

DAMAGE ASSESSMENT (Moli region, Fauros, Shortland Islands, Gizo Diocese)

Scope: Covers the region five kilometres North and South of Moli on Choiseul plus the populated areas of the Fauros and Shortland Islands. It does NOT include Mono in the Treasury Islands. Fourteen villages and two Mission Stations have been covered and 450Km travelled. Villages not covered in the detailed section of this report are thought to be in reasonable condition and not require external assistance.

This report does not cover villages on Ghizo or within the greater Gizo area. These are the subject of assessments by other NGOs. The report does include information on Logha and Ghizo infrastructure.

Appendices have been included for the Catholic Church infrastructure within the Diocesan area. Photographs have been placed in a companion document as otherwise this report could not be distributed internally on the Solomon Islands email system.

Methodology: Pre-assessment visits to villages were made by Catholic Diocese of Gizo staff who collected preliminary information. The final assessment visit was made by David Kerr (BSc) from Australia in the week beginning 23/4/2007. Several hours were spent at each location and all damage areas were visited, inspected and documented.

Overview: There is significant damage across a wide area. 136 buildings have been completely destroyed (dwellings, kitchens, kindies, churches, clinics). 141 buildings have various levels of damage and can be repaired. Most damage was caused by the tsunami. There were generally three waves, with the first two doing the worst damage. In the case of Toumoa, the second wave was at right angles to the first and caused the worst damage. A number of villages have water problems with the earthquake and tsunami cracking and rupturing pipes from springs. The tsunami has filled many wells with sand and salt water. Some have been collapsed. Some villages have lost a number of water tanks and require at least several to ensure even a basic clean water supply. Several villages are rationing water. In general, most people are returning to their villages where this is possible. There are definitely people who are still traumatised. Some are scared to sleep near the water and others (who I did not meet) are several kilometres away in places they consider to be safe. Wherever possible, I tried to explain (in simple terms) the geophysics behind earthquakes/tsunamis and reassure people that the danger now is significantly less than it was before the disaster. People did understand and this will help. Two government geologists have also been travelling around providing reassurance and this has been beneficial.

The island of Pirumiri appears to have sunk 600mm so that high tide now floods the front of the village each day. All footings have been loosened and there is now a serious long term problem because the water table is a mere 600mm below the surface. Residents who have been there over 30 years say that the water table was previously over 1200mm and the high tide has never flooded the village. I have checked the tide tables and there will be several days later this year when the water will be up to 210mm higher than the recent maximums. It appears that the other side of Pirumiri has risen from the sea. Most houses are on posts which are now leaning drunkenly to one side. Ideally, the whole village of Pimumiri should be relocated to higher ground. However, this is impractical cost wise so the alternative for now is to strengthen footings with concrete and more posts. As buildings are replaced, they will need to be relocated to higher ground.

The island of Poporang appears to have sunk 300mm. This is not a major concern except for one

Nurse's house which now floods daily. The village of Toumoa on Faroe Island appears to have sunk 300mm which with erosion of sand has caused the water to come 20 metres closer to the village. This is not a major issue apart from the stand pipes which are now at the edge of the sea. The stand pipes need to be relocated and the damaged piping of spring water repaired.

There appears to have been significant damage to the reef systems near Toumoa and Gaomai (Shortlands). Coral is shattered and reef fishing (upon which the villages survive) has been severely impacted. Fishing and Trochus collection are severely down. Loss of canoes (mainly by smashing) is also a problem, with 50 dugouts gone in Toumoa and ten in Gaomai. A number of canoes were also damaged or smashed in all other villages.

Many buildings were destroyed or damaged because they were erected on wooden poles, sunk into sand or soft soil. The earthquake shook the poles, thus loosening the sand in the footings. The water from the tsunami then swirled around tearing out the water and causing buildings to collapse or the poles to lean- some very badly. After discussions with ex-forestry workers, it is believed that chain blocks and ropes can be used to pull houses back to level. Jacks could then be used to individually replace or re-install posts. Much sawn timber has also been lost from the communities and a portable sawmill could be deployed to considerable advantage.

Many personal possessions have been lost. Clothing soaking in buckets, generators, clothes lines containing clothes, possessions stored under houses and possessions from inside buildings on ground level were washed away.

The Catholic Church provides valuable services to the people of these communities (adult education, counselling, education of children et al) and will continue to do so. It has also been providing relief services out of the two Mission Stations at Nila and Moli plus the Gizo headquarters. A number of buildings relating to these activities have been either damaged or destroyed.

