

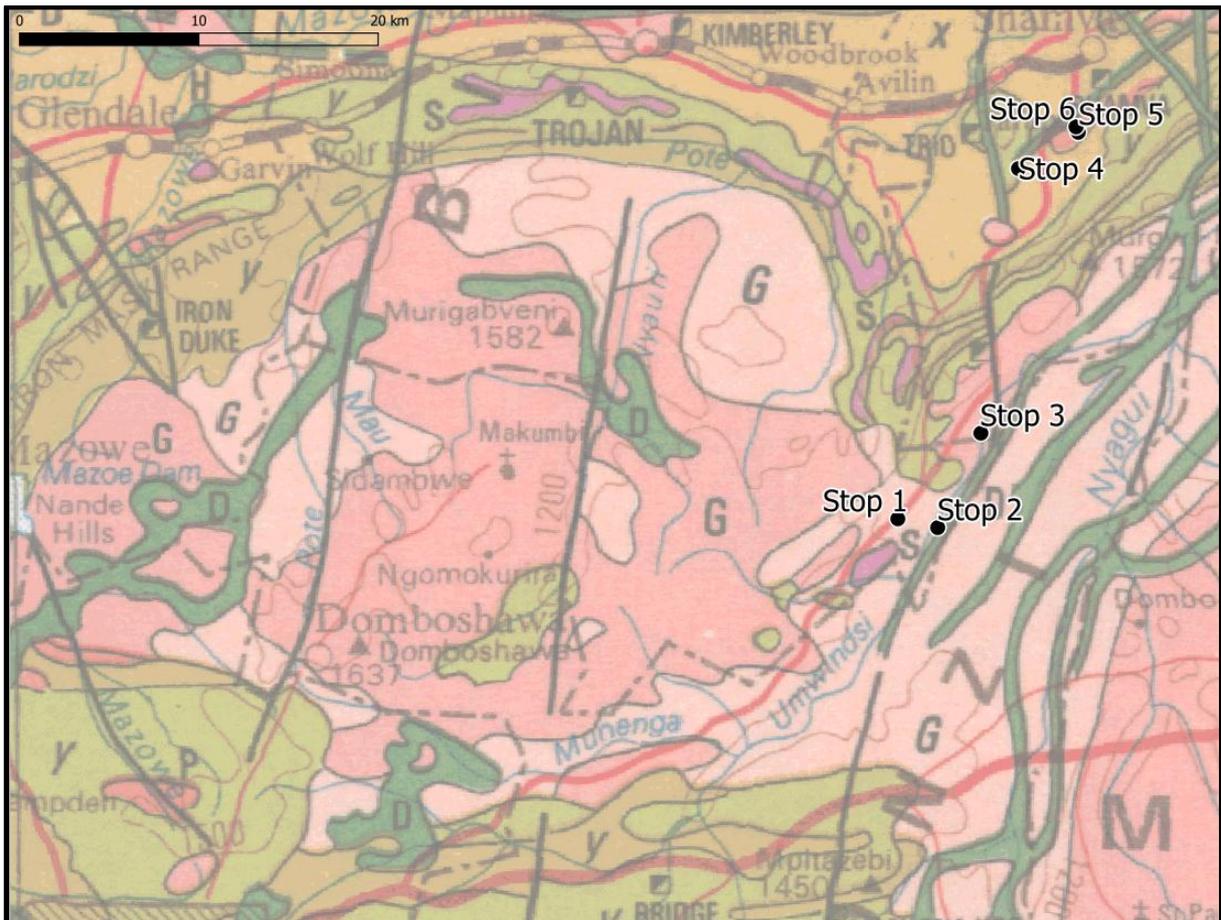


Geological Society of Zimbabwe



Field Excursion Guide- Shamva Area, Zimbabwe

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Stop	Outcrop lithology	Description	Coordinates (UTM Zone 36 Arc50)	
1	Porphyritic granite	Granite with mafic xenoliths and oriented feldspar phenocrysts	336810	8059590
2	Umwindsi Shear Zone	Intensely deformed felsic rock part of a major shear zone	339050	8059100
3	Granite	Massive granite and Lion's Head San rock art	341340	8064250
4	Walwyn Conglomerate	Unusual polymict Shamvaian boulder bed,	343540	8079280
5	Felsic volcanic/clastic rocks	Mixture of Shamvaian volcanoclastic rocks and sediments derived from them	345320	8078100
6	Felsic volcanics	Boulders and scree of felsic intrusive/extrusive porphyry	346940	8080760

The field trip is centred around the Shamvaian with two stops on granitic rocks and one on the Umwindsi Shear Zone.

In 1947 MacGregor officially subdivided the greenstone belt rocks into three units and selected as his type example the Shamva Grits Series of the Shamva Greenstone Belt. Subsequently Stidolph (1977) subdivided the Shamvaian Group into an upper unit of metasediments containing granitic detritus and a lower one of volcanoclastic sediments and pyroclastic rocks devoid of granitic material, although the contact between the two is gradational. These unconformably overlie the Bulawayan (Figure 1) with the main evidence for this being an angular relationship in the Bindura belt west of Glendale and the abundance of mafic volcanic clasts within the Shamvaian around Shamva.

Stop 1 Porphyritic Granite (336810 8059590)

The outcrop (Figure 2) is part of the Chinamora Porphyritic Granite which Baldock (1991) assigned to the Chinamora Igneous Complex. This was first described by Snowden (1976) who recognised some 45 different granitic types and Snowden and Bickle (1976) later grouped these into old gneisses, gneissic granites and late granites. The Chinamora Porphyritic Granite is part of the "late granites".

