

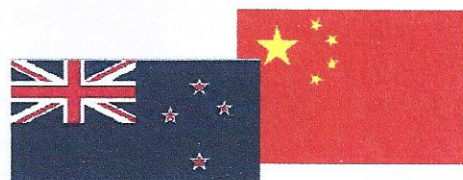


NZ China Friendship Soc.  
Hibiscus Coast Branch  
**Friends News**

朋友們消息

péng yǒu men xiǎo xī

July 2009



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## **“Sichuan Earthquake Reconnaissance November 2008”**

**– a talk by Meng Foon, Mayor of Gisborne**

*Meng Foon very kindly gave a talk to a **joint meeting** of the Hibiscus Coast and Auckland branches, on 28<sup>th</sup> March, 2009, at the Engineering School at Auckland University.*

*The following is a précis of his talk with pictures taken from Meng Foon's PowerPoint presentation, which he kindly supplied.*

The Sichuan ‘**Wenchuan earthquake**’, which measured 8.0 on the Richter Scale, took place in November of 2008, and Meng Foon visited 6 months later as one of a Reconnaissance Delegation organised by the Institute of Geological and Nuclear Sciences in Wellington. The visit was commissioned by the New Zealand Society of Earthquake Engineers<sup>1</sup> to gather, shape and apply knowledge to reduce the impact of earthquakes on our communities.

He went to Sichuan as community representative from Gisborne (one of New Zealand's earthquake-prone zones) to understand the effects on the population of a severe earthquake. Although the visit was six months after the quake, many parts were still in ruins.

Further aims were:

- To foster the advancement of the science and practice of earthquake engineering across all disciplines.
- To promote co-operation among scientists, engineers and other professionals in the field of earthquake engineering through interchange of knowledge, ideas, results of research and practical experience.

<sup>1</sup> <http://www.nzsee.org.nz/>



The members of the group were: Stuart Read, Engineering Geologist NZ, Jiashun Yu Geophysicist GNS<sup>2</sup>, P Brabhakaran OPUS<sup>3</sup>, Philip Yong, and Meng Foon, Mayor of Gisborne.

*Sichuan Province*, in the midwest of China, is 496,000 sq km<sup>2</sup> and the population is roughly 90 million. The capital of the province is Chengdu, with a population of 10 million.

The earthquake is referred to as the “**Wenchuan Earthquake**” as it occurred in the Wenchuan County, north of Chengdu and the main shock travelled 320kms in 80 seconds along 2 major fault lines where the Himalayas meet the Sichuan plain.

### The Devastation

These are some of the figures and when taken in comparison with New Zealand data, it is mind-boggling:

- **69,227 deaths** (population of Gisborne is 45,000),
- **374,176 injured** (population of Manukau City is 354,000)
- The disaster area covered **210,000km<sup>2</sup>** (New Zealand: 268,021 km<sup>2</sup>)
- The population stricken by the earthquake was **15,240,000** (population of NZ is 4.29million).

In the 6 months following the main earthquake there were 274 aftershocks and landslides continued to fall into the rivers and streams.

Fortunately, the people could (and do) rely on total government support at all levels and there are National and Local Emergency Management plans. The children receive regular earthquake drills at school and the armed forces are trained and on standby for such events. There is also an organised China Red Cross.

To try and reduce the possibility of large scale deaths, GPS monitoring of fault areas is carried out every two years, university studies and advice are available. The use of flood-control gates and the prospect of better planning eg. not rebuilding in devastated areas, will also be helpful.

Fortunately, access to the affected areas was good because ‘life lines’ had been cleared and were open early on. The weather was fine, though overcast. All the officials and locals the group encountered were free to speak about all aspects of the effects of the earthquake.