Actions: Caritas and other parts of the Catholic Church will continue to provide relief services to the areas covered by this report but cannot address the numerous water issues. Water issues have been exacerbated by below average rainfalls, damage to reticulation from springs and damage to rainwater tanks. It is hoped that specialists in the supply of water can assist badly affected villages which are as follows:

1. Toumoa. Spring water supply damaged. Repair of pipes and relocation of stand pipes required. Some tanks destroyed. Two tanks required ASAP to assist.
2. Gaomai. Only 2 of 17 wells are operational. Ex WWII fuel tanks are okay- used for rainwater. Need help with drums to build new wells and fix old ones. One tank would partly alleviate water shortage.
3. Nuhu (Shortlands). Only 8 of 15 wells operational. Need drums or concrete to rebuild or replace wells.
4. Aleang & Harapa (Shortlands). Most wells damaged and salinated. Need drums and/or concrete. Harapa is out of water.
5. Vudutaru (Near Moli). Spring water supply damaged. Pipes broken in hills. Pipes broken

on beach. Standpipes gone/broken. Only small flow available from one pipe.

6. Pirumiri. Fiberglass tanks destroyed when they fell off supports. Four or five tanks lost (depending upon success of repairs to one aluminium and one fibreglass tank). Require two tanks ASAP.

Trauma counselling should be made available for people who need help. In general, some trekking will be required to reach these populations as they could be up to 4Km from the coastal villages.

Caritas is procuring some chain blocks, jacks and other building equipment to assist in recovering post houses which are leaning. Caritas is also providing building materials, concrete, utensils, bedding and a whole lot of other items essential to ongoing living and to assist people to start rebuilding. These need to be delivered as soon as possible.

It is highly unlikely that complete assistance can be provided to the village of Pirumiri to address the water table issues nor can we hope to replace the large number of personal possessions, canoes, generators etc lost from many villages.

Considerable ongoing effort will be required for at least a year to get any of the villages mentioned here back to an approximation of life before the disaster.

Some of the Church infrastructure can be repaired and others really should be replaced. Many buildings were old and in a poor state of repair. The earthquake and tsunami have either accelerated the “replace by date” or damaged some of them too much to repair.

Detail: More comprehensive information is provided in Appendix A (villages) and Appendix B (Diocesan infrastructure). The Appendices cover each village and each Mission Station in detail.

David W Kerr
on behalf of the Catholic Diocese of Gizo and Caritas.

APPENDIX A. Detailed Damage Reports- Villages.

There are over 100 pages of supporting data for this Appendix, including details of possessions lost and emergency supplies required for people to continue living and to reconstruct their dwellings and livelihoods. There are also summary sheets of the items which Caritas hopes to provide to these villages in the next phase of assistance.

a. Toumoa: Fauro Island. 43 buildings destroyed, four damaged. Worst affected village. Most damage was done by the second wave which came across the village from the side. Logs and damaged houses were picked up and became battering rams. Two European style Nurses' houses were floated off their posts and relocated up to 100metres up hill. The Church on the beach was washed out to sea with little remaining other than a few posts and pews. The clinic was twisted and damaged with the contents waterlogged and destroyed. Batteries, antenna and radio were destroyed. The malaria lab (shed) was washed back, twisted and destroyed. Patient records were destroyed by sea water. Fourteen kitchens were washed away, the village store and contents destroyed, nine sheds gone and six copra driers washed away. 50 dugout canoes were smashed or washed away. A large number of personal possessions were washed away. The water was approximately two metres high and reached to the start of the school buildings. The kindy, books, toys and other materials were all destroyed. Only a single doll was recovered. Displaced persons are living in the partly completed church and school buildings on the hill. Many school books and other personal possessions were lost from the dwellings. A huge number of cooking utensils were lost. Over 200 pices of timber had recently been purchased for work on the new church and only 92 survived the disaster. A total of nine dwelling houses were destroyed and four others damaged but repairable. As in all villages, the earthquake loosened soil/sand around posts and the water dug holes around the posts. It may be possible to dismantle the nurse houses and rebuild them near the present locations. The adjacent village of Kaireki was first on the scene to assist Toumoa with some money, household items and cash. Kaireki itself is apparently not affected 'though people are living in the hills and fearful of returning to the low land. Samanago which is on the other side of Toumoa is apparently little affected 'though a report from the water management people suggests that there was damage.

b. Hari Hari, Parolang, Manabisi and Block Communities: Shortland Island. 23 buildings destroyed and three damaged. This is the second worst affected village in terms of total damage. However, in percentage terms it is the worst. Nine dwelling houses, eleven kitchens, the Kindy, the Church and the First Aid Post were all destroyed. A further three dwellings were damaged and can probably be repaired. There are only a few buildings totally unaffected. These were some of the European style permanent buildings up the hill and well away from the sea. The water here raced through the Poporang/Alu channel and also from the open sea. It appears to have combined and was the highest in the Shortlands reaching approximately three metres above sea level. It penetrated inland approximately 400 metres. The buildings here were on more solid ground than some of the other villages. However, the destruction and damage were if anything more severe due to the water force and height. Many personal possessions were lost or irreparably damaged. 250 recently purchased bags of cement have been largely destroyed. 250Kg of nails have been saltwater affected. However quick thinking villagers have poured in oil to prevent further corrosion. A large quantity of

milled wood has been washed away. Two gardens were destroyed by the salt water which has killed every plant.