The megacrysts are dominantly of microcline and occur in very variable quantities from dense to widely dispersed and in many localities, they are aligned. This alignment was attributed to two regional deformations by Snowden and Bickle (1976), partly because of their parallelism to similar megacrysts in sparse mafic xenoliths. However, the Granite is not foliated and Baldock suggested that upward diapiric movement could have caused the alignment.

Stop 2 Umwindsi Shear Zone (339050 8059100)

The Umwindsi Shear (Figures 2 and 3) is a major dislocation cutting through the Harare Greenstone Belt and separating the north-trending Passaford Limb from the north-easterly trending Arcturus Limb in the southern part of the Belt. It dies out to the southwest but continues over 90 km to the northeast and north. It is bounded by two zones of intense deformation which are up to 7 km apart and these are more widely spaced where it passes through the Greenstone Belt.

A small outcrop on the bank of the Umwindsi River displays mylonitic felsic rocks with isoclinal folding, which is part of the intensely deformed margin of the Shear. Baldock (1991) does not ascribe any sense of movement to this deformation zone but evidence for this may be present on this outcrop.

Stop 3 Lion's Head rock paintings and granite (341340 8064250)

The granite at this locality is not on any 1:100,000 Geological Survey map but is likely to be part of what Baldock termed Granite.

Stop 4 Walwyn Conglomerate (343540 8079280)

There are some excellent exposures (Figure 4) of an unusual coarse, polymict, clast-supported sedimentary deposit with well-rounded boulders of a number of different lithotypes including granitic and other felsic rocks, basaltic greenstone, chert and limestone. Boulders are up to a metre in diameter (Stidolph, 1977) but most range from 5 to 30 cm. This wedge-shaped outcrop is up to 300 m thick and extends for 2.3 km. Very good examples of pressure solution can also be seen. The origin of this deposit is up for debate.

Stop 5 Pyroclastics and sediments (345320 8078100)

Stidolph (1977) assigned these outcrops (Figure 4) to the lower unit of the Shamvaian Group which consists of volcanoclastic sediments and pyroclastic rocks devoid of granitic clasts. These rocks form an extensive belt stretching across much of the south-eastern limb of the Shamva Belt.

