Trauma, Livelihoods and Resilience in Post-tsunami Samoa: A Review for the New Zealand Aid Programme

Submitted on behalf of the Archdiocese of Apia, Samoa and the Family Centre, Lower Hutt, Wellington, New Zealand

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- Afeafe o Vaetoefaga: Samoan NGO partner organisation
- The Family Centre, Lower Hutt, Wellington

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- Afeafe o Vaetoefaga provided practical supports throughout Stages One and Two of the Asiasiga projects.
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  - Salote and Siagiagi Peleti
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- Tafaomialo Loudeen Parsons assisted in the delivery of Stage One and Stage Two field work as well as delivery of the Youth seminars. Tafaomialo represented the Asiasiga team within the National Psychosocial Response coordination group, and coordinated between the Asiasiga team and the Ministry of Natural Resources and Environments Disaster Management Office (DMO). Tafaomialo Loudeen led the March 2014 field work working with Archdiocese pastoral team members to gather updated information.
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Saleapaga Catholic Community Stage 1
• Patele Mauola, Parish priest for the Aleipata district provided pastoral care to the project team.
• Faapiano Petelo and Joe Tulo were assigned by Patele Mauola to assist the Asiasiga team at the Saleapaga base.
• Tupu Filipo and family provided consistent local support and connection into Saleapaga village community.

Matatufu Catholic Community Stage 2
• Patele Feleti, Parish priest for the Aleipata district supported the Asiasiga team and approved that the use of the Matatufu Church Hall as a project base for Asiasiga Stage 2.

Asiasiga Pastoral Counsellors Team Members
The Asiasiga Pastoral counsellors team members included:
• Patele Iose: a priest from the Theological College of Moamoa;
• Religious Women: Srs Susanna Vito, Losa and Salota.
• Seminarians: Patemo Sialau, and Jerry Sialau, both senior seminarians.
• Catechists or Pastoral workers within the Catholic church:
  • Mika Taofinu‘u: Nofoalii parish
  • Christina and Sefo Pilimai: Faleasiu parish
  • Tumua Siaki: Vailele parish
  • Ikenasio and Kasia Lui: Moamoa Senior Catechists.

Asiasiga Mental Health teams
The Asiasiga Pastoral counsellors and mental health teams worked in partnership with each other. The Asiasiga Mental Health teams included Family Therapists and Mental Health Specialists.

Family Therapy and Mental Health team.
Taimalieutu Kiwi of the Family Centre led this team, and provided supervision of the approach being delivered in the field. This team included two very skilled and experienced American family therapists from the Family Centre network.
• Jenny Freeman (USA)
• Susan Shaw. (USA)

**Mental Health team:**
• Dr. Allister Bush, Child and Adolescent psychiatrist (Capital Coast DHB, Wellington)
• Richard Sawrey, Psychologist (Wellington)

**Medical team**
This team was based with the Asiasiga teams in Saleapaga.
• Fiona Vickers: Paramedic from the St Johns Free Ambulance (Wellington). Fiona worked within the national and village hospitals.
• Dr Chris Jagger (UK) a specialist in post disaster emergency responses. Dr Chris worked in Lalomanu hospital.
• Dr Debbie Eklund (UK) provided GP services at Lalomanu hospital. She also supported Saleapaga and Lepa College senior students.

*Members of the Mental Health team. Left is Richard Sawrey, Jenny Freeman and Dr Allister Bush.*

**Asiasiga Alo ma Fanau: Children’s Camps**
The Asiasiga Alo ma Fanau or Children’s Camps approach was designed by Taimalieutu Kiwi, with support from the Family Therapy and Mental health team members. Young facilitators were recruited from within the Catholic Archdiocese Youth leaders sector. These leaders were trained and supervised in their roles as Children’s Camp facilitators. Facilitators included:
• Alosio Faalogo (Afeafe o Vaetoefaga)
• Mua’au Diocesan Youth leaders (pictured below) were young leaders that were trained as facilitators to work with children during each of the Children’s camps.

*Mua’au Youth leaders at the Saleapaga base*
New Zealand and International Youth supports for Children's Camps
Three young people travelled to Samoa in December 2009 to support the work with the Children and Young people. They were:

- Leitumalo Paongo-Parsons (New Zealand)
- Jubilee Lupeli (USA)
- Lealofi T Tamasese (USA)
- Dr Rony Berger, faculties of Emergency Medicine at Ben Gurion University and the Stress, Crisis and Trauma program at Tel Aviv University, Israel. He is also the Director of the Disaster Relief and Rehabilitation Unit at Brit Olam organization in Israel. He provided specialist help applying his ‘Erase Stress’ program
- William Spear, Fortunate Blessings Foundation, Connecticut, USA provided specialist help using his ‘Body-Centered Exercises after Natural Disasters’ for children and young people

Asiasiga Autalavou Youth seminars
A series of youth seminars were carried out in affected villages. The seminars were jointly facilitated by Afeafe o Vaetoefaga and the Family Centre. The facilitators were:

- Tina Suimai (Afeafe o Vaetoefaga)
- Tafaoimalo Loudeen (The Family Centre)

Film maker documenting the Asiasiga Psychosocial response project.
Film maker Jenessa Joffe (USA) documented interviews and aspects of the project while it was being delivered in Samoa.

Asiasiga o Aiga – Stage Two Review of Progress
The partnership between the partner organisations continued.

During Stage Two consistent support for accommodation and authorizing personnel was provided through:

- Mrs. Tina Bennish (Archdiocese office)
- Patele Feleti
- Patele Kolio

Asiasiga Pastoral counsellors team
Many of the original Asiasiga team members were recruited again to work with the Family Centre and Afeafe o Vaetoefaga in delivering Stage Two activities.

Seminarians:
- Patemo Sialau,
- Tanielu Tauiliili,
- Martin Tuipola
- Iosefo Poai

Catechists:
- Mikaele Taofinu’u: Taitoala parish
- Sefo and Christina Pilimai (Deacons) Saleaumua parish
- Tumua Siaki: Vailele parish
- Ikenasio and Kasia Lui: Moamoa Theological College
- Aperaamo (trainee): Moamoa Theological College
• Alosio & Alae Faalogo (trainees) : Moamoa Theological College

Afeafe o Vaetoefaga team
• Avaoleataeo Taimalie
• Mariota Su'a
• Lopeti Sueva
• Ioane Viiga
• Viiga Viiga
• Timo Masua
• Telesia Pilimai
• Taulupo'o Pesamino
• Salote Peleti

**Interagency collaboration**

**Samoa**
The Ministry of Women, Community and Social Development assisted in the development of a section of the review questionnaire implemented in Stage Two Asiasiga visitations. We acknowledge the support of CEO Leituala Toelupe and staff of the Ministry for their contribution.

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<tr>
<td>Asiasiga</td>
<td>Asiasiga is a pastoral visitation conducted by members of a community (often matai or church leaders) to those in need to offer spiritual, physical, and emotional support and to hear stories of survival.</td>
</tr>
<tr>
<td>Aiga</td>
<td>Broadly speaking households. Aiga may include extended family members including any blood and proxy relatives. Household and aiga are used interchangeably in this review.</td>
</tr>
<tr>
<td>CTSQ</td>
<td>Child Trauma Screening Questionnaire – assesses experiences of trauma among children and young people.</td>
</tr>
<tr>
<td>Faifeau</td>
<td>Pastor or Minister</td>
</tr>
<tr>
<td>Livelihood</td>
<td>Means of securing the basic necessities -food, water, shelter and clothing- of life including employment</td>
</tr>
<tr>
<td>Matai</td>
<td>Titled head of Samoan extended family</td>
</tr>
<tr>
<td>Mua’aau</td>
<td>Name of the Youth Division of the Catholic Archdiocese of Samoa</td>
</tr>
<tr>
<td>Nu’u</td>
<td>village/s. Village and nu’u are used interchangeably throughout this review.</td>
</tr>
<tr>
<td>Pulenu’u</td>
<td>Village Mayor/s</td>
</tr>
<tr>
<td>Psychosocial</td>
<td>Psychological development in interaction with the social environment</td>
</tr>
<tr>
<td>Trauma</td>
<td>An emotional or psychological response to a terrible event or events</td>
</tr>
<tr>
<td>Sui Pulenu’u Tama’ita’i</td>
<td>Deputy Village Mayors</td>
</tr>
<tr>
<td>WHO</td>
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Executive summary

This review documents the ongoing and residual impacts of the 29 September, 2009 tsunami.

The tsunami was the result of an 8.1 earthquake 175 kilometres south of Samoa. Several Pacific countries were affected by the tsunami including Tonga and American Samoa. In total the tsunami caused the deaths of 172 across Samoa, Tonga, and American Samoa, with 143 of these deaths recorded in Samoa. In addition over 310 people were injured, an estimated 5000 people were affected with approximately 3000 left homeless, and an additional 2000 who experienced severe but repairable damage to their homes in Samoa alone (Government of Samoa, 2011).

The work described in this review was undertaken in three stages. The first stage was an immediate response in 2009 to the psychosocial needs of affected communities in Samoa and consisted of asiasiga1 visits to families, youth, children, and communities and included workshops and community health wellbeing sessions. This initial work was undertaken through a partnership between the Catholic Archdiocese of Apia, Afeafe o Vaetoefaga, and with staff from the Family Centre along with associated therapists, psychiatrists, and medics from New Zealand, the UK and the USA.

The second stage, undertaken in 2011, was a review of the recovery process and included an assessment of psychosocial health and wellbeing and a review of livelihoods, engagement in works and development, and weekly income. In addition to this assessment, aiga and individuals who continued to experience the effects of trauma were offered therapy. Some Community ‘Erase Stress’ programmes were also offered as developed by Rony Berger and ‘Body-Centered Exercises after Natural Disasters’ as developed by William Spear. This second stage was conducted by the Family Centre, Lower Hutt, Wellington, New Zealand the Catholic Archdiocese of Apia, Afeafe o Vaetoefaga, Samoa, and the Ministry of Women, Community and Social Development (MWCSD). The review was supported by the Ministry of Health, Samoa.

The third stage of the review was undertaken in 2014 and involved a follow-up of certain key issues identified in the 2011 review. These key issues were water, agriculture/plantations, and fisheries. This work was undertaken again through the partnership of the Catholic Archdiocese of Apia, Afeafe o Vaetoefaga, and the Family Centre. The follow-up was also guided by Dr Harvy Frankel and Sandy Loewen.

This review firstly presents a summary of key literature concerning psychosocial responses to people caught in disasters and the livelihood impacts and responses to the tsunami in Samoa. This is followed secondly by the background context to initial work and the context of Samoa. Thirdly the review examines the continued psychosocial impacts resulting from the tsunami among children, young people, and aiga (households), and the relationships between psychosocial impacts, resilience, and wellbeing among these groups. Fourthly, the review examines the ongoing impact on livelihoods and access to resources for aiga (households) and young people following the tsunami. Resilience in the context of post-tsunami is further considered with reference to psychosocial wellbeing and access to resources.

The review revealed ongoing impacts, including continued trauma from the tsunami. However, trauma levels were mitigated to some extent by strong wellbeing factors and resilience among aiga and individuals, for example cultural and social resources, rituals and protocols, spirituality, and land tenure. The review also noted the impact for tsunami.

1 Asiasiga is a pastoral visitation conducted by members of a community (often matai or church leaders) to those in need to offer spiritual, physical, and emotional support and to hear stories of survival.
survivors of delays in the restoration of essential needs and services such as water supply, public transport, and access/distance to medical care services and schooling. Although significant gains have been made, much work remains before life returns to pre-tsunami levels for many of those who participated in this review. Since 2011, when the review data was gathered Samoa has experienced a second devastating natural disaster, Cyclone Evan in 2013. Some of the follow-up interviews identified the cumulative effects of natural disasters. The effects of climate change in the Pacific have an impact on the frequency and severity of severe climate events such as cyclones, and in this context Pacific resilience and adaptability will be vital.

Aim and objectives of the review
The aim of this review was to provide:
1. a description of the culturally based asiasiga approach to addressing trauma and livelihood destruction developed by the Family Centre and carried out in partnership with the Catholic Archdiocese of Apia, Afeafe o Vaetoefaga and associated health professionals immediately following the 2009 tsunami
2. the findings of a survey questionnaire and follow up interviews of children, youth and households in 2011 that recorded their experience of trauma and wellbeing and their assessment of the impacts on their livelihood and access to resources since the tsunami
3. a summary of the follow-up interviews with the Sui Pulenu’u Tama’ita’i (deputy village mayors) from each of the original nu’u (villages) concerning village access to water, agriculture, and fisheries in 2014
4. a summary of conclusions and recommendations that emanate from the total project.

The asiasiga approach
The asiasiga review approach is built on the interrelated concepts of asiasiga (pastoral visitations) and the relational self within Samoa. The approach acknowledges that the Samoan self is based on relationships (Tamasese, Peteru, & Waldegrave, 1997, 2005) and that during times of disaster relationships can be interrupted and disturbed harming wellbeing. When this happens the practice of asiasiga (pastoral visits) is vital to restore wellbeing. Through these visitations aiga in distress are identified, reconnected with, their needs managed, and their relationships (re)acknowledged and restored, thus fostering wellbeing among individuals, aiga, and communities. All stages of the review were based on the asiasiga approach.

The asiasiga work throughout this review was undertaken by a team composed of women religious, seminarians, Priests and experienced community pastoral workers within the Catholic Archdiocese of Apia. Afeafe o Vaetoefaga field workers provided essential local support to the partners during every stage of this review.

Stage one: 2009 Post tsunami response: The Asiasiga approach
Immediately following the tsunami in 2009, the Pacific Section of the Family Centre joined with our local partners Afeafe o Vaetoefaga and the Catholic Archdiocese of Apia to provide a pastoral care response, which was developed as the ‘Asiasiga approach’ for those affected by the tsunami. The Family Centre and their local partners were supported to undertake this work through the Samoan Ministry of Health and the National Health Service of Samoa.

The team of pastoral workers, in partnership with the Family Centre’s international network of psychiatrists, psychologists, family therapists and child psychiatrists worked together to develop the asiasiga review approach.

The initial asiasiga work continued from 5 October 2009 for five months until late February 2010.
The initial asiasiga approach had three aspects:
1. Asiasiga i aiga ma nu’u – household and village visitations
2. Asiasiga i aoga, i alo ma fana – children and family programmes
3. Asiasiga i au talevou – youth programmes

Together these three activities made up the asiasiga response.

Asiasiga i aiga ma nu’u – household and village visitations
Asiasiga or pastoral visitations were made to each affected household across the three districts and the island of Manono. Those in need of more specialised care were identified and either referred to local specialists (to the extent possible) or provided with additional support by specialists within the psychosocial response team.

In each location, local village governance leaders or Pulenu’u were contacted with the support of the Ministry of Women, Social and Community Development. Village Pulenu’u were supportive, providing permission to work in the area and identifying aiga most affected by the tsunami.

Skills training for ten Pastoral counselling workers in a five day Just Therapy intensive workshop format was also provided.

A total of 301 aiga in 19 nu’u (villages) from Safata, Siumu, Falealili, and Aleipata districts were visited during this time.

Asiasiga i aoga, i alo ma fana – children’s programmes
The group of pastoral care workers identified above also administered 11 Children’s ‘camps’ for 1295 children. The programme was developed to improve children’s and young people’s ability to cope with stress. The programme had five key components, these were identifying and delivering messages of hope between communities, trauma focused ‘body work’ exercises, an art based therapy, group feedback, and a meal together. The programme was delivered in Samoan and was in-line with Samoan cultural practices and beliefs. The children’s programmes were facilitated in particular through the expertise of Dr Allister Bush, a child and adolescent mental health psychiatrist in Wellington. The children’s programme was conducted in 11 nu’u between 25 October 2009 and 17 December 2009.

Asiasiga i au talevou – youth programmes
A Youth leader’s disaster preparedness training for 400 youth leaders in 18 nu’u was delivered by the asiasiga workers. The youth training programme incorporated research from the Samoan Ministry of Health and the Family Centre and build on trauma response methods developed internationally. The programme was also supported by the expertise of Dr Allister Bush and Richard Sawrey (clinical psychologist in Wellington). The programme ran between 22 December 2009 and 28 April 2010 and was facilitated through a contribution from the KOHA- PICD fund of the then New Zealand Aid and International Development (NZAID).

Stage two: Survey and interviews of psychosocial and livelihoods experience since the tsunami
In 2011, in conjunction with the Samoan Ministry of Women, Community and Social Development, the Ministry of Health, and the New Zealand Aid Programme, the Family Centre, the Catholic Archdiocese of Apia, and Afeafe o Vaetoefaga conducted a survey and series of interviews into the experiences of trauma, wellbeing, livelihood impacts and access to resources for children, young people, and aiga two years after the tsunami.
The interview process also followed the asiasiga approach and, as with the stage one visitations, reconnected with families who had experienced trauma through the tsunami. The review questions were delivered to each group to gain a fuller understanding of the impact of the tsunami.

In total 470 household interviews were conducted with one or two chosen household representatives in 25 nu’u (villages). An additional 198 interviews with youth aged between 16 and 25 were conducted in 14 nu’u (villages), and 407 children in six nu’u (villages) were also interviewed.

The interviews focussed on the experiences of aiga, children, and young people and had four parts. The first was based on the Child Trauma Screening Questionnaire (CTSQ) adapted to the Samoan context. The second included six further questions focussed specifically on wellbeing and resilience among children and young people and was developed by Family Centre staff. The third part concerned livelihoods, and access to resources before and after the tsunami and was not delivered to children. The fourth part was only asked of household representatives and included further questions on employment and access to resources.

The Family Centre, the Catholic Archdiocese of Apia and Afeafe o Vaetoefaga were supported by the Clinical Director of the Tupua Tamasese Mea'ole National Hospital, LeMamea Lemaly Dr Limbo Fui to carry out this review of the psychosocial work.

Stage three: 2014 update on water, fisheries, and agriculture/plantations

In March 2014 follow-up interviews on three key resource-issues identified through the 2011 review process was conducted. This follow-up process was undertaken to enhance the work already conducted and to provide updated information on some key issues. The issues identified for the follow-up were water, agriculture, and fisheries. This follow-up process was undertaken in partnership with Professor Harvy Frankel of the University of Manitoba, Canada, Sandy Loewen, and with members of the Catholic Archdiocese team. Professor Frankel was invited to independently appraise the review data from 2011.

During this follow-up, the Sui Pulenu’u Tama’ita’i (deputy village mayors) from each of the original nu’u where asiasiga visitations were conducted were interviewed. This updated review was carried out with the knowledge and support of the Ministry of Women, Social and Community Development.

Sui Pulenu’u Tama’ita’i were asked about the current state of the water supply, the fisheries and agricultural production in each village. These interviews were recorded, transcribed and analysed, and the data was incorporated in this review to provide a fuller understanding of the impact of the tsunami and the resilience factors evident in Samoa.

Survey and interview findings

The findings recorded here were gathered two years after the tsunami. There is no baseline data concerning trauma and wellbeing prior to the tsunami because the tragic event was not expected. A survey was not carried out immediately after the tsunami because the physical and emotional needs of families were so acute that a survey was seen to be inappropriate and may have obstructed aiga responses to the care that was being offered at the time.

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2 The CTSQ was developed by Kenardy, Spence and Macleod (2006) and is an adaptation of the Trauma Screening Questionnaire (TSQ) used to assess trauma reactions among children. The CTSQ is worded in language accessible to children.
There was a high level of exposure to the tsunami among participants in this review in 2011. Among aiga 76% said that a member of the household had been in the path of the tsunami. Children and youth also reported substantial levels of exposure to the tsunami, 48% of youth and over 20% of children interviewed had been in the path of the tsunami. Loss of a loved one among research participants was recorded as 27% of youth, 16% of children, and 18% of aiga. In addition, housing was severely damaged. Almost all aiga interviewed reported damage to their housing as a result of the tsunami. Furthermore researchers noted that a large number of affected families or aiga had relocated between 2009 and 2011 and aiga had been subdivided as a result of relocation, thus fracturing families, and further impacting psychosocial recovery.