c. Nuhu: Magusiae Island. 17 buildings destroyed and three damaged. The water from the tsunami was funnelled by the bay which faces towards the SW and across the end of the island. Nuhu is low-lying and occupies the Northern end of the island. Seven dwellings were washed away or destroyed. Nine kitchens and the clinic were lost. One Primary classroom is leaning on its posts but should be repairable. One other has some repairable damage. People are still living in the bush because they have no housing and no tent or tarpaulin. Only eight of 15 wells are functioning; a number of wells have been caved in. The island does not appear to have sunk.

d. Pirumiri: Pirumiri Island. Four houses destroyed and fifteen damaged. As mentioned in the main section, the island has sunk approximately 600mm leading to daily ingress of water at high tide. Tidal predictions show that inundation will be 200mm worse at spring tides. Perhaps levee banks can be constructed to keep the water out- this would be a large job and require mechanical equipment. Most buildings are leaning because the posts have been undermined. A large number (approximately five) of the water tanks were destroyed or damaged. Four houses, including those of the Chief and his brother have been destroyed. Possessions were washed out. Ideally, the buildings need to be relocated but this is unlikely given the lack of resources in the Solomon Islands. The best interim solution- as mentioned in the summary- is for concrete to be added around the bases of all the posts. Then when houses reach the end of their life, they should be rebuilt on higher ground. Many personal possessions were damaged or lost. The relatively new church sustained damage from the earthquake as well as the tsunami. The earthquake cracked on structural pillar. However it retains 80% of its cross-sectional area which is more than sufficient. The wall at the entrance of the church is cracked. However, it will retain its integrity unless struck by another large earthquake. The floor tiles have been damaged by salt water and have lifted off. Water undermined the foundations and floor at one end of the church. This did not result in any collapse and the sand has been refilled. Many of the dwellings are leaning to one side- some dramatically. The villagers have done good work in bracing their own homes and those of others. Once improvements have been made to the water supply and to the basic living situation, doing something about the water table could be a massive undertaking.

e. Vudutaru: Choiseul Island. 16 buildings destroyed and eleven damaged. The bay containing Vudutaru and adjoining villages focussed the tsunami on Vudutaru with considerable resulting damage. Water supply is an issue in this village and those nearby. The sea has damaged the pipes near the beach area. The earthquake has damaged the feed pipe from the spring or waterfall in the hills. There is not much water available from rain tanks. 16 buildings have been completely damaged or lost (including the Kindy and church). A two storey building was swept off its foundations, moved 60 metres and then disintegrated to half the original size. Eleven buildings can be repaired. Again, possessions were swept out to sea by the retreating water.

f. Sixpen village: Choiseul Island. Seven buildings destroyed. The majority of the village people are living in the hills.

g. Leva Leva: Choiseul Island. The Kindy was destroyed plus one house and the church.

Eleven houses have been damaged but are probably repairable.

h. Muma and Vangamuma villages: Choiseul Island. These two villages of 22 families have lost nine houses with a further five that have been damaged and can likely be restored. Many personal items were lost including the Moli keyboard and a sewing machine.

i. Kopanda village: Choiseul Island. One kitchen and contents were swept away. The location near the water at the end of the Moli channel was a key factor.

j. Maleai Village: Magusiae Island. Maleai is the largest village in the Shortland Islands. It is situated at the mouth of the Poporang/Magusiae/Shortland channel and suffered inundation for about 200 metres. Six kitchens were swept away plus eight houses. 56 dwellings suffered some form of damage and can be repaired. The most common problem is leaning houses due to loosening of posts (as in other villages). Two classrooms have been damaged and can be repaired. One teacher house has also been damaged but is repairable. There were several attempts by people to requests new tanks to replace those obviously already ruined by rust. Probably not surprising given the size of the village. The Mzaleai wharf has been destroyed. Overall, the percentage damage is lighter than might have been expected given the location of the village.

k. Gaomai Village: Gaomai Island (top of Shortland Island). Total three buildings destroyed and five damaged. The Kindy, community meeting house and one Kai house were destroyed. The concrete floor of the new church, which is next to the sea, was badly ruptured when sea water undermined it, collapsing some sections and raising others up to 150mm. As in other villages, buildings are leaning. Many possessions were destroyed or lost from under dwellings when the sea retreated. Water is a major issue with only two of 17 wells operating and very few water tanks. It is three Km each way to retrieve water from the mainland. Fruit trees and grass in Gaomai have been destroyed.

l. Kapakopana Village: Poporang Island (along from Nila). Three kitchens and two houses were lost. These were all very close to the water. Seven houses were partially damaged but can likely be repaired provided that they do not fall down before remedial action is taken.