### Aftershock landslide



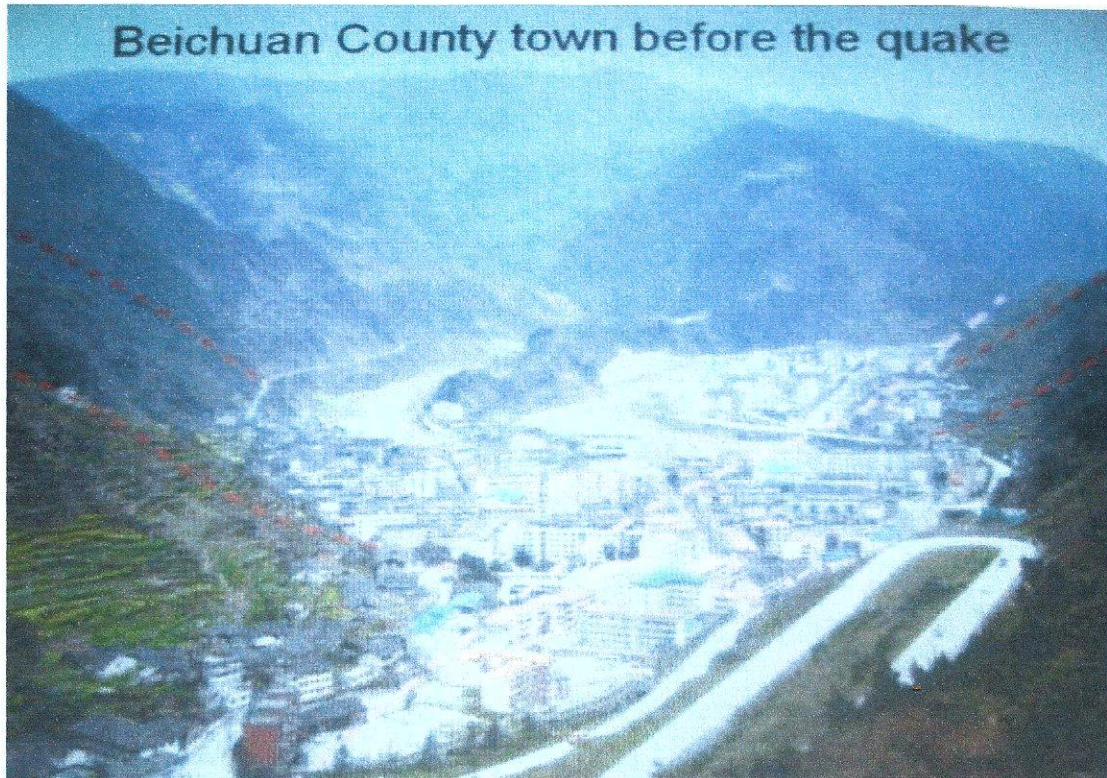
<sup>2</sup> GNS Science, Institute of Geological and Nuclear Sciences, NZ

<sup>3</sup> OPUS: is an International consultancy for infrastructure, architecture, construction, water, environment, asset development and management solutions, based in Australia and NZ