**Trauma and wellbeing**

The survey and interview results two years after the tsunami in 2011 indicated moderately high ongoing levels of trauma symptoms among households, youth, and children. These participants had unwanted thoughts about the tsunami (41% of households, 39% of youth, and 28% of children), felt sometimes like it could happen again (46% of households, and 30% and 23% of youth and children respectively), continued to have bad dreams about the tsunami (32% of households, 30% of youth, and 23% of children), were upset when reminded of the tsunami (45% and 44% of households and youth respectively and 33% of children), had physical stress responses when thinking about the tsunami (32% of households, 41% of youth, and 33% of children), and thought about the tsunami every day (24% of households, 32% of youth, and 26% of children).

However the results also indicated high levels of wellbeing among affected households, youth, and children in 2011. Over 75% of households and youth interviewed were able to sleep okay, while 84% of children were able to sleep okay. Over 80% of households, youth and children felt mostly happy, and over 85% of households and youth felt mostly safe (77% of children reported the same). Almost all households thought family life had returned to normal, while 55% of youth and 59% of children thought the same. Most respondents said they were able to concentrate (only 25% of households, 26% of youth, and 28% of children reported struggling to concentrate). Furthermore 69% of youth, 67% of children and 91% of households reported that they or household members were able to be calm with friends. These results indicate that many respondents experienced high wellbeing on most measures in 2011.

A significant correlation between wellbeing and trauma was found. Higher trauma scores were significantly associated with lower wellbeing scores, or those who were more traumatised were significantly less likely to have high wellbeing. However results also indicated that among those who scored very highly for trauma, some also simultaneously scored highly on wellbeing measures, indicating that even when experiencing trauma individuals are able to maintain wellbeing. Further analysis demonstrated that even within experiences of trauma after the tsunami, individuals were able to restore wellbeing (such as being able to sleep okay, feeling like life was ‘normal’, feeling mostly safe and mostly happy). These results are not contradictions within themselves but instead highlight how experiences of disasters are multifaceted and reveal how people can be both traumatised and resilient to that trauma at the same time.

Resilience may be an important factor in disaster recovery as found in research elsewhere (see Fernando, 2008). These findings suggest that resilience factors often exist alongside experiences of trauma and these resilience factors can be drawn upon to help people deal with their trauma. In light of the increasing occurrence and intensity of tropical storms and extreme weather events in the Pacific, resilience factors may be crucial to climate change adaptation and mitigation in Samoa.
Access to livelihoods and resources
The review assessed people’s (households and youth) perceptions of access to resources before and after the tsunami as they viewed both two years after the tsunami event. The resources assessed were water, land for food crops, land, sea, fishing, animals and livestock, tools, means of transport, housing, paid employment, schooling, and medical care/hospital.

Over 70% of households assessed in 2011 thought that access to almost all resources had been good or very good before the tsunami with the exception of access to tools (55% of households) and paid employment (50% of households). Similarly over 70% of youth interviewed in 2011 thought that access to almost all resources had been good or very good prior to the tsunami (the exceptions were fishing, 69%, transport, 69%, and paid employment, 68%).

Households and youth thought that their access to most resources had decreased since the tsunami. The most notable changes were in access to water, the sea and fishing, animals and livestock, and access to tools. For youth (but not households) good or very good access to land for food and access to land was thought to have reduced considerably, as had access to housing, schooling, and medical care and hospitals.

Aiga representatives interviewed thought that access to resources had decreased since the tsunami. Of households, only 35% thought access to water was good or very good since the tsunami. Similarly households thought that good or very good access to the sea (55% of households), fishing (42% of households), animals and livestock (53%), tools (55%), means of transport (58% of households), housing (66% of households), and paid employment (39% of households) had reduced since the tsunami. However, over 80% of households thought that access to land, schooling, and medical care or hospitals had remained good or very good since the tsunami. While nearly 80% of households thought access to land for food was good or very good since the tsunami. Households thought that access to water and fishing had changed considerably with over 40% of households reporting poor or very poor access to these resources since the tsunami.

Youth results reflected similar changes. Fewer young people thought that access to resources had remained good or very good since the tsunami. In particular youth thought that very good or good access to land for food (47% of youth), land (57%), the sea (35%), fishing (31%), livestock (37%), tools and transport (35%), housing (48%), employment (31%), schools (57%), and medical care (49%) had reduced since the tsunami. Just over 20% of youth thought that access to water was very good after the tsunami. Water, the sea and fishing were particularly identified by youth who thought poor access to these resources had increased since the tsunami. Of youth interviewed around 60% thought that access to the sea and to fishing was very poor or poor since the tsunami, while just over 50% of youth thought access to water was very poor or poor since the tsunami.

Further results from the review of livelihoods indicated that the number of people in households had not changed notably since the tsunami. Most household representatives and young people (over 80%) thought that household health and wellbeing was the same or better in 2011 than it had been before the tsunami. While 88% of households and 77% of youth reported that changes in the household had not affected households or individuals ability to make a living.

The main sources of income for households were agriculture and plantations (36%), followed by employment (20%), remittances (20%), fishing (12%), business (11%) and other sources (2%). For youth the main sources of income were remittances and agriculture and plantations (both at 27% of youth interviewed), followed by employment for 20% of youth, business (13%), fishing (8%) and other sources (5%).
Aiga and youth interviewed in 2011 identified key impacts on their lives which included family members who had died, difficulty accessing schools, livelihoods, tools, employment, and the loss of homes. They also identified the ways in which families struggled mentally and spiritually. They discussed the difficulties they experienced but also the active responses that they had made. These qualitative responses supported the complex findings on psychosocial responses. Both trauma and wellbeing were found in the household and youth responses.

These answers exemplify resilience in Samoa in response to the tsunami. Resilience is broadly understood as a process through which good outcomes are achieved in spite of serious threats (Masten, 2001). Families, youth, children and individuals were able to achieve ‘normal’, happy lives, feel mostly safe, and to have good relationships with friends and families even when loved ones had died, homes and livelihoods were destroyed, and fear and anxiety about the tsunami remained.

In the 2014 update interviews Sui Pulenu’u Tama'ita'i reported that

- access to land was facilitated through the customary land tenure system for many families, and this land was now producing an abundance of food (so much so that families were struggling to sell produce for a good price).
- Water remained a serious issue for over half the villages visited, in particular on Manono Island where they considered there was not enough regular and reliable water supply to meet household needs.
- Fishing resources and access to fishing also remained a serious issue for 71% of the nu’u visited in the follow-up. Fear of the sea, degeneration of coastal fishing following the tsunami, and inland migration all continued to negatively impact access to fishing for many aiga according to the sui pulenu’u tama’ita’i.

Conclusion and recommendations

The 2009 tsunami was a severe disaster for Samoa. In addition to the disastrous impact on human life, it caused widespread damage to resources and infrastructure. In the immediate aftermath of the tsunami much work was done to mitigate the impact and to rebuild resources and infrastructure. In 2009 the Catholic Archdiocese of Apia, the Family Centre, and Afeafe o Vaetoefaga worked together to provide asiasiga therapeutic support and reduce the psychosocial impact of the tsunami on children and young people.

The interviews carried out in 2011 demonstrated the continued high levels of trauma among households, children and young people. However, they also highlighted wellbeing and resilience within aiga, individuals, and communities.

As discussed earlier, there was a significant, 2-tailed, correlation between trauma and wellbeing. High levels of trauma correlated with low levels of wellbeing. However this review also drew attention to complexities within this relationship. It was found that despite high levels of trauma, many respondents also reported high wellbeing. Many respondents, despite experiencing trauma, were able to sleep at night, thought their lives were mostly happy, and felt mostly safe and calm. Thus, this review demonstrates that the relationship between trauma and wellbeing, although significant, is also complex.

The review also assessed access to key resources in 2011. It was found that access to some resources had been severely negatively impacted by the tsunami, particularly access to water, the sea, and fishing. Very poor access to all resources assessed was reported to have increased in 2011. However, many respondents said that access to key resources such as land, land for crops, schooling, and medical care/hospitals remained very good or good. Other resources, such as access to housing, transport, and animals
and livestock, although clearly impacted (according to both youth and aiga) also remained good or very good for most people.

Changes to resource access following the tsunami may affect household ability to earn income and overall household health and wellbeing, however this review demonstrated that in 2011 this was not the case in Samoa. The livelihood survey undertaken among youth and aiga indicates that respondents overwhelmingly did not believe that changes to household health or access to resources had affected their ability to make a living. In addition, and connecting to wellbeing assessments, most aiga interviewed believed that the health and wellbeing of the household was better than, or the same as, before the tsunami, indicating again, that despite the catastrophic effects of the tsunami, respondents had resilience to cope with the disaster. Building on this assessment, the psychosocial survey among aiga, children, and youth, shows that despite trauma experienced children and youth had higher than expected wellbeing.

The combined effect of continued good access to some key resources such as schooling and land access may have contributed to the wellbeing of children and young people. As young people were still able to attend school, as aiga were still able to access land and earn income from this resource, this provided stability for children to recover from the trauma of the tsunami. In addition, as the early asiasiga work showed, community resilience to disasters was high in Samoa. Children, youth and aiga displayed resilience in their responses to the tsunami, both in the initial stage of the project and during the review two years later.

Resilience may be particularly important within the context of climate change. Research indicates that the number and severity of extreme weather events has increased as a result of climate change (Julca & Paddison, 2010).

This review has also drawn attention to the importance of culturally appropriate responses to disaster and culturally appropriate research methods following disasters. Culturally appropriate approaches, research, methods and responses were vital to the initial asiasiga work immediately following the tsunami and were also important in this review methodology, approach, and findings. It is important to emphasise the significance of the cultural responses and methodology of this review.

During the initial stage the team of psychiatrists, psychologists, family counsellors, and pastoral counsellors and workers visited aiga affected by the tsunami. They met with local leadership, including the Pulenu'u before meeting aiga. At each stage Samoan protocol was followed, and where requested religious and spiritual support was offered. Asiasiga provided an opportunity for aiga and individuals to tell their stories of survival and loss and to then receive psychosocial support tailored to their specific needs. The children and youth seminars provided further support building on principles of psychological first aid and on recent research regarding resilience following disasters and incorporating these with cultural knowledge for a Samoan appropriate programme to help young people and children impacted by the tsunami.

In addition the review process in 2011 was guided by culturally appropriate methods. The CTSQ, after piloting, was adapted to fit the Samoan context and translated into Samoan. The ethical guidelines of the Samoan Ministry of Health research were followed. Furthermore, experienced Samoan pastoral, researchers and field workers were involved in the design, implementation, analysis and writing stages of the research at all levels of organisational control. Haney and Elliott (2013) write that residents in disaster areas who

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3 Piloting was funded through was funded by the Head of Mission fund of the New Zealand High Commission.
are asked to participate in research may be suspicious of researchers and reluctant to share their stories with people who have not experienced the disaster. For this reason it can be important for local researchers to direct research in disaster areas and for the research to meet cultural requirements. As outlined above, this review mitigated these issues through engagement at every stage with local partners and leaders. All of the pastoral and field workers participated in ensuring the review processes met cultural protocols and practices in order to build trust and safety, while strengthening relationships with aiga, youth leaders and children. In addition cultural protocols and respectful relationships were accorded to village governance and church ministers, alongside supporting Samoa Government Ministries.

**Psychosocial responses**

Culturally appropriate therapy responses following a disaster were effective and important in the post-disaster recovery stage. This review provided an outline of one way in which this could be carried out in Samoa – the asiasiga approach.

The culturally based psychosocial ‘Asiasiga approach’ intrinsically encourages collective responsibility for one another, especially post-disaster, in order that no-one is left alone in trauma. The asiasiga approach was based on the relational aspect of Samoan identity, that individual identity exists through a relationships, shared genealogy, and mutual roles responsibilities.

Working with children and youth within the context of families and communities was a central part of the asiasiga response and supported the trauma recovery for children, young people, and aiga within highly affected regions. Working within family and community contexts was further important within the relational context of Samoan culture. Individuals should be treated or responded to within the broader context of families, churches, and communities. Providing support within this framework worked well for the asiasiga response team in Samoa following the tsunami.

Resilience can be an influential feature of psychosocial responses to trauma. As this review demonstrates, the relationship between trauma and wellbeing is complex even among those severely affected by disasters. Acknowledging and supporting resilience in disaster affected populations is important to recovery.

In the initial asiasiga stage of disaster response, aiga, individuals, and communities told stories of hope and survival. These messages were then passed on to other affected communities. Facilitating these story-telling spaces and passing on messages was an important way in which the asiasiga approach supported recovery and fostered resilience. As stories of survival were told families demonstrated their own resilience to themselves and to others.

Psychosocial responses are an integral part of any post-disaster responses. In addition to following best practice (such as WHO guidelines on ‘psychological first aid’), psychosocial disaster response teams need to be careful not to re-traumatise children and adults by encouraging them to relive or re-express their trauma. The focus was on highlighting resilient and adaptive responses in culturally ‘normal’ ways.

For culturally appropriate therapy responses to occur there must be considerable understanding among response teams as to:

- what constitutes wellbeing or trauma in the disaster affected country
- what examples of resilience and hope can be drawn upon or be useful
- what services or resources are already available and how can these be further supported?
Responses will consequently vary extensively from country, culture or region.

The review suggests psychosocial disaster response teams can
- draw on a range of familiar responses that are identified as useful in the affected country and not be limited by typical practice in a funding country or country of origin
- follow best practice disaster response guidelines identified by WHO and Sphere with an emphasis on resilience and stories of survival rather than psychological debriefing.

This review also shows how using local resources (cultural, physical, human, spiritual) can be beneficial. The asiasiga approach worked with village structures and local leadership. In each nu’u local leaders were met with. These leaders provided information on which families were most affected and support for the asiasiga process. The asiasiga response utilised buildings such as schools and churches to hold workshops and trainings and local workers were trained, equipped, and supported to undertake the asiasiga work. Local workers and leaders were also instrumental the 2011 review.

This review also found that aiga and youth affected by the tsunami thought that access to some key resources had remained very good or good. This is an important finding, showing that the disaster responses from the Samoan Government, and national and international NGOs was effective and that recovery was good.

In particular restoration of access to education, health and medical services, land for crops and land, remained good. Access to housing and transport was also reportedly good for most aiga.

The asiasiga approach was further tested in Christchurch after the major earthquakes of February 2011 whereby the Ministry of Social Development in New Zealand contracted the Family Centre to deliver trauma counselling and disaster orientation workshops for frontline workers responding to families and individuals who were experiencing grief and trauma symptoms. This was a direct result of the success of the psychosocial work in Samoa after the tsunami and the inexperience in New Zealand of responding to widespread disasters. Resilience focussed training workshops were delivered to 790 frontline workers in Christchurch over a period of six weeks in order to ensure they didn't run the risk of re-traumatising people but focussed on hope, resilience, and stories of survival.

Livelihood responses
The government of Samoa made considerable progress with the recovery process between 2009 and 2011. However the affected households in this review identified some areas where access to resources was still problematic. In particular access to water, the sea, animals and livestock, tools, and paid employment were considered poor by a considerable number of households interviewed.

Land was found to be a very important resource following the tsunami. Access to customary land contributed to a quick recovery as households and communities were able to quickly relocate to higher (unaffected) land. In addition, increased proximity to plantation land reportedly facilitated growth and productivity on these lands.

Relocation, while in many ways very positive, also meant considerable additional work to restore services (particularly water supply). Furthermore relocation may have impeded access to the sea and fishing. Relocation (particularly forced relocation) in the wake of the Indian Ocean 2004 Tsunami had negative outcomes for some of those most affected by the tsunami, in particular coastal fishing communities. Reports from Samoa so far indicate that this has not been the experience of Samoa, in large part due to the accessibility of customary lands for affected populations. However caution needs to be applied if
advocating whole scale relocation. Relocation should be voluntary to be an effective post-disaster reconstruction response. It is also worth noting that Samoa has a history of inland migration following disasters with subsequent returning to the coast, an outcome which may happen again.

Despite the areas of loss since the tsunami, it is quite an achievement that a high proportion of respondents in this study considered schooling, medical care, hospitals and access to land for food had remained good or very good since the tsunami

**Recommendations: Psychosocial responses post disasters**

This Asiasiga project delivered a psychosocial response approach which was developed together with our Samoan partners and the most recent informed approaches to disaster relief and resilience internationally.

1. Given the increased threat of natural disasters through climate change impacts and the level of trauma and psychological stress they create, Pacific nations including Samoa are not well prepared with developed psychosocial and mental health therapeutic services to address the range of stress problem people undergo. The New Zealand Aid Programme and the Non-Governmental Organisations Disaster Relief Forum (NDRF) seriously consider investing in the development of culturally based contextualised psychosocial and mental health services appropriate to the region.

2. A systematic approach to culturally appropriate therapeutic responses for those in need of more intensive interventions should be developed well before future disasters with the aid of experienced psychological and psychiatric professionals because of the very limited ability to provide these services within Samoa and across the region. Disaster responses need to focus on children and youth, particularly in the context of families, communities, schools and churches. These institutions can and do provide contextualised supports to the therapeutic responses within the normal environments for children and young people while they are recovering from situations of severe stress and trauma;

3. Disaster responses should also recognise and employ local networks of support people like the Pastoral workers in this project, who can be trained to carry out the psychosocial first response work. The Asiasiga approach, developed in partnership with the local Pastoral counsellors, led to this same group undertaking the Asiasiga as well as visitation to gather review data on the progress.

4. In the same way disaster responses need to recognise and work with local leadership at both cultural and governance levels. Village Matai, Pulenu'u Village Mayors and the Deputy Mayors or Sui Pulenu'u Tama'itai have all been crucial in identifying families in need of psychosocial support as well providing accurate feedback about village situations for water, fisheries and plantations.

5. The focus of psychosocial work following disasters needs to avoid risk laden interventions like psychological debriefing and its dangers of re-traumatising children and adults. The emphasis should follow WHO guidelines and emphasise resilience, hope, and stories of survival.

**Recommendations: Livelihoods and resources**

6. The customary land tenure arrangements in Samoa proved to be a saving grace for many families whose livelihoods and homes were destroyed by the tsunami. Their ability to move inland and replant crops enabled a speedy resumption of their lives when compared with the disturbing survival processes of such disasters in other countries. It is vital that maintaining customary land tenure arrangements becomes intrinsic to New Zealand’s policies and approaches to bilateral relationships between New Zealand and Samoa. The recognition of the contribution of the Samoan land
tenure systems to the alleviation of poverty needs to be included within the MFAT development policy of the future.

7. Cultural, local and regional governance leadership groups are able to quickly identify resource difficulties, such as water supply and quality and any ongoing problems within their Nu’u. They proved to be more efficient than seeking information from the centralised government ministries or the corporations responsible. Working with these structures, and developing relationships with them at village levels, as occurred in this project, will enable an efficient delivery of and use of resources to respond to disaster situations.

8. The supply of clean fresh water is essential after a disaster where water supplies are often polluted or destroyed. The challenge for the Samoan Government was immense as people moved inland and onto higher ground where water and sewerage infrastructure was often absent. In 2014 twenty four Sui Pulenu’u confirmed that centralised water supply was still a considerable problem. Independent water supply systems, infrastructure and the sources of village water need to be invested in and restored as a matter of priority in order to meet basic requirements hygienically. Village young people and women can be trained in testing water quality and methods to maintain healthy water within villages. Investment needs to focus on water security as the prime goal and good water management through widespread water harvesting, using water tanks, other water containers and desalination plants. High quality water management has to become a government and village priority to meet disaster preparedness, climate fluctuations and periods of drought.