Mixtures of sedimentary and pyroclastic deposits can be seen over scattered outcrops at this locality, indicating reworking of fine pyroclastic material and agglomerates. Some unusual textures of debatable origin are present.

Stop 6 Porphyritic felsic intrusive/extrusive (346940 8080760)

Many of extrusive rocks within the Shamvaian (Figure 4) are porphyritic and have been interpreted as crystal tuffs with plagioclase phenocrysts, but on fresh surfaces these are difficult to see. The rocks range in composition from rhyolite to dacite and some may be intrusive.

Figure 1 Simplified geological plan Shamva Greenstone Belt

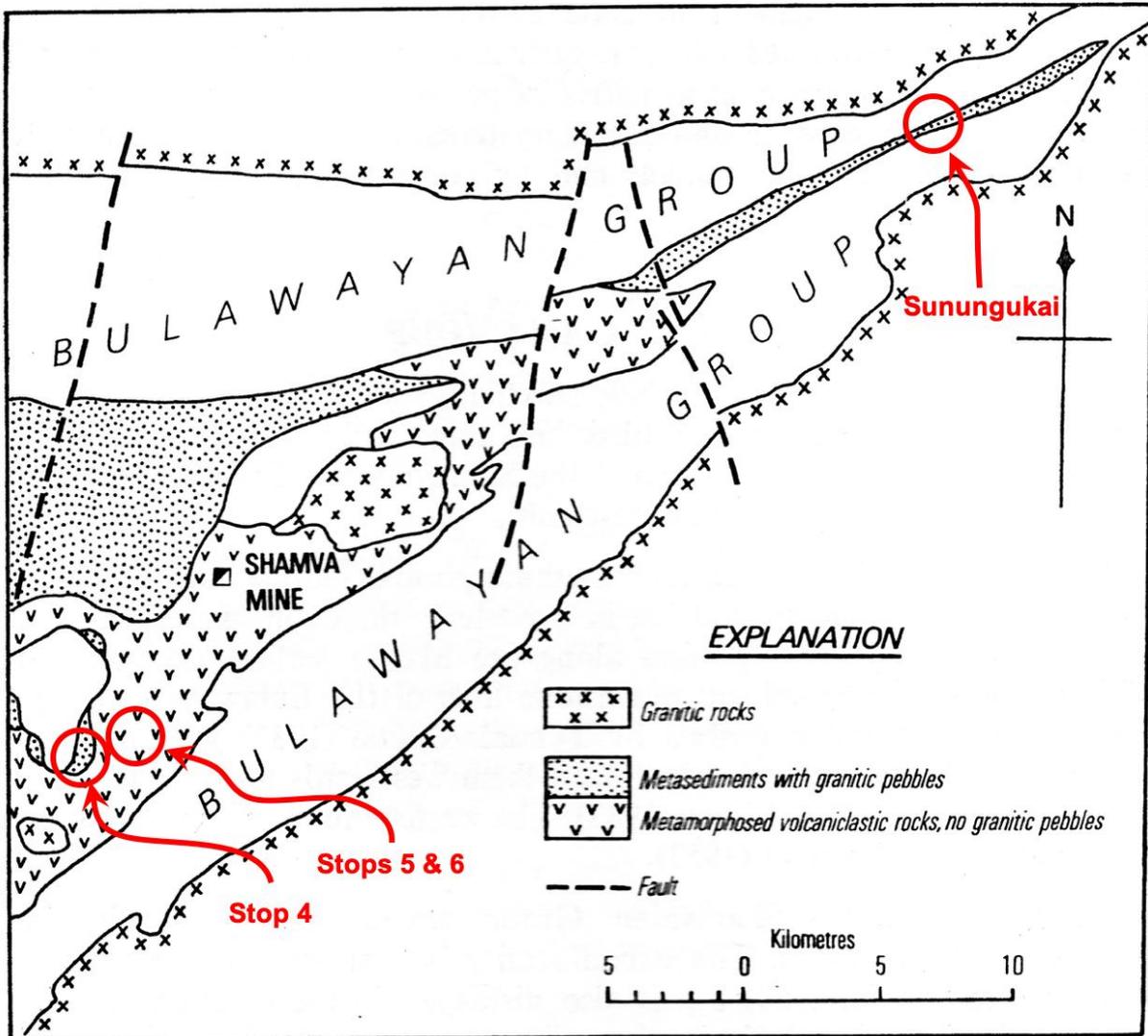
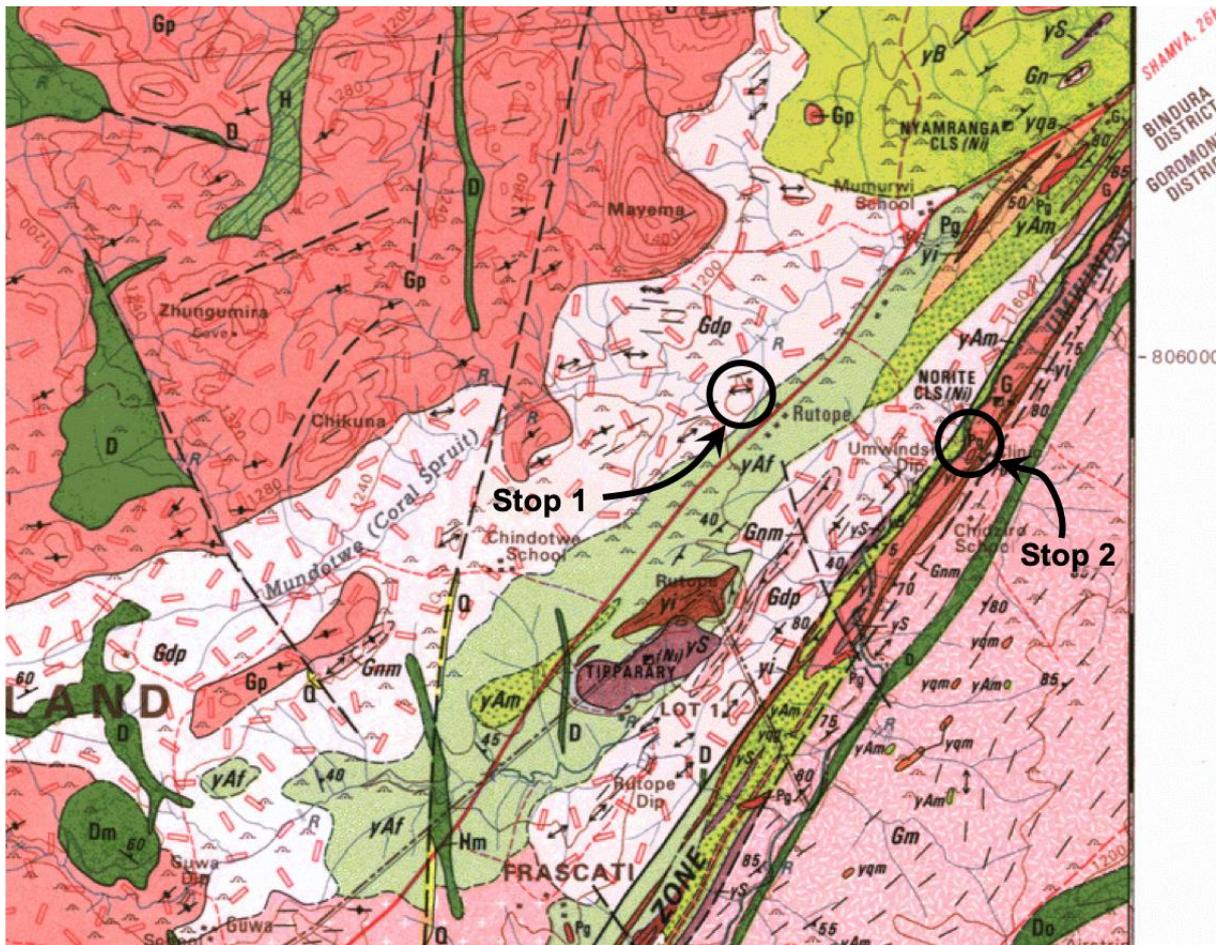


