# Subsurface structure maps (two-way time, depth, isopach and two-way time thickness maps), Western Australian basins

by

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## Abstract

The Energy Systems Atlas is a collection of new geological map layers designed to help explorers identify each of the essential elements/processes of a petroleum system: source, reservoir, seal, burial/maturation, structure/trap formation and migration. To help assess basin structure, subsurface structure maps of major geological horizons, including formation boundaries within the Phanerozoic basins of Western Australia, have been compiled from new and legacy Geological Survey of Western Australia (GSWA) publications. These maps are based primarily on original GSWA interpretation of industry and government reflection seismic data tied to well intersections and outcrop. Structure maps have been compiled from various interpretation reports covering the southwest Canning Basin and Broome Platform (Canning Basin), the northern Canning Basin, Officer Basin, Eucla Basin, Bremer Basin, offshore Bonaparte Basin, the Merlinleigh Sub-basin (Southern Carnarvon Basin), the Peedamullah Shelf (Northern Carnarvon Basin), and both the northern and southern Perth Basins. New maps will be added as digitization continues and as new seismic interpretation campaigns conclude. Outlines of salt intrusions mapped from seismic data in the Officer Basin have also been digitized, and the layer will later include other basins as mapping and digitization continues.

The geology and a description of the data and methods of all subsurface structure maps are outlined in the original GSWA publication, which is given in the attribute tables of the contour versions of each map in the Energy Systems Atlas. GSWA publications are available from eBookshop. Some legacy maps were re-gridded and lightly smoothed using digitized versions of the map data presented in the publications. Subsurface maps do not show updates since the year of publication and do not incorporate newer well and seismic data. Unless otherwise stated, depth maps are given as metres below sea level and are positive downwards, and two-way time (TWT) maps are given as milliseconds referenced from median sea level.

## How to access

The **Energy Systems Atlas** is best accessed using the Western Australian Petroleum and Geothermal Information Management System (WAPIMS). This online interactive mapping system allows data to be viewed and searched together with other datasets. The Energy Systems Atlas subsurface structure digital data are also available as free downloads from the Data and Software Centre via Datasets — Statewide spatial datasets — Energy Systems Atlas — Subsurface structure and isopach/thickness maps, as ESRI shapefiles and MapInfo TAB files and as raster grid (.BIL) files.

## Recommended reference

Thomas, CM and Zhan, Y 2021, Subsurface structure maps (two-way time, depth, isopach and two-way time thickness maps), Western Australian basins: Geological Survey of Western Australia; digital dataset, <https://wapims.dmp.wa.gov.au/WAPIMS/GISMap/Map>.

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