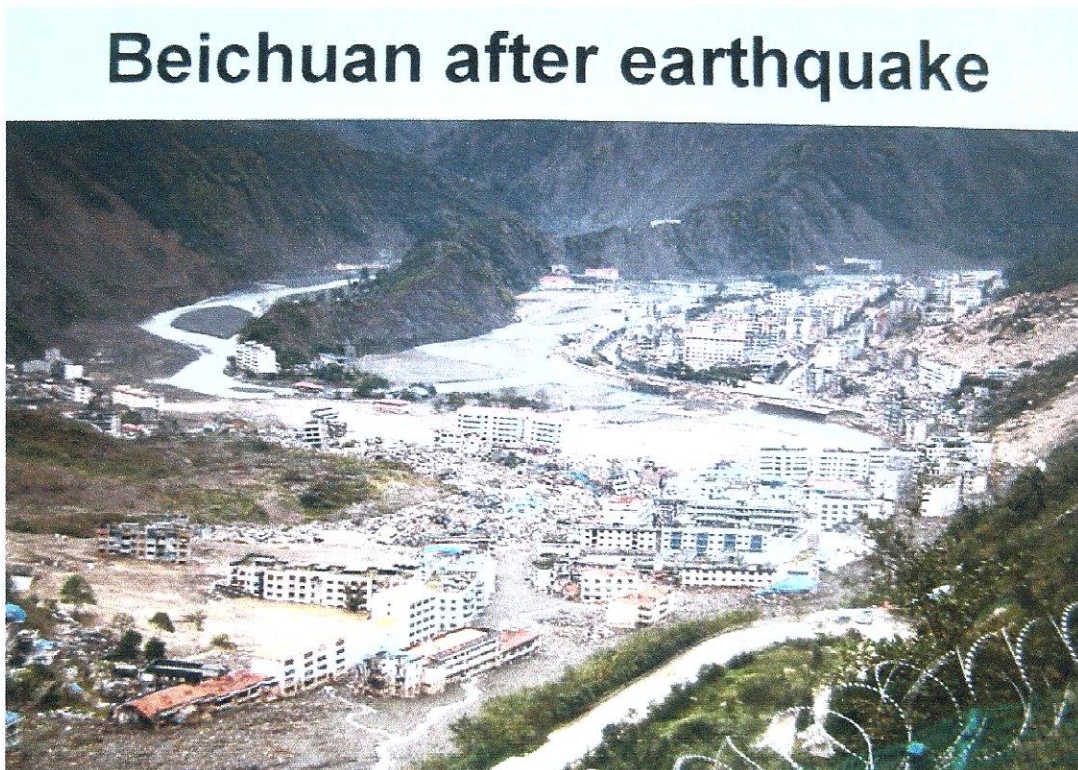


Typical areas the Group visited were:

- Beichuan county town, one of the hardest hit places, had a population of 161,000 and 80% of the town was destroyed. 1000 children and teachers were buried.



**Note:** Red marks indicate where landslides occurred; Blue where a mud-slide (debris flow) occurred





- Eighty percent of Yingxiu township, population 7,500, was devastated with most of the school building brought down in the quake and whole streets of houses and factories fallen or cracked and too dangerous to live in.

**Yingxiu Middle School**



**Yingxiu Middle School**



**Yingxiu township**  
**Population 7,500- 80% destroyed**

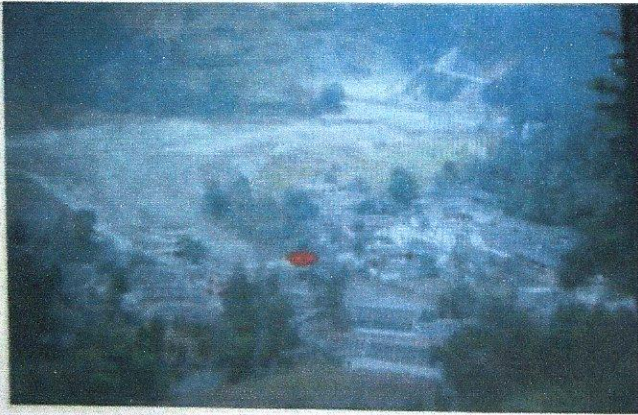


Across the main fault, the main road was lifted up several metres from its original level.

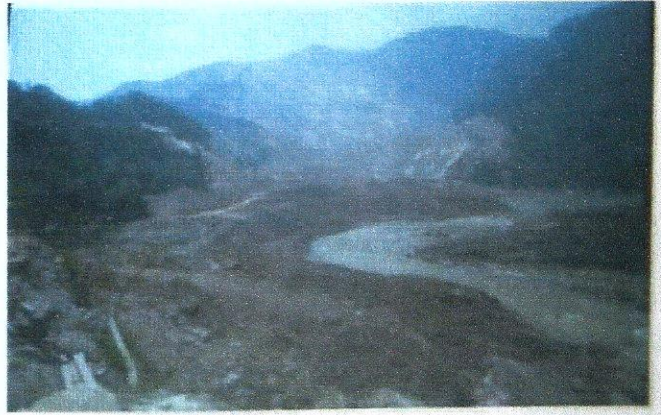


- Other areas affected were Han Wang and Dujiangyan where 60% of the 200,000 residents were in temporary accommodation as of 9/11/08