m. Sapusapuai Village: Poporang Island (North side of Nila). Three houses and one kitchen lost. Nine houses damaged but can likely be recovered.

n. Nila Central: Poporang Island. Five buildings partly damaged but can be repaired. Ebu's house has suffered water damage to walls and the bottom leaf areas have been torn away. The usual array of personal belongings, bedding, cooking utensils etc were lost.

o. Harapa: Shortland Island. Water came into the village. The main issue is water with all of the wells salinated or otherwise damaged. Damage was caused to some tanks and all tanks were dry a couple of weeks after the tsunami. There has been little or no rainfall for weeks.

p. Kamaleai: Shortland Island. The earthquake and tsunami did not cause much damage except that salt water killed of much of the taro crop. There is some evidence that part of the village has dropped causing water ingress to part of the school at high tide.

APPENDIX B. Detailed Damage Reports Diocesan & related Infrastructure.

Damage was sustained to infrastructure on Ghizo Island, Moli Island and at Nila (Poporang Island). Other Centres at Noro, Sirovanga and Wagina were not affected.

In general, infrastructure is quite old and the earthquake plus tsunami have seriously reduced the remaining asset life. In some cases, infrastructure is within the Diocese but not owned by the Diocese. An example is St Anne's Vocational School at Nila which is owned and managed by the Dominican Sisters but works in closely with Nila Parish and the Diocese.

What is important is to document all damage within the Church infrastructure of the Diocese regardless of specific ownership.

- 1. Gizo: Ghizo Island.** The Bishop's House and Diocesan Offices suffered considerable damage but are still fully useable and will be repaired under insurance. The Dominican fathers' property at Logha Island is also covered by insurance but there is no insurance on any other property. The Dominican Sisters' convent within Gizo town suffered almost no damage. A buttress to a retaining wall at the rear of the property was not damaged in the earthquake but must be replaced as a matter of urgency. The large concrete roof behind the Family Life Centre collapsed onto the ground and will have to be broken up and taken away. Water came to the floor boards of the Resource Centre but did no damage. Water entered the Family Life Centre and the old unused building next door but damage to the contents is unknown at this time. The externals appear to be untouched despite the fact that the corner building has major white ant activity. The major damage was sustained to Gizo Cathedral, which was opened in 1964. This building is largely constructed from "Besser Block" type bricks made from crushed coral and cement. Only some parts of the Cathedral included reinforcing. The side (brick) wall of the Sacristy fell out and the roof caved in. A new sacristy will need to be built. The small room on the other side from the Sacristy is still standing but has severe cracking and will need to be rebuilt. The main section of the bell tower, including bell, fell into the grounds immediately in front of the Cathedral. The front outer walls are severely damaged and will require replacement. The inner front wall is severely deformed with over 100mm lateral displacement in the top one third section and will also need to be pulled down. The roof is damaged at the tower end but not critically. The side wall of the Cathedral and the verandah-like extension on the other side are in reasonable condition with no discernible damage. The main pillars which enclose the steel supporting frame for the roof are largely intact with some cracking. It is estimated that five of them will need some repair. The rear wall behind the altar is severely cracked, mainly radiating out from the windows. It will also likely need replacement. There are significant cracks in an inside wall to the left side of the altar and in front of the section which was added a few years ago. The bell, cast in 1891, has been recovered and appears intact. The bell wheel has been destroyed. The tsunami reached the front of the Cathedral and the Diocesan grass plus kindly play area (killing the grass and plants) but progressed no further. Andrew Duncan, Gizo Civil Engineer has recommended taking down the right hand wall. However, this appears to have survived very well and further advice needs to be sought. There would be benefit in opening up this wall to provide more air flow and light in the Cathedral which was not originally optimal for the tropics.

2. **Dominican Sisters, Dominican fathers, Diocesan structures: Logha Island.** See Separate Appendix C.
3. **Moli Station: Moli Island.** There were two earthquakes, each of which caused evacuation of the church during Mass, which was completed after the second earthquake. Then the channel (which is approximately 200metres wide and up to 15 metres deep) emptied of water. Shortly after, a large wave rushed in from the North, meeting an inrush of water from the other end, creating a big surge in the middle which then flooded about 60 metres into Moli Island and a lesser distance on Choiseul. Depth was approximately 1.0 metres. Two buildings were destroyed, the fuel shed was washed away, half the timber collected over several years for Church refurbishment were washed away as was the protecting shed and roof. No water tanks were damaged, although a new tank at Moli ended up in the middle of Leva Leva village a couple of kilometres away. The canoe was washed away but returned half full of water next day. Some of the lost timber was also returned plus all the fuel drums. The alternator was submerged but there was no saltwater ingress to the engine due to the mounting height and location of the air intake. The alternator is probably ruined because it has been almost four weeks since the tsunami and the alternator has not been cleaned. Corrosion of bearings, bushes, contacts and wiring will have occurred.