Figure 2

Stops 1 and 2 Porphyritic Granite and Umwindsi Shear

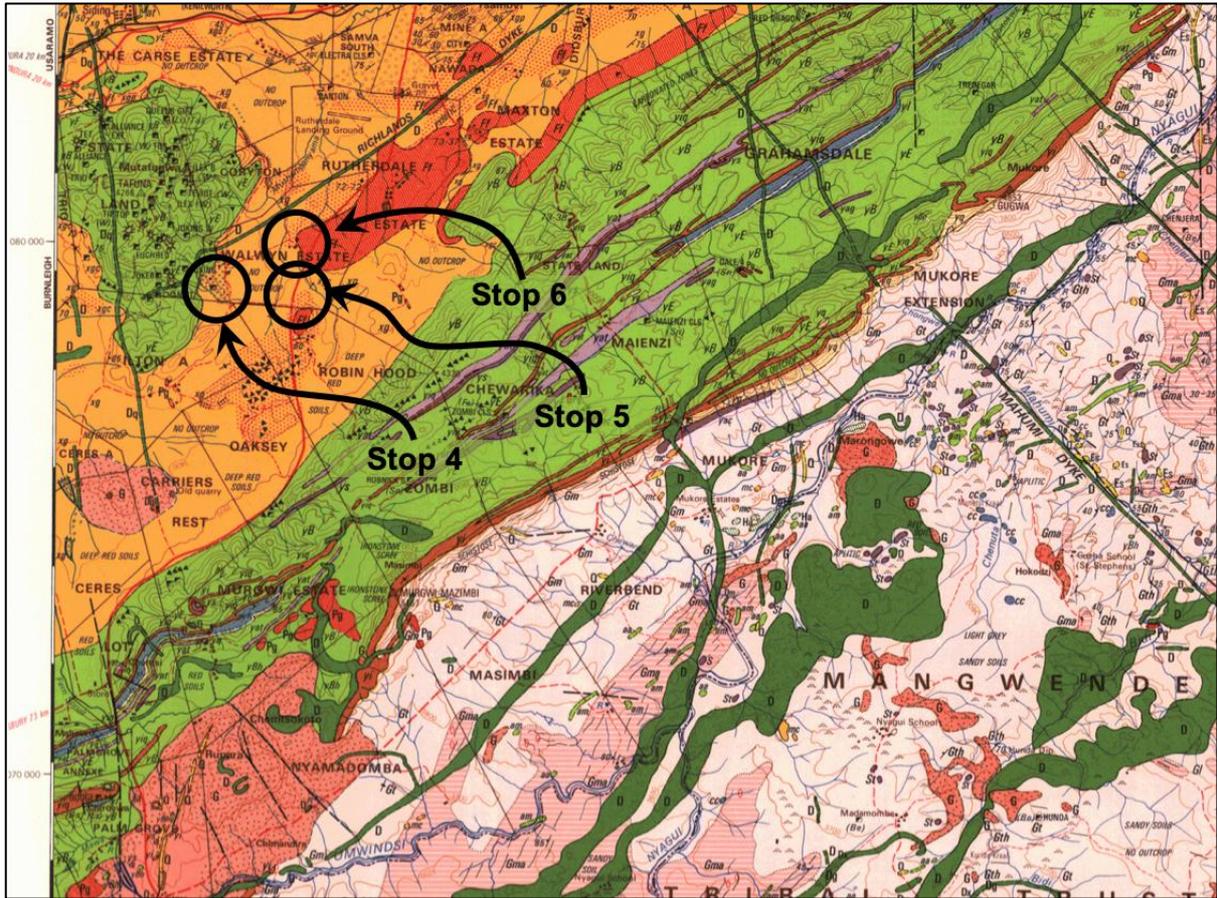


G	Granite
Gf	Fine-grained granite
Gc	Coarse-grained granite
Gp	Porphyritic granite
mG	Microgranite porphyry
Gf	Leucogranite
Gb	Biotite-rich granite
Gd	Granodiorite
Gdf	Fine-grained granodiorite
Gdc	Coarse-grained granodiorite
Gdp	Porphyritic granodiorite
Gdt	Leuco-granodiorite / tonalite
Gdh	Hornblende granodiorite
Gh	Hornblende granite
M	Diorite (unfoliated)
Gth	Hornblende tonalite
Gm	Tonalite to granite, massive to banded migmatite
Gmg	Migmatitic granite gneiss
Gnm	Migmatitic gneiss
Gnh	Gneissic hornblende granodiorite
Gd	Gneissic granodiorite
Gnd	Granodiorite gneiss
Gdp	Porphyritic granodiorite gneiss
Gdx	Xenolithic granodiorite gneiss
Gdh	Hornblende granodiorite / tonalite gneiss
Gnl	Leuco-tonalite / granodiorite gneiss
Gdy	Granodiorite / tonalite gneiss
Gn	Granitoid gneiss

yq	Grunerite quartzite
yi	Iron-formation
yqm	Quartz-mica schists (meta-arenites / sandstones)
yBh	Metabasalt (hornfelsed)
yAm	Amphibolite (undifferentiated)
yS	Orthopyroxene
yFa	Feldspathic amphibolite (meta-andesite)
yAf	Felsic amphibolite (meta-andesite / dacite)
yAm	Mafic amphibolite
yP	Metapyroxenite / peridotite

Figure 4

Stops 4 to 6 Walwyn Conglomerate, felsic volcanics/sediments and felsic porphyry