9. Attention needs to be given to both the more successful and less successful aspects of recovery this project demonstrated to increase the quality of responses in any future disaster. The respondents in this review considered the Samoan Government and local professional people, to their great credit, managed to restore a similar level of schooling, medical care, hospital service and access to food as was experienced prior to the tsunami. The nuts and bolts of those achievements should be recorded and taught. Although housing is still a problem in some villages, the overall effort to repair and re-house aiga seems to have been reasonably successful. This, like water supply, is a critical area of recovery after a disaster. The greater losses appeared to be with access to water, the sea, fishing, animals and livestock, tools, and paid employment. These areas require concerted analysis prior to any future disaster so that planning can restore access and resources quickly, and help adaptation to new circumstances where full restoration is not possible.

Recommendation: General

10. There is a need for baseline psychosocial and livelihood data in Samoa (and in the Pacific in general) so that disaster responses can be more strategically managed and prepared for. The data needs to be developed transparently and record the services and resources available nationally and locally throughout the country. The data could then become publicly available and be used to assess what services and resources are needed currently, what are needed in preparation for a future disaster and it will offer a baseline of information after a disaster to guide recovery and restore health and livelihoods.
Review of relevant literature

Culturally appropriate post-disaster assessment of trauma

Research into psychosocial experiences following disasters in non-western countries has criticised the widespread application in these countries of trauma assessment tools and methods which have been developed in western countries. The Interagency Standing Committee (ISAC), an organisation which includes the World Health Organisation, the Red Cross and Red Crescent, the United Nations, and three international NGOs, recognises that many surveys assessing psychosocial responses and needs in emergency scenarios have previously used inappropriate survey tools developed and validated outside emergency settings, which consequently frequently over-estimate the rates of mental disorders (2007, p.45). In addition, ISAC recognises that instruments used to assess psychosocial need in the past have often been culturally inappropriate further leading to potential for misinterpreting results (2007, p. 45). Others have also acknowledged that psychosocial responses to disasters should be culturally appropriate (De Jong, 2002; Fernando, 2008; Pupavac, 2002; Taylor, 2003, ISAC, 2007).

Research on trauma is often focused on Post-Traumatic Stress Disorder (PTSD) and frequently views or constructs PTSD as a universally applicable term and experience (Mehta, Vankar, & Patel, 2005; North et al., 2005). Critics of this approach have argued that responses to traumatic events vary across cultures and furthermore that PTSD is not the most common or relevant outcome for many people in various (non-western) cultures (Bracken & Petty, 1998; Bracken, Giller, & Summerfield, 1995; Osterman & de Jong, 2007; Miller, Kulkarni, & Kushner, 2006). Moreover some critics contend that developing countries are pathologised through the hunt for PTSD and that this is a tool of power and colonialism (Summerfield, 1999, 2000; Pupavac, 2002).

Pupavac (2002) argues that “populations are generally far more resilient than the international aid workers sent in to administer to them. But resilience is effectively viewed by the psycho-social model as evidence of psychological dysfunctionalism, for PTSD has become universalised as the norm” (p.364).

Pupavac’s (2002) critique is that through the search for PTSD and related trauma following disasters, resilience (the achievement of good outcomes in spite of difficult circumstances) is seen as dysfunction instead of a positive outcome. However, as Fernando notes, PTSD is not “the only or even the most common expression of distress after trauma for people in collectivist cultures” (2008, p.230).

Increasing attention is being paid to contextualised approaches to trauma assessment and treatment (Fernando, Berger, & Miller, 2010: Tol, Komproe, Jordans, Susanty, & De Jong, 2011). Fernando, Berger & Miller argue that “most studies of children’s distress and well-being in complex emergencies have conceptualized these constructs using Western psychiatric diagnoses and self-report measures developed and standardized on Western populations” (2010, p.1193). Masten and Osofsky (2010) likewise argue that research on child trauma after disasters needs to be adapted to fit local contexts and note the difficulties of doing so.

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4 ISAC do not provide extensive recommendations or cultural guidelines. They note that where appropriate, methods from another culture may be used to assess or respond to psychosocial needs following a disaster, however they also say “do not assume that methods from abroad are necessarily better or impose them on local people in ways that marginalise local supportive practices and beliefs” (2007, p. 13).

5 PTSD is an established but contested medical diagnosis. The diagnosis of PTSD is linked to a traumatic event or events outside of the control of the individual which threatened the individual in some way. Stress responses associated with traumatic events have been identified throughout history (Turnbull, 1998) however PTSD as a distinct medical diagnosis emerged throughout the 1970s and was first included in third edition of the Diagnostic and Statistical Manual of the American Psychiatric Association in 1980.
Attempts to develop culturally relevant trauma measurements have been undertaken. For example, Fernando (2008) developed a trauma measure in Sri Lanka among Sri Lankan adults who had experienced the civil war and/or the 2004 Indian Ocean tsunami. The assessment was developed in Sinhalese with research volunteers who relayed narratives of trauma which were then analysed to gain understanding of trauma in the Sri Lankan context. Attention was paid to colloquial language and dialect so as to be more appropriate for a wider group later assessed. The study also assessed a wider cross-section of the population using a standard PTSD based measurement tool (PCL-C6). It was found that the PTSD measurement tool used was difficult to translate accurately into Sinhalese, and that it failed to distinguish between those who had been exposed to trauma and those who had not. Furthermore the Sri Lankan measurement tool developed for the purposes of the study identified factors specific to the Sri Lankan experience. For example, intra-psychic factors (factors which occur within the mind) and psychosocial factors (mental health factors relating to social factors) were strongly connected in Sri Lanka. In addition the English language terms for trauma and psychosocial experiences used in the PCL-C did not accurately reflect the Sinhalese constructs developed through the study. Fernando concluded that PTSD “symptoms are unlikely to typify or characterise the entirety (or even the majority) of trauma reactions among most Sri Lankans exposed to trauma” (2008, p.236; see also Miller, Omidian, Kulkarni, Yaqubi, Daudzai, & Rasmussen, 2009).

**Therapeutic interventions for children and Young people following disasters**

Children’s needs in post-disaster areas can be easily overlooked. However, research demonstrates that children and young people have increased rates of psychiatric disorders following natural disasters. Children and young people may exhibit symptoms such as hypervigilance, nightmares, intrusive memories, dissociation, generalised anxiety, separation anxiety, repetitive play on traumatic themes, withdrawal from friends, family or school, mood changes and self-blame (WHO, 2008).

Therapeutic interventions for children experiencing psychological trauma frequently focus on individual interventions, such as Trauma-focused Cognitive Behaviour Therapy (TF-CBT). These interventions are often given in response to a clear diagnosis, such as post-traumatic stress disorder (PTSD). For adults as well as children Psychological Debriefing and Critical Incident Stress Debriefing (CISD) have also been standard processes to address PTSD.

At the time of the initial work in Samoa (October–December 2009), this kind of response was considered by the review and asiasiga teams as unlikely to be useful. In the immediate aftermath of the tsunami a specific trauma diagnosis such as PTSD in children was unlikely, it would moreover have been difficult to attempt large scale screening for diagnoses.

In addition research indicates that these interventions may unintentionally lead to re-traumatisation (van Emmerik et al., 2002; Rose et al., 2004; National Institute of Mental Health, 2002; Yuen, 2009; White, 2007). Requiring or inviting people to speak of what happened to them in a major traumatic event can accentuate the pain and disrupt the protective processes people develop to survive and move on.

The World Health Organisation (WHO) do not recommend single-session psychological debriefing. Instead they endorse the use of ‘psychological first aid’ (WHO, 2003; WHO, 2008). The PTSD Checklist Civilian version (PCL-C) was used to assess the validity of the study developed Sri Lankan Index of Psychosocial Status – Adult Version (SLIPSS-A) which was developed by Fernando for this research and is presented in Fernando (2008).

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6 The PTSD Checklist Civilian version (PCL-C) was used to assess the validity of the study developed Sri Lankan Index of Psychosocial Status – Adult Version (SLIPSS-A) which was developed by Fernando for this research and is presented in Fernando (2008).

7 Psychological first aid can be defined as “basic, non-intrusive pragmatic psychological support with a focus on listening but not forcing to talk; assessing needs and ensuring that basic needs are met; encouraging but...
War Trauma Foundation, & World Vision International, 2011). They also recommend that children who demonstrate signs of trauma after a disaster should be provided with space where they have opportunities to discuss events and emotions but they should not be pushed to talk (WHO, 2008, p.80) and emphasise the importance of family and community support in responding to psychosocial trauma in children (see also Vernberg, Steinberg, Jacobs, Brymer, Watson, et al., 2008). This approach aims to foster feeling calm, hopeful, safe and connected to others, a sense of resilience and being able to help self and others, and access to social, physical and emotional support (WHO et al., 2011, p.4).

In this review, in addition to providing a safe way for aiga, individuals, and children to process their experiences, counselling was offered only after initial asiasiga meetings and assessment by the asiasiga pastoral team if requested.

**Building resilience**

Corresponding to these recommended responses to psychological trauma, Williams and Dury (2009) argue that psychosocial resilience, rather than pathology and vulnerability, should be emphasised when supporting survivors of disasters.

Williams and Dury (2009) suggest asking questions to encourage stories of survival, resilience and strength following the disaster rather than re-living vulnerability experiences. Rajkumar, Premkumar and Thayan (2008), referring to the impacts of the December 2004 Indian Ocean tsunami on India, pointed to the importance of resilience and the role of ethno-cultural factors including social support networks and religious beliefs and practices.

Similarly, Shalev and Errera argue that people who survive disasters should not be viewed as “trauma victims” but “as active participants in surviving adversity”. They say it follows that recommended interventions should “organize adaptation, and provide the necessary resources” (2008, p.151). Likewise, Ann Masten writes that resilience does not come from rare and special qualities, but from the everyday magic of ordinary, normative human resources in the minds, brains and bodies of children, in their families and relationships, and in their communities. It follows that efforts to promote competence and resilience in children at risk should focus on strategies that protect or restore the efficacy of these basic systems (Masten, 2001, p. 227).

The researchers in this review wanted to explore this notion of resilience and test its efficacy after the Samoan tsunami. If adults and children are traumatised by a major disaster and yet at the same time many of those who are traumatised also display resilient traits, then there will be positive pathways that can lead most of them to recovery without pathologising them (treating or viewing people as psychologically abnormal in any way). The focus would then be on linking people back into their social networks and enabling recovery of their own meaning systems and cultural ways of doing things, thus ensuring that their resilient characteristics are identified, acknowledged, and supported.

**Recovery of livelihoods and resources in Samoa**

The Pacific is increasingly vulnerable to natural disasters (UNISDR, 2010). It is within this context that the residual psychosocial and livelihood impacts of the Samoan Tsunami need to be considered. Restoring livelihoods and resources is central to the recovery process following disasters. The following section identifies key resources such as land, water, and the sea, and key livelihoods such as agriculture and fishing.
The role of customary land tenure in recovery

The Samoan customary land tenure system played a pivotal role in the recovery process following the tsunami. Land is widely recognised in the Pacific as spiritually and culturally significant far beyond the economic value it holds (Curry, Koczberski, & Connell, 2012).

The land tenure system influenced the outcomes for access to housing, agriculture and plantations, changes to income and income sources and also influenced wellbeing outcomes. An important part of the way in which land resources were used was the relocation of aiga from coastal land to customary land located further inland (Government of Samoa, WB, GFDRR, 2009; Le De, 2011; Murphy, 2013). Prior to the tsunami this interior land was mainly used for agricultural plantations, with few houses and limited facilities. After the tsunami, during relocations these facilities came under increased pressure, in particular mains water supply was inadequate to cope with a sudden influx of aiga. As a result the recovery of pre-tsunami water supplies was hindered (as is reflected in the results on access to water outlined below in more detail).

Summary of land tenure in Samoa

The majority of Samoan aiga reside on customary lands, which they are entitled to use on the basis of genealogy and through participation in and contribution to aiga or extended families. Matai, the titled heads of extended aiga/families, hold the principal guardianship responsibilities over Samoan lands. The ongoing access of aiga and nu'u to customary lands has been a crucial contributing factor to the recovery of the Tsunami affected nu'u. In the Tsunami impacted districts 94.1% of aiga were living on customary lands (Samoa Bureau of Statistics, 2012, p.87). Access to customary land played an important role in disaster recovery outcomes.

Access to Samoan customary land is facilitated by the genealogical relationships maintained by Aiga. These genealogical relationships are sustained through the responsibilities of Osi and Tautua. Osi is the honouring and fulfilment of kinship based covenantal relationships and responsibilities. Tautua is the carrying out of consistent service to the collective kinship group. These relationships ensure housing and food security within the Samoan context. However it is also a reciprocal process whereby collective family obligations (osi aiga) are fulfilled. Samoan customary lands therefore underpin belonging and identity.

This review process draws attention to the ways in which the Samoan land tenure system is at the basis of the current wellbeing of tsunami affected village populations. The direct access of nu'u and aiga to their own lands contributed to their ability to become self-sustaining. Maintenance of the guardianship of the Matai and the extended family over their lands directly contributed to aiga/extended families re-establishing themselves, their homes, their food security and livelihoods since the Tsunami further inland.

Relocation following disasters is controversial and has experienced limited success in various locations globally. In Asia following the 2004 tsunami several governments proposed a ‘build-free zone’ in various coastal locations (Sri Lanka, Tamil Nadu, Indonesia). As a result of this build-free zone coastal families and communities were forced to relocate and consequently experienced further stress, loss of livelihoods and support, and arguably increased vulnerability (De Silva & Yamao, 2007; Shanmugaratnam, 2005; Hedman, 2009; Ingram. Franco, Rumbaitis-del Rio, & Khazai, 2006; Fernando, 2010).

The Post-Disaster Needs Assessment (PDNA) (Government of Samoa, WB, & GFDRR, 2009) advocated aiga relocation from coastal land to higher ground inland and noted strong support from government and non-government planners, environmental actors, and disaster response teams. In particular the PDNA notes that the proximity of safe higher
land to coastal areas allowed relocated aiga to maintain close ties to family, communities, and churches. Proximity of higher land also reduced the economic disincentive for those working in fisheries or tourism to relocate. The PDNA further noted that there was strong support among affected populations for relocation (Government of Samoa, WB, & GFDRR, 2009; see also Murphy, 2013).

The situation in Samoa following the 2009 tsunami differed from the Asian experience. Pre-existing access to customary land, the proximity of such land, and the willingness of many families (and entire communities) to relocate inland has had positive short-term outcomes over the last five years. Moreover, Samoa has a history of temporary inland location following disasters (Government of Samoa, WB, & GFDRR, 2009; see also Murphy, 2013).

Access to agriculture and tools
Over 80% of the Samoan population reside in rural districts like those impacted by the Tsunami with 19.6% living in the urban suburbs of Apia (Government of Samoa, WB, & GFDRR, 2009). In the tsunami affected areas 94.2% of households had access to agricultural land (Samoa Bureau of Statistics, 2012). While Samoa makes steady progress in economic development, the agricultural economy still sustains the nation including the nu’u most impacted by the Tsunami. Smallholder subsistence farmers contribute around 19% of the agriculture Gross Domestic Product (Government of Samoa, WB, & GFDRR, 2009). The main plantation crops are coconuts, cocoa, breadfruit and bananas (Government of Samoa, WB, & GFDRR, 2009). Livestock includes pigs, chickens, cattle, goats, and sheep.

In 2009 the PDNA estimated damage to crops from the tsunami at SAT$1,531,750, the damage to livestock was SAT$324,000 (Government of Samoa, WB, & GFDRR, 2009). The estimated losses to agriculture were assessed at SAT$8 million and losses to livestock at SAT$1.4 million (Government of Samoa, WB, & GFDRR, 2009). In total damages and losses to agriculture were estimated at SAT$9,622,075 and at SAT$1,682,100 losses and damages to livestock (Government of Samoa, WB, & GFDRR, 2009). The losses to livestock and agriculture had a considerable impact on the health, education, and economic outcomes in the villages most affected.

Although the damage caused by the tsunami was widespread, not all nu’u were equally affected. The nu’u that experienced intense damage during the tsunami were Saleapaga, Lalomanu, Satitoa, Malaela, Lotopue, Mutiatele, Saleaumua and Manono Island. In these nu’u many aiga reportedly subdivided and moved inland. In other nu’u like Vavau and Aufaga many of the Aiga were already located at higher elevations above the sea so fewer aiga were affected.

The Government of Samoa prioritised rehabilitation of home gardens and plantations to reduce food dependency and food insecurity (Government of Samoa, 2010). Recovery resources were committed to supplying seedlings and livestock in affected areas. In 2011 340 aiga (out of 500 targeted) had received chickens and pigs to replenish lost livestock (Government of Samoa, 2011, p.28). The PDNA also identified damages to tools, farm inputs, and equipment and noted the need to provide equipment such as farm tools in order to facilitate recovery (Government of Samoa, WB, & GFDRR, 2009). The Ministry of Agriculture had also distributed planting materials and vegetable and fruit tree seedlings (Government of Samoa, 2011). In light of the damage to fisheries (discussed below), engagement in and rapid rehabilitation of agricultural and livestock production was identified as particularly important for those who had formally depended on marine resources for income and daily subsistence (Government of Samoa, 2011, p.28).
Access to the sea and fishing

Samoan Context

Samoan village histories, genealogies and identities are often connected with certain fish or seafood’s from their coastal waters. These symbolise the interdependent and close relationship between the sea, its produce and the people who draw from the sea. The physical, environmental and spiritual relationships between people and the sea are nurtured. This approach means that the sea and its produce are not treated as commodities to be freely exploited but that people have considerate and reciprocal relationships with the sea. When these relationships are disrupted there is a corresponding decline in produce from the sea. This particular and significant relationship is protected through the constitution, under which all Samoans have equal access to coastal resources.  

Samoan fisheries activity is differentiated by culturally based gender division and gender specific protocols. Men and male youth carry out day and night time fishing within the lagoon and outside of it, using canoes, diving, nets, lines and other indigenous fishing methods. Women and young people are responsible for and knowledgeable about diving for or gathering different kinds of seafood’s and shellfish usually within the lower tidal areas. Both the men’s and women’s fishing activities require specialised fisheries and environmental knowledge which has been built up over time and with practice.

Due to the proximity of neighbouring countries (American Samoa, Wallis and Futuna, Tokelau and Tonga) Samoa’s Exclusive Economic Zone (EEZ) does not extend to 200 nautical miles offshore in any direction, and at 120,000 square kilometres is the smallest in the Pacific region. It is vital then that Samoan fisheries activities are managed well and are protected for the use of its present and future populations.

Fishing is an important part of Samoan culture and economy. In 2007 fishing was 6.2% of Samoa’s GDP, and most families are engaged in fishing activities in various ways (Gillett, 2011). According to the Samoan Bureau of Statistics 94% of the economically active population over 15 years in Samoa are men who carry out farming and fishing in the ‘subsistence’ economy (Samoan Bureau of Statistics, 2012, p.78). Women were more occupied with ‘making goods for sale’ (52.8%) (Samoan Bureau of Statistics, 2012). In this review almost all of the Sui Pulenu’u Tama’ita’i women were actively involved in both fisheries and/or agriculture.

Unfortunately it has not been possible to access comprehensive government information on the overall level of fisheries activities prior to the Tsunami or specific data on the tsunami impacts within the specific nu’u that are the focus of this review. Fisheries information that was made available, through the Fisheries Division, is included.

Tsunami impact and recovery: access to the sea and fishing

The total cost of fisheries damages and losses was estimated in the PDNA at SAT$24,150,200 all of which was in the private sector (Government of Samoa, WB, & GFDRR, 2009). Loss of equipment, considerable pollution of sea water, and anxiety over the sea were all identified as ongoing issues following the tsunami.