The Church is still standing despite severe concrete cancer in the main supports and rot in the bottom of most of the roof trusses. The wooden bell tower flexed during the earthquake (loudly ringing the bell) but is still intact. The front coral brick wall flexed up to 150mm away from the Church at the top during the earthquake but largely returned to its correct position later. It has been quite badly cracked and there is severe rust in the reinforcing. It should be pulled down and re-erected. However it is unlikely to fall down of its own accord but could come down with danger to life if there is another large earthquake. It is urgent to replace the cancered pillars and also the rotted truss ends. Sections of the aluminium roofing are also loose as the timber has rotted where water has leaked down the attachment screws.

Leaf houses constructed for an imminent ordination were destroyed with one of them being finished off by the windstorm from a US Navy helicopter.

The Diocesan Office building was flooded and there is some new cracking to the foundations where reinforcing has rusted. The contents of the canteen were largely destroyed by salt water. And other rooms were messed up by water.

The bridge over the creek has collapsed and been destroyed. The broken wharf which was still used for fishing has completely gone as has the clam farm nearby. There is severe and new erosion of the water front.

The front wall of the original clinic has been pushed in about a metre at the bottom. It is now dangerous and there are people using it. I have requested Jerome to have some men push the base of the wall out to prevent it slipping inwards and allowing the roof to collapse on those inside. The nearby resource centre, which is made of aluminium, has been destroyed and is not repairable. Walls and ceiling plus bracing struts have been twisted and become detached. Cabinets containing very large quantities of resource materials have fallen over and been saturated with salt water.

Catechist Jerome's house was shaken up, tumbling personal possessions and popping out some of the tongue and groove floorboards. These cannot be reinserted "as is" but can be repaired by cutting off one tongue and nailing the board/s to the bearers. Wooden piers on his house are okay.

The Resource Centre (formerly the old girls' dormitory) has some small new damage to the foundation walls. This is as much due to rusted reinforcing within the concrete as it is due to the earthquake. This building is in need of maintenance but otherwise suffered little additional damage from the the disaster.

The convent is secure (unless there is a major earthquake). There are new horizontal cracks in the dining and lounge rooms. These are aligned with the window lintels and the steel has rusted inside the concrete. There are also new cracks on the North rear corner of the building. The convent is solidly built but has reached the end of its useful life. All gutters, internal wiring and a lot of plumbing need to be replaced. The reinforcing has rusted and it would be difficult to properly repair the cracks other than cosmetically for the short term. Ceiling lining has been displaced in places and hall cupboard doors no longer close due to distortion of the frames. The water tanks do not appear to have suffered. Surprisingly, the large below-ground open water tank did not fill with water.

The Priest's house is also secure for now but with worse cracking than the convent. There are large new cracks in the rear bedroom, the kitchen and dining areas. These are horizontal cracks similar to those in the convent. The house was filled with sand which has now been removed. Tanks are okay but there is no electricity to supply water to the house. This house has reached the end of its useful life and should be replaced as soon as possible.

- 4. Nila Station: Poporang Island, Shortland Islands.** The water reached approximately one metre but there were no waves. The Nila side of Poporang Island appears to have sunk 300mm. Thus, high tide enters one nurse's house daily. Aftershocks at Nila (twice per day) are substantially stronger than those being experienced in Gizo and some of them are strong enough to strongly shake the dwellings. The Sisters' fuel shed was washed away. The generator was submerged for several minutes and unfortunately not flushed with fresh water or cleaned. It is likely that both the alternator and possibly the engine have been irreparably damaged due to corrosion. It is conceivable that the high air intake allowed the engine to survive. However, the alternator is likely to have suffered the same fate as the one at Moli. The Parish office (incl Post Office) was wrecked as was the wooden platform next to it. Much of the grass and plants were killed off by the salt. Central Nila homes have been covered in the Villages section. The new church survived with no damage and the modified roof truss system survived totally intact. Local builders are convinced it would have collapsed without the modifications made last year. The old church also survived but with some minor damage to the floor. The clinic was filled with water which destroyed many of the contents including medicines but is structurally okay. One front wall has a crack which does not adversely affect the structure. The ward section has survived but with some water damage to masonite sheeting and contents. The Sisters' convent survived largely unscathed. The front steps have a couple of extra cracks. The piers are all in good condition except for one which is cracked and should be replaced- though this is not urgent. I couldn't see any problems internally or with any of the structure. Water apparently did not enter above the floorboards. St Anne's staff houses are fine. On the green house, one pier has moved sideways about 15mm.

However this is not serious.

The community hall has suffered major damage to the front wall. This (the wall) needs to be replaced. There are old cracks plus a few new ones in the other walls with rusted reinforcing showing through.

The sewing classroom was a bit of a mess internally but structurally okay. Piers are okay.