SHAMVAIAN GROUP	METASEDIMENTARY AND METAVOLCANIC ROCKS	at	Amphibolite (tremolite-actinolite rock)
		Ff, F	Feldspar porphyry (Ff), felsite (F)
		xg, xgp	Greywacke, poorly sorted gritty sediment (xg), pelitic sediments (xgp)
		xgc, xgt	Pebbly greywacke (xgc), volcanic greywacke (xgt)
		(Pattern: Dotted)	Conglomerate
		(Pattern: Horizontal lines)	Volcaniclastic sediment with felsitic pebbles
(Pattern: Dashed)	Dacitic tuff		
(Pattern: Triangles)	Dacitic agglomerate		

BULAWAYAN GROUP	METASEDIMENTARY AND METAVOLCANIC ROCKS	ycc	Calc-silicate rocks
		yl	Crystalline limestone
		yat, yau	Tremolite schist (yat), cummingtonite rocks (yau)
		yac	Anthophyllite-cordierite rocks
		ys, yag	Serpentinite (ys) garnet-andalusite-cordierite rocks (yag)
		yi, yiq	Banded ironstone (yi), ferruginous quartzite (yiq)
		yq, yma	Quartzite (yq), andalusite-mica-schist (yma)
		yFq	Quartz and feldspar porphyry
		yFt	Felsic tuffs (yFt), and agglomerates
		yF	Felsic volcanic rocks-undifferentiated (dacites to rhyolites)
		yDc	Zones with dacitic tuff, dacitic lavas and spherulitic dacite
		(Pattern: Wavy lines)	Spinifex rocks
		(Pattern: Dotted)	Lapilli tuff and agglomerate
(Pattern: Triangles)	Porphyritic basaltic greenstone		
yE, yA	Epidiorite (yE), andesitic greenstone (yA)		
(Pattern: Horizontal lines)	Carbonate-rich zones in greenstone		