## • Before



## After



### **The First Response**

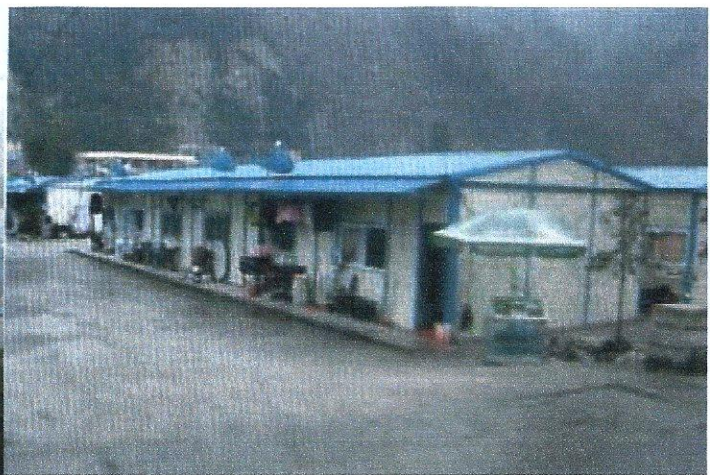
Total government support moved in to rescue, treat the injured, comfort, provide food and provide medical supplies, water etc and 50,000 army personnel with helicopters were on the scene within hours. Fire-fighters, law enforcement officers (to prevent looting), China and International Red Cross workers, local volunteers and private contractors were soon all on the scene to help.

### **The Second Response**

Soon after, the next priorities were shelter, sleeping outside security (tents were provided) and the control of disease when disinfecting and shooting of stray animals had to be dealt with. It was vital to keep lifelines open - roads, airports, power and telecommunications were all treated as of prime importance.

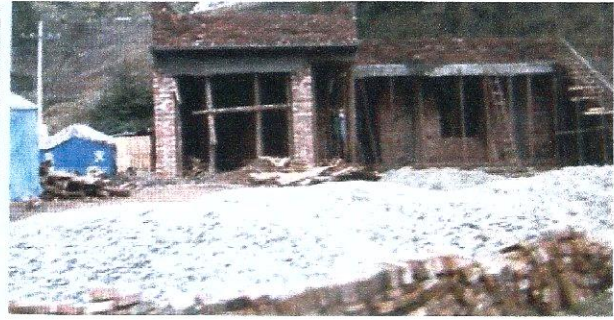
### **Relocation**

The next step was to create communities of similar interests and provide facilities such as police, health, social emergency management and schools.

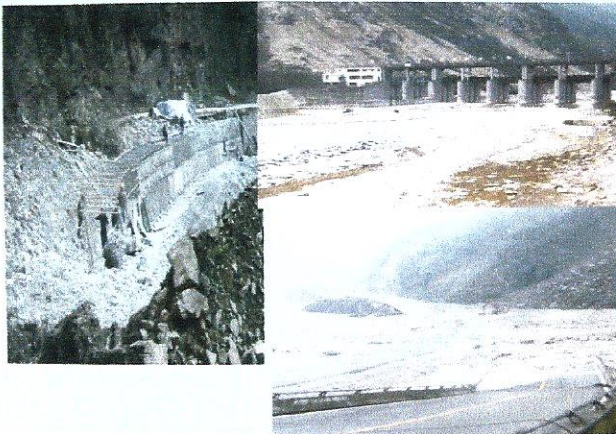


In towns which were less damaged, the people were provided with 20,000RMB to rebuild their homes. Huge numbers of tractors, trucks and supplies were on the scene, carrying bricks for this purpose, each house to receive a dump of bricks (see below), and people set about building their homes as soon as they could.





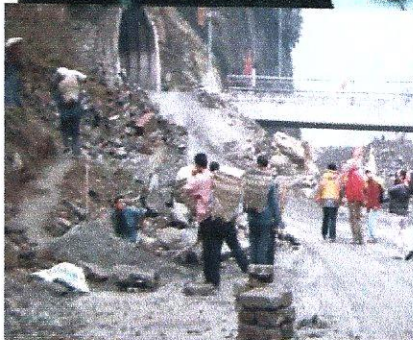
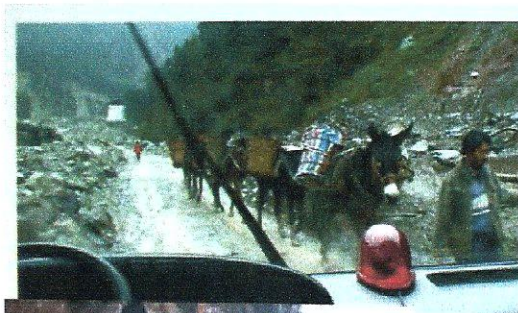
## Life lines restoration No RMA Process



## Recovery

Then came the need to reinforce hillsides, rebuild roads and bridges

All modes of transport were used from baskets carried on backs, donkeys and trucks.





