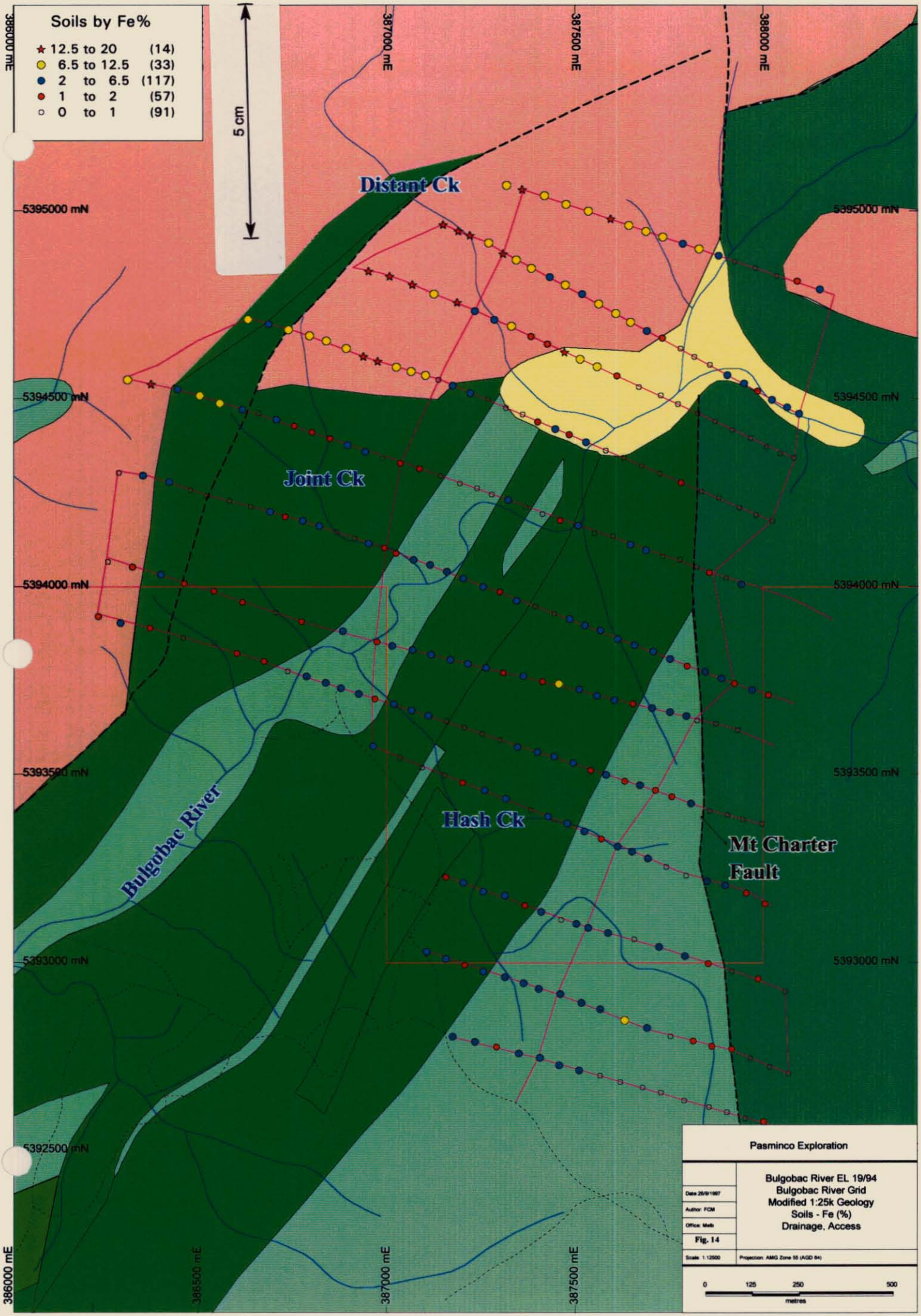
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Soils - Zn (ppm)
Drainage, Access

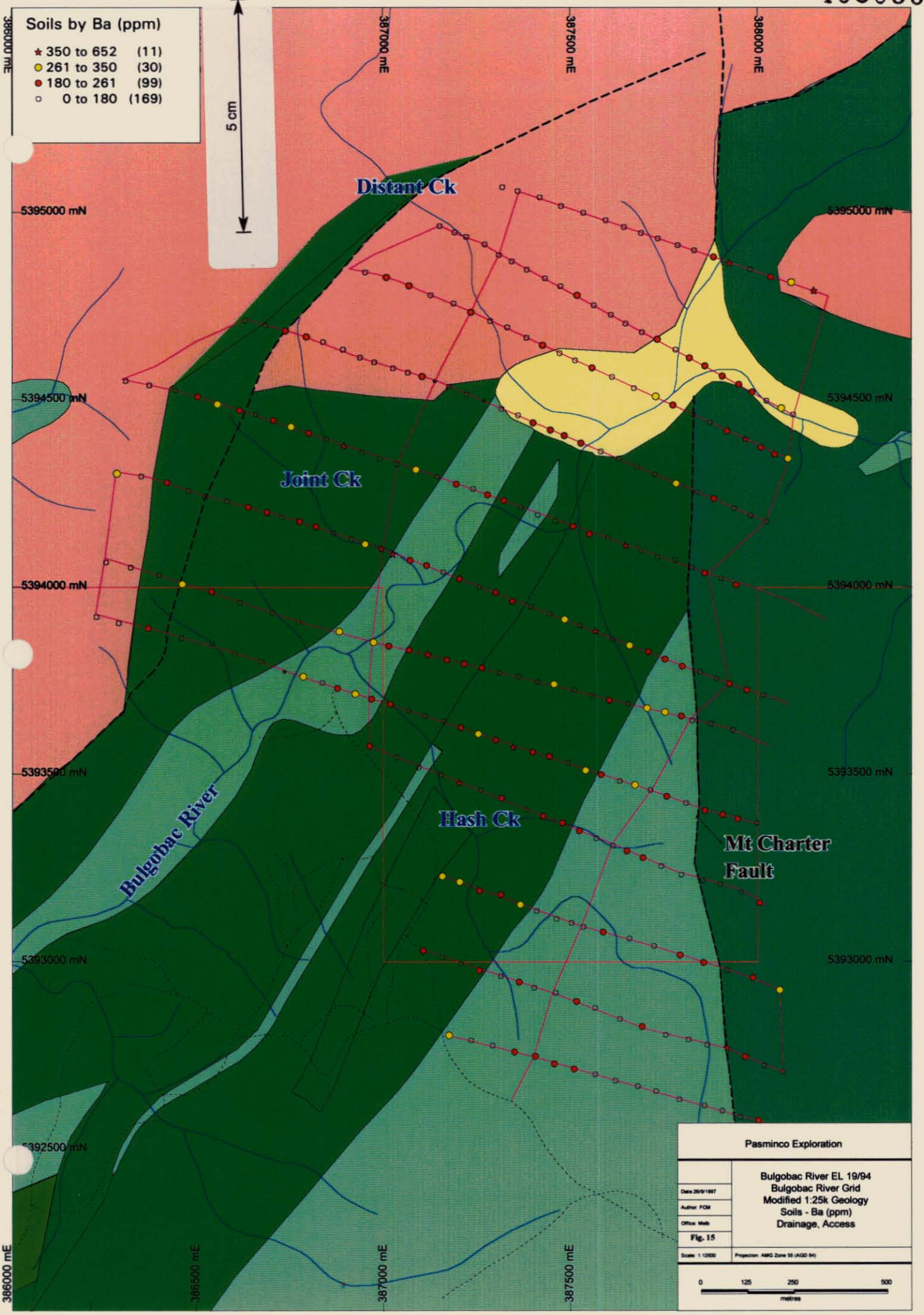
Date: 26/9/1997
Author: FGM
Office: Melb
Fig. 11
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)

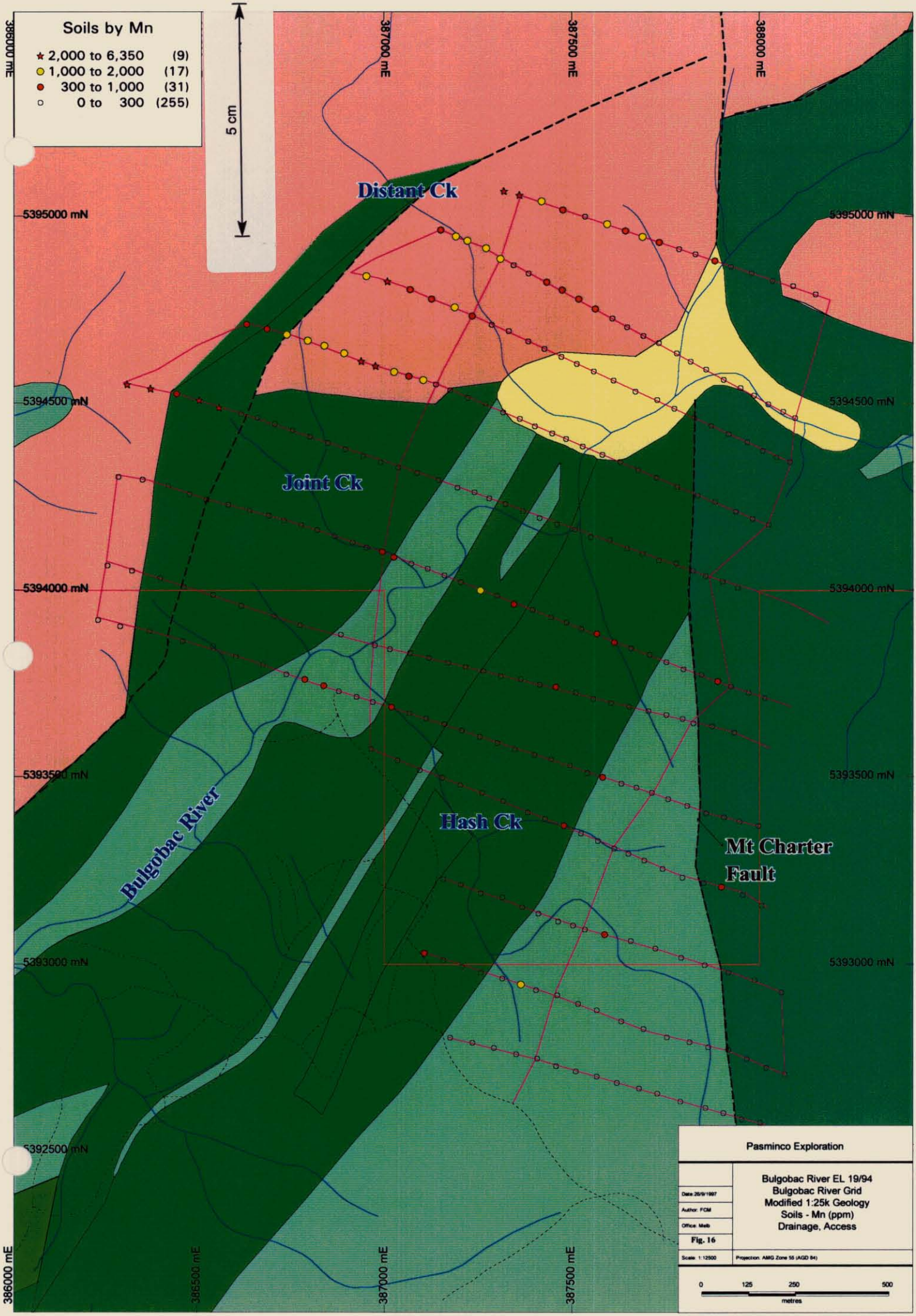
0 125 250 500
metres

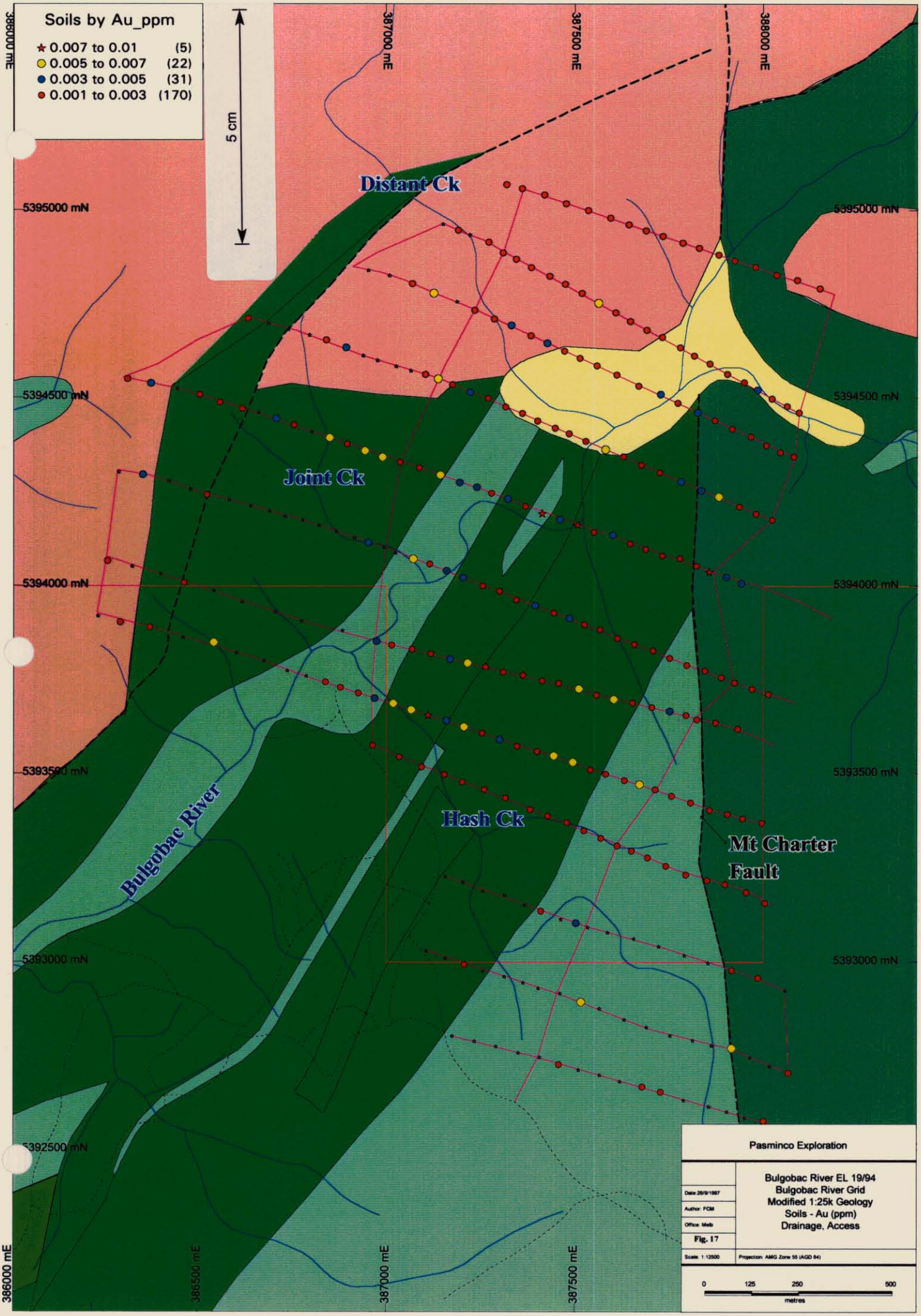

Soils by Pb_ppm
100 to 275 (7)
75 to 100 (10)
30 to 75 (113)
7 to 30 (164)
0 to 7 (16)
5 cm
386000 mE
386500 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Soils - Pb (ppm)
Drainage, Access
Fig. 12
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)
0 125 250 500
metres

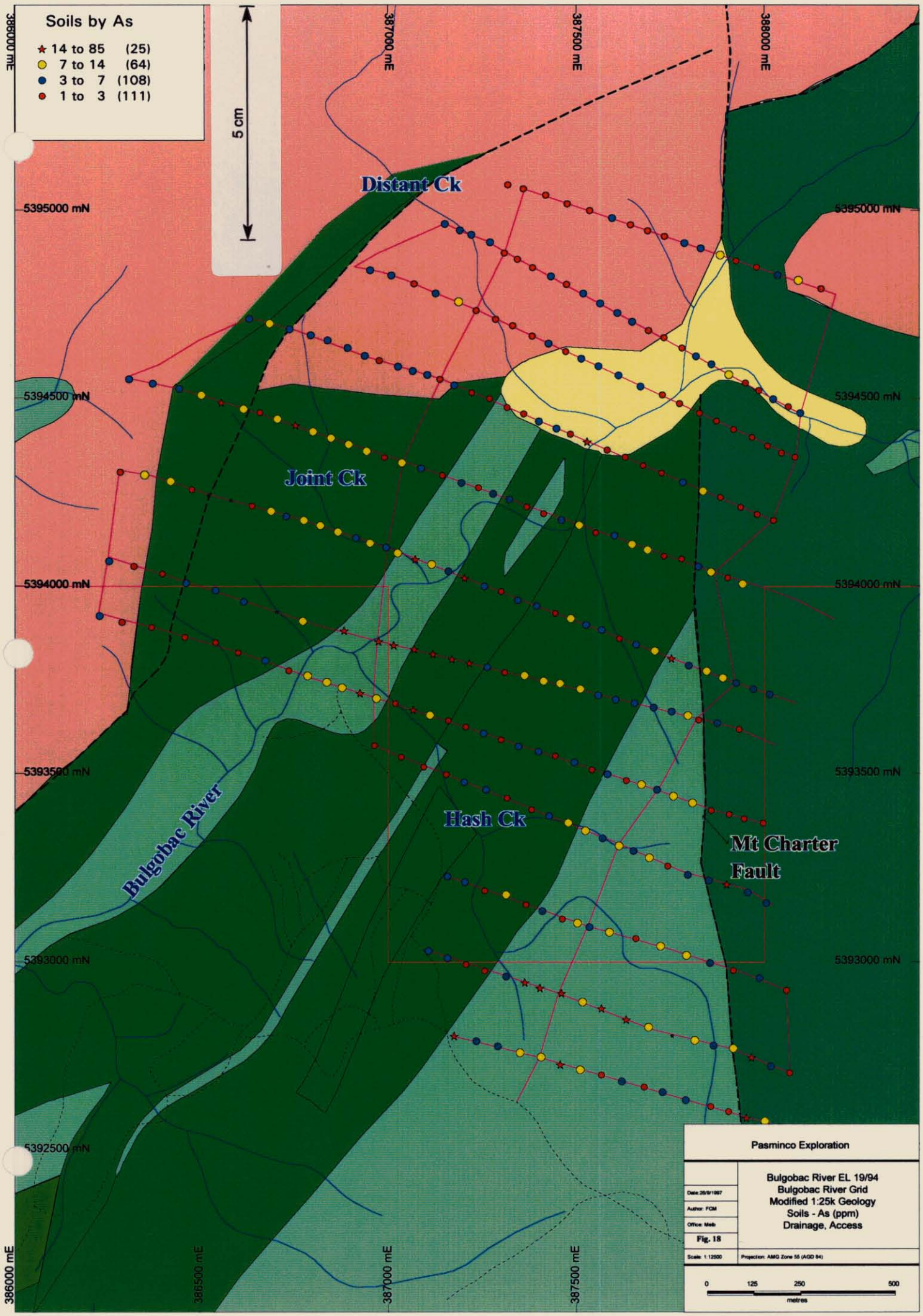

Soils by Cu_ppm
61 to 95 (14)
36 to 61 (27)
28 to 36 (12)
14 to 28 (30)
6 to 14 (80)
0 to 6 (130)
5 cm
386000 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
386500 mE
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Soils - Cu (ppm)
Drainage, Access
Fig. 13
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)
0
125
250
500
metres


