# The Seismic Vault, University of Tasmania - Bend 5, University Reserve, Sandy Bay Campus Tasmania



Fig. 1 - Purposely unassuming entrance to the Seismic Vault

The Vault is situated above Churchill Avenue, on bend 5 of Mt Nelson, in one of the parcels of land, LOT 2, that the University of Tasmania (UTAS) is endeavouring to sell for supposed housing!

Its entrance is purposely unassuming and easily overlooked in order to prevent possible vandalism and deter the inquisitive!

Fig. 2 - Seismic Vault in relation to planned housing!



The Seismic Vault, was constructed and opened in 1957, and was the first station to be set up in the Southern Hemisphere as part of the World Wide Network and has continuously shared collected data on volcanoes, earthquakes, atmospheric and infrasonic signals from the Earth's interior, hazard warnings, tsunamis and the monitoring compliance with nuclear test ban treaties - in fact all earth movements world wide to this very day.

UTAS has been the only university in Australia to continuously collect this research data - from 1957 to 2025!

This site was specifically selected nearly 70 years ago as all the following requirements were met for the installation of a Seismic Vault and remain the foundation requirements for seismic positioning today:

- The site be located on bedrock. The principal reason is that bedrock pads are less susceptible to tilting caused by pressure, temperature, and local disturbances.
- Sites are required to be as far as possible away from any human activity, such as towns, industry, construction, transportation, pipelines, electrical lines, mines and agriculture, in addition to usual natural sources of noise such as rivers, tidal areas, windy canyons, etc.
- Avoid placing the station near trees, power poles, anything that sways in the wind.
- As a rule, to be at least as far away as the thing is high.
- There must be a clear sky view to the North in the southern hemisphere.
- The higher the latitude, the more important this will be to keep the batteries charged through the winter months.
- Basically, large moving objects are a problem, especially when they are active for large portions of the day and at irregular intervals.

But, most importantly, the Guidelines to follow include:

- Install the seismometer on bedrock.
- Maintain 30-50 meters distance from footpaths.
- Avoid large overhead powerlines or trees due to wind induced motion.
- Maintain 3 km distance from major roads, railroads, irrigation pumping stations.
- Avoid large power generating stations with big turbines (10km).
- Bury the sensor with soil, 30 cm for short period, 1-1.5 meters for broadband.

It must be noted that NONE of these requirements can be found in the Sandy Bay Campus BELOW Churchill Avenue which is where UTAS very vaguely if at all, assumes they are going to relocate(!) the Seismic Vault!

NB: It is becoming increasingly difficult to locate accessible new sites for Seismic Research that are far from anthropogenic noise.

### Fig 3 - All earthquakes registered from 1970 to 2011 in Tasmania

# Tasmania

The Tasmania seismic network records approximately 50 local earthquakes each year. The majority of these events are either very small or in remote locations and are not felt by humans.

Recorded events are concentrated in western Tasmania but small events are likely to be under-represented in northeast Tasmania due to the sparse distribution of seismometers.

In western Tasmania magnitude 4 events occur about every 2-4 years and magnitude 5.5 events are projected to occur about once every 100 years.

Significant earthquake activity occurred in an area to the east of Flinders Island in the late 19<sup>th</sup> century. Over 2500 events were felt between 1883 and 1886. Epicentres and magnitude estimates for major events in this zone in 1884 (magnitude ~6.4), 1885 (magnitude ~6.8) and 1892 (magnitude ~6.9) have been determined using intensity estimates derived from published accounts (Michael-Leiba and Gaull, 1989. BMR Journal, 11). The 1892 event was the largest earthquake in eastern Australia since European settlement and caused damage to buildings in Launceston.



The purple dots represent the earthquakes registered by the Seismic Vault from 1970 - 2011 in and surrounding Tasmania.

The LAKE EDGAR DAM is one of three dams which edge Lake Pedder and which together with Lake Gordon combine to make the mighty Gordon Power Station.

Unfortunately at the time the Lake Edgar Dam was built the fault it was built upon was considered to be an inactive fault but this is now not the case - the Fault is Active and is only 75 kilometres from Hobart!