Restoring access to fishing and the sea was recognised by the Government of Samoa as essential to recovery. By 2011 the government had replaced 16 fishing alias belonging to

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8 Under Samoa’s Constitution (Article 104) all land lying below the line of high water is vested in the State, therefore legally accessible to all Samoan’s.
9 The census forms ask participants if they “Produce subsistence (agriculture, fishing) for sale/use e.g kapisi (bok choy), tau’ia (strings of fish).” It could be that the format of the questions on employment activities unintentionally minimizes the contributory roles women have in agricultural and fishing activities. In the future it would be beneficial to collect more expanded gendered qualitative data on rural Samoa’s economic activities.

18
registered fishermen, and an additional six fishermen had received support to repair vessels (Government of Samoa, 2011, p.28). In spite of concern over the state of the fisheries sector there is some evidence that recovery has been good. McAdoo et al., (2010) report that although fishing income and take decreased dramatically in the immediate months following the tsunami, by September 2010 sales and total take were restored to pre-tsunami levels. They write that loss of equipment resulted in a fishing hiatus but the industry recovered when support services were made available (McAdoo et al., 2010).

Access to transport
The tsunami severely damaged coastal roads throughout the south and southeast Upolu Island. According to the 2011 census, 31.8% of households in tsunami affected regions had a motor vehicle (Samoa Bureau of Statistics, 2012).

The PDNA estimated total damages to the transport sector (including roads, vehicles, seawalls, bridges, and a wharf) at SAT$73.35 million (Government of Samoa, WB, & GFDRR, 2009). The damage to vehicles alone was estimated at SAT$1.69 million with the loss of around 50 cars, five buses/trucks and three heavy vehicles.

In 2011 the Government of Samoa reported that by the end of 2010 all the contracts for road works had been completed including two bridge construction contracts, and eight road works contracts on 58 kilometres of road. In addition a road protection seawall was under construction and due to be completed at the end of 2011. In total SAT$8.1 million had been spent on roading reconstruction and an additional SAT$6.6 was contracted for the seawall construction. In total in 2011 SAT$11.37 million had been spent on transport reconstruction. The Government of Samoa recovery report does not identify whether funding was also available for loss of vehicles.

Access to paid employment
Access to paid employment is an important part of disaster recovery and reconstruction. According to the 2011 Samoa Census 50.1% of the economically active population were in paid employment, 8.3% were self-employed, 5.7% were looking for work, and 33.6% were engaged in family subsistence and income generating activity, a further 2% were street vendors or made/manufactured goods for sale (Samoa Bureau of Statistics, 2012). Most of the paid employment is based in the Apia Urban Area and Northwest Upolu. In the rest of Upolu (including the southeast coast most affected by the tsunami) 32.6% of the economically active population are employed in subsistence activities, and 27.9% are involved in goods manufacturing, while only 23% are employees or employers (Samoa Bureau of Statistics, 2012). Men are more likely to be employed than women (72.9% men, 27.1% women) (Samoa Bureau of Statistics, 2012).

In late 2009 the PDNA estimated loss of employment at 990 weeks at a value of SAT$1,319,922. In particular in Samoa restoring employment opportunities in the tourism sector for those affected by the tsunami was considered important (Government of Samoa, 2011; Government of Samoa, WB, & GFDRR, 2009). The south and southeast coast of Upolu island is a local and international tourist destination.

Access to water
Samoan Context
Samoan nu’u are always traditionally established close to water sources. Village practices ensured that water sources were maintained and protected for the use and health of village aiga. Village structures were responsible for guardianship of water ways, tufu (springs) and the creation of vai’eli (wells).
In addition to these traditional water supplies and management system the government of Samoa is responsible for water services through the Samoa Water Authority (SWA). The SWA supplies water to approximately 20,000 households (around 85% of the population), 16,000 households in Upolu and 4,000 in Savaii. The majority of the remaining population receives water from independent village water schemes (District Water Committees) or harvest rainwater as their main water supply. Prior to the tsunami the SWA water supply provided water to the coastal aiga in Aleipata, Falealili and Siumu districts.

Independent water supply schemes within Samoa service 53 nu’u (around 32,000 people in 2010) (IWSA, 2010). These schemes are owned, operated and maintained by villages under the Independent Water Schemes Association (IWSA). Independent water systems are maintained through village governance and while they supply water at lower cost (e.g., at 2ST per tap), they are also affected when there is insufficient or excess rain. Vavau in Aleipata is the only village amongst the 24 in this review that currently operates an independent water scheme.

Local village water resources can provide nu’u with water security following natural disasters. Water security solutions for the future might be achieved through water management partnerships which support village structures to retain local guardianship over their water systems when national water systems fail or are damaged.

Tsunami impact and recovery: Water
Water was recognised as the highest recovery priority by local, national and international NGOs, and the Government of Samoa in the rebuild. The tsunami caused extensive damage to government maintained water supply systems, including connections to 527 households in 22 nu’u and the destruction or damage to 37 kilometres of water mains (Government of Samoa, 2010, p.12; Government of Samoa, WB, & GFDRR, 2009). Additional water connections under the Independent Water Schemes Association were also damaged, including service connections to 71 households (Government of Samoa, 2010, p.12). Furthermore, the Samoan Government Post Tsunami report (2011) stated that families who had relocated to higher ground as a result of the tsunami had lost access to the Samoan Water Authority water supply (2011, p.16). The PDNA estimated cost of damage to the water was SAT$3.94 million and the cost of losses estimated at SAT$4.64 million.

In 2011 the restoration of water supply to all households was underway but not complete (Government of Samoa, 2011). An interim water scheme for 280 houses in South East Upolu was completed in 2010, however, the Government of Samoa was still using water tankers to supply water to households when required. In Manono households had been provided with rainwater tanks to supplement SWA water supply. The nu’u most impacted by loss of water supply as a result of the tsunami were Saleapaga, Satitoa and Saleaumua (Government of Samoa, WB, & GDFRR, 2009). A total of SAT4.6million had been spent on interim water supply schemes in by 2011 (Government of Samoa, 2011).

In 2011 the SWA was working with private contractors and non-governmental organisations to restore supply to affected areas (Government of Samoa, 2011, pp.17–18). Delays in the restoration of water supply were caused by the time required to resolve compensation for land use, the procurement processes, and the need for technical

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10 SWA was established in September of 1993 under the Water Authority Act 1993/1994 and continues under the Samoa Water Authority Act 2003. Under the Act, the Authority is empowered (through the Board of Directors and the Managing Director) to do all things lawful and necessary in the performance of its functions.
11 The IWSA is an NGO established to support these developments, and is supported by Oxfam and its Samoan partner the Women in Business NGO.
12 The 2014 updated information included in this review indicates that this is still the case for some aiga. The provision of water to aiga who relocated inland was a key issue reported by the Sui Pulenu’u.
assistance. Financial restrictions were not identified as the cause of any delay (Government of Samoa, 2011, p.20). The government recovery plan in 2010 and 2011 indicated that the restoration of water supply to all affected aiga was underway, and, despite some delays and difficulties, was on target.

Access to housing
In the affected areas housing was sufficient and accessible prior to the tsunami. Housing units in Samoa are made up of a variety of types and structures including kitchens and other auxiliary buildings and may include Fale Palagi (European Style House), Fale (an open house), Fale Samoa (traditional Samoan house), Fale Apa (tin roofed house), Faleoo (thatched simple version of the Samoan fale), Falee’o fale (a central fale house), faasee faleoo (a very small house), faasee fale apa (a small tin roofed fale). The tsunami damaged all types of houses. Close to 70% of affected housing stock was fully destroyed indicating some issues with construction quality (Government of Samoa, WB, & GDFRR, 2009).

According to Samoan Government data, approximately 502 homes were completely destroyed by the tsunami, and another 360 were severely damaged (Government of Samoa, 2010, p.12). Satitoo, Mutiatele, and Saleapaga experienced the most damage to housing with over 70 houses in each village destroyed (Government of Samoa, WB, & GDFRR, 2009). The PDNA estimated the cost of housing damage at SAT$27,088,780 for houses fully destroyed, SAT$2,677,650 for houses partially destroyed, and SAT$1,694,700 for household goods, a total of SAT$31,461,130 (Government of Samoa, WB, & GDFRR, 2009).

Housing was recognised as a priority in the government recovery plan in 2010. By 2010 the government had already spent SAT$9.4 million on rebuilding 502 new houses (Government of Samoa, 2010, p.67). In total the government built 321 houses, and the NGO sector built a further 181 (Government of Samoa, 2010, p.67). An additional 360 homes were rehabilitated by the Government of Samoa (Government of Samoa, 2011, p.23). At the time of the 2010 report the Government of Samoa considered the housing project 99% complete. This impressive recovery is not fully reflected in the interviews undertaken in this review. Both aiga and youth interviewed reported that their access to good or very good housing was still moderate in 2011.

Access to education
Restoring access to education was a priority for the Government of Samoa following the tsunami.

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592 primary school students and an additional 495 secondary school students taught by a total of 42 teachers (24 primary and 18 secondary) were affected. Immediate responses to education needs following the Tsunami included transporting children to attend schools in neighbouring nu'u, and providing additional infrastructure (such as water and sanitation, school materials and furniture, and transport) in these schools to support new students. In addition the PDNA estimated the need for psychosocial support, and school supplies and monitoring at a loss of SAT$30,000 and SAT$15,000 respectively (Government of Samoa, WB, & GDFRR, 2009).

The Samoan government was committed to restoring access to education as quickly as possible. Several schools were rebuilt through partnerships between the Government of Samoa, international NGOs, private sector, and international funding. These are Satitoa Primary school, Saleapaga School, Vailoa Primary School, Falealili Secondary School, and Lalomanu Primary School Library, in addition Faleu Manono and Aleipata District Library were under construction in 2011 (Government of Samoa, 2011, pp. 26–27).

Access to health
The health sector in Samoa is regulated by the Ministry of Health while health services are primarily delivered by the National Health Service (NHS). Health care in the affected region was provided by two district hospitals (Lalomanu and Poutasi hospitals). An additional community owned Health Centre in Fusi was also active in the affected area following the tsunami. Restoring full access to regular health services was important for the Government of Samoa. Both district hospitals were quickly restocked with supplies and equipment. Lalomanu hospital was not damaged, however Poutasi hospital did experience extensive damage, and has since been refurbished, a security fence installed, and discussions on relocation were pending in 2011. The Government of Samoa (2011) report noted that land access issues need to be resolved before relocation can occur.

Immediate health needs included post-event treatment of those injured in the tsunami, responding to infections, and psychosocial treatment. Primary health care has been the focus of the government response (2011, p.30), however, psychosocial needs were also recognised as significant and ongoing by the Government recovery plan (Government of Samoa, 2010, p.68; 2011, p.30).

In total the PDNA estimated losses and damages to the health sector of around SAT$8.67 million. Only SAT$2.63m out of allocated SAT$8m had been used in 2011 and it was anticipated that further work would be undertaken over the following 5 years (Government of Samoa, 2011). The 2011 Government of Samoa report noted that limited progress has been made in the recovery of health services (2011, p.30).

Summary
Restoration of livelihoods and key resources following the tsunami was a central part of the recovery process. Considerable financial and other resources from the Government of Samoa, and from local and international non-government organisations were used to restore these livelihoods and resources. This research will explore the experiences of those children, young people and households who were directly affected by the tsunami for their assessment of how successfully they considered the restoration goals were achieved.

The restoration of livelihoods and resources is important not only for normal economic and social recovery but for the restoration of wellbeing and good psychosocial outcomes. The damage caused by the tsunami to land, homes, water supply, and the disruption to education and health services as well as agricultural activity and food supply had serious psychosocial impacts. As with the restoration of livelihoods, the trauma and wellbeing achievements post-tsunami will also be explored through the experiences of those directly involved.
Tsunami Context: Disaster response and initial psychosocial responses

Tsunami background
In 2009, at 6.48am on September 29 a magnitude 8.1 earthquake occurred 175 kilometres south of Samoa, generating a devastating tsunami across the Pacific region. Samoa, American Samoa, and Tonga were all severely affected, with the most damage occurring in Samoa. Fatalities were high with 143 deaths in Samoa, 22 deaths in American Samoa and seven in Niutatapu, Tonga. Over 310 people were additionally reported injured in Samoa and a further five people missing. The south eastern coast of Upolu experienced the most damage where 40 nu'u (villages) were affected and 20 nu'u completely destroyed (see Figure 1). An estimated 5000 people throughout Samoa were affected, with approximately 3000 people whose homes were destroyed and an additional 2000 people who experienced severe but reparable damage to their homes (Government of Samoa, 2011). The most vulnerable groups were women, children and youth, and elderly people.\textsuperscript{15} Almost 50\% of those who died were under the age of 10 (Government of Samoa, 2010, p.11) while 87 out of the 143 people who died were female and at least 28 were over 50 years old (Government of Samoa, 2010, pp.36–39).\textsuperscript{16}

Figure 1: Map of Upolu and South East coast (Medical missions)

Asiasiga and a culturally appropriate response following the Tsunami
In the immediate aftermath of the tsunami, the Family Centre, partnered with the Catholic Archdiocese and Afeafe o Vaetoefaga, under the oversight of the Ministry of Health in Samoa, to deliver asiasiga in affected regions.

The asiasiga approach considers first and foremost Samoan concepts of self as relational, that is, that the health and wellbeing of individuals is implicitly linked to the health and

\textsuperscript{15} Women, children and the elderly are frequently the most vulnerable groups in any natural disaster. Neumayer and Plümper (2007) in their assessment of natural disasters and the gender gap in life expectancy found that “on average, large natural disasters lower the life expectancy of women more than that of men” (2007, p.562). Morrow (1999) notes that the elderly, children, women, and people from ethnic minorities are more vulnerable to disasters (see also Oxfam, 2005).

\textsuperscript{16} The ages of some of those who died are not specified in the Government of Samoa (2010) report.
wellbeing of families and households (aiga), villages (nu’u), and church communities, and to the health of the relationships between these beings.

Tamasese, Peteru and Waldegrave have described this relational aspect of Samoan identity. They write

“the Samoan person does not exist as an individual. There is myself and yourself. Through you, my being is contextually meaningful and whole. Through myself, you are given primacy in light of our collective identity and places of belonging [fa’asinomaga], our genealogical lineage [tupuaga], and our roles, responsibilities and heritage [tofiga]” (Tamasese, Peteru & Waldegrave, 1997, p.28)

The asiasiga approach was designed to hold this understanding of interconnectedness within broader cultural, gendered, socioeconomic, spiritual and historical structures. The asiasiga response work aimed to restore (to the extent possible) the spiritual, mental and physical wellbeing of the affected nu’u (villages) and aiga.

The practical response undertaken within the asiasiga approach was asiasiga pastoral visitations. Pastoral visitations are made at times of stress, grief, or disaster and can be made by any member of a community to any other member in need of support. However, within the cultural and religious structures in Samoa asiasiga is often undertaken by church leaders and Matai. Through asiasiga visitations aiga are able to reconnect to relationships around them. In doing so aiga are able to restore the balance of these relationships and thus restore their own balance, finding therein health and wellbeing, not just for individuals but for households and wider church and nu’u (village) communities.

In the asiasiga approach families/aiga and/or individuals in distress are not left isolated but rather are visited by kin, matai or leaders of aiga, and by elders of the community. These visits are usually accompanied by prayers, words of comfort and connection, and sometimes material support. The purpose is to ensure that people in distress are not left isolated and disconnected from natural support. This culturally specific disaster response is consistent with psychological disaster response recommendations from the World Health Organisation (WHO).

Asiasiga and counselling, the work with families (aiga), and the collective work with households and communities drew on Family Centre research on Samoan conceptions of mental health and mental health services (O le Taeao Aftua17), Just Therapy, theological perspectives, and narrative therapy. This approach was also guided by the World Health Organisation (WHO) guidelines on responding to trauma following disasters. The format of the asiasiga approach workshops were informed by work undertaken by Rony Berger, William Spear, Allister Bush and Richard Sawrey in conjunction with the Family Centre staff.

Research on psychosocial responses to disasters has identified the need to respond in culturally appropriate ways (Pupavac, 2002; Taylor, 2003). Each aspect of the initial disaster response was orientated to the Samoan situation and was based on cultural knowledge (Tamasese, Peteru, & Waldegrave, 1997; Tupuola, 1994), theological/pastoral knowledge and Just Therapy18 (Waldegrave & Tamasese, 1993), and narrative therapy


18 Just therapy is a reflective therapeutic approach that takes into account the “gender, cultural, social and economic context of the persons seeking help” (Waldegrave, 2003, p.4). The Just Therapy approach was developed by Pacific, Māori and Pākehā family therapists working at the Family Centre, Lower Hutt among others.
ideas and practices (Denborough, 2006). Attention was paid to stories of resistance and hope, community resilience was focussed on, and the externalisation of problems encouraged. Additional counselling responses were offered when appropriate and requested. Counselling conformed to guidelines in disaster counselling provided by the World Health Organisation, for example, psychological debriefing was not offered. Counselling had a resilience focus and was offered in conjunction with community support and services already available (IASC, 2011).

Three key aspects of the asiasiga tsunami response from the Family Centre and Catholic archdiocese were:
1. Asiasiga i aiga ma nu’u – household and village visitations
2. Asiasiga i aoga, i alo ma fana – children and family programmes
3. Asiasiga i au talevou – youth programmes

Asiasiga pastoral visits
The aim of asiasiga pastoral visits was to find out what was happening for families/aiga in affected areas, to witness their ‘stories of survival, strength and hope’, to gain feedback on community strengths, and to record aiga concerns and needs. Asiasiga visits provided counselling and pastoral support for aiga most affected by the tsunami. In addition pastoral teams were able to identify aiga in need of greater support, and to respond to community requests for public health education, and advocacy to meet material needs such as housing, road repairs and so on.

Under the supervision and support of the Family Centre and the Catholic Archdiocese of Apia, teams of women and men religious and pastoral counsellors including Catechists and wives, priests, seminarians, and Mua’au or youth leaders were assembled, trained, equipped and debriefed. Training in asiasiga and working with aiga, children, young people, and communities who face traumatic events was provided by a leadership team of professionals including theologians, psychiatrists, psychologists, family therapists, public health and disaster response specialists, and pastoral counsellors. Four pastoral asiasiga teams were formed and provided with a vehicle, phone, and food and water for each day. At the end of the day teams were debriefed by the leadership team. At each stage of the work Samoan protocols were followed, and a sense of partnership, reciprocity and respect for the eldership and local village structures were fostered.

Each team of workers, in partnership with the Samoan Ministry of Women, Community and Social Development, travelled to affected areas where they approached the village Pulenu’u who were consulted for approval, advice and blessing on the work. The Pulenu’u were instrumental in providing information on the extent of damage within each community. Following this initial contact, community and village elders, Matai, and Church leadership (Faifeau) were also consulted in order to gain permission to undertake work in the area.

Each household visited was greeted with appropriate protocols and rituals by the visiting group spokesperson. The team engaged spiritually and emotionally with individuals and aiga and, if invited, observed the damage caused by the tsunami. They were thus able to witness and acknowledge the experiences during and after the tsunami and in doing so heard narratives of survival and resilience. Open ended questions were asked such as ‘how have you survived since the tsunami?’ and ‘what sustained you?’ This approach allowed people to talk about their experiences in a manner appropriate to them. Across the region different experiences were recounted, many stories reflected hope and mutual support. Responses demonstrated people’s resilience, trust in God, and the strength of

Externalising is part of a therapeutic approach that involves identifying and discussing problems, strengths, struggles or issues for individuals.
communities. Following these discussions those in need of additional help were able to request support suitable for their needs. People were also asked for and gave messages of hope or support to pass on to other groups also affected by the tsunami. At the end of each visit, Samoan protocol for leaving was followed.

A total of 301 aiga were visited by these asiasiga groups. The family therapy and asiasiga visitations occurred from October 2009 until February 2010.

Child and youth programme

The child and youth programme developed interventions to improve children’s and adolescents’ ability to cope with stress in the tsunami affected areas of Aleipata and Falealii. The child and youth programmes had a group format and was based in Samoan cultural and spiritual values. The programme flexibly accommodated various group sizes, could be implemented in a range of environments and was designed to be fun and engaging for children.