Soils by Fe%
12.5 to 20 (14)
6.5 to 12.5 (33)
2 to 6.5 (117)
1 to 2 (57)
0 to 1 (91)
5 cm
386000 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
386500 mE
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Soils - Fe (%)
Drainage, Access
Fig. 14
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)
0 125 250 500
metres

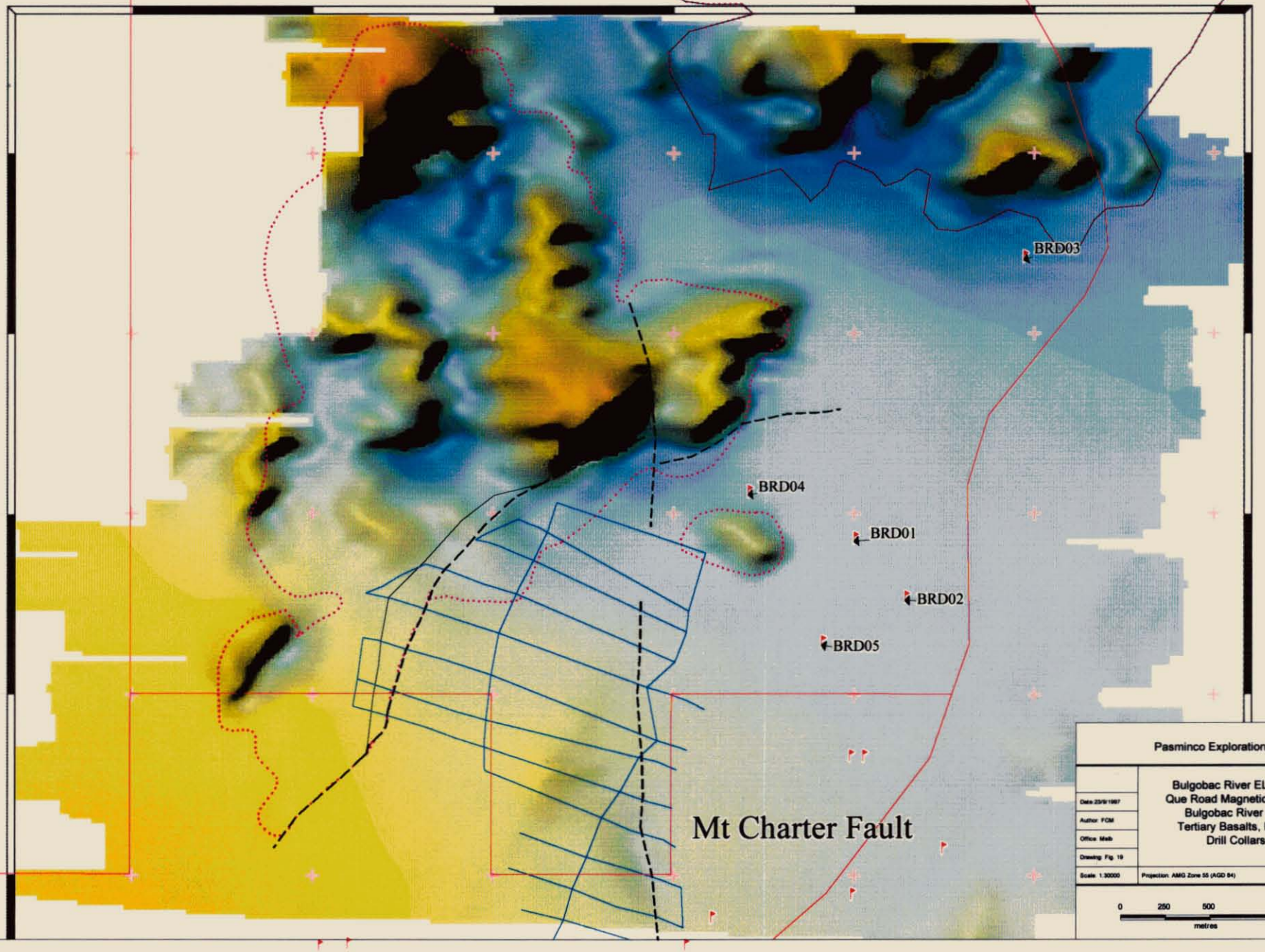

Soils by Ba (ppm)
350 to 652 (11)
261 to 350 (30)
180 to 261 (99)
0 to 180 (169)
5 cm
386000 mE
386500 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Soils - Ba (ppm)
Drainage, Access
Fig. 15
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)
0 125 250 500
metres


Soils by Mn
2,000 to 6,350 (9)
1,000 to 2,000 (17)
300 to 1,000 (31)
0 to 300 (255)
5 cm
386000 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
386500 mE
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Soils - Mn (ppm)
Drainage, Access
Date: 26/9/1997
Author: FCM
Office: Melb
Fig. 16
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)
0 125 250 500
metres


Soils by Au_ppm
0.007 to 0.01 (5)
0.005 to 0.007 (22)
0.003 to 0.005 (31)
0.001 to 0.003 (170)
5 cm
386000 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Soils - Au (ppm)
Drainage, Access
Date: 26/9/1997
Author: FCM
Office: Melb
Fig. 17
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)
0 125 250 500
metres


Soils by As
14 to 85 (25)
7 to 14 (64)
3 to 7 (108)
1 to 3 (111)
5 cm
386000 mE
387000 mE
387500 mE
388000 mE
5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
Distant Ck
Joint Ck
Hash Ck
Bulgobac River
Mt Charter Fault
Pasminco Exploration
Bulgobac River EL 19/94
Bulgobac River Grid
Modified 1:25k Geology
Soils - As (ppm)
Drainage, Access
Date: 26/9/1997
Author: FCM
Office: Melb
Fig. 18
Scale: 1:12500
Projection: AMG Zone 55 (AGD 84)
0 125 250 500
metres

TASMANIA - QUE ROAD '85 MAGNETICS. 1:25000



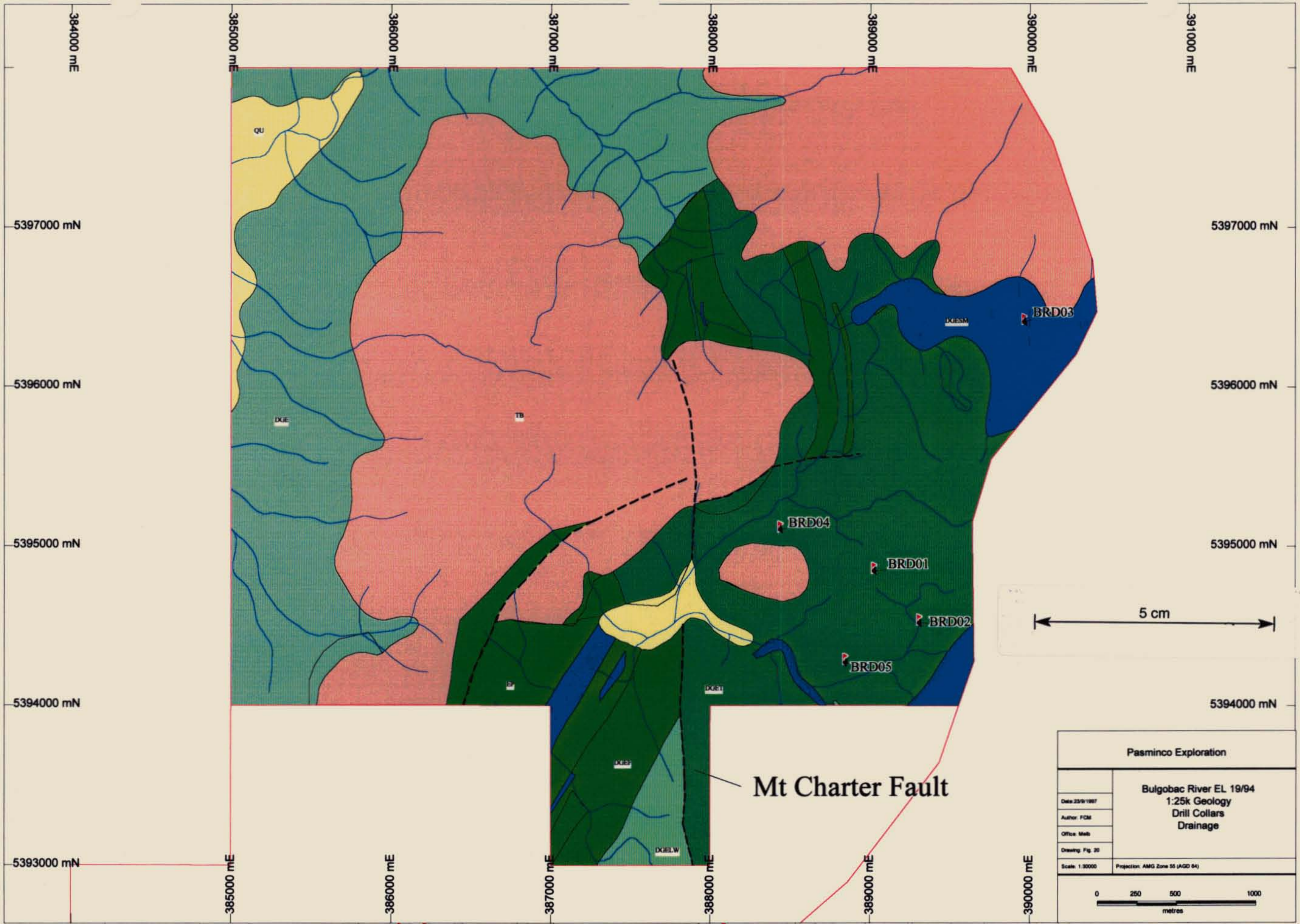
Pasminco Exploration

Bulgobac River EL 19/94
Que Road Magnetic Survey
Bulgobac River Grid
Tertiary Basalts, Faults
Drill Collars

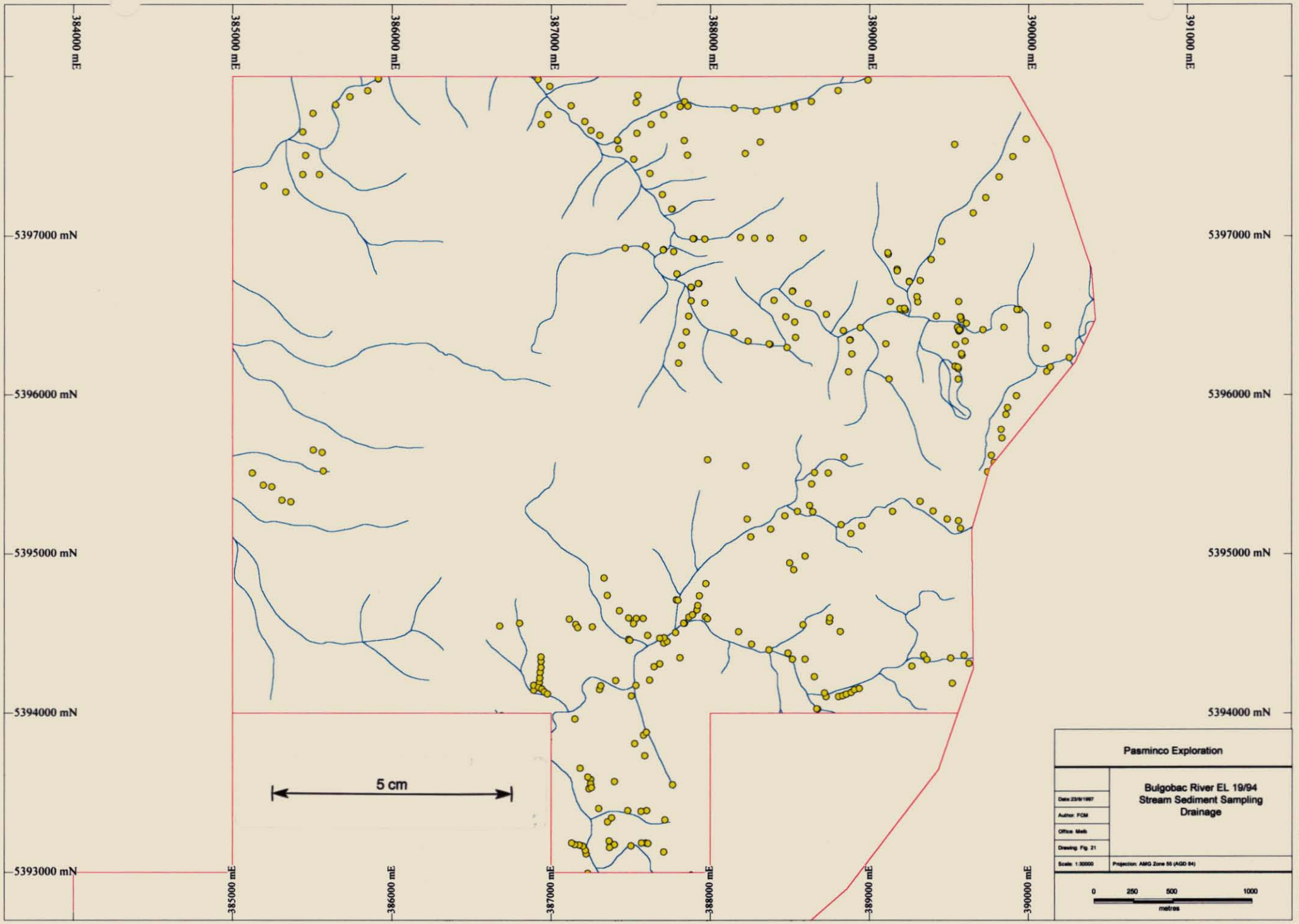
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 19
Scale: 1:30000

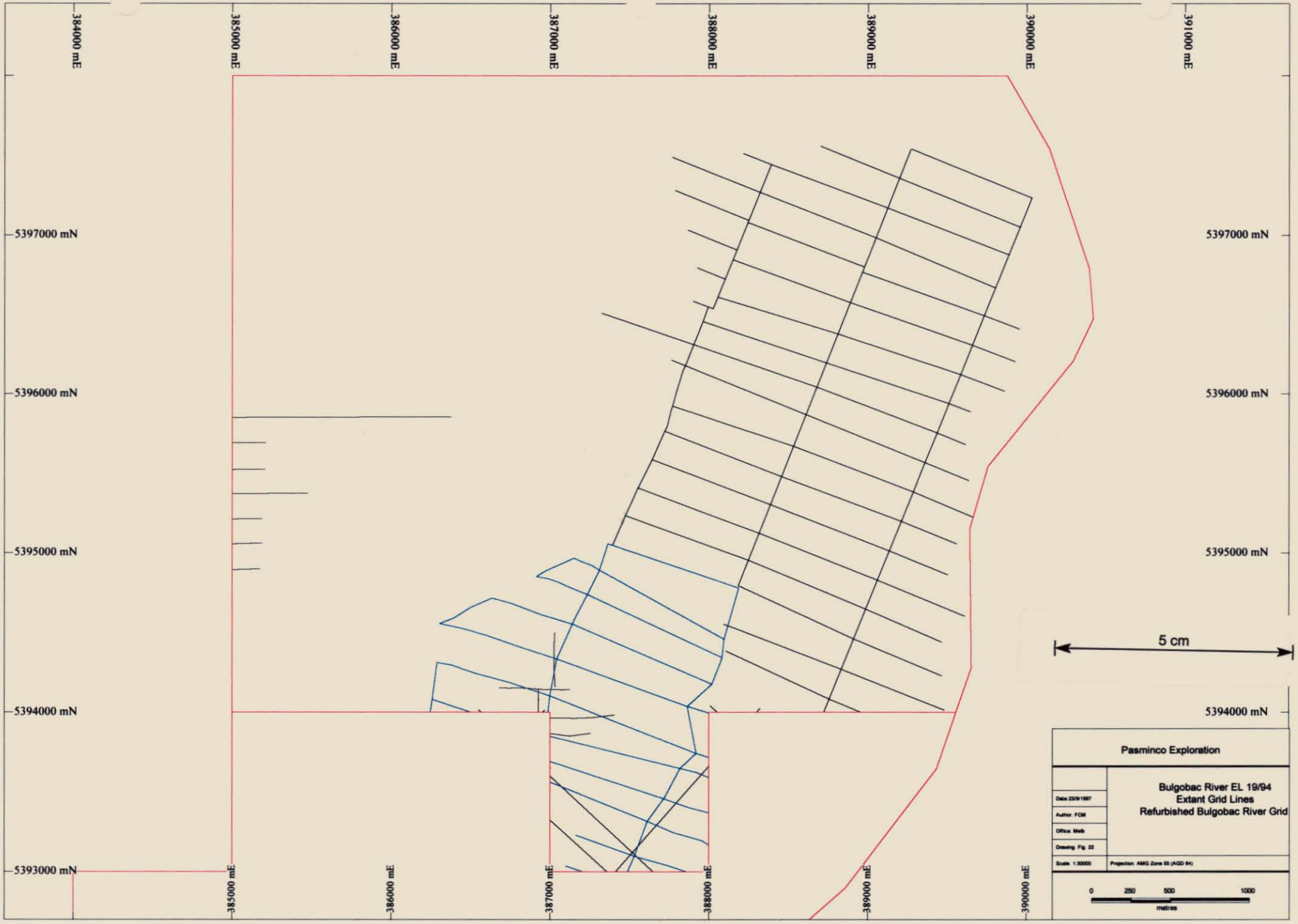
Projection: AMG Zone 55 (AGD 84)

