Structure and kinematics of the Louth-Eumarra Shear Zone (north-central New South Wales, Australia) and implications for the Paleozoic plate tectonic evolution of eastern Australia

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SUPPLEMENTARY PAPERS

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SUPPLEMENTARY PAPERS

A1. Field and drill core sample information table.

A2. SEM-BSE images and SEM-EDS spectra from sample 14-SD-03 collected from drill core DDHTE Templestone Anomaly (–30.215023°S, 146.608217°E), 115.9 m depth.

A1. Field and drill core sample information table.

Sample	Latitude	Longitude	Sample type	Drill hole/Depth	Lithology	Comments
14-SD-25	30.46645°S	146.68734°E	Field sample	–	Quartzite	Weak foliation developed (S2).
14-SD-03	30.21502°S	146.608217°E	Drill core	DDHTE Templestone Anomaly/ 115.9 m	Biotite– muscovite schist	Two foliations. Strongly developed S2 crenulation cleavage with remnant S1 within microlithons of S2.
14-SD-06	30.33722°S	146.139375°E	Drill core	DDH-01 Woodstock/ 151 m	Mica schist	Two foliations. S2 foliation within sample occurring axial planar to F2 folds, remnant S1 slaty cleavage in microlithons.
14-SD-07	30.35503°S	146.314388°E	Drill core	DR20 Doradilla/ 159.1 m	Muscovite schist	Two foliations. Strongly developed S2 crenulation cleavage with development of quartz–mica domains. Remnant S1 found within microlithons of S2.
14-SD-08	30.174047°S	146.671944°E	Drill core	BO-1 Boomi/ 133.4–133.5 m	Biotite– muscovite schist	Only one foliation weakly developed in sample. Growth of chlorite and biotite along foliation planes.
14-SD-01	30.322747°S	146.405670°E	Drill core	DDHTE-1 Templestone anomaly/ 142.9– 143 m	Biotite– muscovite schist	Three foliations. S1 found within microlithons of strongly developed S2 crenulation cleavage. S3 is a weakly developed (incipient) crenulation cleavage.
14-SD-11	30.322747°S	146.405670°E	Drill core	DBT-1 Bobs Tank/ 121.6–121.7 m	Biotite– muscovite schist	Foliation within this rock is defined by prominent quartz–mica domains presumably following a strong crenulation cleavage.
14-SD-12	30.315920°S	146.369827°E	Drill core	MW2 Midway Doradilla line/ 98.9–99 m	Chlorite–biotite– muscovite schist	Two foliations. Dominant foliation within sample (S2?) defined by quartz–mica domains overprinted by incipient crenulation cleavage (S3?).
14-SD-14	30.286101°S	146.423994°E	Drill core	3Kel-18 Doradilla line	Muscovite phyllite	Two foliations. Dominant foliation (S2?) defined tightly spaced (<1mm) quartz–mica domains. Overprinted by a kinked crenulation cleavage (S3?).
14-SD-17	30.273041°S	146.355557°E	Drill core	Moocha MO-1/ 229.5 m	Biotite– muscovite schist	One strong slaty cleavage in the sample. Quartz veins folded around foliation.
14-SD-18	30.273041°S	146.355557°E	Drill core	Moocha MO-1/ 170.8 m	Biotite– muscovite schist	One strong foliation defined by quartz–mica domains. No evidence for secondary foliation found.
14-SD-20	30.180218°S	146.617911°E	Drill core	Frontage Tank/ 166.6 m	Biotite– muscovite schist	Two foliations. Strong foliation (S2?) defined by strongly developed quartz–mica domains, which are overprinted by a strong crenulation cleavage (S3?).
T79665	30.347791°S	146.295167°E	GSNSW field sample	–	Biotite– muscovite schist	Dominant foliations (S2?) defined by quartz–mica domains, which is overprint by an incipient crenulation cleavage (S3?). A remnant S1 foliation is found in lower strain areas
T79644	30.356676°S	146.313178°E	GSNSW drill core sample	DR20 Doradilla/ 266.5 m	Biotite– muscovite schist	One major foliation in the rock defined by quartz–mica domains.
T79657	30.345777°S	146.316926°E	GSNSW drill core sample	YTC drillhole DCMD001/ 79 m	Muscovite schist	One major foliation defined by strongly developed quartz–mica domains.

Sample	Latitude	Longitude	Sample type	Drill hole/Depth	Lithology	Comments
T79647	30.356676°S	146.313178°E	GSNSW drill core sample	DR20 Doradilla/ 123 m	Muscovite schist	One major foliation (S2) within the rock defined by aligned muscovite domains. Very rare occurrences of S1 in microlithons of S2.
14-SD-23B	31.177997°S	146.843262°E	Field sample	–	Muscovite schist	Up to 3 foliations. S2 foliations defined by quartz–mica domains overprinted by a strong crenulation cleavage (S3). S1 rarely found in microlithons of S2.
14-SD-29A	31.287321°S	146.435049°E	Field sample	–	Biotite– muscovite schist	Three foliations developed. Major foliation is S2, which is a strongly developed crenulation cleavage. S1 found in microlithons of S2. Very weak S3 foliation found overprinting entire sample.
14-SD-30	31.291474°S	146.398281°E	Field sample	–	Muscovite schist	Main foliation (S2?) defined by strong crenulation cleavage forming quartz–mica domains. S1 foliation found in microlithons of S2.
14-SD-31	31.291919°S	146.399699°E	Field sample	–	Muscovite schist	Very close to sample 14-SD-30. Main foliation (S2?) defined by strongly developed crenulation cleavage, which has developed quartz–mica domains. Very incipient S3 foliation throughout sample.

A2: SEM-BSE and SEM-EDS spectra results from sample 14-SD-03

A2. a) SEM-BSE image of kyanite (as shown in Figure 7e)

A2. b) SEM-EDS spectra of kyanite shown in A2. a).

A2. c) SEM-BSE image of late stage mineral forming after the major deformation. Potentially cordierite.

A2. d) SEM-EDS spectra the mineral in A2. c). The high aluminium peak and the minor magnesium peak indicate this mineral is potentially cordierite.

A2. e) SEM-BSE image metamorphic muscovite.

A2. f) SEM-EDS spectra of the muscovite in A2.e)

A2. g) SEM-BSE image of metamorphic biotite.

A2. h) SEM-EDS spectra of the biotite in A2.g)

A2. g) SEM-BSE image of metamorphic biotite.

A2. h) SEM-EDS spectra of the biotite in A2.i)

A2. k) SEM-BSE image of post tectonic chlorite.

A2. l) SEM-EDS spectra of the chlorite in A2.k)

A2. m) SEM-BSE image of biotite within the post tectonic chlorite in A2.k.

A2. n) SEM-EDS spectra of the biotite in A2.m)