As with the asiasiga pastoral visitations, the programme was delivered with community consent, in particular permission from school principals and community elders. Senior Matai and Faifeau from local churches were consulted. Likewise, Samoan protocols of acknowledgement and respect were followed when seeking permission to work in each area. In each location, school principals were accommodating and gave time within the school schedule for the activities. Venues included school rooms, church halls, Pulenu'u community fale, and Faifeau fale. There was wide community acceptance and support of the programme.

Five key components comprised the programme. These were messages to young people in each community from other communities; trauma focused ‘body work’ exercises which included interactive games and a series of vocal and physical exercises; ‘the tree of life’, an art based therapeutic model used with children in various countries; group feedback; and a meal for children and family members. Each aspect of the programme was culturally appropriate and designed to avoid re-traumatising participants while also providing a safe space to express emotions and relate experiences. Cultural aspects of the programme included delivery in Samoan, prayers and attention to appropriate Samoan protocol, use of Samoan and spiritual programmes, humour, and small group discussions.

The child and youth programmes were conducted in 11 nu’u between 25 October 2009 and 17 December 2009. A total of 1295 children attended over the period. School principals were invited to fill in an evaluation form on the completion of each programme. The evaluations expressed the hope that the positive feel of the programme would encourage children to return to school.

Youth leadership programme

The youth leadership programme was developed to train youth leaders in disaster preparedness and responses. The programme ran between 22 December 2009 and 28 April 2010, again through a partnership between Afeafe o Vaetoefaga, and was facilitated through a contribution from the KOHA-PICD fund of the then New Zealand Aid and International Development (NZAID).

Prior to establishing the youth programme, the team reviewed various relevant aspects including the asiasiga work carried out in the previous months by the Family Centre and

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20 In all regions affected there was a high youth population at the time of the 2006 census. The median age in Samoa at the time of the 2006 census was 20.5, this had risen very slightly to 20.7 by the 2011 census.
21 Reading messages from other affected children was closely aligned with Samoan practices of reciprocity and also built on narrative therapy practices (Denborough, 2006).
Catholic Archdiocese of Apia. Research on Samoan conceptions of mental health (Tamasese, Peteru, & Waldegrave, 1997, 2005) was also examined and incorporated into the training design. In addition the group reviewed the Samoan Mental Health Plan of the Ministry of Health in Samoa to ensure compatibility with that plan. Finally trauma response methods developed in Canada and elsewhere, were examined and adapted to fit the Samoan context (see Wade, 1997).

Consequently this collective knowledge was incorporated into the design of a Samoan trauma counselling community outreach youth training programme for youth facilitators and leaders in tsunami affected nu’u. In each location consultation on the programme and its purpose occurred, and dates, venues and locations were established. All but one of the programmes were delivered in local churches or village based facilities.

At the end of the programme a five day Just Therapy course was delivered for all those who had worked on the programme.

Background to the 2011 Review
In 2010 it was recognised that a review of the process undertaken by the Family Centre would be beneficial in order to understand the ongoing impacts of the tsunami and to reassess those who had initially received the asiasiga pastoral visits. This review examined ongoing and residual experiences of trauma and wellbeing two years after the tsunami. In addition, the impact of the tsunami on livelihoods and access to resources was assessed. The review focused on the aiga, children, and youth who had been visited in the previous asiasiga pastoral visitations and explored their assessment of progress since the tsunami both psychologically and in livelihood terms.

The review was undertaken in 2011. Again the Family Centre in New Zealand collaborated with local partners Afeafe o Vaetoefaga, the Catholic Archdiocese of Apia, the ministry of Women, Community and Social Development to undertake the review (with the support also of the Ministry of Health).

Background to the 2014 follow-up
During the process of completing the Family Centre’s report on the psychosocial and livelihoods impacts of the 2009 Tsunami, the Family Centre invited Professor Harvy Frankel of the University of Manitoba to review our work to date and the report draft.

In discussion with Professor Frankel, Taimalieutu proposed that significant value would be added if the report included some updated information on the three areas of greatest concern raised during the 2011 review of the affected households. These areas are water, fisheries and plantations as the most severely impacted livelihoods areas in people’s lives, and therefore key contributors to resilience and recovery.

In March 2014, in partnership with members of the Catholic Archdiocese team, affected nu’u were revisited and the Sui Pulenu’u Tama’ita’i (women village Deputy Mayors) interviewed. Interviews with the Sui Pulenu’u Tama’ita’i enabled the team to collect new perspectives on progress from village leadership and to specifically incorporate women’s perspectives in the review process. Each of the Sui Pulenu’u were asked the following three questions.

- What is the situation in your village regarding water at this time?
- What is the situation in your village regarding fisheries at this time?

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22 In one location, Lepa, the team were advised that there was insufficient capacity to host a visiting group so alternative arrangements were made with the Lepa Secondary College who were able to host the training programme with the support of the Ministry of Education.

23 The follow-up work was undertaken without external budget support.
What is the situation in your village regarding plantations and planting at this time?

Professor Frankel and his colleague Sandy Loewen also travelled to Samoa to visit the tsunami affected areas, meet with the local Samoan partners and observe interviews with Sui Pulenu'u Tama'ita'i on Manono Island. Their visit additionally involved carrying out interviews with the majority of Pastoral team members to hear their own perspectives on the impacts of their training and work with the Family Centre.

Interviews were transcribed in Samoan (the interview language) and translated by the interviewing teams and then analytically themed by researchers fluent in both Samoan and English.

All follow-up interviews were conducted with the knowledge and support of the Ministry of Women, Social and Community Development. Sui Pulenu'u Tama'ita'i of each of the nu’u have a relationship with the Ministry of Women, Community and Social Development and participate in development programmes initiated by them. The Sui Pulenu'u Tama'ita'i across all of the districts were pleased to be included in the 2014 review of their current situations and to meet the Asiasiga team members once again. This recognition of the ongoing commitment and engagement between the Asiasiga team and the women contributed positively to our ability to carry out this follow-up within a short time frame.
Review Methodology

Research in the Pacific and a Pacific methodology

Social science scholars, researchers, community groups, community leaders, and individuals have drawn attention to issues of power apparent within research in the Pacific. A history of extractive research undertaken by colonial outsiders has been strongly critiqued (Tuhiwai Smith, 2012; Bishop, 1999, Louis, 2007) and methods which adhere to Pacific cultural guidelines recommended and expanded upon (Bishop, 1998; Cunningham, 2000; Gegeo & Watson-Gegeo, 2001; Tupuola, 1994; Tamesese, Peteru, & Waldegrave, 1997; Peteru, 2012; ‘Otunuku, 2011; Sauni, 2011; Louis, 2007; Trask, 1996). Research methods created and affirmed by western cultures have also been critiqued, both by Indigenous and postcolonial researchers (Tuhiwai Smith, 2012; Mohanty, 1988, Spivak, 1988) and by feminist researchers (Gibson-Graham, 1994; Stanley, 1990; Fonow & Cook, 1991; Letherby, 2003). It is recognised that methodologies which blindly sit within western paradigms effectively exclude non-western ways of knowing (Trinh, 1989). This review is informed by these critiques and guided by Pacific research methodologies. Throughout the review we attempt to acknowledge Samoan ways of knowing and Samoan responses to the tsunami, and to present the concerns of those people who were affected by the 2009 tsunami.

Further to this methodological standpoint, attention to language was recognised as significant. Language is “not merely reflective but instead [is] constitutive of social life” (Mansvelt & Berg, 2010, p. 339). In all cases review participants were interviewed in Samoan unless the participant chose otherwise. In the analysis of the data gathered attention was given to nuances of meaning and culturally specific understandings of what was said and the language used in analysis and writing. It is acknowledged that in Samoa, language may be used metaphorically to communicate important information (Tamasese, 1994). Tamasese, Peteru and Waldegrave write that in conducting research with Samoan speaking participants it is critical to understand what is being relayed within the worldview in which it is said, to respond to that worldview and to “bridge the two worldviews without compromising the first [Samoan] paradigm” (1997, p.14). This review attempts to incorporate and acknowledge these aspects of research within a Samoan paradigm.

Ethics and confidentiality

Ethical health research in Samoa occurs when participants are informed of the function and aims of the research, informed consent is obtained freely, participants are permitted to withdraw from the research at any time, privacy, confidentiality and safety of participants is maintained, and any costs for participants is reimbursed (Ministry of Health, n.d., p.14).

This review was conducted following the same ethical guidelines used for research in Samoa. Full written consent was gained from individuals and groups after participants had been fully informed of the review aims and functions. In addition the review design, parameters, methodology, and analysis were overseen at every stage by Pacific leaders. Participants in this review had the right not to participate, to confidentiality, researcher accountability, guardianship of specific and tapu knowledge, and to reciprocal relationships. Every care was taken to ensure that review participants were made culturally safe.

Research in disaster affected areas

Research in the aftermath of extreme natural or human disasters is always difficult as the restoration of services and emergency responses takes natural precedence over research or evaluation (Ager, Stark, Akesson, & Boothby, 2010; Parks, 2011). Furthermore there are inevitable complexities conducting research in an environment in which individuals and communities are under extreme emotional, mental, and physical distress. North and
Norris (2006) note the multiple difficulties of conducting research following disasters. They write that in the immediate aftermath from a disaster people are concerned with health and safety and bereavement,

“at this time, those so affected by the disaster may find research endeavors [sic] to be intrusive and insensitive. Research conducted during this period may be sensitive to these issues by using simple measures creating a light participant burden, although with some sacrifice of methodological integrity” (p.57).

Various methodological approaches have been recommended to cope with specific research needs following disasters. Haney and Elliott recommend incorporating and funding local researchers into the research project as they may be able to “ask different questions, pursue different topics, and may produce research that better reflects and recounts the lived experience of participants” (2013, p.9). Brun (2009) advocates the use of Participatory Action Research (PAR) as a way for researchers to engage constructively and ethically in post-disaster research. This review process incorporated some of these recommendations, for example, local researchers were employed and supported.

It was important during this review to be sensitive to participant needs. Throughout the review process spiritual, mental, and emotional support was available for aiga and individuals who struggled with trauma experiences. In spite of these difficulties, research following disasters can bring to light community strengths and resilience as well as draw attention to community needs as was found to be case during this review (ISAC, 2007).

Further difficulties researching following a disaster were also identified through this review process. Following disasters pre-event data may be unavailable or destroyed (Johnson & Galea, 2011). In addition it is rare for a study to have been undertaken in a disaster affected area prior to the event to provide comparable data. Norris and Elrod (2006) note that in disaster mental health research pre-post designs in which participants assess their mental health prior to and after the disaster may be used – as happened in this review. Similarly the review assessed perceptions of access to resources. No similar study on access to resources had been undertaken in Samoa prior to the tsunami. Therefore this review relied on participant perceptions and memories of access to resources before the tsunami.

**Asiasiga review approach**

As identified above, an ethical and culturally appropriate approach within the disaster context was adhered to in this review. Typically scientific research aims for objectivity in order to support the truth of what is found. Objectivity is often claimed to be found in distance and the reduction of emotional and personal engagement in the research process. In this review the asiasiga review approach was the most appropriate, however traditional understandings of objectivity were inappropriate in this approach and could not be adhered to. It was important during the review to acknowledge and foster relationships, and the review itself was premised on relatedness and interconnectedness. Acknowledging relationships enhanced the validity of the review findings.

For this reason the 2011 review utilised the asiasiga workers who had conducted the original asiasiga visitations in 2009. These workers were able to revisit aiga to conduct the review and at the same time provide further asiasiga support, and gain an understanding from households about the current situation in the aiga. This process fostered trust and in doing so promoted an honest reporting of the situation in affected aiga. Nonetheless, the

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24 Although noting the value in conducting psychosocial evaluations following disasters, ISAC consider these surveys to be beyond the scope of the essential high-priority responses required immediately after disasters (2007, p.45).
role of workers was embedded in professional ethics. As Hanley and Elliot report, local (and more connected) researchers may be able to gather data “that better reflects and recounts the lived experience of participants” (2013, p.9). Furthermore this review process encouraged engagement by participants on multiple levels, not merely a reporting on the current situation, but as part of an ongoing discussion on the ways in which individuals, aiga, communities, and churches supported each other, and an opportunity to express sorrows as well as achievements made since the tsunami.

The questions
In line with the methodological standpoint outlined above it was recognised at the planning stages of this review that standard trauma questionnaires would not necessarily 'translate' (either linguistically or culturally) into the Samoan context. Random early trauma assessments in Samoa after the tsunami indicated very high trauma scores among affected communities. While this may be expected soon after a major disaster, most people pick up their lives again in the months following and the overall levels of trauma begin to reduce. Standard trauma questionnaires tend to be based on trauma questions in the Diagnostic Statistical Manual (DSM IV, 2011) and it was the concern of the researchers that the initial data collected focussed almost entirely on the level of trauma among respondents with no recourse to positive feeling and achievement. The researchers were also interested in examples of wellbeing and resilience in order to become more aware of the complexity of human responses and to become better informed of the positive experiences that could be drawn upon to further resilience.

As a consequence, wellbeing assessment questions were used with the trauma questions in conjunction with a Samoan orientated approach for this review. Wellbeing in the Pacific concerns relationships. When relationships between the “land, waters, God(s) or Atua, and through genealogy to the ancestors” and with interconnected people are in harmony or balance wellbeing is experienced (Tamasese, Parsons, Sullivan, & Waldegrave, 2010, p.192). Reciprocity and mutuality are key to wellbeing in this context.

There were three initial questions designed to explore respondents experience to the primary traumatic events of the tsunami.
1. Were you in the path of the tsunami?
2. Did you lose a loved one in the tsunami?
3. Was your house damaged in the tsunami?

The trauma assessment questions were based on the Child Trauma Screening Questionnaire (CTSQ). These questions were:
5. Do you have lots of thoughts about the tsunami that you don’t want to have?
8. Does it sometimes feel like the tsunami is about to happen again?
9. Do you have bad dreams about the tsunami?
12. Do you feel upset by things that remind you of the tsunami?
13. When you think of the tsunami, does your body do things like your heart beat fast or your stomach feel funny?
15. Do you think about the tsunami every day?

Questions on wellbeing were then incorporated into the survey. These questions were:
4. Since the tsunami has your life returned to being normal again?
6. Do you sleep okay without any problems?
7. Is your life mostly happy?

25 Although the CTSQ has been validated, the survey as administered by the Family Centre with the additional wellbeing questions is preliminary and has not been validated. Further work would be needed to validate this questionnaire.
10. Are you calm with your friends and not often grumpy?
11. Do you struggle to pay attention and concentrate on things without being distracted?
14. Do you mostly feel safe?

Aiga, youth and children were all asked the same 15 questions, including the initial three questions and then six that assessed trauma and a further six that assessed wellbeing. They are set out in chronological order in Appendix One. All questions were asked in the Samoan language. The children were asked the questions firstly as they related to themselves and secondly as they considered they related to their families. They were also asked two extra questions with a scale of one to ten (not happy to very happy/proud) concerning their families’ wellbeing. These questions in Samoan are set out in Appendix Two.

Aiga and youth were then asked an additional eight questions assessing livelihood impacts and access to resources before and after the tsunami.

In this livelihood section of the review questionnaire households and youth only were asked how many people lived in the household before and after the tsunami. They were asked for their perceptions of health and wellbeing before and after the tsunami, whether changes in health had affected individuals or household ability to make a living and how these changes had affected them.

The review also assessed perceptions on access to resources and livelihoods before and after the tsunami. The resources assessed were

- Land for food crops
- Land
- Sea
- Fishing
- Animals and livestock
- Tools
- Means of transport
- Housing
- Paid employment

Households and youth were also asked to describe the activities they undertook to cope with the effects of the tsunami. The complete questionnaire for livelihoods is available in Appendix Three.

In addition, the Ministry of Women, Community and Social Development (MWCSD) in Samoa also provided a series of questions for aiga about the work and income sources available to those interviewed. These questions asked whether youth were engaged in works or developments, and how many in each household were engaged (with gender breakdown). Households and youth were also asked what income sources the family had and which source provided the most income. The sources of income pre-identified by the MWCSD were

- fishing (1) - Faiga Faiva
- agricultural or plantations (2) - Faatoaga
- employment (3) - Tagata Faigauega
- business (4) - Pisinisi
- remittances (5) - Tupe mai
- other income sources (6) - Isi Auala

Finally they were asked what their weekly income was. The questions are set out in Appendix Four.
Teams of field workers were trained and equipped by the Family Centre. The fieldworkers also entered all the data into spreadsheets. The review data gathered was then translated into English (where necessary) and analysed by the Family Centre. All participants signed a consent form.

**Interviews**

Interviews with children, youth, and aiga were conducted by designated team members.

The following numbers of interviews with children were conducted with each of the listed nu’u. With the support of the Ministry of Education village schools hosted the review team.

<table>
<thead>
<tr>
<th>Village</th>
<th>No. of Interviews with children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lalomanu</td>
<td>55</td>
</tr>
<tr>
<td>Salani</td>
<td>89</td>
</tr>
<tr>
<td>Saleaumua Primary School</td>
<td>65</td>
</tr>
<tr>
<td>Saleilua/Poutasi</td>
<td>55</td>
</tr>
<tr>
<td>Sattioa</td>
<td>78</td>
</tr>
<tr>
<td>Siumu</td>
<td>65</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>407</strong></td>
</tr>
</tbody>
</table>

The following number of interviews with youth were conducted in the nu’u listed below:26

<table>
<thead>
<tr>
<th>Village</th>
<th>No. of Interviews with youth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faleu Manono Tai</td>
<td>11</td>
</tr>
<tr>
<td>Fausaga</td>
<td>11</td>
</tr>
<tr>
<td>Fusi</td>
<td>6</td>
</tr>
<tr>
<td>Lepua’i Manono Tai</td>
<td>8</td>
</tr>
<tr>
<td>Lotopue</td>
<td>13</td>
</tr>
<tr>
<td>Maninoa</td>
<td>8</td>
</tr>
<tr>
<td>Mulivai</td>
<td>14</td>
</tr>
<tr>
<td>Poutasi</td>
<td>36</td>
</tr>
<tr>
<td>Saleapaga</td>
<td>7</td>
</tr>
<tr>
<td>Saleaumua</td>
<td>10</td>
</tr>
<tr>
<td>Satalo</td>
<td>37</td>
</tr>
<tr>
<td>Satitoa</td>
<td>27</td>
</tr>
<tr>
<td>Siumu</td>
<td>9</td>
</tr>
<tr>
<td>Tafitoala</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>198</strong></td>
</tr>
</tbody>
</table>

The following table lists the numbers of aiga visited by the asiasiga and review team who were affected by the Tsunami by village. Note that the Number of aiga interviewed for

26 Youth seminars in Lalomanu and Salani were organised but were postponed owing to village and Church based commitments.
review were based on the affected aiga worked with immediately following the tsunami in 2009/2010.