0 250 500 1000
metres

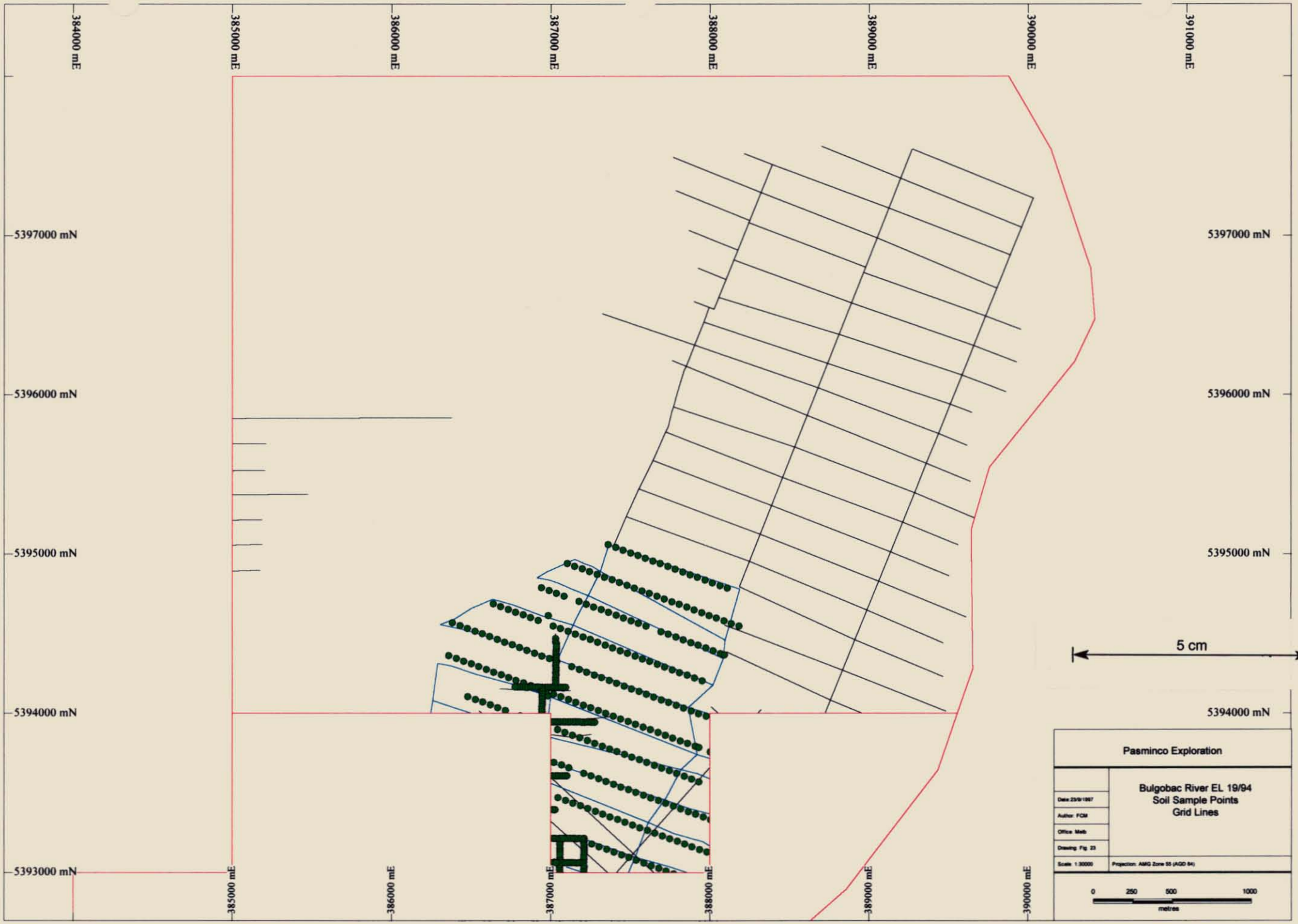

384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
QU
DGE
TB
BRD03
BRD04
BRD01
BRD02
BRD05
DGET
DGELW
5 cm
Mt Charter Fault
Pasminco Exploration
Bulgobac River EL 19/94
1:25k Geology
Drill Collars
Drainage
Date 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 20
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres

408038


384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Stream Sediment Sampling
Drainage
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 21
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres

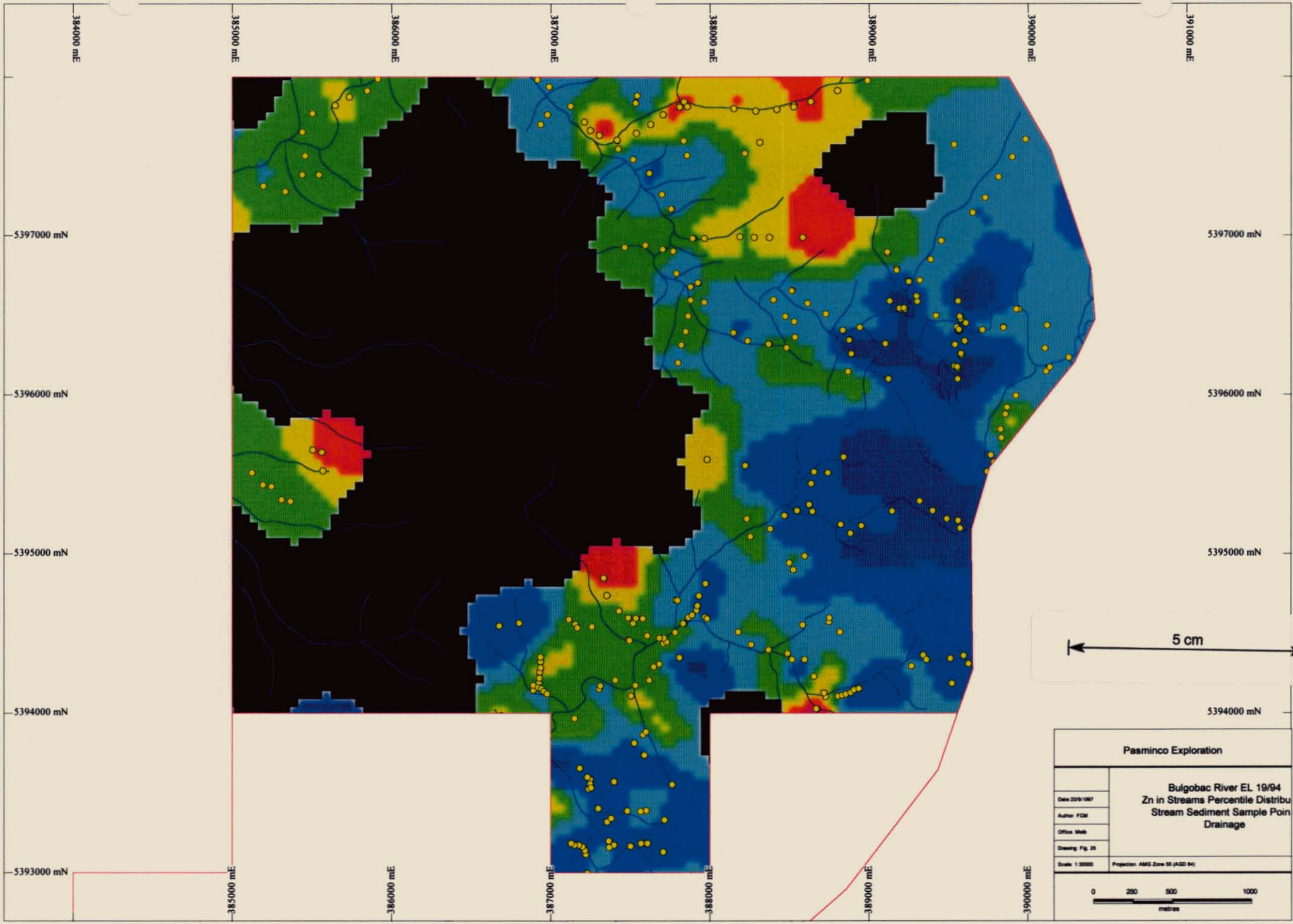

384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Extant Grid Lines
Refurbished Bulgobac River Grid
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 22
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres

408040


384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Soil Sample Points
Grid Lines
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 23
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres


384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
BRD03
BRD04
BRD01
BRD02
BRD05
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Rock Chip Sample Points
Drill Collars
Grid Lines
Date: 23/9/1997
Author: FGM
Office: Melb
Drawing: Fig 24
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres

408042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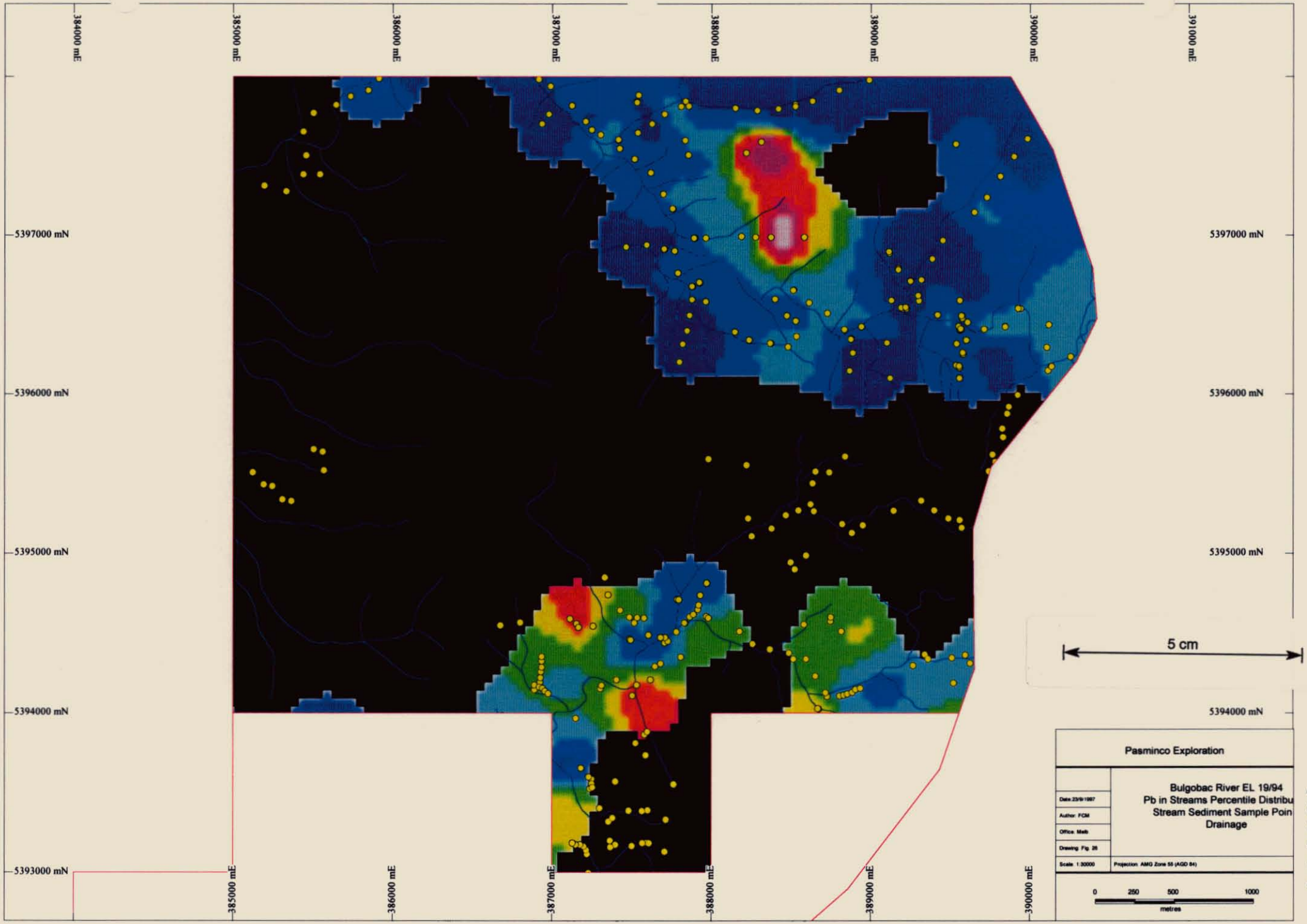
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Zn in Streams Percentile Distribu
Stream Sediment Sample Poin
Drainage
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 25
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres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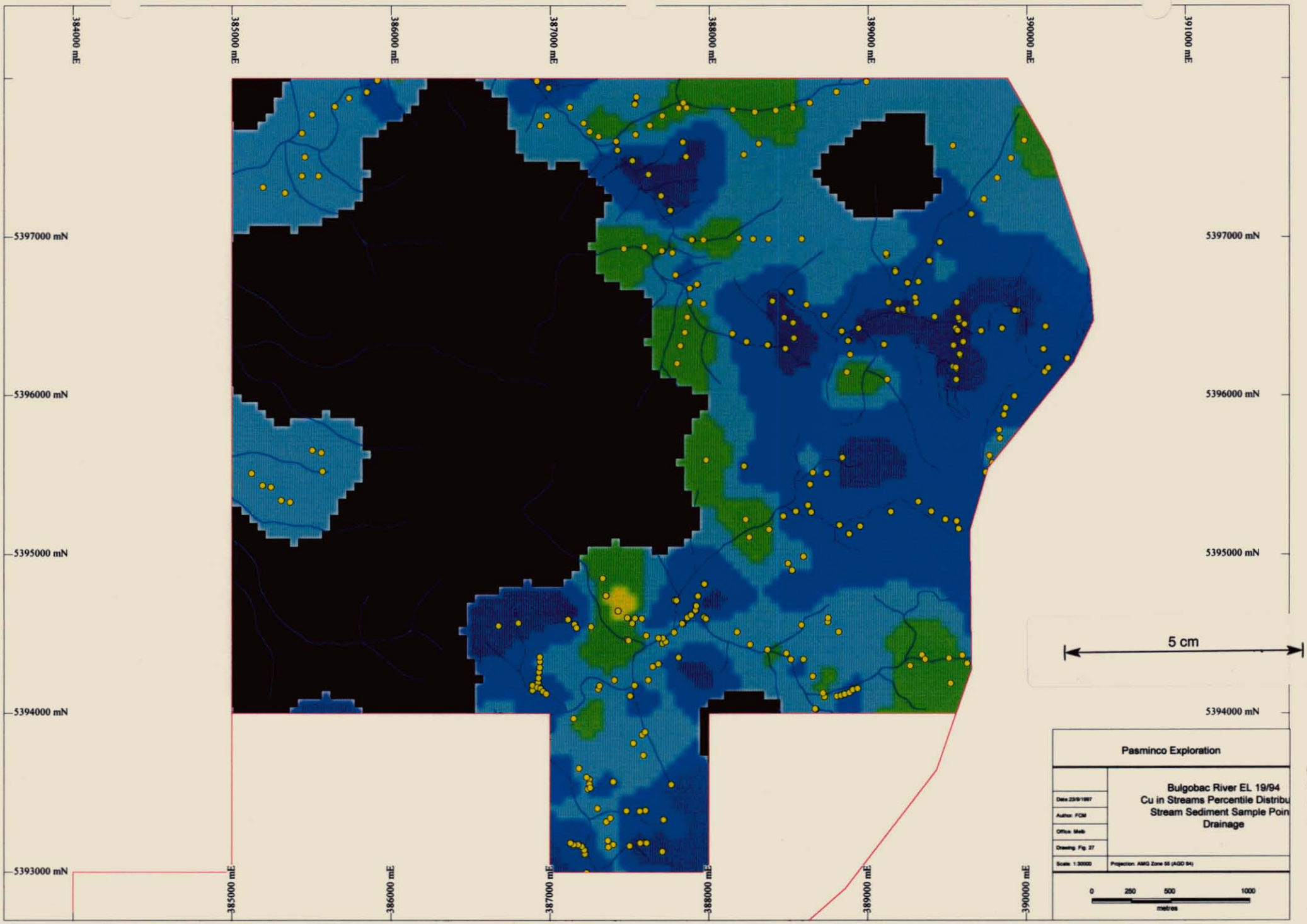
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Pb in Streams Percentile Distribu
Stream Sediment Sample Poin
Drainage
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 28
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres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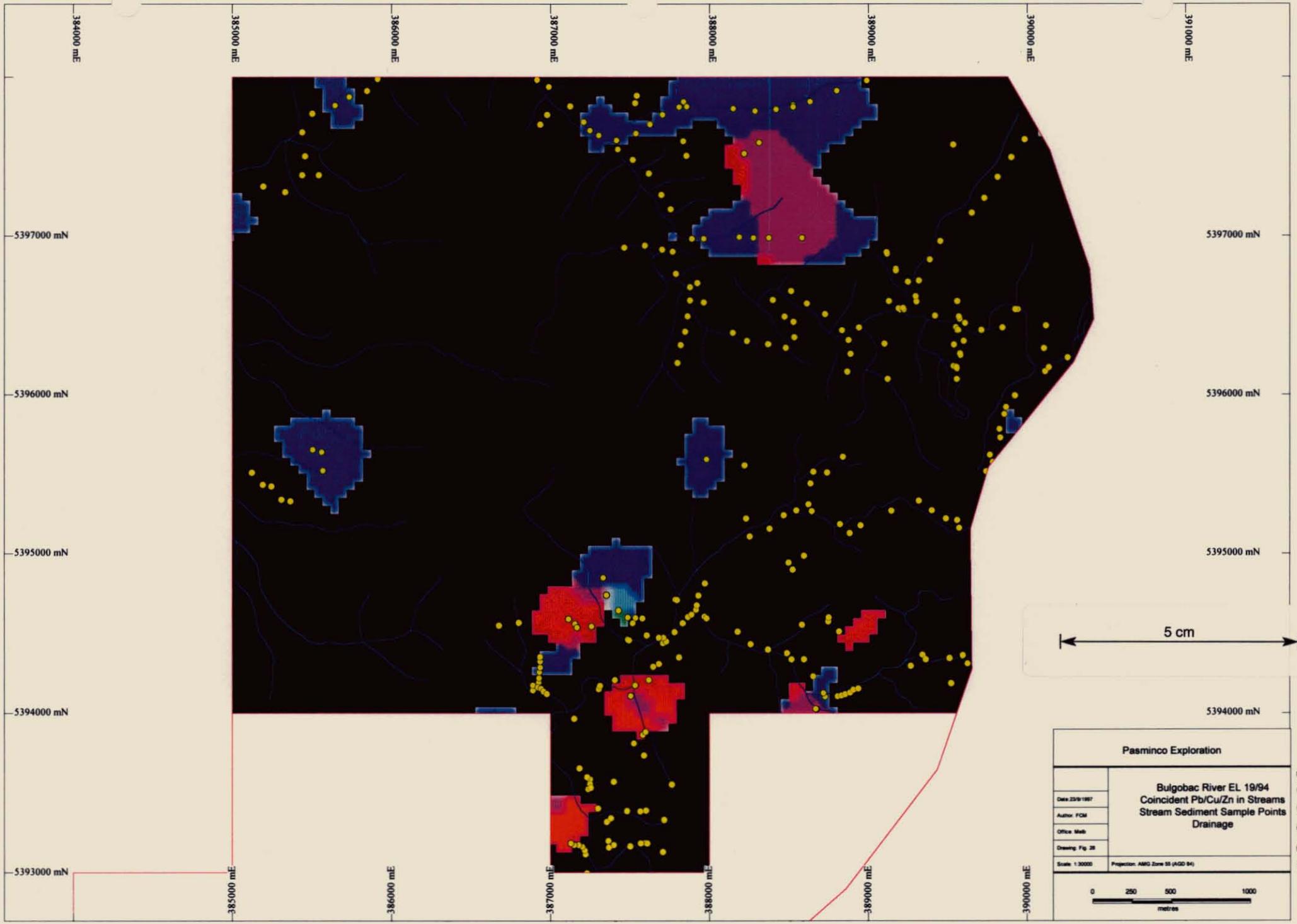
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Cu in Streams Percentile Distribu
Stream Sediment Sample Poin
Drainage
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 27
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres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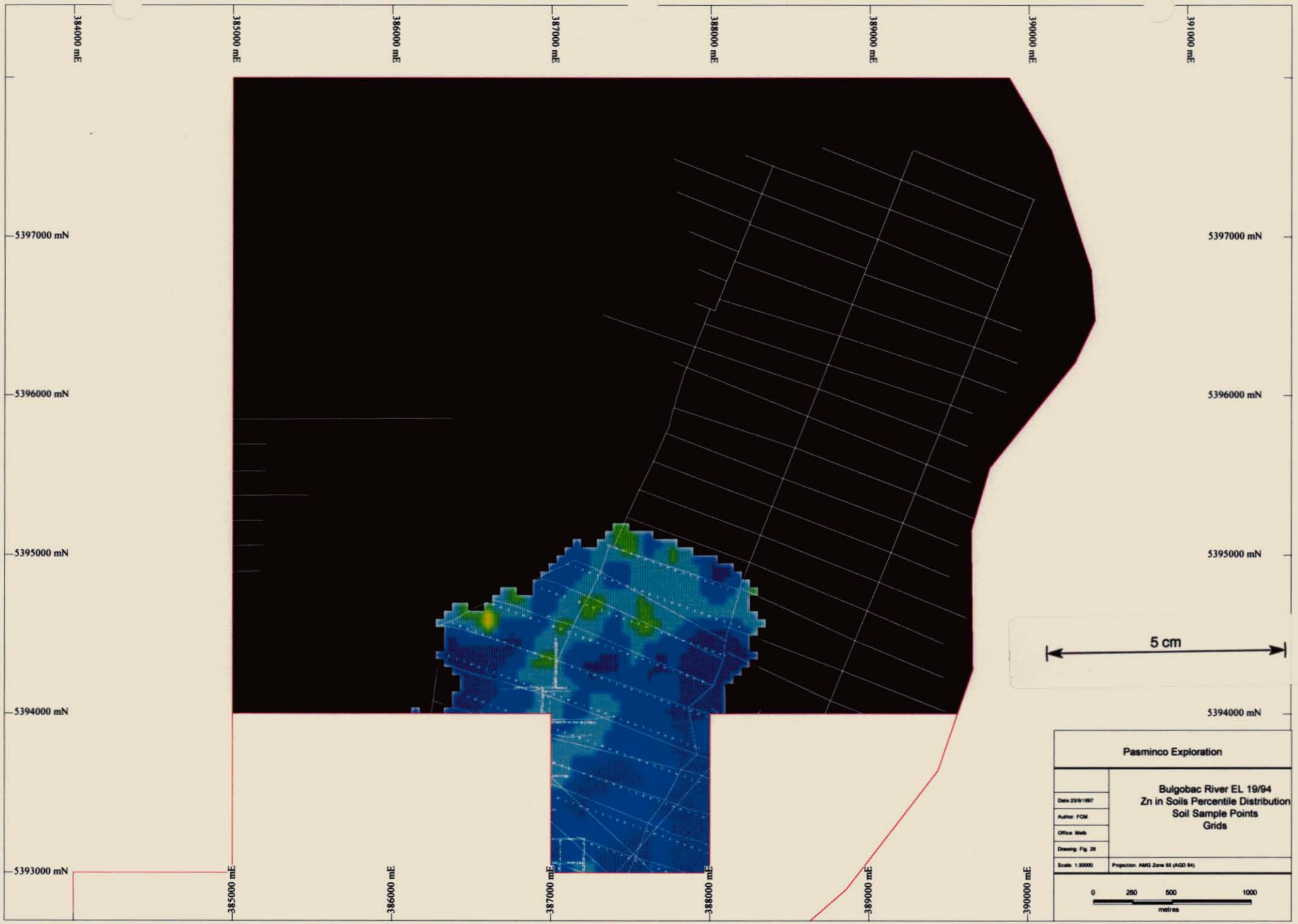
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Coincident Pb/Cu/Zn in Streams
Stream Sediment Sample Points
Drainage
Date: 23/9/1997
Author: FOM
Office: Melb
Drawing: Fig. 28
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0 250 500 1000
metres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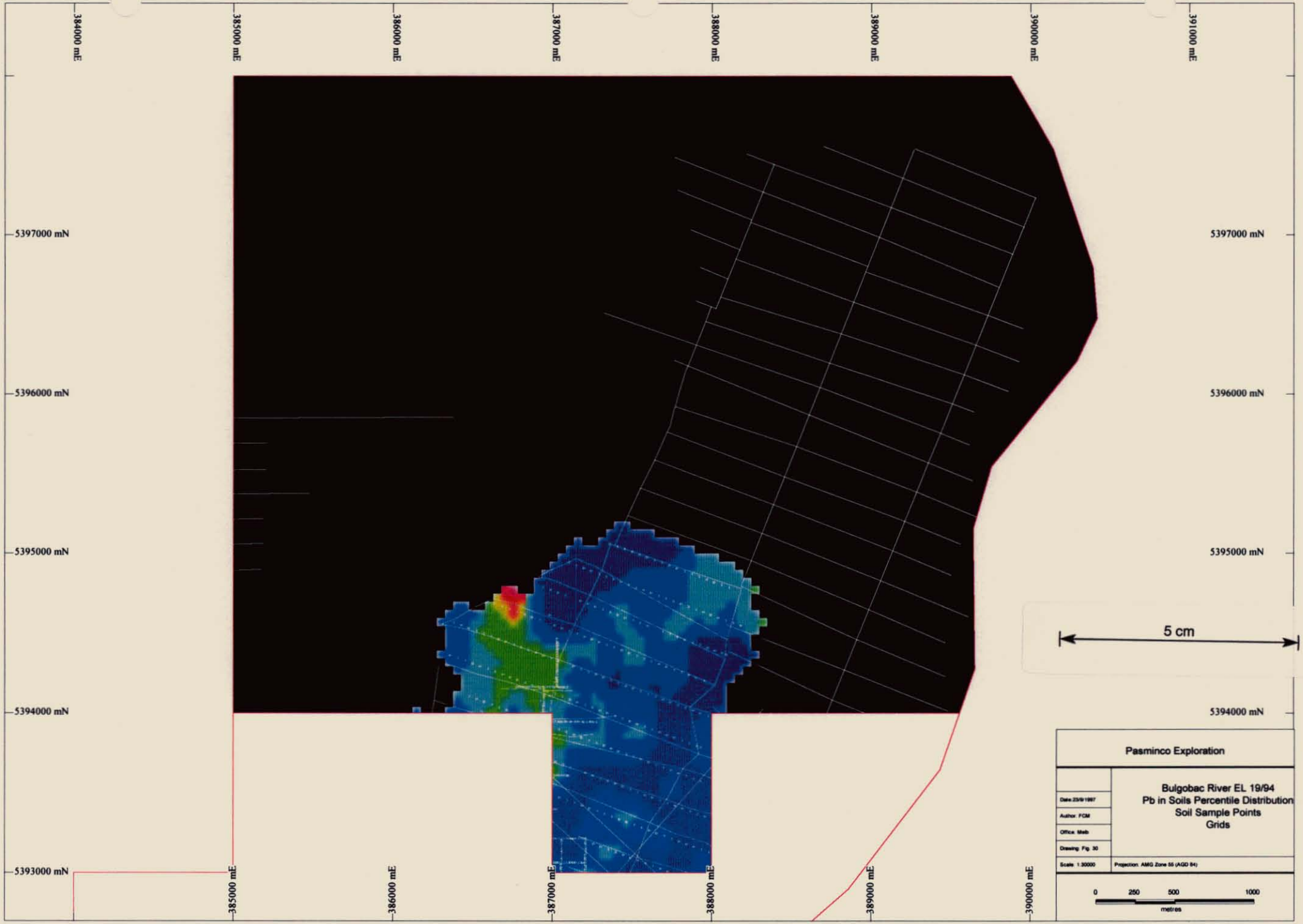
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Zn in Soils Percentile Distribution
Soil Sample Points
Grids
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 29
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres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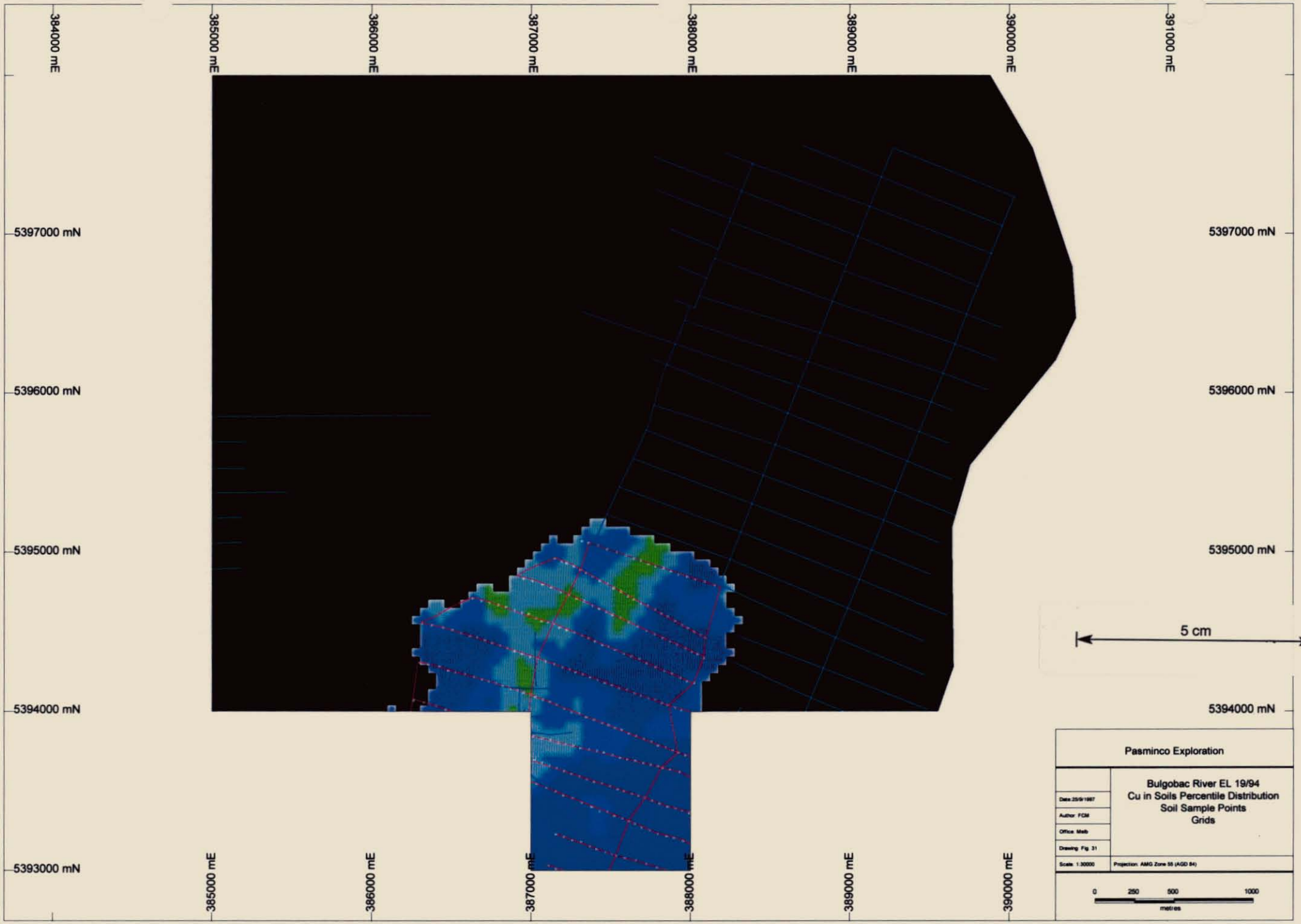
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Pb in Soils Percentile Distribution
Soil Sample Points
Grids
Date: 23/9/1997
Author: FGM
Office: Melb
Drawing: Fig. 30
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres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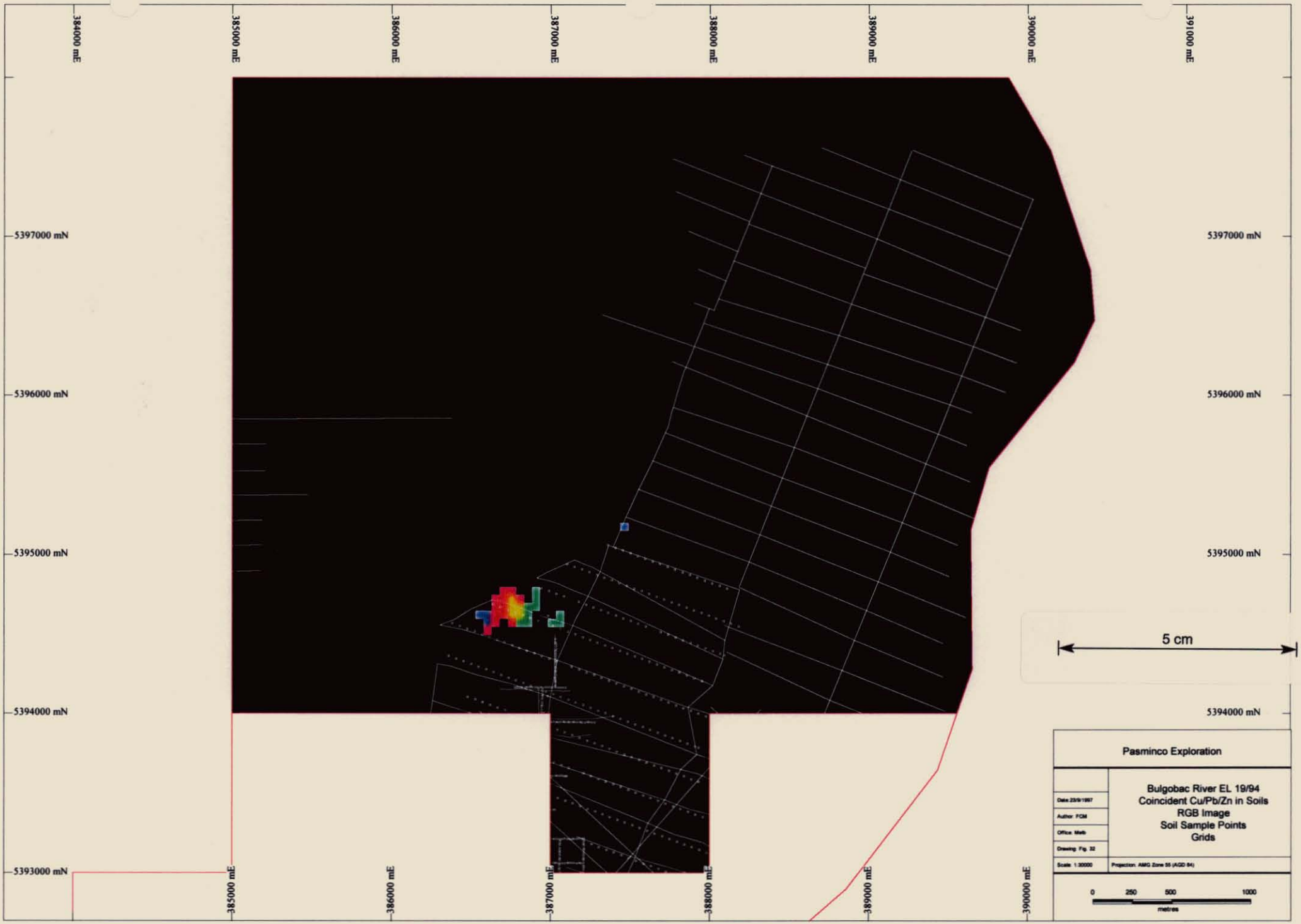
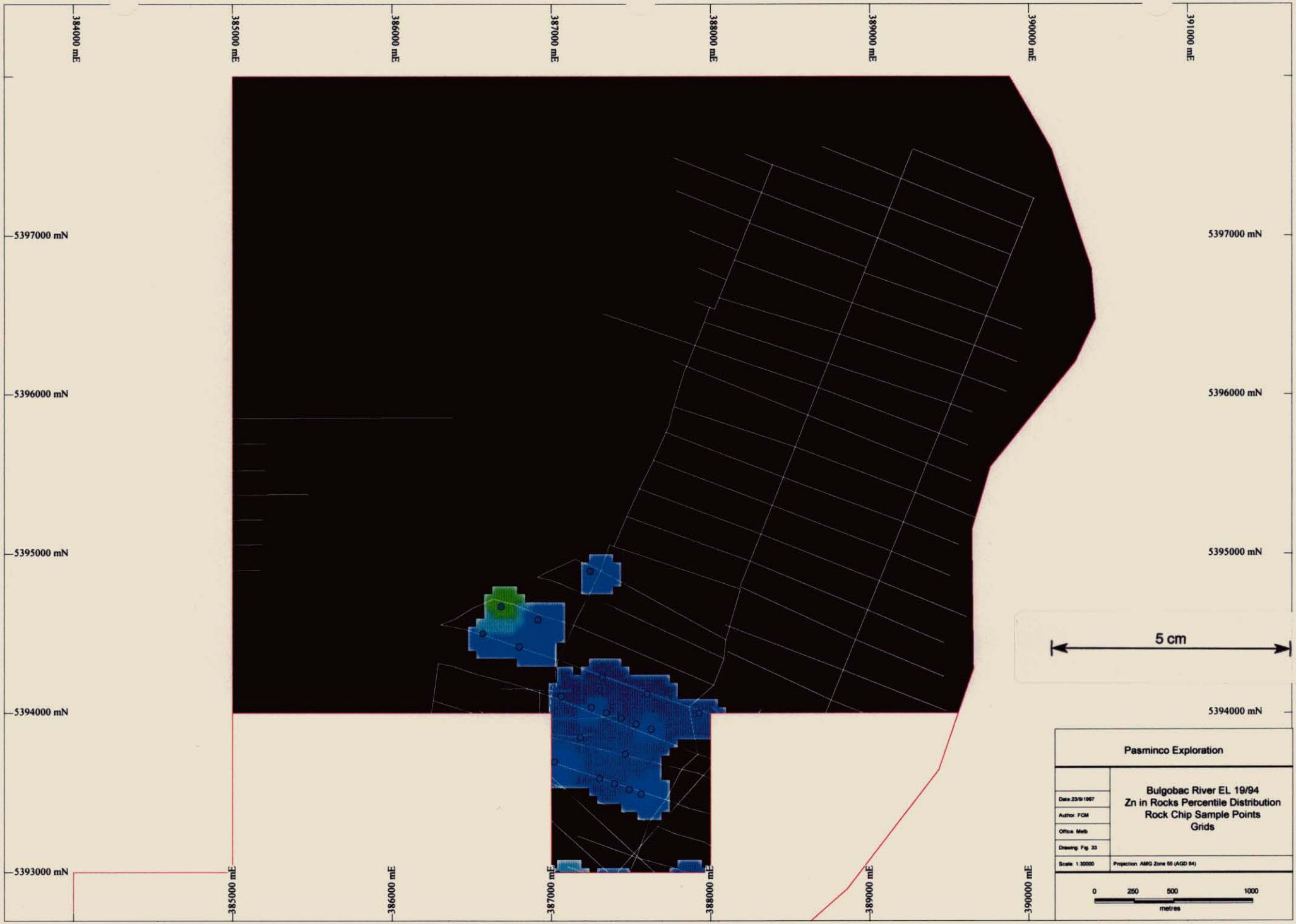
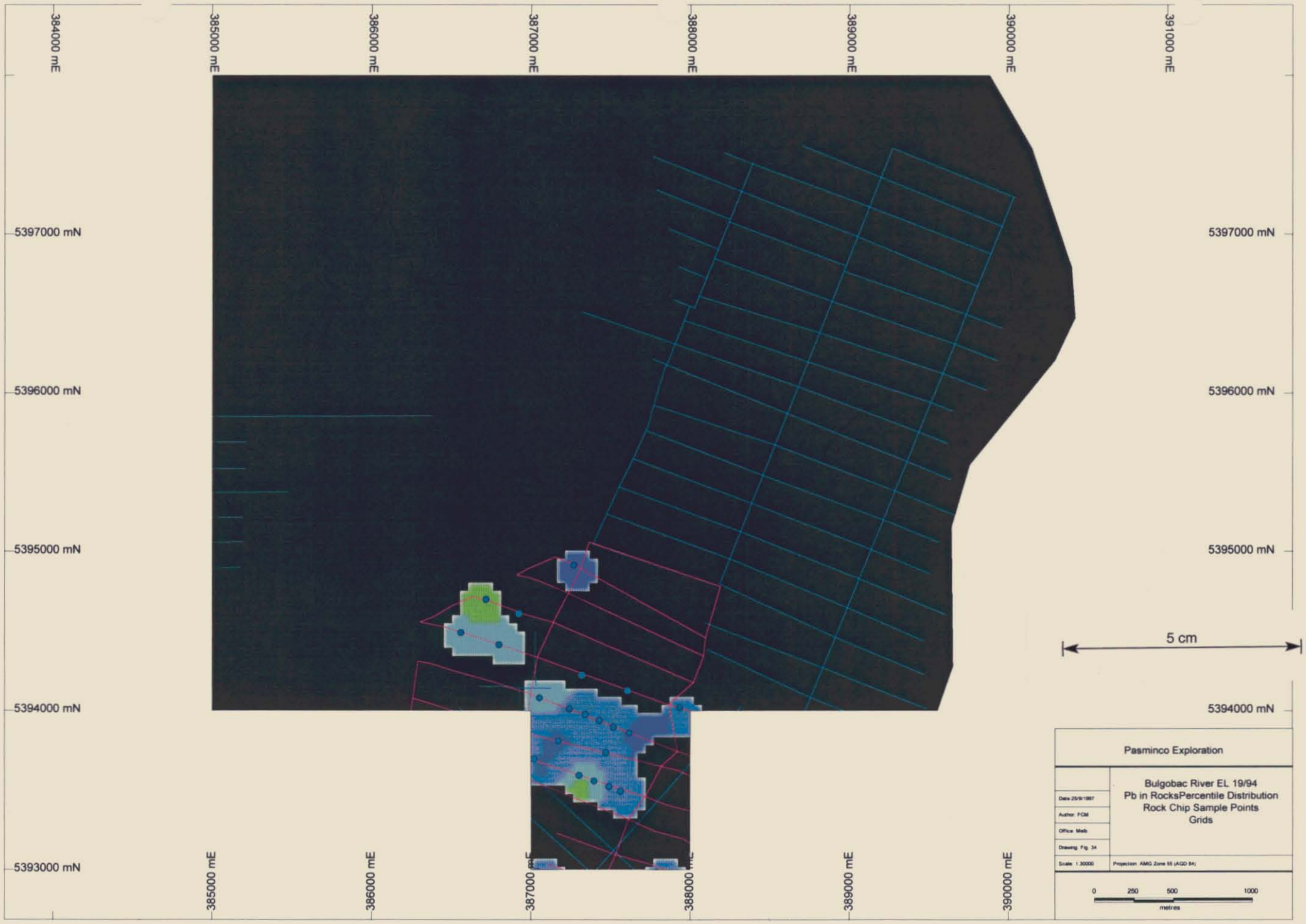
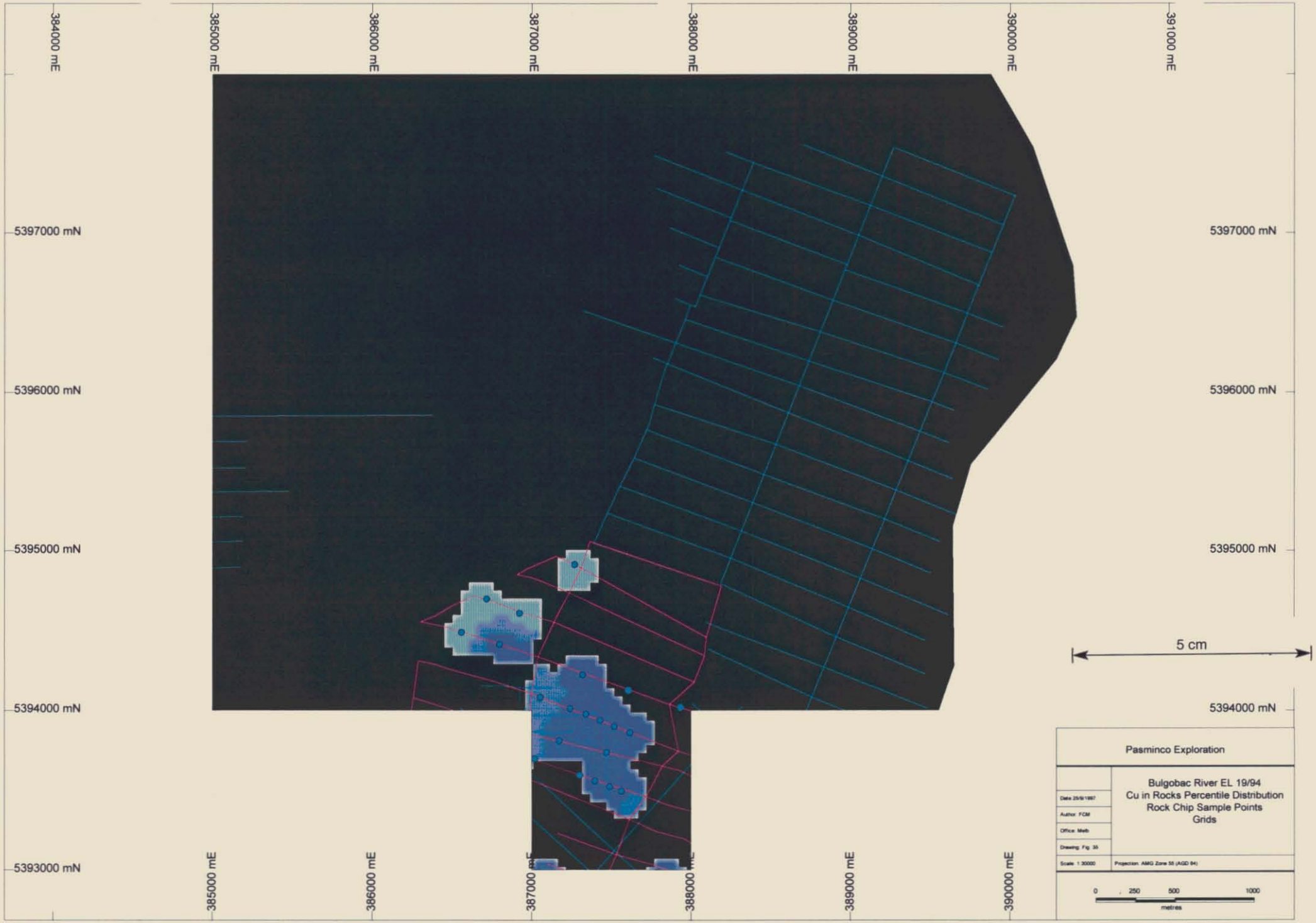
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Cu in Soils Percentile Distribution
Soil Sample Points
Grids
Date: 25/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 31
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0 250 500 1000
metres