The Seismic Vault consistently monitors the active Lake Edgar Fault along with its World Wide contribution of data relating to the Earth's seismic events.



Fig. 4 - The Lake Edgar Fault Line

The Lake Edgar Fault line is situated at the head of the Huon River, and is an active fault of approximately 30 kilometres in length.

An earthquake magnitude of 6 and above will trigger this active fault - albeit the last major movement was thought to be approximately 18,000 years ago!

Fig. 5 - The Gordon Power Station



The worst case scenario if the Edgar Dam were to fail would be the flooding of Huonville, which is only about 53 kilometres down stream, and surrounds, causing significant damage to property and infrastructure.



## Fig. 6 - Map 1 of Edgar Dam Earthquake Failure



The key to this Lake Edgar Dam Fault is to appropriately manage the seismic risk and, as seismology research has improved greatly, there is minimal risk of a complete catastrophe.

The University of Tasmania is only one of three Seismic Vaults in Australia that have come under the auspices of the University of California, San Diego USA (known as UCSD and are recognised as The World Leaders in Seismology).

# Table 1. List of GSN Host Organizations

| Country         | Host organization              |
|-----------------|--------------------------------|
| Antigua/Barbuda | National Office of Disaster    |
|                 | Services                       |
| Argentina       | University of La Plata         |
| Armenia         | National Survey for Seismic    |
|                 | Protection                     |
| Australia       | Australian National University |
| Australia       | Geoscience Australia           |
| Australia       | University of Tasmania         |
| B.I.O.T.        | US Air Force                   |
| Barbados        | Government of Barbados         |
| Bermuda         | Bermuda Institute of Ocean     |
|                 | Sciences                       |

The UCSD extensively upgraded UTAS' Seismic Vault in mid 2024.

The Vault now boasts monitoring equipment and not just recording equipment which would, in conjunction with the present position, inhibit an 'easy relocation' by UTAS!

What an accolade that UTAS sits so highly within-in the UCSD international network, and that we are an extremely important cog in this world of uncertain climatic occurrences!

The UCSD has the world's largest outdoor earthquake simulator and an international network of seismic stations. UCSD is a living laboratory for seismic safety creating safe structures that will potentially save thousands, if not millions of lives which is paramount especially in this more frequently changing nature of climates - world wide!



Fig. 10 - Earthquake epicentres in Australia



I was initially querying the blasting of the dolerite rock face of Mt Nelson for 1500 odd building foundations and the demolition of several large existing buildings - and queried whether or not the blasting would affect the Lake Edgar Fault!

To date there is not a conclusive answer to my query regarding the active Lake Edgar Fault from any Department I've contacted regarding the blasting - but I am satisfied that UTAS' Seismic Vault and UCSD are monitoring our active Fault, along with All World Wide Earth activities from the carefully selected prime vantage point of the Sandy Bay Campus, Bend 5, University Reserve, Tasmania.

Also through my Seismic and Lake Edgar Fault investigations I've discovered that Mount Nelson and upper Sandy Bay, amongst other suburbs, are potential Landslide sites!

#### Fig. 11 - Landslide hazards for Hobart & suburbs



#### Fig. 12 - Landslide hazards: Sandy Bay & Mount Nelson

 ResearchGate https://www.researchgate.net
(PDF) Hobart - Potential Deep seated Landslide Hazard
11 Jan 2016 — SANDY BAY. MOUNT NELSON. Heights. Albion. TAROONA.
Park. Ridgeway. FERN T ... Landslide Zone. Municipality boundary. Faults.
Tertiary sediments.

The parcels of land, Lot 1 & 2, that UTAS is hoping to sell above Churchill Avenue are being bandied about without any thought of the past, present and futures of specific current ongoing faculties, businesses, occupants, tenants etc - all noteworthy entities and associations with world wide significance.

Ramifications will have detrimental consequences for the UTAS, Tasmania and Australia, and are an appalling indictment of what UTAS, the Liberal and the Labor Governments are exhibiting with absolutely no consideration or respect to the above mentioned groups and our Country as a whole!

Are You: UTAS, Liberal and Labor ALL Really an Alliance of "We Don't Give a Damn" !

I sincerely hope and trust NOT!