<table>
<thead>
<tr>
<th>Village</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apai Manono Tai</td>
<td>7</td>
</tr>
<tr>
<td>A'ufaga</td>
<td>6</td>
</tr>
<tr>
<td>Faleu Manono</td>
<td>37</td>
</tr>
<tr>
<td>Lalomanu</td>
<td>31</td>
</tr>
<tr>
<td>Lepa</td>
<td>11</td>
</tr>
<tr>
<td>Lepuia'i Manono</td>
<td>16</td>
</tr>
<tr>
<td>Lotopue</td>
<td>23</td>
</tr>
<tr>
<td>Malaela</td>
<td>18</td>
</tr>
<tr>
<td>Maninoa</td>
<td>4</td>
</tr>
<tr>
<td>Mulivai</td>
<td>2</td>
</tr>
<tr>
<td>Mutiaatele</td>
<td>19</td>
</tr>
<tr>
<td>Poutasi</td>
<td>36</td>
</tr>
<tr>
<td>Sa'a'aga</td>
<td>4</td>
</tr>
<tr>
<td>Saanapu</td>
<td>1</td>
</tr>
<tr>
<td>Salani</td>
<td>18</td>
</tr>
<tr>
<td>Saleapaga</td>
<td>67</td>
</tr>
<tr>
<td>Saleaumua</td>
<td>47</td>
</tr>
<tr>
<td>Salua Manono</td>
<td>6</td>
</tr>
<tr>
<td>Satalo</td>
<td>10</td>
</tr>
<tr>
<td>Sataoa</td>
<td>3</td>
</tr>
<tr>
<td>Satitoa</td>
<td>42</td>
</tr>
<tr>
<td>Siiumu</td>
<td>18</td>
</tr>
<tr>
<td>Taftotoala</td>
<td>21</td>
</tr>
<tr>
<td>Vailoa</td>
<td>13</td>
</tr>
<tr>
<td>Vavau</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>470</strong></td>
</tr>
</tbody>
</table>

Interviews were conducted with aiga, with usually one or two people nominated to respond on behalf of the household.

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27 The Pulenu'u for A'ufaga was unavailable despite several visits during the earlier review timeframe. A new Pulenu'u was available at the second review timeframe and so affected aiga in A'ufaga were able to be interviewed. Similarly for Manono Island interviews were able to be carried out with aiga and youth which had not been possible in 2009/2010 owing to village commitments.
Update from Sui Pulenu'u Tama'ita'i in 2014
In March 2014 follow-up interviews with the Sui Pulenu'u Tama'ita'i (deputy village mayors) from each of the original nu'u where asiasiga visitations took place were conducted, (see Appendix 5 for a complete list of all participant nu'u). This follow-up process was undertaken to enhance the work already conducted and to provide updated information on some key issues. The issues identified for the follow-up were water, agriculture, and fisheries.

This updated review was carried out with the knowledge and support of the Ministry of Women, Social and Community Development. It was undertaken in partnership with Professor Harvy Frankel of the University of Manitoba, Canada, Sandy Loewen, and with members of the Catholic Archdiocese team. Professor Frankel was invited to independently appraise the review data from 2011.
Findings: Trauma impacts
For all review participants the impact of the tsunami was traumatic and disruptive. It was seen that there were contradictions in the relationship between trauma and wellbeing.

This section discusses the experiences of the tsunami and psychological impact two years later.

Exposure to trauma in Samoa
As detailed above, this review used standard psychosocial trauma assessment questions to assess levels of trauma from the tsunami among aiga, youth and children in affected areas. Questions one to three (listed below) assessed exposure to the tsunami.

1. Were you (or members of your family) in the path of the tsunami?
2. Did you lose a loved one in the tsunami?
3. Was your house damaged in the tsunami?

The responses given indicated high exposure to trauma among aiga, youth and children.

Among aiga interviewed 76% said that members of their family were in the path of the tsunami. Of the children interviewed, 26% had been in the path of the tsunami, while 48% of youth interviewed had been in the path of the tsunami. However in the highest affected areas youth and children’s responses were much greater. In Satitoa 70% of youth interviewed said they had been in the path of the tsunami while 36% of children had been in the tsunami path. The highest affected region was Aleipata, 86% of household respondents said that members of their family had been in the path of the tsunami.

Of those whose loved ones died in the tsunami, 27% of youth, 16% of children, and 18% of aiga reported losing a loved one. Again, Aleipata was the most severely affected region where the number of household respondents who reported having lost a loved one in the tsunami rose to 24%.

Aiga, youth and children all reported high damage to houses. Of aiga interviewed, 92% reported damage to housing. Child and youth reports of housing damage were considerably lower at 37% and 55% respectively. Aiga from the Manono region had the highest reports of damage to housing, with 97% reporting damage, however in all regions over 85% of aiga reported damage to housing.

Trauma and wellbeing
In order to assess the nature of the trauma experienced in Samoa following the tsunami we undertook statistical analysis on the psychosocial findings. The findings of this analysis are described below.

After a significant disaster it is expected that experiences of trauma would be high and that perceptions of wellbeing would be low. This relationship was demonstrated in this review but was not straight forward.

When the trauma questions were correlated with the wellbeing questions a significant relationship was found. The data gathered showed a significant correlation between wellbeing and trauma (correlation coefficient -0.319**, a p-value of <0.01, see figure below). Higher trauma scores were significantly linked to lower wellbeing scores. Likewise higher wellbeing scores correlated with lower trauma scores.

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28 Household responses may be much higher because this was not an individual response and includes all members of the household who were in the path of the tsunami.
However, the data also indicates that the relationship is complex. For example, as the figure above shows, among those who scored highly on the trauma score (a score of 4.00 – 6.00 on the horizontal axis) there are also respondents who scored highly on the wellbeing score (4.00 and 5.00 coloured yellow and red respectively in the key). Although there is a clear relationship between the high wellbeing scores and low trauma scores, the relationship is not consistent.

This finding shows that individuals with high trauma had lower general wellbeing and that those with high wellbeing often had low trauma experiences. However it also shows that even those who experience a lot of trauma may also have high levels of wellbeing.

These discrepancies indicate that among those who experienced extreme levels of trauma there are nevertheless resources which facilitate higher wellbeing scores. These results are more clearly seen in the analysis of wellbeing and trauma questions among the different groups surveyed (children, youth, aiga).

**Household responses to the trauma and wellbeing questions**

The figures below display the household responses to the psychosocial questions. Households indicated moderate levels of exposure to trauma and they identified the continued impact of this exposure in household life and activity. Of household respondents, 40.7% reported that family members continued to have unwanted thoughts about the tsunami in 2011. In addition 46.3% of households reported that family members felt like the tsunami was going to happen again, 32.3% said that family members continued to have bad dreams about the tsunami, and 45.2% said that family members were upset by things that reminded them of the tsunami. Furthermore, 23.6% of households reported that family members thought about the tsunami every day (see figure 29).

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29 Other researchers have similarly drawn attention to the relationships between trauma and wellbeing. Headey, Kelley and Wearing (1993) recognised that it was possible to simultaneously have high levels of stress and also score highly on wellbeing. Similarly Fernando (2008) in a study on experience of trauma in Sri Lanka noted that “despite high scores on indicators of suffering and distress, the mean life satisfaction score for this sample was 6.7, which is higher than would be expected for this traumatised community” (p.236). Fernando (2008) attributes this to resilience in Sri Lankans interviewed, rather than culturally acceptable ways of responding to questions about life satisfaction.
These results indicate that a considerable number of aiga continued to be negatively affected by the tsunami in 2011.

![Household responses to CTSQ (trauma) questions](image)

**Figure 3: Household responses to trauma questions**

Although trauma levels were pronounced, aiga also reported good wellbeing scores for households and families (see figure below). 82.5% of aiga said that family life had returned to normal. Most households reported that family members were able to sleep okay without problems (78.6%). Almost all aiga said that their households were mostly happy (96.9%), that members of the aiga were able to be calm with friends (91.1%), and felt mostly safe (92%). Only 24.9% of households said that aiga members struggled to concentrate without getting distracted.
These mixed results demonstrate resilience among aiga in Samoa following the tsunami. Although households reported moderate levels of trauma among family members they nevertheless were also restoring family wellbeing. Households reported that aiga felt mostly safe and happy, were calm with friends and able to sleep okay, all indicating good wellbeing and resilience to the disaster.

**Youth responses questions four to 15**

The two graphs below show the youth responses to the psychosocial questions. Of interest are the moderately high levels (for two years after the event) of trauma responses. For example, 39.4% stated they had lots of thoughts about the tsunami that they didn’t want to have indicating a fairly widespread trauma response two years after the tsunami. Similarly over 50% (54.5%) of youth said that sometimes they felt like the tsunami was about to happen again, showing a further trauma response among a notable proportion of those interviewed.
In spite of the high trauma levels, the answers to the wellbeing questions demonstrated surprisingly high perceptions of wellbeing. Just under 80% (78.3%) of youth interviewed said they slept okay while nearly 90% (87.4%) said their lives were mostly happy. Likewise, 85.4% of youth interviewed said they felt mostly safe, again indicating high levels of wellbeing. 73.7% said they did not have difficulty concentrating. Difficulty concentrating or paying attention are common trauma associated symptoms among children and adolescents (Lubit, Rovine, Defrancisci, & Eth, 2003).
Children's responses to questions four to 15

Similar responses were seen in the results from children (see figures below). They demonstrated a high level of perceived wellbeing. Most children interviewed were able to sleep without problems and considered their lives mostly happy. Similarly, 74% of children reported feeling mostly safe and over 50% believed their lives had mostly returned to normal since the tsunami. As with youth, over 70% of children interviewed did not struggle to concentrate indicating again moderately high wellbeing.

![Child responses to wellbeing questions about themselves](image)

Figure 7: Wellbeing questions from children about themselves

Levels of trauma experienced were still substantial among the children interviewed. 28% said they had lots of unwanted thoughts about the tsunami. 30% of children sometimes felt like the tsunami was about to happen again, and 33% felt upset by things that reminded them of the tsunami (see figure below).
While these results do not indicate severe levels of trauma among children in Samoa two years following the tsunami, they show that for some children the impact of the tsunami continued to negatively affect their mental health.

Children's assessments of their family wellbeing reflected very similar results to their own as can be seen in the figure below.
As with children’s responses about themselves, children’s responses about their family indicated that the negative impacts of the tsunami continued for some children and their aiga. 26% of those interviewed thought that members of their household had lots of unwanted thoughts about the tsunami. Likewise, 34% of children thought that members of their household become upset by things that reminded them of the tsunami.

Children’s perceptions of their family wellbeing were also similar to their own wellbeing. A high proportion considered their household slept okay (79%) and that their lives were mostly happy (87%). These results are very similar to children’s perceptions of their own wellbeing two years after the tsunami and highlight the importance of household or family environments for children after traumatic events.

The relationship between trauma and wellbeing

The relationship between wellbeing and trauma was further assessed by statistically comparing trauma based questions with wellbeing ones.

Question four (a wellbeing question – has your life returned to normal?), was compared to question five (a trauma assessment question – do you have lots of thoughts about the tsunami that you don’t want to have?), (see figure below). The relationship between these two variables was found to be significant, demonstrating that those with less trauma, as expected, were significantly more likely to have higher wellbeing.

![Figure 10: Relationship between trauma and wellbeing, question 4 and 5 (youth)](image)

Chi-Square had a p-value of 0.004 (Cramer's V .207)

However, as the figure above shows a substantial proportion of those who had intrusive and unwanted thoughts about the tsunami (showing trauma) also said their lives had returned to normal (demonstrating wellbeing), which suggests complex responses occurred for quite a number of participants.

Although a considerable level of trauma (anxiety about the tsunami) was indicated, the data also showed that respondents with trauma symptoms had a level of control over their lives and many perceived their life as having returned to normal. This result demonstrates that there were clear resilient factors among those who experienced some trauma in Samoa as a result of the Tsunami.

In the same way the following figure below shows a statistical comparison of the question ‘do you sleep okay without any problems?’ (an indication of wellbeing) and the question,
'does it feel like the tsunami is about to happen again?' (a trauma question). Once again a significant relationship was found showing that those who slept okay were significantly less likely to be worried that the tsunami was going to happen again. However, as the figure demonstrates, more than two thirds of those who felt like the tsunami was going to happen again actually acknowledged they were sleeping okay without any problems. Thus, despite respondents feeling like the tsunami may happen again, many were also able to control certain responses to the traumatic experiences as evidenced in their ability to sleep without problems.

Figure 11: Relationship between trauma and wellbeing, question 8 and 6 (youth)
Chi-Square had a p-value of 0.003 (Cramer's V .210)

Figures 12 and 13 (below) demonstrate further the complex responses to the tsunami. Figure 12 below again analyses the relationship between a wellbeing question (is your life mostly happy) to a trauma question (when you think about the tsunami, does your body do things like your heart beat fast or your stomach feel funny). Again the relationship between these two variables was found to be statistically significant, demonstrating that higher wellbeing (feeling like life is mostly happy) was significantly associated with lower trauma (physical responses to thinking about the tsunami). However more than half those who reported negative physical responses when they thought about the tsunami also considered their lives to be mostly happy.
When you think of the tsunami, does your body do things like your heart beat fast or your stomach feel funny?

Is your life mostly happy?

Figure 12: Relationship between trauma and wellbeing, questions 13 and 7 (youth)
Chi-Square had a p value of 0.001 (Cramer’s V .240)

Figure 13 below assesses the relationship between whether respondents thought about the tsunami every day (a trauma question) and whether they felt mostly safe (a wellbeing question). Again, the relationship was found to be statistically significant between trauma and wellbeing, those who felt mostly safe were significantly more likely to not think about the tsunami every day. However, as with the above comparisons it can be seen that a clear majority of those who thought about the tsunami everyday still felt mostly safe demonstrating resilience.

Do you think about the tsunami every day?

Do you mostly feel safe?

Figure 13: Relationship between trauma and wellbeing, questions 15 and 14 (youth)
Chi-Square had a p value of <0.001 (Cramer’s V .263)

These comparisons indicate that the relationship between trauma and wellbeing among youth in Samoa after the tsunami was statistically significant, higher trauma was associated with lower wellbeing. However the comparisons also show that many of those respondents who demonstrated high levels of trauma were also able to sleep well, felt mostly safe, thought their life had returned to normal and were mostly happy, indicating
some resilience to the impacts of trauma and a considerable degree of control over their lives.

These examples do not minimise the trauma experienced. Instead they point to the complexities within trauma experiences and show that for many there are resilient factors that can be drawn upon to help people move beyond the trauma.

These comparisons demonstrate resilience in the Samoan context, that is, the ability to maintain good outcomes in the face of extraordinary adversity. In this case respondents had experienced considerable hardship both through and in the period following the tsunami (injury to self, injury or death of loved ones, damage to aiga, loss of livelihoods, and personal fear and anxiety, ongoing trauma). Respondents demonstrated the ongoing impact of these experiences. For example many had reactions such as fast heartbeat, thinking repeatedly about the tsunami, and anxiety about the tsunami happening again. These reactions indicated trauma among respondents. Nevertheless most people (even among those who displayed trauma responses) were still able to maintain good outcomes. That is, they were able to consider their lives mostly happy and normal. Moreover they were able to control their own responses to the trauma in order to achieve good outcomes (for example, many were able to sleep okay even when concerned that the tsunami was going to happen again). This ability to maintain and achieve good outcomes in the face of adversity indicates resilience among those affected by the tsunami in Samoa.

In disaster responses and trauma therapy this is an important finding. Avoiding re-traumatisation, encouraging resilience, and focusing on strengthening personal resources was central during the asiasiga and counselling stage of the response. By highlighting answers given by respondents on wellbeing questions the already existing strengths and support among individuals, aiga and communities were further demonstrated. Furthermore, in the communal village context this finding is particularly important. A shared response to trauma and disasters from nu’u and aiga may be critical to the collective recovery and survival in high risk areas.
Findings: Livelihood impacts

Access to vital resources is often severely impacted following natural disasters such as the 2009 Samoa Tsunami. Ensuring access to resources such as food, water, productive land, and employment as well as rebuilding education, health, housing and communication networks was a priority for the Samoan government and for all agencies who responded to the disaster (Samoan Non-Governmental Organisations and faith-based organisations, international aid organisations, and international governments). Much has been achieved in the areas of health, housing, and education since the tsunami. However this review showed that respondents in the effected villages considered there were still ongoing restrictions in 2011 of access to some resources such as water and fishing for many of those affected by the tsunami.

In this section household and youth responses to questions about the changes they experienced around access to resources before and after the tsunami are identified. The resources examined in this review were water, land for food, land, the sea, fishing, animals and livestock, tools, transport, housing, employment, schools, and medical care. Income sources and the amount of income earned by youth and households were also assessed.

Households and youth were additionally asked to describe changes in the household, and asked whether these changes affected their ability to make a living and how as individuals and households they had met these challenges. This information is included in the final part of this section on resource access.

Perceptions of resource access were assessed in interviews with young people and aiga but not in the interviews with children. There was no baseline data prior to the tsunami because no one was expecting it. The assessments by respondents of their access to resources before and after the tsunami were made in 2011.

In 2014 the Sui Pulenu’u Tama’ita’i (women deputy village mayors) from all of the original review nu’u were interviewed and asked for a current update on the water, fishing, and agricultural situation in each village. This data is also included within these three sections in the report below.

The following section discusses the impact of the tsunami on access to resources.

Access to resources

In all sectors assessed both youth and household respondents reported a decrease in resource access (see figures below).

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30 As identified in the methodology section, studies comparing health, wellbeing and resource access prior to and following a natural disaster are limited and few exist. Data on access to resources in Samoa prior to the tsunami was not available; therefore the review assessed access to resources before the tsunami based on the memory of respondents.

31 Youth interviewed were between the ages of 16 and 25.

32 Sectors assessed were water, land for food crops, land, sea, fishing, animals & livestock, tools, means of transport, housing, paid employment, schooling, and medical care/hospital.
As can be seen, most household respondents reported good or very good access to resources prior to the tsunami. On all measurements except access to tools and paid employment, over 70% of respondents said that access had been good or very good. In contrast, two years following the tsunami respondents thought that for seven of the 12 resources assessed, the good or very good access categories had decreased.
considerably (fewer than 60% of aiga reported good or very good access to water, the sea, fishing, animals and livestock, tools, means of transport, and paid employment).

Youth perceptions of access to resources before and after the tsunami were broadly similar to household perceptions, for example youth and aiga both considered poor or very poor access to water and the sea had increased substantially following the tsunami (see figure below).

As with aiga, for all but three measurements, over 70% of youth respondents said that access to most resources was good or very good prior to the tsunami. The only exceptions were just below 70% – fishing, transport, and employment which were 69.5%, 68.4%, and 68.9% respectively (see figure below).

Figure 16: Access to resources before the tsunami (youth)

Again like aiga, youth interviewed reported a decrease in good or very good access to all resources after the tsunami and a corresponding increase in poor and very poor access to resources. The increases in very poor access are particularly apparent (see figure below). These increases are more dramatic and uniform across all resources assessed than the changes reported by aiga.
As with aiga, very poor access to water, the sea, and fishing were the biggest changes to resource access identified by youth, with over 30% of youth identifying very poor access for these three resources. However, significant areas such as access to land for crops, land, schooling, and medical care/hospital showed much greater perceptions of change than the household assessments. For example, 74% of youth interviewed thought that before the tsunami access to water was good or very good, compared to 77.9% of aiga. Following the tsunami only 22.1% of youth thought that access to water was good or very good compared to 34.8% of aiga.

Similarly, youth interviewed reported that good or very good access to land for food and access to land had decreased dramatically, 83.4% and 84.5% of youth thought that access to land for food and access to land had been good or very good before the tsunami. After the tsunami only 47% and 56.7% respectively thought that access was good or very good (compared to aiga at 79.5% and 88.5% after the tsunami) Notable differences in experiences between youth interviewed and aiga interviewed were also particularly evident in responses about schooling and medical care. The percentage of youth who reported very good or good access to schools and medical care reduced from 87.1% (schools) and 75.6% (medical care) to 57.3% and 49% respectively, compared to household reported access following the tsunami of 81.1% (schools) and 81.7% (medical care). These results are more extensively discussed below.

The Government of Samoa recovery plan, released in 2010, lists the recovery to date and further work planned. In this recovery plan water is recognised as the highest priority for the government followed by housing, health, education and agriculture/fisheries. In all of these areas significant gains have been made however this review highlights areas in which a number of people directly affected consider they are still experiencing substantial deficits.
Access to water
This review shows that people in the tsunami affected villages in 2011, assessed that their access to water had not reached pre-tsunami levels. Aiga interviewed who thought access to water was good or very good decreased from 78% before the tsunami to 35%. Furthermore, 25% of respondents reported very poor access to water in 2011, a dramatic increase from only 2% prior to the tsunami (see figures below).