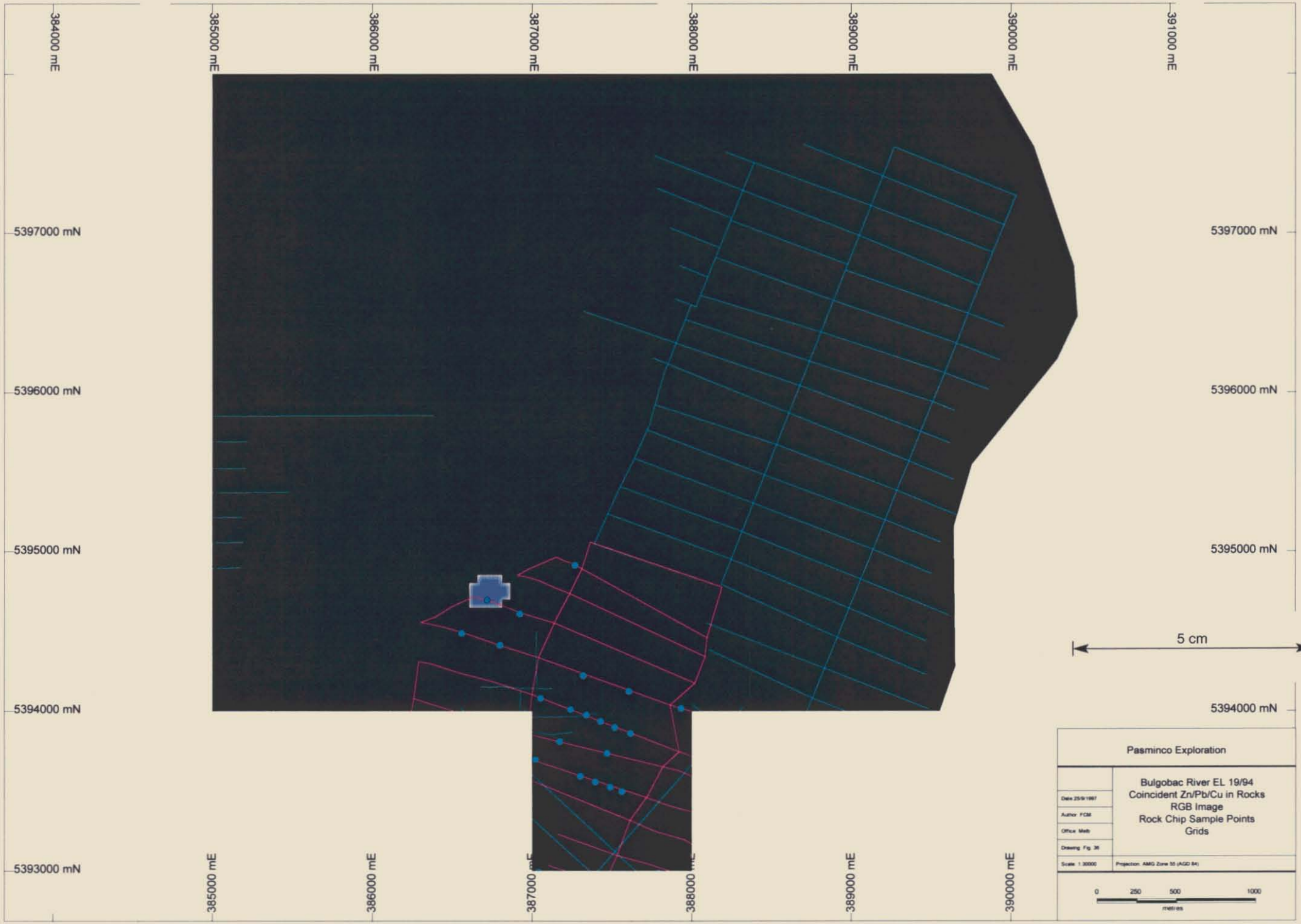

384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Coincident Cu/Pb/Zn in Soils
RGB Image
Soil Sample Points
Grids
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 32
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0 250 500 1000
metres

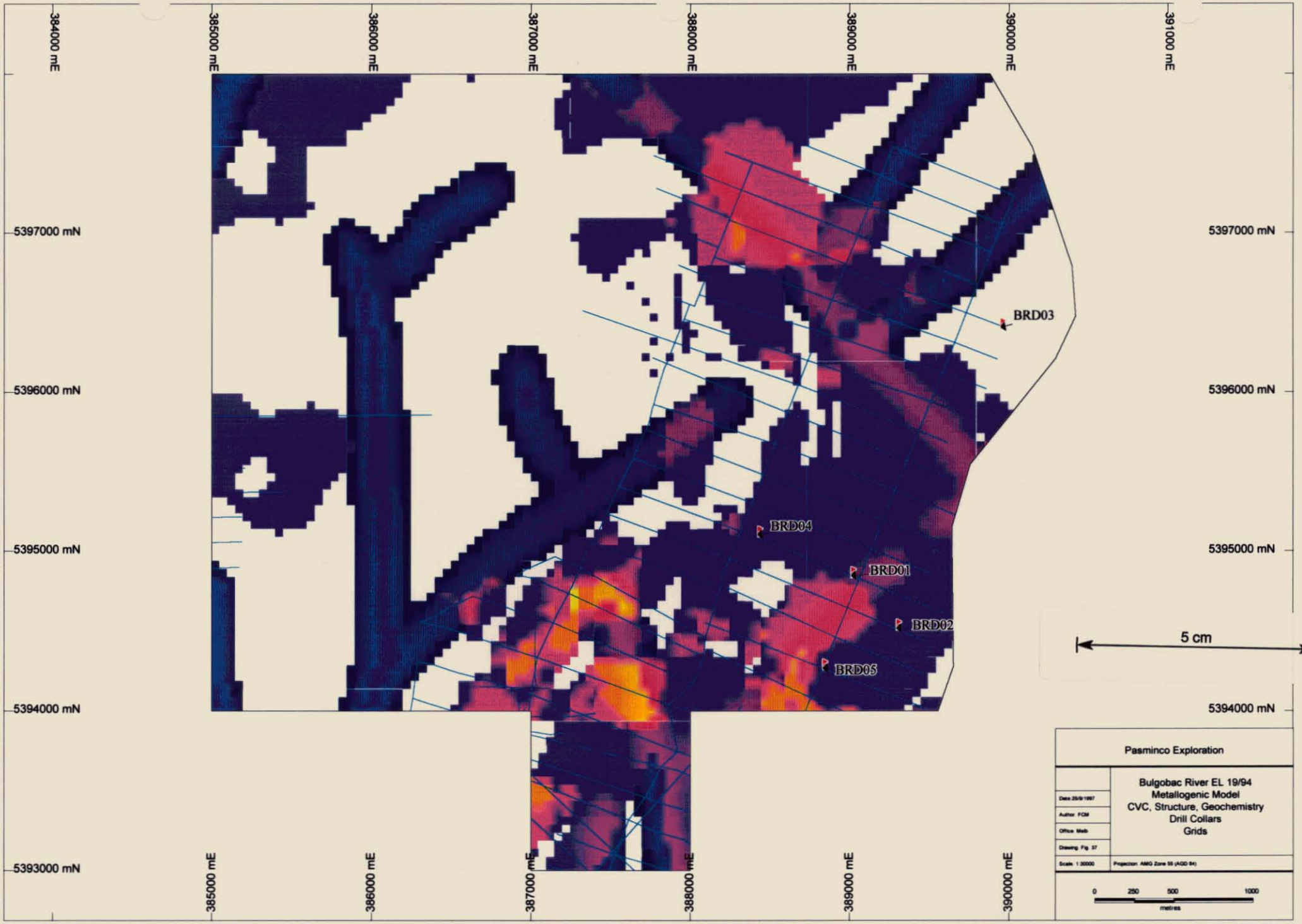

384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Zn in Rocks Percentile Distribution
Rock Chip Sample Points
Grids
Date: 23/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 33
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres


384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Pb in RocksPercentile Distribution
Rock Chip Sample Points
Grids
Date 25/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 34
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0
250
500
1000
metres

408052


384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Cu in Rocks Percentile Distribution
Rock Chip Sample Points
Grids
Date: 25/9/1997
Author: FCM
Office: Melb
Drawing: Fig. 35
Scale: 1:30000
Projection: AMG Zone 55 (AGD 84)
0 250 500 1000
metres


384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Coincident Zn/Pb/Cu in Rocks
RGB Image
Rock Chip Sample Points
Grids
Date 25/9/1997
Author FCM
Office Melb
Drawing Fig 36
Scale 1:30000
Projection AMG Zone 55 (AGD 84)
0
250
500
1000
metres


384000 mE
385000 mE
386000 mE
387000 mE
388000 mE
389000 mE
390000 mE
391000 mE
5397000 mN
5396000 mN
5395000 mN
5394000 mN
5393000 mN
BRD03
BRD04
BRD01
BRD02
BRD05
5 cm
Pasminco Exploration
Bulgobac River EL 19/94
Metallogenic Model
CVC, Structure, Geochemistry
Drill Collars
Grids
Date 25/9/1997
Author FCM
Office Melb
Drawing Fig. 37
Scale 1:30000
Projection: AMG Zone 55 (AGD 84)
0 250 500 1000
metres