Sisters' canoe house is okay apart from some new cracking in the launching ramp and up to 300mm of sand has been washed away from the ramp and surrounding areas. These things will not impede normal operations. Canoes are also okay. Earlier reports of the Sr Joanne being broken were incorrect- this was Fingleton's canoe. All in all, four fibreglass canoes were snapped in half by logs or falling coconut palms.

The rice thresher and building have tilted but seeing they have never been used this presumably is inconsequential.

The canteen was filled with water which destroyed much of the contents. The supporting piers are loose as sand has been washed from their bases. This should be easy to rectify.

All the doors on the water side of the St Anne classrooms have had the bottoms broken off. The classrooms filled with water and debris and then when it rushed out, it snapped the bottom 800mm off all the doors. They were only thin masonite. One water tank has toppled off and is on its side. All sand has been cleaned out of the classrooms. It is unclear whether or not the stove(s) have had their bottoms flushed with fresh water to remove salt. If this has not been done, they will quickly rust. The four sinks have been tumbled out of their frame which seems to have suffered minor distortion. One of the concrete ovens has been fractured all over the top. It is probably repairable as most of the lower parts appear uncracked. Quite a lot of the internal cladding in the kitchen has become detached and/or broken.

The wood fired kitchen near the beach has had the door wrecked by force of the water.

The girls' dormitory which is in current use (i.e. the original concrete dormitory) survived well. There are a few extra minor cracks. Some parts of the concrete floor have dropped approximately 5mm at the joins. The adjoining teacher accommodation is in reasonable condition and similar to the girls' dormitory. The newest dormitory which was attacked by white ants and concrete cancer of the piers partly collapsed in an earthquake in 2006. It has now collapsed significantly further with all the piers giving way and the whole structure is in far worse condition. The earthquake probably saved the demolition team a few hours work.

The Priest's house has been badly damaged. Many of the piers had prior cracking and there is concrete cancer in 30%. Many more have now snapped or disintegrated. The situation is similar to that in the convent on Logha. Of 160 piers, approximately 100 are defective. They should all be replaced using the methodology as for the Logha convent. The house is being occupied at the moment. However, urgent action must be taken to shore up the worst affected area so that the house does not collapse in one of the frequent earthquakes in the area. Given the age and run down condition, the Priest's house should be replaced. Fr. Gerome has checked extensively and believes there is no fibro in the house and thus no asbestos. Even the

bathrooms appear to be masonite with tiles to a high level. The house cannot be left as it is. The piers could be replaced if sufficient funding cannot be obtained for a new building. Cost would be in the order of SBD\$400 per pier or SBD64,000 including materials. A couple of the footings have also broken and would need to be dug out and restored.

The sleeping house for workshop participants has major cracks in structural walls and these cannot be patched. Given that long lengths of all are intact, the roof could be braced at each corner and the broken corner sections dismantled and re-bricked- working in towards the corner. This would be much cheaper than reconstruction and result in a building which should last another ten years.

The kindy has bad cracking at each end of each of the side verandahs. These walls are not structural but do enclose the ends of the verandahs. The footings were not deep enough on the outsides of these walls so the ends of the walls have fallen, tearing the walls away from the sides of the Kindy. The best solution would be to pull down the walls, repair the footings and rebuild the walls, re-keying them into the Kindy. They could alternatively be dismantled and removed completely, repairing the Kindy sections and leaving the verandahs open at the ends.

Both main Nurse's houses have been destroyed. The one near the sea has had the leaf house verandah torn apart. The house has broken walls internally and the floor is deformed in places. There is evidence of white ant damage. Now that the island appears to have sunk, this site on the edge of the water is untenable and a new building site must be found. A second nurse's house further from the water has been destroyed because the rear piers collapsed in the earthquake, twisting the structure and causing major damage. It should be replaced. A third and original Nurses' house is made from coral bricks and has been extensively damaged at the four corners. Just like the workshop sleeping house. It should probably be replaced. However, it could be rendered usable as overflow or temporary accommodation by rebuilding each corner as described earlier. This would restore it to its former condition and functionality.

APPENDIX C. Logha Island

Interim Logha Infrastructure Report- Earthquake-tsunami Disaster

General:

Damage on Logha was caused by both the earthquake and the tsunami on April 2nd 2007.

In general, the infrastructure is old and has been quite run down due to a lack of funds over the years. The disaster has effectively added years of additional deterioration.

There was some damage caused to canoes when the canoe shed collapsed but other canoes were taken to deep water by boat boys who were also able to rescue people and property within the harbour precinct.

The most severe damage has been caused to the Dominican Sisters' infrastructure.

The water level was two metres above ground level in the front of the Sisters' house. This puts the total water height at about three metres above HWL (High Water Level at maximum tide). The ingress of water caused considerable damage to books and personal possessions. Some items were washed away when the water retreated and considerable rubbish was left behind. Most floors were covered with thick, stinking mud from the mangrove swamps below the buildings. It has taken many cleanings with fresh water to try and remove the salt which "attracts" more water in high humidity.