Even six months afterwards, the team saw convoy after convoy of trucks bringing material for the reconstruction of the area.



In terms of why so many buildings fell, examination of damaged buildings often revealed poor construction habits. The team found that in some cases, the concrete used, crumbled in the hand...

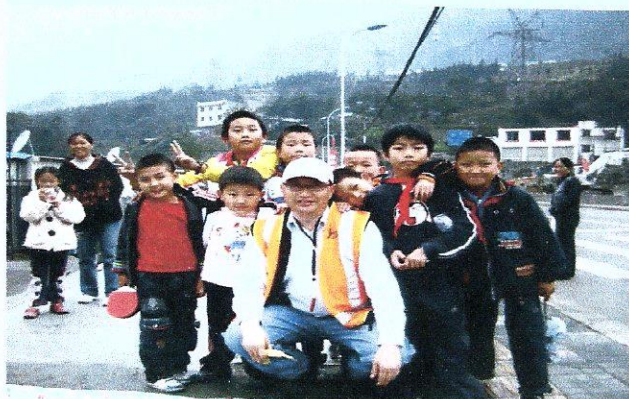


### **The Future**

Government is committed to a three-year reconstruction programme at 1 trillion RMB and the reconstruction committee has all the power to support reconstruction. The buried cities are closed off as a memorial and new cities are to be built in safer areas. In many cases these will form 'business clusters.

Lessons have been learnt and life goes on...

### **The future generation**





Meng Foon's comments on the difference between our communities?

**"Not a lot! Because**

- **We are parents,**
- **We have mum and dads,**
- **We have brothers and sisters, Grandparents, Neighbours and friends**
- **We have memories, we grieve**
- **We are strong resilient people and most of all...**
- **We care."**

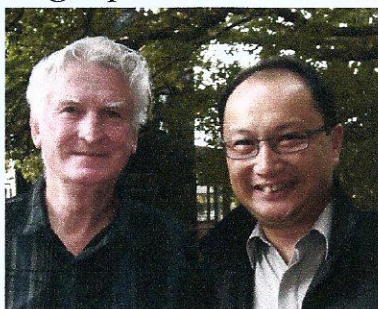
### **His Recommendations**

- That NZ reinforces its earthquake strengthening code with vigilance
- Reaffirm our National and Local emergency management plans and review
- Reaffirm our National education programmes "*what's the Plan, Stan?*" "*Get Ready, Get Through*"
- Ensure excellent building quality and monitoring
- Local Government plans to prohibit building in extreme risk areas
- RMA [Resource Management Act] – focus on action and effects, not process, extend time after civil emergency for lifeline work.

### **References and Acknowledgements**

- NZSEE Inc
- College of Environment and Civil Engineers
- GNS Science
- Statistics New Zealand
- Earthquake Administration, Sichuan Province
- Sichuan Reconstruction Committee
- Photos from Philip Yong, Stuart Read, P Brabhakaran, Jiashun Yu.
- Gisborne District Council

*About 25 people attended a very enjoyable talk, for which Meng Foon is to be congratulated. Afterwards, everybody enjoyed an alfresco buffet supper based on 'bring-a-plate'*



Allen Crosby and Meng Foon  
at the alfresco after-talk buffet

Your editor apologises for the tardiness of this report which is due largely to his and Teri's wanderings in Europe.

For more details given in 5 reports sent back to the NZSEE, follow this link for the first report: <http://www.nzsee.org.nz/WenchuanReport1.xml>, and click on the links on left for 4 more reports