Appendix 1

Rock Chip Assays, Bulgobac River Grid

sample	amg east	amg north	grid ea	grid nor	grid id	sample sa	sds	Ag	As	Au pp	Au(R	Ba	Cu ppm	Fe%	Mn	Pb pp	Zn ppm
165086	386800	5393800			Bulgobac River	rock	1520	1	4		0.027	41	38	1.45	113	5	18
165087	387793	5392985	1870	5400	Bulgobac River	rock	1520	-1	17			24	2	1.93	1690	15	15
165088	388034	5392683	2200	5200	Bulgobac River	rock	1520	-1	4			-10	-2	0.3	119	-5	6
165421	387244	5394889	700	7000	Bulgobac River	rock	1520	-1	-1	0.003		326	39	6.73	730	5	72
165422	386914	5394584	495	6600	Bulgobac River	rock	1520	-1	-1	0.006		212	41	4.14	555	-5	53
165423	386684	5394668	250	6600	Bulgobac River	rock	1520	-1	48	0.002		151	53	5.73	275	138	298
165424	386569	5394498	200	6400	Bulgobac River	rock	1520	-1	14	0.001		365	29	3.19	172	104	92
165425	386799	5394414	445	6400	Bulgobac River	rock	1520	-1	7	0.001		764	2	1.54	134	107	50
165426	386761	5393788	625	5800	Bulgobac River	rock	1520	-1	8	0.003		472	27	5.39	294	70	151
165427	386870	5393750			Bulgobac River	rock	1520	-1	4	0.002		119	51	0.88	283	185	36
165428	387564	5393494	1480	5800	Bulgobac River	rock	1520	-1	-1	0.001		834	9	3.17	1270	21	98
165429	387063	5394104	800	6200	Bulgobac River	rock	1520	2	43	0.003		476	15	4.34	102	50	22
165430	387533	5393932	1300	6200	Bulgobac River	rock	1520	-1	4	-0.001	0.001	1520	11	3.34	900	20	121
165431	397453	5389236	1230	5200	Bulgobac River	rock	1520	-1	13	-0.001		831	2	2.72	421	21	50
165432	387627	5393898	1400	6200	Bulgobac River	rock	1520	-1	1	0.001		1890	3	1.89	307	6	43
165433	387377	5392924	1500	5200	Bulgobac River	rock	1520	-1	-1	-0.001		1380	-2	3.26	290	-5	65
165434	387320	5394223	1000	6400	Bulgobac River	rock	1520	-1	3	-0.001		128	5	0.42	73	-5	10
165435	387571	5392640	1780	5000	Bulgobac River	rock	1520	-1	2	0.001		59	22	3.54	141	17	45
165436	387395	5393556	1300	5800	Bulgobac River	rock	1520	-1	-1	0.001		509	2	1.47	350	-5	41
165437	387464	5393744	1300	6000	Bulgobac River	rock	1520	-1	4	-0.001		829	-2	0.92	284	17	13
165438	387489	5393522	1400	5800	Bulgobac River	rock	1520	-1	-1	-0.001		1620	-2	3.33	771	-5	73
165439	387601	5394120	1300	6400	Bulgobac River	rock	1520	-1	1	0.001		1390	-2	0.36	23	-5	24
165440	387251	5394035	1000	6200	Bulgobac River	rock	1520	1	-1	0.003		1130	4	3.04	677	29	82
165441	387439	5393966	1200	6200	Bulgobac River	rock	1520	-1	15	-0.001		424	5	1.19	113	30	18
165442	387345	5394001	1100	6200	Bulgobac River	rock	1520	-1	-1	-0.001	0.001	243	-2	0.37	41	-5	8
165443	387489	5393522	1400	5800	Bulgobac River	rock	1520	-1	1	-0.001		972	-2	3.38	1860	12	105
165444	387020	5393694	900	5800	Bulgobac River	rock	1520	-1	-1	0.002		1040	-2	1.5	447	7	63
165445	387301	5393591	1200	5800	Bulgobac River	rock	1520	-1	5	-0.001		368	-2	0.51	45	-5	8
165446	387182	5393847	1000	6000	Bulgobac River	rock	1520	-1	-1	0.001		152	3	1.58	477	8	35
165447	387301	5393591	1200	5800	Bulgobac River	rock	1520	-1	12	0.001		554	-2	0.66	24	191	18
165448	387930	5393999	1650	6400	Bulgobac River	rock	1520	-1	3	-0.001			-2	3.58	205	12	17

Appendix 2

C Horizon Soil Assays, Bulgobac River Grid

sample	amg east	amg north	grid ea	grid nor	grid_id	sample	sa	sds	Ag	As	Au ppb	Au(R	Ba	Cu ppm	Fe%	Mn	Pb ppm	Zn ppm
165101	386926	5393728	800	5800	Bulgobac River	soil	C	2380	1	18	0.001		335	12	2.11	252	53	76
165102	386973	5393711	850	5800	Bulgobac River	soil	C	2380	1	9	0.003		197	11	1.9	131	49	32
165103	387020	5393694	900	5800	Bulgobac River	soil	C	2380	1	1	0.006		260	8	2.68	899	17	50
165104	387067	5393677	950	5800	Bulgobac River	soil	C	2380	1	21	0.005		110	25	3.63	81	132	56
165105	387114	5393659	1000	5800	Bulgobac River	soil	C	2380	1	8	0.007		129	5	2.9	116	21	81
165106	387160	5393642	1050	5800	Bulgobac River	soil	C	2380	1	1	0.004	0.003	86	6	0.57	30	10	10
165107	387207	5393625	1100	5800	Bulgobac River	soil	C	2380	1	1	0.005	0.002	230	5	0.32	17	32	7
165108	387254	5393608	1150	5800	Bulgobac River	soil	C	2380	1	6	0.001		307	4	0.69	34	15	19
165109	387301	5393591	1200	5800	Bulgobac River	soil	C	2380	1	1	0.003		260	4	0.33	21	5	9
165110	387348	5393573	1250	5800	Bulgobac River	soil	C	2380	1	5	0.001		364	4	5.01	243	6	24
165111	387395	5393556	1300	5800	Bulgobac River	soil	C	2380	1	3	0.001		258	4	3.82	250	9	22
165112	387442	5393539	1350	5800	Bulgobac River	soil	C	2380	1	2	0.006		181	4	3.3	156	6	21
165113	387489	5393522	1400	5800	Bulgobac River	soil	C	2380	1	3	0.006		105	8	2.81	254	19	29
165114	387536	5393505	1450	5800	Bulgobac River	soil	C	2380	1	2	0.001	0.001	331	12	1.46	268	18	20
165115	387583	5393487	1500	5800	Bulgobac River	soil	C	2380	1	6	0.001		181	6	4.88	769	23	31
165116	387630	5393470	1550	5800	Bulgobac River	soil	C	2380	1	2	0.001		147	4	1.67	52	8	24
165117	387677	5393453	1600	5800	Bulgobac River	soil	C	2380	1	12	0.005		290	7	3.16	55	40	36
165118	387724	5393436	1650	5800	Bulgobac River	soil	C	2380	1	4	0.001		104	5	1.61	84	8	19
165119	387771	5393419	1700	5800	Bulgobac River	soil	C	2380	1	9	0.001		183	13	1.59	36	10	13
165120	387818	5393402	1750	5800	Bulgobac River	soil	C	2380	1	7	0.001		163	4	4.09	44	10	20
165121	387865	5393384	1800	5800	Bulgobac River	soil	C	2380	1	1	0.001		212	3	0.36	22	12	4
165122	387912	5393367	1850	5800	Bulgobac River	soil	C	2380	1	2	0.001		190	4	0.55	30	8	8
165123	387959	5393350	1900	5800	Bulgobac River	soil	C	2380	1	1	0.001		221	5	0.61	51	7	13
165124	388006	5393333	1950	5800	Bulgobac River	soil	C	2380	1	1	0.001		135	4	0.33	30	-5	6
165125	386094	5393899	800	6000	Bulgobac River	soil	C	2380	1	23	0.003		278	8	1.96	33	30	14
165126	387041	5393899	850	6000	Bulgobac River	soil	C	2380	1	31	0.001		259	20	4.59	75	40	36
165127	387088	5393882	900	6000	Bulgobac River	soil	C	2380	1	14	0.001		230	14	3.15	100	47	47
165128	387135	5393864	950	6000	Bulgobac River	soil	C	2380	1	22	0.001		184	39	5.03	200	55	92
165129	387182	5393847	1000	6000	Bulgobac River	soil	C	2380	1	25	0.003		201	28	6.15	76	38	46
165130	387229	5393830	1050	6000	Bulgobac River	soil	C	2380	1	26	0.005		197	40	4.76	256	43	66
165131	387276	5393813	1100	6000	Bulgobac River	soil	C	2380	1	6	0.001		224	10	2.38	136	24	46
165132	387323	5393796	1150	6000	Bulgobac River	soil	C	2380	1	2	0.001		118	6	1.5	267	29	30
165133	387370	5393778	1200	6000	Bulgobac River	soil	C	2380	1	11	0.001		155	10	2.01	112	46	34
165134	387417	5393761	1250	6000	Bulgobac River	soil	C	2380	1	8	0.001	0.002	108	7	1.16	88	37	24
165135	387464	5393744	1300	6000	Bulgobac River	soil	C	2380	1	9	0.001		266	52	10.23	792	32	50
165136	387511	5393727	1350	6000	Bulgobac River	soil	C	2380	1	7	0.005		92	7	4.08	172	17	28
165137	387558	5393710	1400	6000	Bulgobac River	soil	C	2380	1	3	0.001		89	4	3.3	173	10	40
165138	387605	5393692	1450	6000	Bulgobac River	soil	C	2380	1	3	0.006		257	5	2.41	108	11	28
165139	387652	5393675	1500	6000	Bulgobac River	soil	C	2380	1	4	0.001		75	7	1.11	55	14	22

sample*	amg east	amg north	grid ea	grid nor	grid id	sample	sa	sds	Ag	As	Au pp	Au(R	Ba	Cu ppm	Fe%	Mn	Pb pp	Zn ppm
165140	387699	5393658	1550	6000	Bulgobac River	soil	C	2380	1	5	0.001		261	8	5.55	111	30	42
165141	387746	5393641	1600	6000	Bulgobac River	soil	C	2380	1	6	0.003		269	9	2.6	104	12	33
165142	387793	5393624	1650	6000	Bulgobac River	soil	C	2380	1	7	0.001		197	3	4.06	76	33	23
165143	387840	5393607	1700	6000	Bulgobac River	soil	C	2380	1	1	0.001		22	3	0.25	14	5	3
165144	387887	5393589	1750	6000	Bulgobac River	soil	C	2380	1	5	0.001		162	5	0.36	18	32	4
165145	387933	5393572	1800	6000	Bulgobac River	soil	C	2380	1	1	0.001		93	4	0.39	36	5	6
165146	387063	5394104	800	6200	Bulgobac River	soil	C	2380	1	85	0.005		182	25	4.81	46	82	27
165147	387110	5394087	850	6200	Bulgobac River	soil	C	2380	1	13	0.001		219	8	2.4	80	39	24
165148	387157	5394069	900	6200	Bulgobac River	soil	C	2380	1	5	0.003		153	6	2.57	99	43	31
165149	387204	5394052	950	6200	Bulgobac River	soil	C	2380	1	16	0.003	0.003	208	14	3.54	119	57	43
165150	387251	5394035	1000	6200	Bulgobac River	soil	C	2380	1	6	0.001		172	12	2.66	1310	81	82
165151	387298	5394018	1050	6200	Bulgobac River	soil	C	2380	1	1	0.001		195	6	1.71	99	10	27
165152	387345	5394001	1100	6200	Bulgobac River	soil	C	2380	1	3	0.001		224	7	2.67	347	23	39
165153	387392	5393983	1150	6200	Bulgobac River	soil	C	2380	1	3	0.004		59	5	0.67	49	20	17
165154	387439	5393966	1200	6200	Bulgobac River	soil	C	2380	1	2	0.001		76	4	0.35	42	6	13
165155	387486	5393949	1250	6200	Bulgobac River	soil	C	2380	1	12	0.003		304	9	2.63	143	70	42
165156	387533	5393932	1300	6200	Bulgobac River	soil	C	2380	1	6	0.001		121	8	2.15	153	274	50
165157	387580	5393915	1350	6200	Bulgobac River	soil	C	2380	1	5	0.001		385	9	3.89	386	30	80
165158	387627	5393898	1400	6200	Bulgobac River	soil	C	2380	1	2	0.001		178	6	4.32	306	15	48
165159	387674	5393880	1450	6200	Bulgobac River	soil	C	2380	1	6	0.001		310	5	3.07	92	15	35
165160	387721	5393863	1500	6200	Bulgobac River	soil	C	2380	1	12	0.001		220	10	2.69	35	12	21
165161	387767	5393846	1550	6200	Bulgobac River	soil	C	2380	1	25	0.001		253	11	5.3	81	20	39
165162	387814	5393829	1600	6200	Bulgobac River	soil	C	2380	1	5	0.001		242	3	1.03	24	13	11
165163	387861	5393812	1650	6200	Bulgobac River	soil	C	2380	1	10	0.001		153	9	2.58	100	50	32
165164	387908	5393794	1700	6200	Bulgobac River	soil	C	2380	1	8	0.001		121	8	3.72	660	47	45
165165	387932	5393786	1725	6200	Bulgobac River	soil	C	2380	1	4	0.001		183	5	1.11	37	40	20
165166	388002	5393760	1800	6200	Bulgobac River	soil	C	2380	1	4	0.002		202	7	2.39	56	29	31
165167	388049	5393743	1850	6200	Bulgobac River	soil	C	2380	1	3	0.001		166	5	1.07	44	13	17
165168	387038	5394326	700	6400	Bulgobac River	soil	C	2380	1	10	0.001		144	7	1.14	23	14	15
165169	387273	5394240	950	6400	Bulgobac River	soil	C	2380	1	5	0.002	0.001	235	7	0.64	28	47	18
165170	387132	5394292	800	6400	Bulgobac River	soil	C	2380	1	6	0.001		321	7	1.77	30	35	19
165171	387179	5394274	850	6400	Bulgobac River	soil	C	2380	1	1	0.005		129	3	0.31	17	19	9
165172	387226	5394257	900	6400	Bulgobac River	soil	C	2380	1	4	0.003		211	3	0.47	19	50	10
165173	387273	5394240	950	6400	Bulgobac River	soil	C	2380	1	1	0.004		71	4	0.26	16	7	10
165174	387320	5394223	1000	6400	Bulgobac River	soil	C	2380	1	3	0.003	0.005	255	4	2.4	189	11	60
165175	387367	5394206	1050	6400	Bulgobac River	soil	C	2380	1	1	0.001	0.001	95	3	0.33	21	5	7
165176	387414	5394188	1100	6400	Bulgobac River	soil	C	2380	1	2	0.009	0.007	74	4	0.68	54	30	22
165177	387461	5394171	1150	6400	Bulgobac River	soil	C	2380	1	3	0.003		143	6	1.5	90	28	41
165178	387508	5394154	1200	6400	Bulgobac River	soil	C	2380	1	12	0.007		258	5	3.05	99	39	32

sample	amg east	mg north	grid ea	grid nor	grid id	sample	sa	sds	[illegible]	As	Au pp	Au(R	Ba	Cu ppm	Fe%	Mn	Pb pp	Zn [illegible]m
165179	387555	5394137	1250	6400	Bulgobac River	soil	C	2380	1	1	0.001		230	3	0.53	29	13	20
165180	387601	5394120	1300	6400	Bulgobac River	soil	C	2380	1	3	0.003		151	5	0.73	32	14	58
165181	387648	5394103	1350	6400	Bulgobac River	soil	C	2380	1	8	0.001		376	7	3.87	226	45	128
165182	387695	5394085	1400	6400	Bulgobac River	soil	C	2380	1	8	0.001		113	4	2.68	25	10	9
165183	387742	5394068	1450	6400	Bulgobac River	soil	C	2380	1	2	0.001		92	6	0.46	19	6	11
165184	387789	5394051	1500	6400	Bulgobac River	soil	C	2380	1	2	0.001		41	4	0.3	21	5	8
165185	387836	5394034	1550	6400	Bulgobac River	soil	C	2380	1	4	0.001		121	4	0.39	15	7	9
165186	387883	5394017	1600	6400	Bulgobac River	soil	C	2380	1	8	0.007		217	11	1.37	88	15	24
165187	387930	5393999	1650	6400	Bulgobac River	soil	C	2380	1	1	0.003		78	7	0.5	64	17	12
165188	387977	5393982	1700	6400	Bulgobac River	soil	C	2380	1	9	0.003		226	18	2.88	272	29	39
165189	387952	5394204	1600	6600	Bulgobac River	soil	C	2380	1	1	0.001		124	17	0.67	31	18	14
165190	387905	5394222	1550	6600	Bulgobac River	soil	C	2380	1	1	0.001	0.001	162	2	0.17	8	5	10
165191	387858	5394239	1500	6600	Bulgobac River	soil	C	2380	1	1	0.001		152	2	0.44	16	5	12
165192	387811	5394256	1450	6600	Bulgobac River	soil	C	2380	1	1	0.005		198	2	0.23	7	5	11
165193	387764	5394273	1400	6600	Bulgobac River	soil	C	2380	1	11	0.003		156	2	0.99	22	78	17
165194	387717	5394290	1350	6600	Bulgobac River	soil	C	2380	1	4	0.004		303	3	1.09	19	38	47
165195	387670	5394308	1300	6600	Bulgobac River	soil	C	2380	1	2	0.001	0.001	139	3	0.56	25	27	17
165196	387623	5394325	1250	6600	Bulgobac River	soil	C	2380	1	1	0.001		161	3	0.45	17	28	16
165197	387576	5394342	1200	6600	Bulgobac River	soil	C	2380	1	2	0.001		145	6	0.39	16	31	21
165198	387529	5394359	1150	6600	Bulgobac River	soil	C	2380	1	2	0.005		99	3	0.92	25	24	31
165199	387482	5394376	1100	6600	Bulgobac River	soil	C	2380	1	18	0.001		243	12	3.28	172	78	86
165200	387435	5394393	1050	6600	Bulgobac River	soil	C	2380	1	2	0.001		200	5	1.9	48	56	39
165201	387435	5394393	1050	6600	Bulgobac River	soil	C	2380	1	4	0.001		199	8	2.58	49	58	61
165202	387389	5394411	1000	6600	Bulgobac River	soil	C	2380	1	4	0.001		224	11	1.95	55	67	67
165203	387342	5394428	950	6600	Bulgobac River	soil	C	2380	1	1	0.001		79	2	0.62	24	26	14
165204	387295	5394445	900	6600	Bulgobac River	soil	C	2380	1	1	0.001		153	3	0.59	36	35	27
165205	387248	5394462	850	6600	Bulgobac River	soil	C	2380	1	1	0.001		-10	5	0.1	8	11	46
165206	387201	5394479	800	6600	Bulgobac River	soil	C	2380	1	2	0.004		167	18	5.89	72	45	32
165207	387154	5394497	750	6600	Bulgobac River	soil	C	2380	1	3	0.001		168	11	4.04	88	48	48
165208	387107	5394514	700	6600	Bulgobac River	soil	C	2380	1	1	0.005		-10	5	0.78	41	7	24
165209	387222	5394684	750	6800	Bulgobac River	soil	C	2380	1	1	0.001		205	39	6.2	439	17	116
165210	387269	5394667	800	6800	Bulgobac River	soil	C	2380	1	1	0.001		55	25	5.52	116	22	56
165211	387316	5394650	850	6800	Bulgobac River	soil	C	2380	1	2	0.003		172	35	8.27	252	26	73
165212	387363	5394633	900	6800	Bulgobac River	soil	C	2380	1	2	0.001		117	2	1.11	34	34	17
165213	387410	5394616	950	6800	Bulgobac River	soil	C	2380	1	3	0.003		250	2	1.06	39	40	21
165214	387457	5394598	1000	6800	Bulgobac River	soil	C	2380	1	1	0.001		68	47	12.94	262	24	69
165215	387504	5394581	1050	6800	Bulgobac River	soil	C	2380	1	3	0.001	0.001	111	51	11.41	136	19	75
165216	387551	5394564	1100	6800	Bulgobac River	soil	C	2380	1	3	0.001		186	35	6.85	172	22	63
165217	387598	5394547	1150	6800	Bulgobac River	soil	C	2380	1	3	0.001		10	11	1.86	76	24	54