In the most affected nu’u of Saleapaga, Satitoa and Saleaumua over 50% of aiga interviewed reported very poor or poor access to water in 2011.

Qualitative data from aiga also indicated that access to water remained a significant challenge for them. They identified poor water quality and supply throughout their responses.
Similarly to household respondents, most youth (73%) considered access to water before the tsunami to have been either good or very good, however only 22% thought it had remained so after the tsunami. Youth interviewed believed that poor and very poor access to water had increased since the tsunami, 52% of those interviewed thought access was poor or very poor since the tsunami an increase from 9%.

Despite significant recovery in Samoa, access to water in 2011 remained difficult for many of those in affected areas.

**Update from Sui Pulenu’u Tama’ita’i in 2014**

Household access to consistent and safe water continues to be critical for over half of the nu’u visited in this review. Of the nu’u visited, 56.5% (13) Sui Pulenu’u Tama’ita’i stated that their village water supply was still problematic four and a half years after the tsunami. The Sui Pulenu’u Tama’ita’i reported that inconsistent supply was still common in many nu’u, as was no water for days at a time. Ensuring a clean and safe water supply for drinking and cooking in particular was of concern for the Sui Pulenu’u Tama’ita’i.

Some Sui Pulenu’u Tama’ita’i noted that aiga were reliant on rainwater when the local or government water supplies failed. Rainwater harvesting was historically an important source of fresh clean water and remains so today, particularly following the tsunami. In the worst affected district, Aleipata, water tanks were provided to most aiga. In other affected nu’u Sui Pulenu’u Tama’ita’i were asking for more water tanks to ensure future water security. Sui Pulenu’u Tama’ita’i also discussed use of village vai’eli (wells), tufu (coastal springs), and vaitafe (rivers), all of which were identified as important sources of water particularly after the tsunami and other disasters such as Cyclone Evan.

In inland areas some Sui Pulenu’u Tama’ita’i noted that the SWA water supply was still not connected and many aiga were reliant on water truck deliveries. These areas were often where new aiga and developments had been built following the tsunami and consequently new connections needed to be made with the SWA supply. While acknowledging the work that had occurred, frustration and concern with the SWA water supply was expressed by some Sui Pulenu’u Tama’ita’i particularly over the delay of establishing connections, interruptions to supply, electricity-caused interruptions, and the restrictive cost of the SWA supply.

In particular the Sui Pulenu’u Tama’ita’i of Manono Island identified serious issues with the water supply. Manono island receives fresh water supplies from an under-sea pipeline from Northern Upolu. The four Sui Pulenu’u Tama’ita’i were united in the view that the SWA system did not meet their needs in 2014. Although Manono nu’u were very resourceful and experienced at managing on much lower levels of water, there was clearly not enough water to meet the basic needs of women, men and children resulting in considerable stress for aiga.

The Sui Pulenu’u Tama’ita’i of Manono Island reported that communities were using pools and wells for laundry and bathing, as well as storing rainwater to mitigate against the limited supply. However, some aiga needed more tanks to meet their basic requirements – only one tank was insufficient for larger households. To mitigate against water shortages a communal approach was often taken in Manono Island, some village aiga shared their tank water when they have enough, and shared water pumps when neighbouring aiga or the village hosts visitors.

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33 The WST$200 cost for each household to connect to the SWA supply system prevents some families from accessing that system. The monthly costs for the SWA supply also acts as a disincentive for some aiga.
The Sui Pulenu'u Tama'ita'i in Manono identified their water situation as critical and in need of urgent attention from the Samoan Government and Independent Water Schemes planning programmes as well as within the Ministry of Women, Community and Social Development (MWCSD). The Sui Pulenu'u Tama'ita'i have raised their water issues with the MWCSD as their contact point with the government on issues to do with water.

Of the 23 Sui Pulenu'u Tama'ita'i 43.5% were positive about the water supply in 2014. For these nu'u the water supply had been restored and was mostly reliable and clean. Some of the Sui Pulenu'u Tama'ita'i noted that in 2014 the water supply in coastal areas was better than in inland areas, in particular that the SWA had struggled to enlarge the water supply to include inland aiga as well as maintain the coastal water supply system. The challenge continues to be for SWA to deliver water to nu'u that are further away, and often at higher elevations.

Some nu'u found that the older system worked better for their nu'u.

> When we had our old water supply system it was working very well. Since the changes we are experiencing many problems with our water. Many families in our village are affected negatively. SAT

One village in this review, Vavau, was on an independent water supply system and currently have a strong water supply. Aufaga and Lepa also had independent water sources (though also connected to the SWA). In all three nu'u maintenance of the water supply was a community responsibility. The Sui Pulenu'u Tama'ita'i were also responsible for regularly testing the water to ensure a clean and safe supply. It is important that each of the nu'u that have their own sources of water have access to simple, effective and affordable water testing methods in order to test the quality and health of their independent water sources. Village wells, fresh water springs and rivers need to be tested regularly for their levels of salinity, pesticides, and livestock effluent.

It will be important in light of the difficulties restoring water following the tsunami and increasingly frequent and severe climatic events to ensure that nu'u and aiga maintain and establish alternative water sources (such as village wells or rainwater harvesting) which can be used to sustain communities during droughts or following disasters.

See Appendix Six for details on water supply in 2014 for each village from the 2012 review.

**Access to housing**

Significant work on restoring housing to affected populations in Samoa has been undertaken by the Samoan government and by local and international NGOs, in particular 502 new houses had been built by 2011. This impressive recovery was not fully reflected in the interviews undertaken in this review. Both aiga and youth interviewed reported that poor or very poor access to housing was still an issue in 2011.

**Damage to housing and changes to aiga**

Aiga, youth, and children interviewed across all regions reported very high rates of damage to housing. Almost all aiga interviewed said their house had received damage during the tsunami (92%). Aiga in the Manono Island region reported the most damage with 97% of respondents recording damage.\(^{34}\) Over 90% of respondents in the Aleipata region also reported damage to housing. Although not as high as household reports, a

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\(^{34}\) Fewer people were interviewed in the Manono Island region, particularly compared with the villages of Saleapaga and Saleaumua, while this may have influenced the proportions it nonetheless indicates severe damage to housing on Manono Island.
considerable proportion of children and youth interviewed still recalled damage to their house (37% of children and 55% of youth).

The number of people in each household varied slightly but did not change much after the tsunami (see figure below). The most notable changes were slight increases in the number of smaller aiga, four person aiga households increased from 3.7% to 5.7%, and seven person aiga households increased from 8.5% to 11.3%. Correspondingly the number of large aiga reduced, the number of 20 person aiga households decreased from 2.4% to 1.5%.

![Figure 2: Number in household before and after the tsunami](image)

Most aiga had between five and 15 people both before and after the tsunami (79% before and 78% after). The small changes reflect some of the shifting household dynamics following the tsunami. Many aiga had relocated in the immediate period following the tsunami and this necessarily impacted on their living arrangements. It was found during the data gathering stage that many aiga had subdivided from larger aiga into smaller aiga. This change is partially reflected in the changes outlined above, for example in the decrease in 20 person aiga and increase in four person aiga. It is thought by the researchers that the changes in household composition is one of the ongoing impacts of the tsunami and has a profound effect on aiga and relationships in the regions most affected.

In addition qualitative data revealed that many aiga had relocated to hinterland immediately after the tsunami although some had subsequently returned to the coast. Relocation of aiga may have had a disruptive effect on household sizes, particularly in the immediate period following the tsunami. It is possible that these disruptions and separations had been resolved by 2011 when the review was conducted. Nevertheless, it is worth noting that aiga identified relocation to the hinterland as an effect of the tsunami. The ability to relocate, while unsettling for aiga, was also a resource for those who were able to access land, homes, and plantations, and build a sense of security and normalcy away from the coastline where they had experienced trauma.

**Access to housing**

Household respondents interviewed in 2011 thought that very poor access to housing had increased from 0% before the tsunami to 9% after the tsunami. Good or very good access
to housing decreased from 85% to 66%. Although for many aiga access to housing in 2011 remained good or very good, for a proportion of other aiga access had become very poor (see figures below).

As with access to water, youth interviewed reported increased levels of poor and very poor access to housing following the tsunami (from 8% to 36%) while the percentage of youth who thought that access to housing was good and very good fell from 83% to 48%. In comparison, as noted above, 66% of aiga thought access had remained good or very good after the tsunami.

**Access to agriculture, livestock, and tools**

**Access to agriculture and land**

Household respondents in this review reported that access to land for crops remained good or very good after the tsunami, 85% of household respondents said that access to
land for crops had been good or very good in 2009 compared to 79.5% who thought access was good or very good in 2011 (see figures below).

![Figure 23: Access to land for food before the tsunami (households)](image)

![Figure 24: Access to land for food after the tsunami (households)](image)

Unlike aiga, youth respondents thought there had been a considerable decrease in good or very good access to land for crops since the tsunami (from 83% to 47% of youth). This large difference may be due to the loss of access to coastal household gardening land (mainly used to feed families) which was completely destroyed. The inland plantation lands, where many households are now located, were not destroyed, however, this land may have taken some time to reach full production for household subsistence crops. In the 2014 follow-up household gardens and plantations in the inland areas were producing an agricultural mau (abundance).

Land was an important resource to many of the aiga interviewed, particularly as a source of income. Among aiga interviewed the most significant source of income in 2011 was
agriculture or plantations (36% of aiga interviewed said agricultural or plantations were the main source of income) (see figure below). Many aiga did not think that access to land had changed significantly after the tsunami, and aiga were moreover able to continue to use land as their primary income source.

![Figure 25: Main source of income in 2011 (households)](image)

**Access to livestock and animals**
Households thought that good or very good access to animals and livestock had decreased since the tsunami (from 73% of households prior to the tsunami, to 53% in 2011). Very poor access increased from 1% to 12% of aiga in 2011 (see figures below).

![Figure 26: Access to animals and livestock before the tsunami (households)](image)
Similarly to aiga, youth perceptions of good or very good access to animals and livestock had decreased in 2011, from 78% of youth before the tsunami to 36% after the tsunami.

**Access to tools**
Households considered that access to tools had changed somewhat between 2009 and 2011. Just over half (55%) thought that access was very good or good in 2009, however 39% thought access was good or very good in 2011. Conversely, 15% remembered access to tools as poor or very poor in 2009 which increased slightly to 22% who thought access was poor or very poor in 2011.

Of youth interviewed, 73% remembered access to tool as being good or very good in 2009 and 9% remembered access as poor or very poor. In comparison 35% of youth thought that access in 2011 was good or very good and 39% thought access was very poor or poor.

**Update from Sui Pulenu’u Tama’ita’i in 2014**
As already identified, following the tsunami many aiga relocated to higher land. A small number of aiga still maintain their coastal residences but many family members relocated to their plantation lands. Prior to the Tsunami mainly men and young men regularly went to plantations each week to plant and maintain their crops. The movement of whole aiga inland to their plantations has reportedly led to the increased frequency of activity within the aiga plantations which have produced the Mau or plentiful crops as an outcome.

Sui Pulenu’u Tama’ita’i who took part in this 2014 follow-up identified how the tsunami had impacted agriculture and plantations. They reported that prior to the tsunami plantations were flourishing and productive. Reports of changes varied between nu’u. Where the Tsunami damaged coastal lands as well as reaching sea level plantation lands, nu’u experienced a period of ‘Oge’ or famine when food was in short supply. Soil damage and soil salinity caused by the tsunami were identified by the Sui Pulenu’u as explanations for poor agriculture growth in some areas. It was also reported that some aiga had experienced difficulty restoring livestock to pre-tsunami levels. However, on the whole agricultural recovery was reported as very good across many nu’u in this review.

The Sui Pulenu’u Tama’ita’i indicated that most of their nu’u had been active in growing food crops adjacent to their coastal houses alongside increased planting in their
plantations. Aiga that moved inland have adapted to living within plantations, rather than having to walk several days a week to plant and maintain their crops. Being located inland improved the frequency and ease of access by the men, women and children to their crops. Post Tsunami sub-division and relocation of aiga to plantation lands helped to produce the current plentiful level of food in most of the nu’u in this review.  

Sui Pulenu’u identified both challenges and resources in the tsunami recovery process. The challenges included the cumulative impact of cyclone Evan and the tsunami, the difficulty of transporting goods to Apia to sell, low crop prices, lack of markets, and the impact of various weather related changes (such as drought). Sui Pulenu’u also reported higher levels of pests since Cyclone Evan and a need for more pesticides for plantation farmers. Sui Pulenu’u in some areas also identified difficulties accessing both local and national markets to sell agricultural produce. Even when markets were accessible, low food prices in the context of strong agricultural production and the current economic environment were identified as an additional difficulty for aiga and farmers.

Sometimes it is hard to take our produce to Apia because the prices for our produce are so low. However, we still do because we are in need of cash.

SAA

We are one of the nu’u that are supplying the market. Some families in our village are choosing not to take our produce to the market. The monies received from sales do not cover time, energy and resources expended to plant. However, some still take their produce to the Market because of the need for cash in order to support families and pay for schooling costs. We need to sell in order that we have enough cash in order to buy other household goods such as soap, sugar etc. VAI

Furthermore changing weather patterns have also impacted nu’u with drought or high rainfall periods identified as areas where external expertise could support preventative and resilience building responses.

Sui Pulenu’u feedback indicated that rural nu’u have the skills to achieve food security within Samoa, however there is also a need to develop a greater range of markets both internally and externally and to facilitate better access to markets. Such markets can absorb surpluses and act as catalysts for rural income generation. Thirdly, the Samoan rural sector needs continued and innovative supports. Such a focus could benefit not only Samoa, but also facilitate greater food security within the region while contributing to improving regional health outcomes for example through the supply of indigenous foods.

Despite identifying challenges Sui Pulenu’u Tama’ita’i reported that plantations were currently producing at better levels and had improved. The increased production is the result of:

- whole aiga moving inland
- access to Samoan customary lands
- Aiga efforts to increase their food security after experiencing Oge or famine
- Faiga Nu’u village practices encouraging aiga to be actively planting
- Aiga expanding and mixing their garden and plantation crops.

Sui Pulenu’u recognised the strengths and resources available among their communities.

35 Not all villages reported good crop yields. Some villages found that despite their efforts, possibly owing to the Tsunami damage to their soil, their gardens and plantations were not producing as well as they used to.
Faiga Nu'u (village structures) helped the recovery. Post Tsunami practices that emanate from the village structures, like Asiasiga or visitations to plantations by the village council or village groupings, were fundamental catalysts to the recovery of plantations and agriculture. The Sui Pulenu'u Tama'ita'i confirmed that Asiasiga visitations have helped to enliven the agricultural productivity of their nu'u.

Part of the role of Sui Pulenu'u Tama'ita'i in providing support has been to monitor vegetable gardens, ensure that livestock are appropriately fenced, work with women’s networks to encourage women’s engagement in planting and agriculture, and lobby the MWCSD for seedlings, particularly for women’s committees and groups.

Some nu'u have also hosted a Fa’aliga fa’ato’aga (village agricultural show) in order to showcase and generate pride in village agricultural skills and produce. In one village they had hosted such an agricultural show at the beginning of the wet season and it inspired pride in their plantations for the Sui Pulenu'u Tama'ita'i.

Faith in God and spiritual belief was also a community resource identified by Sui Pulenu'u Tama'ita'i who often expressed that they felt that their prayers and faith in God had been answered because the suffering they had experienced had been alleviated in their nu'u.

Sui Pulenu'u also reported that bananas and other crops are currently being planted more frequently than taro in some nu'u showing the adaptation or changing characteristics of plantations. Some crops such as ta’amu, ufi (yam) and umala (sweet potato) are cyclone resilient. It will be important for all plantations to include good proportions of these crops as part of their disaster preparedness each year.

Access to education
Aiga interviewed reported that access to schooling had remained very good or good in spite of the negative impact of the tsunami. As can be seen in the figures below, 83% of aiga reported that access to schooling had been good or very good prior to the tsunami. Slightly fewer (81%) aiga reported good or very good access to schooling after the tsunami. Poor or very poor access to schooling both before and after the tsunami was reported by only 6% of aiga.

36 Within Samoan villages Matai and the Fono a Matai village council structure exerts the strongest influences on the daily activities of families and their members. It is the village council of Matai that drives village priorities and practices, known as Faiga Nu'u. Each elected village Pulenu'u (Male Village Mayor) then monitors the village practices, with the aim to improve village wellbeing. The gendered groupings of Aualuma (women genealogically connected by birth to the village), the Taule’ale’a untitled men’s guild and the Aumaga younger men’s groupings carry out and structure village affairs within Nu'u villages.

37 The election process of Sui Pulenu'u Tama'ita'i (Female Deputy Mayors) varies across villages. Sui Pulenu'u Tama'ita'i as part of local Nu'u or village governance have a direct role in promoting and encouraging village directions with a specific, though not an exclusive, focus on the activities of women.
Youth interviewed thought that greater changes to access to schooling had occurred since the tsunami as compared to households. Only 57.3% of youth thought access to schooling was good or very good after the tsunami compared with 81% of aiga. While 33% of youth considered access to schooling poor or very poor since the tsunami, a considerable increase from 9% of youth who thought access to schooling had been poor or very poor prior to the tsunami.

Access to health
According to households access to medical care and hospitals had changed little since the tsunami. This review found that 81% of aiga interviewed considered good or very good access to medical care was available two years following the tsunami (see figures below).
It is encouraging that access to these significant resources remained good for many of those affected.

Youth reports of access to medical care were comparable to their reports on access to education and again were lower than household reports, 49% of youth thought access to medical care or hospitals was very good in 2011 (compared with 82% of aiga) a reduction from 76% who thought that access had been good or very good before the tsunami.

**Access to the sea and fishing**

Although access to land for crops and access to animals and livestock were moderately affected by the tsunami both aiga and youth reported that poor or very poor access to fishing and to the sea had increased dramatically since the tsunami (see figures below).
Only 8% of household respondents thought that access to the sea before the tsunami had been poor or just enough (no respondents reported very poor access before the tsunami). In contrast, 30% of aiga interviewed reported that access to the sea in 2011 was very poor (see figure below). At the other end of the scale, 92% of respondents said that access to the sea had been very good or good before the tsunami. In 2011 this had fallen to only 56% of respondents.

Access to fishing had similar dramatic changes. Over 70% of aiga interviewed thought access to fishing had been very good or good in 2009 before the tsunami. However, only 42% of aiga thought access to fishing was good or very good since the tsunami (see figures below).
Access to fishing resources was also frequently identified in qualitative data by aiga as a notable change since the tsunami affecting household ability to make a living. Aiga noted particularly that fear of the sea prevented individuals from returning to fishing, and that this had affected livelihoods for some aiga. Fishing was the fourth largest income source for aiga at 12%, (following agriculture and plantations, 36%, remittances, 20%, and employment, 20%) (see figure below). In addition fishing was the main source of income for 14% of those earning 10–50T per week. For these aiga, the decrease of good and very good access to fishing is substantial and the tsunami may have significantly impacted their ability to earn an income from this resource.

The Government of Samoa noted that following the tsunami some aiga relocated to higher ground (2011, p.4). Relocation to higher ground could have negatively impacted access to the sea and to fishing, particularly for those for whom fishing had previously been a primary source of income.
Youth data on access to the sea and fishing were similar to household responses. Most youth interviewed (69%) thought that before the tsunami access to fishing had been good or very good. In comparison, only 31% of youth thought access to fishing was very good or good since the tsunami, while 62% believed access to fishing was poor or very poor.

Youth responses about the main source of income were similar to household responses, with some small differences. For only 8% of youth respondents was fishing the main source of income, compared to 12% for aiga. For over 50% of youth, remittances and agricultural resources were the main source of income.

