

TR18, 142, 144

21. Computer programmes for map grid reference conversion for Tasmania.
Part 1. Australian National Grid to Australian Map Grid.

E.L. Martin

The conversion programme (9A2; V=7646) has been compiled for the Wang 700 computer and is based on the Lands Department formula:

$$Em = 0.914655E - 0.012024N + 5.7^{-11}EN - 8.4^{-10}(E^2 - N^2) + 60,757$$

$$Nm = 0.914663N + 0.012020E - 1.678^{-9}EN - 2.8^{-11}(E^2 - N^2) + 4,587,327$$

where E, N are the coordinates in yards on the Australian National Grid and Em, Nm are the coordinates in metres on the Australian Map Grid.

The conversion formula is accurate to ± 2 m.

The basic programme has been expanded to give the conversion of full yard coordinates, 100-yd grid references or 10-yd grid references to full metre coordinates, 100-m grid references or 10-m grid references.

OPERATION

Operating details are shown in Table 1. It is essential that references are keyed-in in the correct form.

Full yard coordinates consist of a 6-figure easting and a 6-figure northing (7-figure northing in the case of the Bass Strait Islands which lie on or above grid line 1,000,000 yd N). A form of hybridised reference is often met in the literature.

e.g. 4080E 93605N

In this example the easting is given to the nearest 100 yd and the northing is given to the nearest 50 yards. The corresponding full coordinates are:

408000E 936050N

Yard grid references consist of 2 + 6 figures or 2 + 8 figures (for 100-yd and 10-yd references, respectively). The following examples show how these should be keyed in.

Grid reference	Keyed as
47/123567	47.123567
47/12345678	47.12345678

The slash will be added to the print out.

To leave a line space between entries key SF 15.

EXAMPLES OF PRINTOUT

A. Full yard coordinates to full metre coordinates

201345 1093787 232752 5589856
350022 827942 371444 5348352
572661 673018 576585 5209152

B. Full yard coordinates to 100-m grid references

201345 1093787 BR328899
350022 827942 CP714484
572661 673018 EN766092

Table 1. OPERATING INSTRUCTIONS FOR PROGRAMME 9A2

CONVERSION FROM	CONVERSION TO																						
	FULL METRE COORDINATES	100 m GRID REFERENCE	10 m GRID REFERENCE																				
FULL YARD COORDINATES	<p>A</p> <p>(1) PRIME, GO (2) Key SF 00 (3) Key yards E, GO (4) Key yards N, GO</p> <p>To continue repeat operations (2)-(4).</p>	<p>B</p> <p>Alter programme</p> <table><thead><tr><th>Step</th><th>Alter to</th></tr></thead><tbody><tr><td>664</td><td>GO</td></tr><tr><td>666</td><td>0010</td></tr><tr><td>672</td><td>MARK</td></tr><tr><td>673</td><td>0010</td></tr></tbody></table> <p>Operate as for A</p>	Step	Alter to	664	GO	666	0010	672	MARK	673	0010	<p>C</p> <p>Alter programme</p> <table><thead><tr><th>Step</th><th>Alter to</th></tr></thead><tbody><tr><td>664</td><td>GO</td></tr><tr><td>666</td><td>0010</td></tr><tr><td>692</td><td>MARK</td></tr><tr><td>693</td><td>0010</td></tr></tbody></table> <p>Operate as for B</p>	Step	Alter to	664	GO	666	0010	692	MARK	693	0010
Step	Alter to																						
664	GO																						
666	0010																						
672	MARK																						
673	0010																						
Step	Alter to																						
664	GO																						
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692	MARK																						
693	0010																						
100-YARD GRID REFERENCE	<p>D</p> <p>Alter programme</p> <table><thead><tr><th>Step</th><th>Alter to</th></tr></thead><tbody><tr><td>674</td><td>0112</td></tr><tr><td>675</td><td>0200</td></tr></tbody></table> <p>Operate as for E</p>	Step	Alter to	674	0112	675	0200	<p>E*</p> <p>(1) PRIME, GO (2) Key SF 01 (3) Key grid reference (4) GO</p> <p>To continue repeat operations (2)-(4).</p>	<p>F</p> <p>Alter programme</p> <table><thead><tr><th>Step</th><th>Alter to</th></tr></thead><tbody><tr><td>674</td><td>SEARCH</td></tr><tr><td>675</td><td>0010</td></tr><tr><td>692</td><td>MARK</td></tr><tr><td>693</td><td>0010</td></tr></tbody></table> <p>Operate as for E</p>	Step	Alter to	674	SEARCH	675	0010	692	MARK	693	0010				
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694	SEARCH																						
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*Full yard and metre coordinates may be printed in addition to the grid references by keying SF 03, when printout of grid references has been completed; if a printout on the same line is required programme steps 687 and 707 should be altered to STOP.

C. Full yard coordinates to 10-m grid references

201345	1093787	BR32758986
350022	827942	CP71444835
572661	673018	EN76580915

D. 100-yd grid references to full metre coordinates

20/013938	232711	5589868
38/500279	371424	5348313
56/727730	576620	5209136

E. 100-yd grid references to 100-m grid references

20/013938	BR327899
38/500279	CP714483
56/727730	EN766091

F. 100-yd grid references to 10-m grid references

20/013938	BR32718987
38/500279	CP71424831
56/727730	EN76620914

G. 10-yd grid references to full metre coordinates

20/01359379	232757	5589859
38/50022794	371442	5348350
56/72667302	576584	5209154

H. 10-yd grid references to 100-m grid references

20/01359379	BR328899
38/50022794	CP714483
56/72667302	EN766092

I. 10-yd grid references to 10-m grid references

20/01359379	BR32768986
38/50022794	CP71444835
56/72667302	EN76580915

E* 100-yd grid references to 100-m grid references, with full yard and metre coordinates

20/013938	BR327899	201300	1093800	232711	5589868
38/500279	CP714483	350000	827900	371424	5348313
56/727730	EN766091	572700	673000	576620	5209136

I* 10-yd grid reference to 10-m grid references, with full yard and metre coordinates

20/01359379	BR32768986	201350	1093790	232757	5589859
38/50022794	CP71444835	350020	827940	371442	5348350
56/72667302	EN76580915	572660	673020	576584	5209154

[revised 14 December 1973]