sample	amg east	amg north	grid ea	grid nor	grid id	sample	sa	sds	Ag	As	Au pp	Au(R	Ba	Cu ppm	Fe%	Mn	Pb pp	Zn ppm
165219	387692	5394512	1250	6800	Bulgobac River	soil	C	2380	1	4	0.001		171	5	0.54	53	36	29
165220	387739	5394495	1300	6800	Bulgobac River	soil	C	2380	1	2	0.003		266	7	0.59	43	40	33
165221	387786	5394478	1350	6800	Bulgobac River	soil	C	2380	1	2	0.001		218	3	0.44	27	18	16
165222	387833	5394461	1400	6800	Bulgobac River	soil	C	2380	1	1	0.003		150	2	0.39	20	11	9
165223	387880	5394444	1450	6800	Bulgobac River	soil	C	2380	1	1	0.001		72	2	0.18	17	13	7
165224	387927	5394427	1500	6800	Bulgobac River	soil	C	2380	1	2	0.001		197	2	0.55	29	10	4
165225	387974	5394409	1550	6800	Bulgobac River	soil	C	2380	1	1	0.001		421	2	0.33	12	23	9
165226	388021	5394392	1600	6800	Bulgobac River	soil	C	2380	1	2	0.001	0.001	222	2	0.48	13	9	7
165227	388068	5394375	1650	6800	Bulgobac River	soil	C	2380	1	2	0.001		208	2	0.41	13	5	9
165228	388091	5394366	1675	6800	Bulgobac River	soil	C	2380	1	2	0.001		267	2	0.78	22	9	11
165229	388183	5394546	1700	7000	Bulgobac River	soil	C	2380	1	4	0.001		114	12	3.06	60	59	48
165230	388136	5394563	1650	7000	Bulgobac River	soil	C	2380	1	2	0.001		298	11	2.97	73	68	61
165231	388089	5394580	1600	7000	Bulgobac River	soil	C	2380	1	3	0.001		93	12	3.59	87	40	38
165232	388042	5394597	1550	7000	Bulgobac River	soil	C	2380	1	1	0.003		247	11	1.81	169	33	59
165233	387996	5394614	1500	7000	Bulgobac River	soil	C	2380	1	1	0.001		235	11	2.24	129	22	63
165234	387949	5394632	1450	7000	Bulgobac River	soil	C	2380	1	9	0.001		205	8	2.43	237	62	45
165235	387902	5394649	1400	7000	Bulgobac River	soil	C	2380	1	5	0.001		197	11	0.82	62	46	57
165236	387855	5394666	1350	7000	Bulgobac River	soil	C	2380	1	3	0.001		196	4	0.54	57	32	35
165237	387808	5394683	1300	7000	Bulgobac River	soil	C	2380	1	1	0.001		145	2	0.41	33	29	22
165238	387761	5394700	1250	7000	Bulgobac River	soil	C	2380	1	1	0.001		244	9	1.17	110	27	66
165239	387714	5394717	1200	7000	Bulgobac River	soil	C	2380	1	2	0.001		154	16	3.15	122	31	64
165240	387667	5394735	1150	7000	Bulgobac River	soil	C	2380	1	6	0.001		151	36	8.17	140	37	58
165241	387620	5394752	1100	7000	Bulgobac River	soil	C	2380	1	3	0.001	0.001	160	28	7.19	205	32	57
165242	387573	5394769	1050	7000	Bulgobac River	soil	C	2380	1	3	0.005		105	61	11.24	464	21	91
165243	387526	5394786	1000	7000	Bulgobac River	soil	C	2380	1	3	0.001		242	28	5.64	457	30	85
165244	387479	5394803	950	7000	Bulgobac River	soil	C	2380	1	2	0.001		92	38	8.91	691	26	77
165245	387432	5394821	900	7000	Bulgobac River	soil	C	2380	1	3	0.001		137	34	5.94	573	16	63
165246	387385	5394838	850	7000	Bulgobac River	soil	C	2380	1	2	0.001		58	31	9.46	242	22	51
165247	387338	5394855	800	7000	Bulgobac River	soil	C	2380	1	1	0.001		33	23	8.38	219	20	50
165248	387291	5394872	750	7000	Bulgobac River	soil	C	2380	1	2	0.001		79	42	14.34	1440	16	66
165249	387244	5394889	700	7000	Bulgobac River	soil	C	2380	1	3	0.001		109	57	10.35	1460	15	89
165250	387360	5395060	750	7200	Bulgobac River	soil	C	2380	1	1	0.001		80	51	11.32	2930	17	84
165251	387407	5395043	800	7200	Bulgobac River	soil	C	2380	1	1	0.001	0.001	95	56	12.95	2370	14	100
165252	387454	5395026	850	7200	Bulgobac River	soil	C	2380	1	1	0.001		119	46	12.42	1050	16	106
165253	387501	5395008	900	7200	Bulgobac River	soil	C	2380	1	2	0.001		51	44	11.02	331	19	72
165254	387548	5394991	950	7200	Bulgobac River	soil	C	2380	1	1	0.001		48	28	11.37	249	18	52
165255	387595	5394974	1000	7200	Bulgobac River	soil	C	2380	1	3	0.001		131	56	18.19	1480	16	111
165256	387642	5394957	1050	7200	Bulgobac River	soil	C	2380	1	1	0.001		80	39	9.12	589	18	75
165257	387689	5394940	1100	7200	Bulgobac River	soil	C	2380	1	2	0.001		153	63	9.74	1440	14	115

sample	amg east	mg north	grid ea	grid nor	grid id	sample	sa	sds	[illegible]	As	Au pp	Au(R	Ba	Cu ppm	Fe%	Mn	Pb pp	Zn ppm
165258	387736	5394922	1150	7200	Bulgobac River	soil	C	2380	1	1	0.001		94	56	12.25	687	16	67
165259	387783	5394905	1200	7200	Bulgobac River	soil	C	2380	1	3	0.001		170	12	3.57	146	41	40
165260	387830	5394888	1250	7200	Bulgobac River	soil	C	2380	1	6	0.001		118	24	6.71	161	43	47
165261	387876	5394871	1300	7200	Bulgobac River	soil	C	2380	1	12	0.001		231	9	3.82	771	27	61
165262	387923	5394854	1350	7200	Bulgobac River	soil	C	2380	1	2	0.001		388	16	0.79	75	72	48
165263	387970	5394837	1400	7200	Bulgobac River	soil	C	2380	1	2	0.001		159	2	0.62	26	37	10
165264	388017	5394819	1450	7200	Bulgobac River	soil	C	2380	1	4	0.001		236	2	0.4	22	34	11
165265	388064	5394802	1500	7200	Bulgobac River	soil	C	2380	1	7	0.001		317	3	1.28	47	58	25
165266	388111	5394785	1550	7200	Bulgobac River	soil	C	2380	1	1	0.001		652	20	2.11	99	68	100
165267	386439	5390073	1600	2200	Bulgobac River	soil	C	2380	1	1	0.01	0.011	113	31	8.1	249	28	67
165268	387045	5393472	1000	5600	Bulgobac River	soil	C	2380	1	1	0.001		256	2	2.26	85	14	24
165269	387092	5393454	1050	5600	Bulgobac River	soil	C	2380	1	1	0.001		136	2	0.74	35	7	7
165270	387139	5393437	1100	5600	Bulgobac River	soil	C	2380	1	1	0.001		49	2	0.22	22	6	8
165271	387186	5393420	1150	5600	Bulgobac River	soil	C	2380	1	1	0.001		57	2	0.31	12	11	8
165272	387233	5393403	1200	5600	Bulgobac River	soil	C	2380	1	4	0.001		456	2	1.25	92	49	41
165273	387280	5393386	1250	5600	Bulgobac River	soil	C	2380	1	4	0.001		163	2	3.58	137	29	54
165274	387326	5393368	1300	5600	Bulgobac River	soil	C	2380	1	2	0.001		217	2	2.65	216	16	50
165275	387373	5393351	1350	5600	Bulgobac River	soil	C	2380	1	1	0.001		114	2	0.97	43	16	13
165276	387420	5393334	1400	5600	Bulgobac River	soil	C	2380	1	4	0.001		241	2	3.68	116	23	31
165277	387467	5393317	1450	5600	Bulgobac River	soil	C	2380	1	8	0.001		244	2	2.77	491	30	34
165278	387514	5393300	1500	5600	Bulgobac River	soil	C	2380	1	7	0.001		222	2	2.39	96	29	35
165279	387561	5393282	1550	5600	Bulgobac River	soil	C	2380	1	5	0.001		176	2	1.92	41	48	18
165280	387608	5393265	1600	5600	Bulgobac River	soil	C	2380	1	9	0.001		147	2	3.34	43	29	31
165281	387655	5393248	1650	5600	Bulgobac River	soil	C	2380	1	4	0.001		231	2	3.48	137	21	41
165282	387702	5393231	1700	5600	Bulgobac River	soil	C	2380	1	10	0.001		247	2	3.42	78	25	59
165283	387749	5393214	1750	5600	Bulgobac River	soil	C	2380	1	2	0.001		58	2	0.51	12	14	7
165284	387796	5393197	1800	5600	Bulgobac River	soil	C	2380	1	4	0.001		72	2	0.81	17	23	16
165285	387843	5393179	1850	5600	Bulgobac River	soil	C	2380	1	4	0.001		129	2	2.57	22	16	18
165286	387890	5393162	1900	5600	Bulgobac River	soil	C	2380	1	19	0.001		113	9	5.92	352	48	74
165287	387937	5393145	1950	5600	Bulgobac River	soil	C	2380	1	5	0.001		28	2	1.02	32	6	10
165288	387984	5393128	2000	5600	Bulgobac River	soil	C	2380	1	5	0.001		197	2	1.21	28	19	6
165289	387016	5394121	750	6200	Bulgobac River	soil	C	2380	-1	7	-0.001		447	27	1.91	326	87	371
165290	386980	5394110			Bulgobac River	soil	C	2380	-1	6	-0.001		362	26	1.82	839	72	88
165291	386969	5394138	700	6200	Bulgobac River	soil	C	2380	-1	12	0.003		304	21	2.25	165	88	54
165292	386922	5394155	650	6200	Bulgobac River	soil	C	2380	-1	3	-0.001		133	7	0.4	79	14	28
165293	386875	5394173	600	6200	Bulgobac River	soil	C	2380	-1	7	-0.001	0.001	159	14	0.79	13	90	29
165294	386828	5394190	550	6200	Bulgobac River	soil	C	2380	-1	12	-0.001		219	14	2.32	44	66	67
165295	386781	5394207	500	6200	Bulgobac River	soil	C	2380	-1	8	-0.001		187	16	2.25	51	29	44
165296	386735	5394224	450	6200	Bulgobac River	soil	C	2380	-1	3	-0.001		173	4	1.94	27	28	32

sample	amg east	amg north	grid ea	grid nor	grid id	sample	sa	sds	Ag	As	Au pp	Au(R	Ba	Cu ppm	Fe%	Mn	Pb pp	Zn ppm
165297	386688	5394241	400	6200	Bulgobac River	soil	C	2380	-1	7	-0.001		210	10	2.07	55	61	34
165298	386641	5394258	350	6200	Bulgobac River	soil	C	2380	-1	2	-0.001	0.001	196	4	0.28	17	47	25
165299	386594	5394276	300	6200	Bulgobac River	soil	C	2380	-1	-1	-0.001		136	3	0.43	25	65	19
165300	386547	5394293	250	6200	Bulgobac River	soil	C	2380	-1	-1	0.001		58	-2	0.16	8	51	19
165301	386500	5394310	200	6200	Bulgobac River	soil	C	2380	-1	2	-0.001		132	2	0.41	31	61	20
165302	386453	5394327	150	6200	Bulgobac River	soil	C	2380	-1	11	-0.001		256	14	3.27	41	56	37
165303	386406	5394344	100	6200	Bulgobac River	soil	C	2380	-1	7	0.004		120	16	4.27	48	30	39
165304	386359	5394362	50	6200	Bulgobac River	soil	C	2380	-1	2	-0.001		281	3	0.41	13	21	18
165305	386991	5394343	650	6400	Bulgobac River	soil	C	2380	-1	1	0.005		165	2	0.43	15	6	15
165306	386944	5394360	600	6400	Bulgobac River	soil	C	2380	-1	7	0.005		140	18	4.17	60	44	55
165307	386897	5394378	550	6400	Bulgobac River	soil	C	2380	-1	8	0.001		413	34	4.21	39	61	76
165308	386850	5394395	500	6400	Bulgobac River	soil	C	2380	-1	10	0.005		171	10	1.97	38	52	43
165309	386803	5394412	450	6400	Bulgobac River	soil	C	2380	-1	8	-0.001	0.001	181	5	1.39	63	43	33
165310	386756	5394429	400	6400	Bulgobac River	soil	C	2380	-1	21	0.001		322	12	1.58	19	121	22
165311	386709	5394446	350	6400	Bulgobac River	soil	C	2380	-1	7	0.003		259	7	2.1	46	62	37
165312	386662	5394463	300	6400	Bulgobac River	soil	C	2380	-1	2	-0.001		138	5	0.36	35	48	18
165313	386615	5394481	250	6400	Bulgobac River	soil	C	2380	-1	13	0.001		193	7	2.94	72	179	44
165314	386569	5394498	200	6400	Bulgobac River	soil	C	2380	-1	21	0.001		319	41	6.76	2610	168	154
165315	386522	5394515	150	6400	Bulgobac River	soil	C	2380	-1	11	0.001		188	42	7.16	2680	64	91
165316	386475	5394532	100	6400	Bulgobac River	soil	C	2380	-1	4	-0.001		58	14	4.46	301	65	41
165317	386428	5394549	50	6400	Bulgobac River	soil	C	2380	-1	6	0.003		118	69	16.09	6340	22	99
165318	386381	5394567	0	6400	Bulgobac River	soil	C	2380	-1	6	0.001		83	45	12.29	3590	20	76
165319	386637	5394686	200	6600	Bulgobac River	soil	C	2380	-1	5	0.001	0.001	107	32	8.55	434	90	54
165320	386684	5394668	250	6600	Bulgobac River	soil	C	2380	-1	7	-0.001		91	8	2.38	526	64	81
165321	386731	5394651	300	6600	Bulgobac River	soil	C	2380	-1	6	-0.001		185	87	10.83	1080	257	95
165322	386778	5394634	350	6600	Bulgobac River	soil	C	2380	-1	6	-0.001		221	87	8.7	1780	201	68
165323	386825	5394617	400	6600	Bulgobac River	soil	C	2380	-1	6	0.002		128	66	12.11	1070	38	90
165324	386872	5394600	450	6600	Bulgobac River	soil	C	2380	-1	6	0.003		65	49	12.18	1730	30	52
165325	386919	5394583	500	6600	Bulgobac River	soil	C	2380	-1	6	-0.001		73	61	13.01	3550	17	64
165326	386983	5394612	550	6600	Bulgobac River	soil	C	2380	-1	2	-0.001		126	66	12.96	2220	19	71
165327	387013	5394548	600	6600	Bulgobac River	soil	C	2380	-1	6	-0.001		142	95	11.84	1300	14	111
165328	387060	5394531	650	6600	Bulgobac River	soil	C	2380	-1	4	0.002		193	75	10.42	1170	14	94
165329	387197	5394907	650	7000	Bulgobac River	soil	C	2380	-1	4	-0.001	0.001	116	61	14.9	1250	13	77
165330	387150	5394924	600	7000	Bulgobac River	soil	C	2380	-1	4	0.001		127	48	13.54	1110	15	73
165331	387103	5394941	550	7000	Bulgobac River	soil	C	2380	-1	3	-0.001		108	46	14.8	406	18	52
165332	387176	5394702	700	6800	Bulgobac River	soil	C	2380	-1	9	-0.001		124	73	13.19	1080	16	93
165333	387060	5394531	650	6800	Bulgobac River	soil	C	2380	-1	4	-0.001		156	71	10.17	747	10	75
165334	387082	5394736	600	6800	Bulgobac River	soil	C	2380	-1	4	0.005		106	54	12.47	801	13	61
165335	387035	5394753	550	6800	Bulgobac River	soil	C	2380	-1	2	0.001		186	59	13.33	569	16	74