Two weeks after the event, salt water is still oozing from the ground. This has destroyed any plants which were submerged.

Details:

Boat Shed: This tiled structure collapsed, damaging a canoe and outboard.

Old generator shed and workshop. Largely submerged causing internal salt water damage. No obvious earthquake damage.

Diocesan Staff accommodation: Some damage to leaf structures and some water damage. Some damage to internal property.

Priest's House: This has been largely unaffected. The steps at the front have dropped out of alignment and there is some small pier damage in this area at the corner of the house. This should be rectified when other piers are being addressed elsewhere on Logha. According to Fr. Michael there was little or no damage internally and even glasses and cups/saucers survived intact!

Sisters' house and Kai Kai house. The new Kai Kai house built using traditional materials collapsed and was destroyed with some damage to chairs and tables.

Kitchen attached to Sisters' house: This was unaffected apart from water ingress to about 1500mm. The solar batteries are fully sealed and were unaffected. The solar panels erected on a tall galvanized pole were unaffected. The refrigerator was partially submerged. It has been moved to higher ground

but unfortunately nothing has been done to clean it. People will now flush it with fresh water and dry it thoroughly but some permanent damage will already have been done due to corrosion.

Sisters' House: This is the worst affected building and the damage was earthquake inflicted. The house is elevated on concrete piers set on footings which presumably penetrate to the coral. Severe concrete cancer is evident in all the piers and a considerable number (dozens) have simply snapped or cracked right through. Worst affected areas are missing four or five piers with consequent bending of the bearers. I only detected one cracked bearer. The interior of the building appears unaffected apart from some warping of the floor and framing. The asbestos sheeting is undisturbed. The building is not currently safe for habitation due to the potentially unstable foundations.

There were previous reports of white ants in the ceiling area. I have explored the area above the dining and breakfast areas and they appear okay, but there are many other unexplored areas which presumably have the reported white ant damage.

I have spoken with an expert from Queensland who is here providing building assessments for insurance companies. There is no doubt that the building could be repaired by replacing all the piers. This would best be done by jacking each side of a pier, removing the pier, drilling the footing to insert reinforcing which would be locked with an epoxy compound. The new pier would then be poured with concrete. The piers could be increased in cross sectional area. Of course, this would simply restore the building to the way it was but with better foundations. The “downside” of knocking down and replacing the building (and novitiate) would be the process of removal and disposal of the asbestos. Certainly in Australia this would be considered an expensive and major task. It could be more onerous in the Solomon Islands. Rebuilding with metal piers is not feasible on Lohga as each pier would need to be individually cut, welded and treated due to unevenness in the footings. They would be fine for a new construction when they could all be the same size (should that method be chosen for any new construction- see section on Cook's House).

Novitiate Dormitory: Contents affected by water. Some internal paneling sprung. This is easily repaired. The piers under this structure have a larger cross-sectional area than the Sisters' House. There is some concrete cancer but many fewer piers are damaged. Those damaged must be repaired but the building is usable. I was only able to find two small areas where asbestos has been exposed. One small damage area was probably caused when a bookcase was removed for drying. Another occurred when a piece of beading covering a join fell off. According to advice from Painting the exposed ends of the asbestos should be sufficient to prevent any potential problems.

Classrooms: These are built on the ground with no piers and a concrete floor. It is believed that the floor used to be flat whereas it now has a gentle slope, which is not noticeable in normal function (standing and walking). It is even possible that the slope was always there or caused by subsidence after construction. Memories on this are hazy. There is no impairment to use.

Interior paneling has been sprung and the water level in this building was high (about head height for the Sisters and Postulants). There was plenty of damage to bookshelves, their contents and other possessions. The ubiquitous mud has been cleared away.

Laundry: This appears unaffected and is the current living quarters for the remaining sisters who are reluctant to live closer to the water (e.g. In the Novitiate Dormitory).

Cook's House: Unlike the other buildings, the piers on this house are galvanised steel. The house has survived without apparent damage. The piers allowed the building to move and flex in the earthquake more so than with concrete.

Dominican Fathers' & Brothers' House: Relatively little damage was experienced. Due to the higher ground, water ingress was not a problem. Places such as the library were a mess as all bookshelves and books tumbled down.

A number of piers have been damaged and need to be replaced. This is not an urgent requirement and the building is habitable "as is". The repairs should be done to ensure no further damage occurs.

The most obvious damage is to the Solar hot water heater and appears to have been due to the violence of the earthquake coupled with the attachment methodology. Both panels are smashed (this is ordinary 3mm glass). The outer covering of the tank unit is twisted and distorted. The whole thing is likely a total write off.

Chapel: Not inspected but believed to be in reasonable condition.

