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DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY
REGIONAL SURVEYS SECTION.

QUATERNARY SEDIMENTARY BRECCIAS AND EMERGED OFFSHORE BARS NEAR POINT LOWLY

BY
A.R. Crawford

Text
Plate 1
Plate 2
Location Map Scale 1" to 1 mile (S3248)

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Twelve miles east-north-east of Whyalla Point Lowly is the tip of a low peninsula formed of flat-lying current-bedded Precambrian quartzitic sandstones. This peninsula is everywhere less than 350 feet high and declines in height southwards, the eastern slope being steep and the western gentle. The coast on the east side is determined by a major fault trending at 330°. The coast west of Point Lowly is controlled by a fault only north of Black Point, 3½ miles west, this fault trending at 345° so that the coast swings abruptly from west-north-west to north-north-west for a distance of about a mile. Both faults are part of a complex system which dominate the topography of the Whyalla-Port Augusta area. (See accompanying Plan S3248).

East and north of Black Point sandstone cliffs 25-40 feet high, fall to a beach the upper part of which is a stepped platform, the lower being littered with loose slabs. The cliff is thus protected from wave action which is in any case very limited in this sheltered northern most part of Spencer Gulf.

A quarter of a mile north of Black Point small stacks remain on the middle part of the beach. Here and south to Black Point on the lower part of the beach, and being slowly eroded by the sea, are small remnants up to 8 feet high of very coarse sedimentary breccias composed of slabs of the Precambrian sandstone up to 3 feet in length (Plate 1). These are in every possible attitude, and are completely unsorted. Those on the seaward side are less coarse and built of more rounded material. Cementation by lime and silica is intensely hard.

The age of these breccias was uncertain. But on the east coast coarse conglomerates of similar but moderately well rounded material occur three miles north of Point Lowly about 200 yards east

of the assumed position of the fault. These are about four feet thick on the middle part of the beach and have a red iron-stained matrix which is rich in Quaternary gastropod and mollusc shell fragments. They are firmly cemented, and rise up into low cliffs, thickening to form ancient beaches capped by a thin white shell-bed in turn thinly covered with talus. Further south thicker less well cemented accumulations were found banked against the bedrock cliffs. All this material contains fragments mostly less than one foot in size.

The sedimentary breccias are thought to have accumulated at the base of a fault scarp which later became a sea cliff, cut back by marine erosion. The accumulations of less angular material are, significantly, furthest west. The conglomerates on the east coast are representative of transported breccia material, in part cemented subaerially, then submerged temporarily, and emerged again. Evidence of subaerial cementation comes from remnants further south the cement of which is a variety of kunkar.

Between Black Point and Point Lowly are two Quaternary deposits which are related to the breccias but are distinct in type. One is half a mile east of Black Point, where a loose accumulation of coarse sub-rounded slabs of the sandstone forms a dune-like pile blocking the mouth of a small creek. At Stony Point, one and a half miles west of Point Lowly the coast is very low, lacking any cliffs, and a small bay is backed by mobile sand dunes. On its west side, at Stony Point, loose slabs of the bedrock occupy the beach and behind is a boomerang-shaped accumulation of rounded slabs of the sandstone. This has a steep landward slope to a narrow dried-up lagoon, a flat crest about eight feet wide, and a gentle seaward slope (rather steeper than the slope of the beach). The crest is almost as high as the roof of a single storey shack built just above high water mark (Plate 2). The deposit is extremely coarse, slabs being mostly between 1 and 3 feet in diameter. They are loose and mostly lying flat or nearly so. The deposit is vegetated on its seaward and landward slopes,

but the crest is bare.

These deposits are regarded as emerged offshore bars.

Because of the structural mobility of the whole area between Whyalla and Port Augusta, where faulting may well have been continual since the middle Precambrian, it is not to be assumed that any of these deposits necessarily imply the existence of former absolute high sea levels. The lack of known comparable deposits elsewhere along the South Australian coasts suggests that tectonic rather than eustatic changes were responsible.