sample	amg east	amg north	grid ea	grid nor	grid id	sample	sa	sds	[illegible]	As	Au pp	Au(R	Ba	Cu ppm	Fe%	Mn	Pb pp	Zn [illegible]m
165336	386988	5394770	500	6800	Bulgobac River	soil	C	2380	-1	3	-0.001		201	51	12.94	3110	13	86
165337	386941	5394788	450	6800	Bulgobac River	soil	C	2380	-1	6	-0.001		82	61	14.55	1440	18	63
165338	388009	5392906	2100	5400	Bulgobac River	soil	C	2380	-1	1	-0.001		313	3	0.55	65	10	14
165339	387962	5392923	2050	5400	Bulgobac River	soil	C	2380	-1	5	0.001		204	10	1.13	92	37	30
165340	387915	5392940	2000	5400	Bulgobac River	soil	C	2380	-1	2	0.001		98	4	0.4	38	38	7
165341	387868	5392957	1950	5400	Bulgobac River	soil	C	2380	-1	6	-0.001		236	4	1.4	27	57	23
165342	387821	5392974	1900	5400	Bulgobac River	soil	C	2380	-1	13	-0.001		235	4	3.86	67	55	53
165343	387774	5392992	1850	5400	Bulgobac River	soil	C	2380	-1	7	-0.001		155	2	3.31	61	16	25
165344	387727	5393009	1800	5400	Bulgobac River	soil	C	2380	-1	2	-0.001	0.001	95	-2	0.33	12	-5	4
165345	387680	5393026	1750	5400	Bulgobac River	soil	C	2380	-1	8	-0.001		230	14	6.02	698	25	117
165346	387633	5393043	1700	5400	Bulgobac River	soil	C	2380	-1	4	-0.001		120	3	3.16	67	17	34
165347	387586	5393060	1650	5400	Bulgobac River	soil	C	2380	-1	7	0.003		176	5	3.46	72	31	87
165348	387539	5393077	1600	5400	Bulgobac River	soil	C	2380	-1	1	-0.001		101	3	0.47	33	15	12
165349	387492	5393095	1550	5400	Bulgobac River	soil	C	2380	-1	5	0.001		144	3	2.45	51	17	21
165350	387446	5393112	1500	5400	Bulgobac River	soil	C	2380	-1	2	-0.001		301	-2	1.11	42	8	9
165351	387399	5393129	1450	5400	Bulgobac River	soil	C	2380	-1	7	-0.001		217	7	3.72	145	16	82
165352	387352	5393146	1400	5400	Bulgobac River	soil	C	2380	-1	2	-0.001		216	4	2.24	74	25	23
165353	387305	5393163	1350	5400	Bulgobac River	soil	C	2380	-1	4	-0.001		266	5	2.83	119	19	23
165354	387258	5393181	1300	5400	Bulgobac River	soil	C	2380	-1	5	-0.001	0.001	295	6	1.91	126	32	36
165355	388081	5392666	2250	5200	Bulgobac River	soil	C	2380	-1	2	0.001		167	-2	0.38	31	9	11
165356	388034	5392683	2200	5200	Bulgobac River	soil	C	2380	-1	3	-0.001		142	-2	0.53	28	8	6
165357	387987	5392701	2150	5200	Bulgobac River	soil	C	2380	-1	14	-0.001		206	-2	0.87	18	10	7
165358	387940	5392718	2100	5200	Bulgobac River	soil	C	2380	-1	9	0.005		476	5	1.83	72	31	38
165359	387893	5392735	2050	5200	Bulgobac River	soil	C	2380	-1	4	-0.001		52	-2	1.33	43	11	13
165360	387846	5392752	2000	5200	Bulgobac River	soil	C	2380	-1	7	-0.001		99	3	1.58	34	16	12
165361	387799	5392769	1950	5200	Bulgobac River	soil	C	2380	-1	-1	-0.001		35	-2	0.26	18	9	9
165362	387752	5392787	1900	5200	Bulgobac River	soil	C	2380	-1	10	-0.001		192	4	2.81	37	17	33
165363	387705	5392804	1850	5200	Bulgobac River	soil	C	2380	-1	34	-0.001		153	10	6.98	54	45	23
165364	387658	5392821	1800	5200	Bulgobac River	soil	C	2380	-1	26	-0.001	0.001	86	5	2.43	33	15	14
165365	387612	5392838	1750	5200	Bulgobac River	soil	C	2380	-1	11	0.005		201	38	6.31	138	54	41
165366	387565	5392855	1700	5200	Bulgobac River	soil	C	2380	-1	16	-0.001		132	10	3.01	52	19	47
165367	387518	5392872	1650	5200	Bulgobac River	soil	C	2380	-1	17	-0.001		101	11	3.47	77	29	41
165368	387471	5392890	1600	5200	Bulgobac River	soil	C	2380	-1	19	-0.001		217	23	5.18	1810	43	86
165369	387424	5392907	1550	5200	Bulgobac River	soil	C	2380	-1	4	-0.001		143	2	3.49	119	15	23
165370	387377	5392924	1500	5200	Bulgobac River	soil	C	2380	-1	2	-0.001		210	-2	4.21	212	16	51
165371	387330	5392941	1450	5200	Bulgobac River	soil	C	2380	-1	2	0.001		123	3	1.07	59	12	10
165372	387283	5392958	1400	5200	Bulgobac River	soil	C	2380	-1	5	-0.001		103	3	4.85	172	15	32
165373	387236	5392976	1350	5200	Bulgobac River	soil	C	2380	-1	5	-0.001		204	8	5.54	791	23	107
165374	388059	5392461	2300	5000	Bulgobac River	soil	C	2380	-1	8	0.001		280	6	1.63	49	39	23

sample	amg east	amg north	grid ea	grid nor	grid id	sample	sa	sds	Ag	As	Au pp	Au(R	Ba	Cu ppm	Fe%	Mn	Pb pp	Zn ppm
165375	388012	5392478	2250	5000	Bulgobac River	soil	C	2380	-1	9	0.001		184	3	1.63	177	36	21
165376	387965	5392496	2200	5000	Bulgobac River	soil	C	2380	-1	22	-0.001		123	-2	0.53	15	17	18
165377	387918	5392513	2150	5000	Bulgobac River	soil	C	2380	-1	2	-0.001		102	-2	0.18	12	11	2
165378	387871	5392530	2100	5000	Bulgobac River	soil	C	2380	-1	2	-0.001		141	-2	0.17	10	8	2
165379	387825	5392547	2050	5000	Bulgobac River	soil	C	2380	-1	3	-0.001		135	-2	0.22	13	30	3
165380	387778	5392564	2000	5000	Bulgobac River	soil	C	2380	-1	3	0.001		71	3	0.24	14	16	4
165381	387731	5392582	1950	5000	Bulgobac River	soil	C	2380	-1	1	0.001		81	3	0.36	28	19	7
165382	387684	5392599	1900	5000	Bulgobac River	soil	C	2380	-1	3	-0.001		76	2	0.21	13	17	6
165383	387637	5392616	1850	5000	Bulgobac River	soil	C	2380	-1	1	-0.001		41	4	0.19	22	19	12
165384	387590	5392633	1800	5000	Bulgobac River	soil	C	2380	-1	8	-0.001		220	8	3.54	55	41	9
165385	387543	5392650	1750	5000	Bulgobac River	soil	C	2380	-1	18	0.001		196	12	4.4	54	57	24
165386	387496	5392667	1700	5000	Bulgobac River	soil	C	2380	-1	8	-0.001		244	18	2.3	80	35	28
165387	387449	5392685	1650	5000	Bulgobac River	soil	C	2380	-1	12	-0.001		237	7	2.6	55	35	8
165388	387402	5392702	1600	5000	Bulgobac River	soil	C	2380	-1	4	-0.001		116	4	1.98	76	14	19
165389	387355	5392719	1550	5000	Bulgobac River	soil	C	2380	-1	5	-0.001	0.001	132	-2	3.85	146	12	29
165390	387308	5392736	1500	5000	Bulgobac River	soil	C	2380	-1	21	-0.001		306	10	3.93	181	83	84
165391	386879	5393745	750	5800	Bulgobac River	soil	C	2380	-1	8	0.001		185	31	2.56	285	71	61
165392	386832	5393763	700	5800	Bulgobac River	soil	C	2380	-1	8	0.001		82	19	3.01	664	31	35
165393	386785	5393780	650	5800	Bulgobac River	soil	C	2380	-1	13	-0.001		272	20	4.52	364	40	65
165394	386738	5393797	600	5800	Bulgobac River	soil	C	2380	-1	2	-0.001		-10	5	0.77	104	16	13
165395	386691	5393814	550	5800	Bulgobac River	soil	C	2380	-1	3	-0.001		96	3	1.98	55	18	20
165396	390870	5392284	5000	5800	Bulgobac River	soil	C	2380	-1	2	-0.001		120	-2	1.89	58	13	12
165397	386597	5393848	450	5800	Bulgobac River	soil	C	2380	-1	2	-0.001		105	3	1.52	58	23	19
165398	386550	5393866	400	5800	Bulgobac River	soil	C	2380	-1	1	0.005		71	-2	0.27	10	11	-2
165399	386503	5393883	350	5800	Bulgobac River	soil	C	2380	-1	2	-0.001	0.001	123	-2	0.46	30	43	6
165400	386456	5393900	300	5800	Bulgobac River	soil	C	2380	-1	2	0.001		214	-2	1.22	47	48	16
165401	386409	5393917	250	5800	Bulgobac River	soil	C	2380	-1	1	0.001		143	3	2.05	69	44	20
165402	386362	5393934	200	5800	Bulgobac River	soil	C	2380	-1	3	-0.001		132	3	1.8	58	29	24
165403	386478	5394105	250	6000	Bulgobac River	soil	C	2380	-1	3	0.001		102	3	0.95	58	50	20
165404	386525	5394088	300	6000	Bulgobac River	soil	C	2380	-1	2	-0.001		124	4	1.58	33	41	5
165405	386572	5394071	350	6000	Bulgobac River	soil	C	2380	-1	2	-0.001		168	7	2.86	40	54	13
165406	386619	5394053	400	6000	Bulgobac River	soil	C	2380	-1	4	0.001		324	12	1.77	93	67	41
165407	386666	5394036	450	6000	Bulgobac River	soil	C	2380	-1	4	-0.001		231	6	1.19	143	80	21
165408	386713	5394019	500	6000	Bulgobac River	soil	C	2380	-1	3	-0.001		171	-2	1.93	34	16	17
165409	384903	5388931	550	6000	Bulgobac River	soil	C	2380	-1	3	-0.001		328	3	3.21	52	19	19
165410	386807	5393985	600	6000	Bulgobac River	soil	C	2380	-1	-1	-0.001		141	2	0.29	15	14	3
165411	386854	5393968	650	6000	Bulgobac River	soil	C	2380	-1	9	-0.001		142	4	1.97	28	34	12
165412	392817	5391785	7000	6000	Bulgobac River	soil	C	2380	-1	4	-0.001		107	4	0.82	23	29	7
165413	386947	5393933	750	6000	Bulgobac River	soil	C	2380	-1	26	-0.001		283	16	3.66	26	66	10

Appendix 3

1:25K geology lithostratigraphic codes and modification based on lithotypes

1 : 25 K LITHOSTRATIGRAPHIC CODES

DGE - **Modified Lithology codes**

EDQ - Original Rock codes from 1:25K sheets

DGE — *ED, EHF, EQ, ET*

- DGEQW *(EDQ, Eq)*
- DGESM *(EDS, ETS, EFS)*
- DGESD *(GDD)*
- DGELW *(EF, Edg, Edw, Ehlg, Edgm, Edgl, Edwt)*
- DGECG *(Edc)*
- DGEM *(Ela, Edba, Ehfab)*
- DGEB *(Edbr, Ehfb, Edb)*
- DGEA *(Eda, Ehfa)*
- DGEF *(Edlf, Ell, Elv, Elp, Elpi, Elpl)*
- DGET *(Edl, Ehft, Elt, Elcl, Elvc, Elf)*
- DGEVC *(Elc)*
- DGEVT *(Edlv, Elva)*

CVC — *EMV, ECV, EWS*

- CVCT — *EMVT, ECVT, EWST, EKVR* — *ECVI, ECVIB, ECVAG, ECVXT, ECVVT, ECVAT*
- CVCS — *EKM, ECVS, EWSS* — *ECVSC*
- CVCL — *EUVP, EMVC, ECVL* — *ECVA, ECVLM, ECVQ, ECVG*

1 : 25 K LITHOSTRATIGRAPHIC CODES

GROUP NAME	GROUP CODE	LITHOCODE 1	LITHOCODE 2	LITHOCODE 3
Alteration	Alt	MS (Massive sulphide)		
		BA (Barite)		
		ALSI (Argillic)		
		FeSi (Silicic)		
		FeRED (Pyritic)		
		FeOx (Hematitic)		
INTRUSIVES	I	MI	JDC	
			XL	
		DI	DQP (Porphyry)	
			DDL (Dolerite)	
			DG (Granite)	
			DL (Lamprophyre)	
		OI	OP (Porphyry)	
		EI	Ep (Porphyry)	
			Epa (Felsic Intrusive)	
			Eg (Gabbro)	
			Eb (Basalt)	
			Eus (Ultramafic)	
			Egr (Granite)	
Quaternary	Qu	Qc (Cultural)		
		Qt (Talus)		
		Qa (Alluvium)		
		Qg (Glacial)		
Tertiary Basalt	Tb	Tb (Basalt)		
Upper Palaeozoic	Pu	Pu (Sediments)		
Siluro - Devonian	S - D	Sd (Sediments)		
Gordon Limestone	OGL	Ogl (Limestone)		
Owen Conglomerate & Equivalents	EO	EOo (Sediments)	EOoM (Siltstone)	
			EOoC (Chert)	
			EOoS (Siliciclastic cong.)	
			EOoVC (Volcaniclastic cong.)	
Dundas Group & Equivalents	DGE	DGES (Sediments)	DGEQW (Quartzwacke)	DGEQC (Quartzite Cong.)
			DGESI (Siltstone)	DGESM (Micaceous Siltstone)
				DGESD (Dolomitic Siltstone)
			DGELW (Lithic Wacke)	
			DGECG (Conglomerate)	
		DGEL (Lavas)	DGEM (Mafic Lavas)	DGEB (Basaltic)
				DGEA (Andesitic)
			DGEF (Felsic Lavas)	
		DGET (Tuffs)	DGEVT (Vitric Tuffs)	
			DGEVC (Conglomeratic Tuffs)	
Central Volcanic Sequence	CVC	CVCT (Tuffs)		
		CVCL (Lavas)	CVCA (Felsic)	
			CVCB (Basic)	
		CVCS (Sediments)		
Slicht Range Beds	ESRB	ESRB (Sandstone Cong.)		
		ESRV (Conglomerate)		
		ESRV (Volcaniclastic)		
Crimson Creek Fm.	ECC	ECC (Siltstone/sandstone)		
Proterozoic	P	Pm	Pp	
			Phs	
			Phq	
		Po		

Pasminco Exploration

Map 1:
Bulgobac River Grid,
Mapping and Rockchip Sampling.

408069

Date: 26/9/1997
Author: PJC
Office: Melbourne - ETS
Drawing: Map 1
Scale: 1:5000
Projection: Transverse Mercator (Gauss-Kruger)

5 cm

0 50 100 200
metres

97-4063

ANNUAL REPORT-BULGOBAC RIVER
EL 19/94 - PASMINCO EXPL.
F.C.MURPHY

LEGEND

- Soil Sample Location
- Chlorite-rich rock
- Quartz-Feldspar Porphyry
- Quartz Vein
- Grey Volcanic Breccia?
- Glassy Volcanic
- Felsic Igneous Rock
- Unassigned
- Siltstone/Sandstone/Shale
- Volcaniclastic Sediment
- Basalt
- Tertiary Basalt
- Quaternary Deposits
- Dundas Grp Black shale & siltstone
- Dundas group intercalated felsic tuff
- Dundas group qtz-feldspar porphyry intrusive
- Fault
- Tenement Boundary
- Pasminco Bulgobac River Grid
- U Uphill Gradient
- D Downhill Gradient
- SU Steep Uphill Gradient
- SD Steep Downhill Gradient
- F Flat Gradient

Distant Creek
Bulgobac River
Joint Creek
Hash Creek
Mt. Charter Fault

basalt rubble
basalt & qtz & fine sediment rubble
felsic volcanic sediment and basalt rubble
basaly olivine/pyroxene
basalt & felsic volcanic boulders
Tertiary basalt float
basaltic
Basalt
Tertiary basalt? and cherty? sulphide
tuffaceous siltstone basalt float
felsic volcanic/clastic rubble
vesicular & massive basalt
felsic & qtz volcaniclastic SST bedding 30/150
qtz fragments in clay substrate
fine volcaniclastic SST/SLTST loc qtz phyric
massive graded volcaniclastic SST boulders
massive graded volcaniclastic SST boulders
qtz-feld intrusive
qtz-feld
qtz & feld in v.fine gdmass lineations on rubble
massive felsic volcanic & qtz rubble
fine fg volcaniclastic sandstones
massive volcaniclastic fine siltstone
tuffaceous siltstone
fine grained siltstone
fine tuffaceous siltstone
siltstone/shale qtz and basalt rubble
fine-grained glassy volcanic
feld & rare qtz phenocrysts in grey groundmass
coarse feld-qtz rock some angular fragments
chlorite-rich clasts
cream fine grained volcanic
siltstone/shale
felsic volcanic/clastic
feldspar porphyry
shale
qtz-feld phyric
siltstone?
feld-qtz phenocrysts extrusive/intrusive
white fine grained volcaniclastic
white clay and round qtz (phenocrysts?)
qtz-feld intrusive/extrusive & clastic
fine-medium grained sandstone
Quartz-Feldspar Phyric
siltstone So 070/50N Lo 090
white fine volcaniclastic
coarse fragmented volcanic
felsic volcanic some fragmentation
qtz-feldspar volcanic
felsic volcanic
Volcaniclastic silts and sandstones
medium grained intermediate igneous rock. Feldspar
qtz-feldcoarse phyric & siltstone
felsic volcanic minor qtz limonite veins
siltstone/shale minor qtz veins
fine grained white volcaniclastic
vesicular felsic volcanic
glassy felsic volcanic some qtz
feld-phyric volcanic
qtz-feld porphyry
coarse-grained intermediate igneous rock feld phen
basalt
Medium Grained intermediate igneous rock
fine-grained volcaniclastic sandstone
sediments - shales and sandstones
grey siltstone/shale
qtz phyric
qtz-feld phyric
qtz-feld coarse volcaniclastic
med grained volcaniclastic
glassy volcanic
siltstone
felsic volcanic lava
Felsic Volcanic Lava
Medium Grained Intermediate igneous rock
rare pumice clasts
lge feld laths in chl-rich matrix
ash fall?
vesicular felsic lava
grey volcanic breccia?
felsic volcanic
glassy
massive
fine chl rock?volcaniclastic?
tan felsic volcanic
qtz & fine-grained volcanic & feldspar phyric volc
fine grained volcaniclastic
Siltstone
Quartz Rubble
Intermediate igneous rock. Porphyritic
tan volcaniclastic vague So
coarse qtz-phyric clastic
tan volcaniclastic
volcaniclastic? Banding?
felsic lava
tan fine grained clay-musc volc? sediment vague So
grey qtz musc sandstone
qtz rubble
siltstone/shale
chl-rich schist?shale
dark grey (chl-rich) siltstone
siltstone mild fabric S1 200/vert

5395000 mN
5394500 mN
5394000 mN
5393500 mN
5393000 mN
5392500 mN
5395900 mN
5394600 mN
5393600 mN
5392600 mN
387000 mE
387500 mE
388000 mE
388500 mE