APPENDIX D. Vanga Training College and Vanga Teachers' College

Not yet available. However, the substantial concrete wharf has been severely damaged and sunk. A wall fell out of the mechanical workshop and the woodworking classroom area. Some of the houses near the creek suffered water inundation and the wooden posts are now at an angle due to loosening. It is proposed to repair the houses using jacks and chain blocks as proposed for a number of the other villages. The walls will be repaired with local labour. The wharf is a major issue and no solution has yet been determined. A temporary wooden structure might be erected.

APPENDIX E. Assessment of Diocesan offices and Bishop's House (Gizo)

The following assessment has been accepted in its entirety by the Insurance company and is being used as the basis of obtaining two quotations from local builders. The insurance assessor has said that it is acceptable for one of these quotes to come from Sebastien who is employed as a builder by the Diocese.

Damage Report for Bishop's House and Office, Gizo

Summary: In general, the structure resisted the Earthquake quite well due to the construction which is largely timber but with concrete and steel supports in key locations. The supporting poles for the upper story are pinned deep into coral beneath the overburden. The lower walls are approximately 1500mm free standing between vertical supports. Render is used to disguise verticals. More significant concrete cover is used in some places as in the badly cracked internal corner to the left of the main door.

The timber flexed and moved considerably in the earthquake. This will be seen from the fact that much of the interior panelling has torn loose from the studs. Apart from this, the structural members appear to have returned to their original positions.

It appears that the upper floor has dropped slightly on either side of the bearer running across the steel supports between the front door and the rear window in the dining area.

There are issues with concrete walls in a number of locations, particularly where concrete has moved differentially with respect to the steel beams and in locations where concrete walls join at right angles.

Water tanks ruptured and pipes broke in the earthquake. It has been necessary to urgently repair these items. Likewise, some panels downstairs have been re-nailed to prevent accidents to staff. It is requested that the Insurance Company acknowledges the urgent necessity to restore water supplies and perform this other work. Further details and itemisation of the modest costs will be provided with the Insurance Claim.

Contents were thrown around violently with a small amount of breakage. A photograph is available of the study after the earthquake. The TV set was thrown off its table into a cushioned arm chair and survived while the table travelled four metres away. A computer and LCD screen were thrown off a desk and survived with some denting. Our internal IT Manager has had to repair the computer in order to continue operations.

We have not inspected the roof cavity. Internal ceiling linings appear to have generally remained in place,

Detail: The following sections provide a more detailed list of damage to the structure and contents. It is expected that a professional building examination and assessment could/will reveal additional areas of damage.

Upstairs:

1. Store Room
Still in a mess. No damage discovered to this point.
2. Visitor Bathroom.
Floor tiles separated from substrate in centre of room near toilet.
Horizontal crack in tiles inside door on left which extends across the shower recess wall.
Vertical crack in tiles above hand basin.
Vertical crack in tiles from centre of window downwards.
Cracks on the Right Hand Side (RHS) of window.
Vertical crack above hand basin
Several other tiles broken.
Grout loosened in corners.
Broken tile behind door.
3. Visitor Bedroom.
Okay.
4. Kitchen.
Horizontal cracking above stove
Cracking of tiles above RHS draining board
Cracking of tiles above LHS of draining board
Bulge in wall inside pantry, facing door. See #5.
5. Main living area.
Many panels detached due to flexing of the structure
Fan blades were all bent. Manually straightened.
Protective covers on fans have all slipped down from the ceiling to the fan bosses
Floor discontinuity in line from front door to rear window consistent with posts holding bearer remaining firm but rest of house dropping slightly.
Bulge in wall separating kitchen from hallway. Consistent with pantry wall remaining in position and dividing wall moving slightly except at the intersection point. See #4
6. Study
Panels loose.
7. Master Bedroom
Panels loose.
8. Master Bathroom.
Some broken tiles at points of substrate joins
Horizontal crack 1000mm high around room (tiles).

Downstairs:

1. Finance office.
Rendering and concrete cracks in vicinity of steel supports.

Concrete cracks in two corners
Detached panelling

2. Main reception area.
Cracking around steel support poles, particularly near entrance.
Many detached panels, some of which have been re-nailed.
Concrete wall 2.5M high separating bathroom has moved out of position.
Stud wall in line with this concrete wall has also moved out of position.
Detached panelling
Damaged sports trophy
Damaged statue
3. Kitchen.
Vertical crack in tiles and wall where wall intersects finance room wall.
Panels off.
4. Bathroom.
Door frame distorted. Door forced open as access required. Doorknob and door damaged.
Multiple tiles cracked and concrete wall moved approx 30mm.
Bad cracking of other walls.
5. Office near kitchen
Bad cracking in two corners adjoining the bathroom.
Panelling
6. Large End Office.
Cracking of render around all poles.
Bad cracking of wall adjoining bathroom.
Detached panelling, some of which have been re-nailed.
7. Miscellaneous
Some external cracking which is associated with vertical steel supports.
8. Short fence sections to the sides of the bottom of the stairs have moved from their normal positions.

***** END*****