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ARC:AVK

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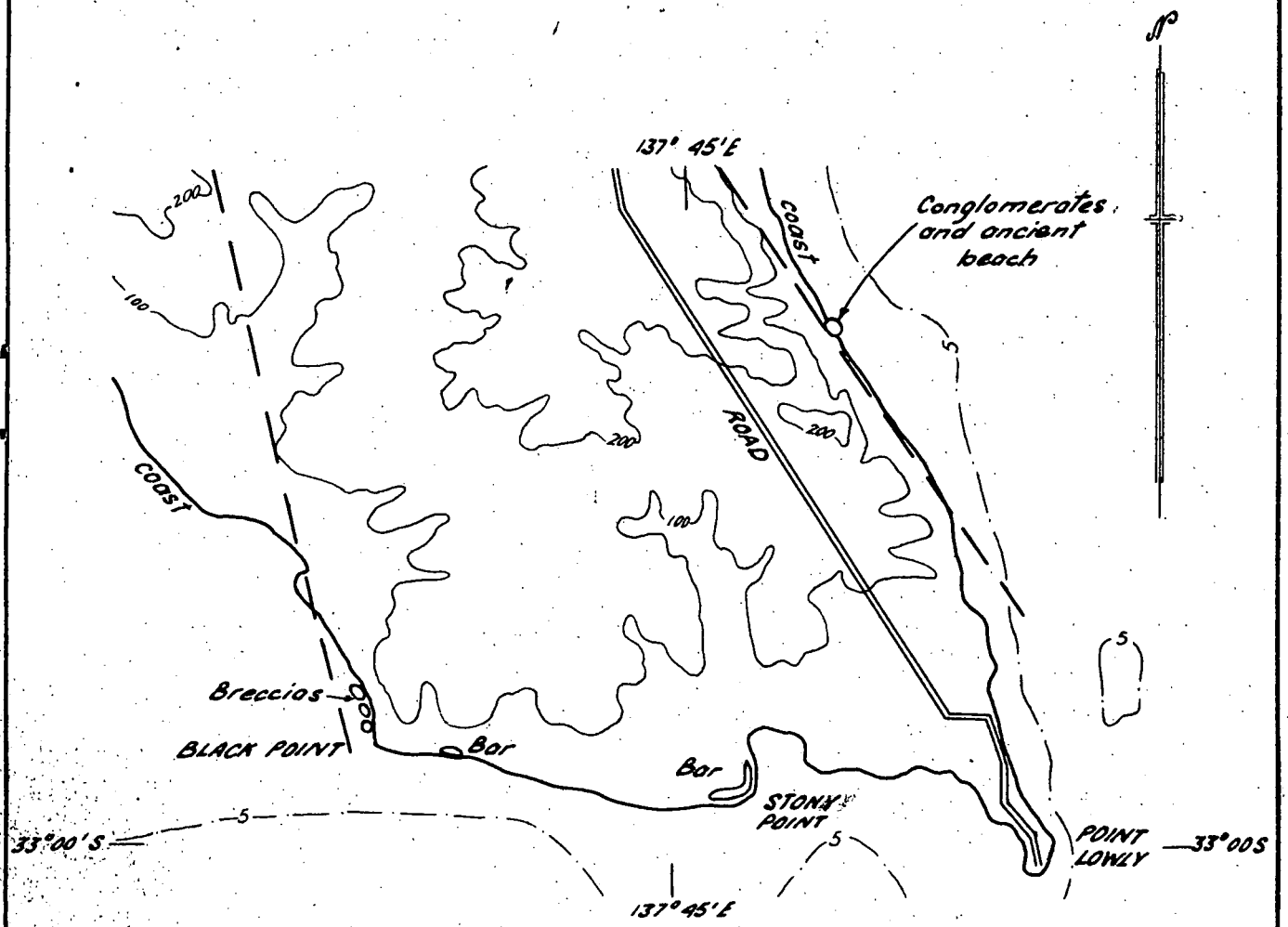
Plate 1. Close-up of coarse sedimentary breccia, Black Point, three miles west of Point Lowly.

Plate 2. View east along crest of emerged offshore bar at Stony Point, 1½ miles west of Point Lowly. Southern Flinders Ranges in background on east side of Spencer Gulf.



SCALE

Miles 1 ½ 0 1 2 Miles

LEGEND

Surface contours (100' interval) ~200~

Sea bed contours (5 fathom interval) -5-

Foult ----------

To accompany report by A.R. Crowford.

S.A. DEPARTMENT OF MINES

Approved	Passed	Drn.	OLDER QUATERNARY DEPOSITS POINT LOWLY AREA	D.M.	Scale 1" = 1 Mile.
		Tcd. B.G.		Req.	S 3248
		Ckd.			Dk 7.
Director		Exd.			Date 2-10-62

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