**Update from Sui Pulenu'u Tama'ita'i in 2014**

Only 29% (7) of the nu'u in this follow-up had access to coastal fisheries at pre-tsunami levels. Four and a half years after the Tsunami 71% (17) of the nu'u continued to experience some reductions in fish and seafood varieties through to seriously reduced fisheries quantities, coral reef damages and changing weather impacts (for a full list see Appendix 7).

Sui Pulenu'u Tama'ita'i who took part in this 2014 follow-up identified the changes that had occurred from pre-tsunami, the ongoing challenges, and the resourcefulness, opportunities and responses in various communities.

The Tsunami has impacted the fisheries along the south eastern coastlines of Upolu and Manono Island. Village fisheries have been affected differently across the village districts. The Sui Pulenu'u Tama'ita'i from southern coastal nu'u recalled they had access to sufficient quantity and variety in their fisheries pre-tsunami but the current quantity and variety was much reduced. Furthermore in some communities and nu'u access to the sea had changed when communities relocated further inland. In some nu'u the distance from the sea, while helpful for their psychosocial recovery, has slowed down the frequency of fishing and the gathering of seafood’s by men, women and young people. On the other hand the decrease in fishing activities may help in the regeneration of their gataifale coastal waters. Increased fear of the sea was also identified as one of the reasons for the changed access to and use of sea and fishing resources. People are mindful of the physical as well as psychological dangers posed by the sea.

The tsunami has brought fear to people in case they get caught while they are gathering seafood or out at sea…Women are no longer diving in case they come across the clothing of a dead person. LEP

Sui Pulenu'u Tama'ita'i indicated that the fear of another Tsunami disaster still affects some of them, including the women who mainly gather seafood closer to shore. Damage to the coastal region had also affected women’s fishing activities. Sui Pulenu'u Tama'ita'i also identified a reduction in quantity of available seafood since the tsunami.

We now search for seafood (figota). It is now further away where we can get sea urchins and sea slugs. We had plentiful seafood before the tsunami and now we have very little. When the people go fishing they bring very little back. Before a family could be fed with the catch of the day, now that is no longer possible. This is also the case with our fishing boats. There are days when they return with no catch. There are days when people await the fishing boats and there is very little to sell. MANI

In addition to the damage caused by the tsunami, Sui Pulenu'u Tama'ita'i identified the impact of Cyclone Evan in 2012 and the combined effect of these two disasters. The torrential rains during Cyclone Evan in December 2012 eroded the soil around the roots of large trees which were then uprooted by flooding rivers and carried to the river mouth blocking access to the sea. Some
quantity of catch had fallen in some nu’u along with a decrease in the variety of seafood available. Sometimes people had to travel further than previously and fished from the shores of other nu’u to get enough seafood.

Continuing challenges identified by the Sui Pulenu’u Tama’ita’i were the need to carefully manage Samoan fishery resources within the context of the small EEZ and the increasing frequency and severity of climate related events. Climate related challenges were also identified, such as the need for greater caution due to unpredictable weather, and the danger of fishing further away from the reef (due to low fish stocks closer to shore). The damaged coral and coastal regions were similarly identified as an ongoing challenge. Sui Pulenu’u Tama’ita’i reported that Tsunami damaged coral and coastal areas on the south eastern and south western coastlines were still impacting women’s fishing activities in particular. While Sui Pulenu’u Tama’ita’i also reported that since the tsunami men had to go much further out from the lagoons (at greater risk) in order to meet household needs due to the depleted fish stock. Furthermore a lack of resources such as fishing boats and fishing tools was also noted by some Sui Pulenu’u Tama’ita’i.

During this update process, Sui Pulenu’u Tama’ita’i indicated that the relocation of aiga inland and further from the sea has impacted on the frequency and scale of fishing activities. As a result younger people do not see fishing skills practiced around them as often as they might have, and therefore have fewer opportunities for engagement and learning. Relocation way from the sea consequently contributes to the erosion of fishing skills unless consistent action to maintain and teach these skills is taken by nu’u and Aiga. Skills such as making and maintaining the equipment and nets, as well as the wooden canoes, also begin to be erased from the memories and practices in aiga and nu’u. In order to preserve both knowledge and a sustainable lifestyle and practice these skills must be maintained.

It will take a focused and determined approach within each village to ensure that young people can grow up knowing how to protect their marine environments and with sustainable indigenous fishing skills. Sui Pulenu’u Tama’ita’i can play a helpful role in fisheries security through village based projects.

In spite of these negative changes and the challenges identified above the Sui Pulenu’u Tama’ita’i also identified strengths and positive responses from aiga and communities. Faiga Nu’u Village structures, such as the Fono a Matai council of village Matai has the responsibility to set village protections, under this management resources such as coral reefs are carefully managed and nurtured. Sui Pulenu’u Tama’ita’i identified committees (komiti) which had been established especially to monitor and protect the coral and fisheries areas. Some nu’u had also adopted the practice of ‘fa’asao’ or established protected areas of the seashore in order to regenerate and regrow coral and fish species that had become depleted.

In addition Sui Pulenu’u Tama’ita’i reported that while many were re-engaging in fishing as a primary livelihood activity, fishing was also a means to maintain cultural priorities such as caring for Elders by contributing fish for Elders meals. The recovery of coastal waters for some nu’u was matched by increased fishing activity. In the nu’u where highly developed fishing skills were already part of their customary knowledge and activities, the fishermen and women had returned to fishing. Sui Pulenu’u Tama’ita’i reported increased numbers of people that fished to sell to their neighbours and others and fishing was again contributing to livelihoods, particularly in the Aleipata region which had been severely damaged in the 2009 Tsunami.

of these blockages had no been cleared a year after Cyclone Evan and in some of the south west villages these obstacles were preventing some villages from fully accessing their coastline.
Sui Pulenu'u Tama'ita'i noted that women were playing an important role in the restoration and monitoring of coastal areas and marine life. New projects to revive marine life have also been undertaken such as the new hybrid seafood development and farming limufuafua (sea grape seaweed). The MAF Fisheries Division of Samoa is currently working with the Secretariat of the Pacific Community (SPC) and the German government in the SPC/GIZ ‘Coping with Climate Change in the Pacific Islands Region’ project (CCCPIR) implementing smaller scale fish aggregating devices (FADs) in 18 nu'u across four districts, one of which, Falealili, was impacted by the Tsunami. New Fishing boats and a focus on fishing tourism have also facilitated recovery.

**Access to transport**
Household representatives and youth interviewed were positive about access to means of transport, 70% of households and 69% of youth believed that access to a means of transport had been good or very good before the tsunami. In comparison 24% of households and 35% of youth believed that access was good or very good after the tsunami.

**Access to paid employment and household and youth income**

**Access to paid employment**
Households interviewed thought access to paid employment had been good or very good prior to the tsunami (64% of households) while only 39% of households thought access had remained good or very good after the tsunami.

Very similarly to households, youth thought that access to paid employment had reduced in the two years following the tsunami. In total 68% of youth interviewed thought that access to paid employment was good or very good before the tsunami, however only 31% thought access was very good after the tsunami.

**Household and youth income**
Aiga and youth were asked questions about income, including income sources and how much was earned. Over half (56%) of all aiga earned over SAT$150 per week, while 18% of aiga earned between SAT$10 and 50 each week.

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39 FADs aim to enhance the coastal fisheries access of village fishermen to larger fish normally caught outside the reef by attracting bait fish like anchovies and sardines closer to shore. These fish are the food of the larger fish like skipjack and yellow fin, wahoo and masimasi.
Most aiga (83%) had more than one source of income, 47% of aiga had three or four income sources. Sources of income identified in this review were agriculture and plantations, employment, business, remittances, fishing, and other sources. The main source of income for aiga was agriculture and plantations (36%), followed by employment (20%), remittances (20%), fishing (12%), and business (11%) and other (2%) (see figure below).

Sources of income varied between different income brackets. For households earning SAT$10–50 per week agriculture and plantations were the main sources of income for 43% of aiga.
In comparison for those earning over SAT$150 per week agriculture and plantations was the main source of income for only 31% of aiga (see figure below). Business was the main source of income for 17% of aiga earning over SAT$150 per week compared to only 5% of those earning under SAT$50 per week (see figure below).

Youth sources of income differed from aiga. Remittances provided the most income for 27% of youth (see figure below).
As with aiga, agriculture and plantations were an important source of income. Agriculture or plantations were the main source of income for 27% of youth interviewed. Within this context the youth responses about access to land and land for crops are important. Although land was the primary source of income for 27% of youth respondents, only 47% thought that access to land for crops was very good or good.

The higher levels of variation in the responses from youth may illustrate different experiences of the tsunami and reconstruction for youth compared with aiga. It may also be an indication that youth were more likely to perceive and experience greater extremes in access to resources following the tsunami.

Youth in works and development
As part of the work undertaken for the Ministry of Women, Community and Social Development aiga were also asked about the number of youth involved in works and development in each household. Only 21% of aiga reported that there were no young people involved in works or development, while 76% of aiga reported one or more young person was involved in works or development.

Two thirds of all aiga interviewed (66.1%) reported that between one and four youth in their aiga were involved in works or developments (see figure below). This was also the experience of youth who reported that in most aiga between one and five youth were involved in works or developments.

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40 As noted earlier, a number of families relocated to higher ground following the tsunami, as a result, access to the sea and fishing was reduced for these people. Furthermore relocating may have put pressure on access to land in these areas, thus influencing responses in this review.

41 Works or development refers to any involvement in family plantation, agriculture, livestock care, and/or fisheries or fishing, and helping or engagement in family businesses. This engagement may be at a subsistence level for the provision of family needs, or for family income. It usually refers to family self-sufficiency, draws on a cultural basis of reciprocal relationships, and may sometimes be without a cash-based recompense.
In total young men and women were almost equally involved in works and developments as reported by aiga (358 women compared to 352 men).

![Chart: Young People Involved in Works or Developments]

**Figure 41: Number of young people involved in works or development (male and female)**

**Qualitative data on livelihoods and health and wellbeing for aiga and youth**

For many of those interviewed (both youth and aiga) the tsunami continued to affect access to key resources (such as water, fishing, and the sea) in 2011. In spite of the impact on household and individual access to resources, aiga and youth reported that health and wellbeing since the tsunami was the same or better in 2011, (82% for aiga, and 84% for youth). Furthermore both youth and household respondents said that changes to health or within the household had not affected their ability to make a living, 87.7% of aiga, and 77.2% of youth answered ‘no’ to the question whether changes within the household or to health had affected their ability to make a living. However, it is necessary to note that nearly 13% of aiga and almost 23% of youth had experienced changes to their household to a degree which affected their ability to make a living. These results indicate the complexity of responses to the tsunami. Despite evident negative impacts such as reduced access to resources, respondents were nevertheless able to respond positively and remained able to make a living.

Qualitative responses from youth and aiga were also revealing both of the extreme difficulty experienced by those interviewed and of the extraordinary resilience displayed by many people.

Youth and aiga identified how family health, livelihoods, and access had been affected. Youth identified in particular poor access to water, difficulty accessing schools and difficulty accessing livelihoods as revealed in the quotes below

> With our water supply affected we no longer have access to clean water (youth responses)
It’s been difficult to access schooling for our kids and paid employment for members of our family (tourism) (youth responses)

Our capabilities and skills and abilities to work on our livelihood has been adversely affected (youth responses)

Similarly aiga identified

Multiple difficulties, a lot of our family tools and housing were destroyed (household responses)

[our] mother no longer works in usual manner (household responses)

In addition many of those visited also identified ongoing mental health difficulties and struggles as illustrated below

We experience uncertainty. There is no harmony between our aiga and the reality (youth responses)

We have been affected mentally because we have been worried and stressed out by the tsunami (youth responses)

Now [because of the tsunami] no longer interested in working (household responses)

Two children died. The majority of the impact is in the minds and the bodies of our family. We find it difficult to forget about this tragedy (household responses)

Three died. That is the reason why this family is finding it hard to find joy. Some of us cannot sleep (household responses)

In some cases it was evident that the emotional and mental impact affected the ability of some youth and aiga to access resources such as fishing or employment

We no longer want to go to the sea, we once loved going fishing but we no longer [go fishing] (youth responses)

We now are fearful to work again (youth responses)

We no longer enjoy and feel well enough to continue with our usual chores (youth responses)

While the quotes above would seem to indicate severe ongoing difficulties for many aiga and young people many of the responses were also surprisingly positive illustrating a strong sense of resilience among those most affected by the tsunami.

Young people said

We are progressing with our aiga development in order that we continue to improve our family’s livelihood (youth responses)

Although the health of my family was affected, the experience increased our family’s work to achieve our improved livelihood (youth responses)

We are still working on keeping our family wellbeing and livelihood (youth responses)

There is a harmony between the ‘before and after’ periods for my family (youth responses)

Likewise, aiga noted that
[Our] aiga developing towards wellbeing (household responses)
We’re not having the tsunami slow our developments (household responses)
We’re not letting our poverty stop us from developing (household responses)
[We have] increased wellbeing physically and spiritually (household responses)
We’re still working collectively to improve our drinking water (household responses)
It is hard to forget what has happened but everything is improving (household responses)
We’re still living by the sea, our family development is in fishing boats, we cannot forget the time of the big wave however we know that God has authority over these things (household responses)

Even when speaking of family who had died and extreme losses experienced by communities respondents demonstrated how individuals and communities were coping. For example,

[in our family] one baby died, mother now worries when she hears waves breaking. However, it hasn’t stopped her from her daily chores (household responses)

Notable in the household and youth responses was the ‘activeness’ identified by respondents. People said they were ‘working’ ‘developing’, ‘continuing’, ‘progressing’, ‘striving’, ‘maintaining’ and ‘trying’ These responses indicated that theirs was not a naive response but rather an acknowledgement that the situation was and continued to be difficult but that individuals, aiga, churches, and communities were actively responding in positive ways to maintain wellbeing and livelihoods.

Aiga and youth identified specific activities and responses that they had undertaken to cope with the impacts and ability to make a living. These included rebuilding and renovating houses, starting plantation developments and livestock developments, rebuilding businesses including shops and tourist fales, and rebuilding churches. Some aiga identified government or NGO aid as supporting their recovery and rebuilding – frequently in reference to rebuilding houses or in restoring water supply and installing water tanks. Others noted the support of the community, church, or aiga in rebuilding and recovery. Some aiga also noted that they were able to rebuild better houses than those prior to the tsunami.

Unsurprisingly rebuilding homes, businesses, and communities was the primary way in which aiga and youth reported coping with the impact of the tsunami. However many also spoke of restoring family or aiga and community wellbeing

restoring aiga environment, house and livestock (youth responses)
Aiga coming together or ‘gatherings’ in order to restore wellness (youth responses)

Spiritual wellbeing was important for many of those visited and was a notable part of how people reported coping following the tsunami.

We are contented in our family, we’re grateful for God’s grace (household responses)
We are contented because our family try and achieve the most positive results. We are grateful to God for everything (household responses)

Gratitude to God for the help that our family has received (household responses)

Gratitude to God, things work out well (youth responses)

Progressing well because of God’s love (youth responses)

This qualitative data exemplifies the findings from our quantitative analysis. Although youth and aiga had struggled emotionally, spiritually, physically and mentally and demonstrated high levels of trauma in some aspects of their recovery, they also demonstrated strong resilience and the ability to achieve positive outcomes.
Resilience in Samoa in the context of Natural Disasters

Resilience is most often understood as a process through which good or normative outcomes in the presence of adversity are achieved. Understanding resilience in the context of natural disasters is a vital part of understanding the recovery and rebuilding process.

This review identifies some of the factors which contribute to resilience in Samoa. The psychosocial data and analysis demonstrated that despite high trauma levels there were also high levels of normal functioning. For example most youth were able to sleep okay even those who felt sometimes like the tsunami was going to happen again. Similarly many young people felt that their lives had returned to normal, even those who had lots of unwanted thoughts about the tsunami. Likewise, many of those who experienced physical reactions (such as a fast heart-beat) when they thought about the tsunami still thought that their lives were mostly happy.

Responses to questions about livelihood, including qualitative responses, also demonstrated surprisingly high levels of resilience among those severely affected by the tsunami.

Livelihood results demonstrate that despite extreme damage caused by the tsunami, high loss of livelihood, and loss of physical health and lives there was a remarkable recovery, to the extent that access to key resources such as housing, water, schooling, and medical resources had almost returned to pre-tsunami levels by February 2011. This recovery was facilitated through government responses, aid and NGO responses, and vitally, through individual and community responses.

This review highlights these important aspects of resilience in Samoa—that resilience is drawn from individual, family, community, and cultural resources. A wide-ranging international literature supports this finding (Luthar, 2006; Masten & Coatsworth, 1998; Masten, 2014; Ungar, 2012).

Individual resources

Individuals spoken to repeatedly emphasised their desire and ability restore normal life. We were told that people had found work again, rebuilt houses, rebuilt livelihoods, plantations were replanted, businesses re-established, and the needs of surrounding aiga and neighbourhoods were actively responded to. The individual responses were closely linked to the family, community and cultural resources which facilitated resilience as described below.

Family and community resources

It is widely recognised that the relationships between family and community are central elements of Samoan cultural identity and life (Tamasese, Peteru & Waldegrave, 1997). As Tamasese, Peteru and Waldegrave write

“the Samoan person does not exist as an individual […] through you, my being is contextually meaningful and whole. Through myself, you are given primacy in light of our collective identity and places of belonging [fa’asinomaga], our genealogical lineage [tupuaga], and our roles, responsibilities and heritage [tofiga]” (Tamasese, Peteru & Waldegrave, 1997, p.28)

Family and community relationships, resources, and responses were repeatedly identified by all those visited throughout the review process.
Qualitative responses were particularly illustrative of this aspect. Household and youth responses identified the role of parents, children and extended families in rebuilding housing, working in plantations, or caring for one another especially elderly or very young family members. The act of visiting aiga (as undertaken in the asiasiga response detailed in this review) was likewise an important response. In doing so individuals and aiga were able to restore interconnectedness thus restoring wholeness for those traumatised by the tsunami. Rajkumar, Premkumar and Tharyan (2008) similarly noted the importance of restoring interconnectedness and interdependence among Tamil communities affected by the 2005 Asian tsunami. They cited one elder who said “it is the responsibility of the leaders that no one should be left to suffer alone. We will visit them periodically and help them in some way” (Rajkumar, Premkumar, & Tharyan, 2008, p.849).

Aiga were able to draw on the relationships between individuals and families in order to restore wellness. Young people played an important role contributing to family work and development, as is clear in the high number of aiga who had at least one young person contributing in this way (over 75% of aiga). Without this collective response the rate of recovery may have been lower. Resilience was found in the mutual support provided by this family network.

As already discussed, land holds important spiritual and cultural values in the Pacific beyond its economic value. Access to land was a vital resource for recovering aiga following the tsunami in Samoa. The system of common land tenure allowed many aiga to relocate to familial land away from the coast. This relocation provided a place where lives could be rebuilt (for some temporarily), and a safe environment to recover from the trauma away from the sea (see also Bird, Chague-Goff, & Gero, 2011). Customary land also provided vital agricultural food and income resources for aiga. Finally, access to customary land provided an environment where aiga could be together so that relationships could be restored and connections remade.

Faith and spirituality was also central to the recovery and resilience demonstrated by many of those visited. Many people interviewed felt that God was with them through the tsunami and their recovery, and were grateful for the support this had given them. Several respondents identified rebuilding the community church as part of the recovery process indicating the centrality of continuance of faith and spirituality throughout the recovery.

Faith and spirituality provided daily rituals, family structures, and safety for affected aiga. Faith provided a combination of theological structures (prayer and belief) and practical support. These faith and family frameworks are held together within the village structures and are embedded within the land tenure system. These interlinked structures provide normality and support in times of stress and chaos.

Similarly cultural resources such as church and leadership based village structures of support facilitated the resilient responses. The asiasiga process used in the early stages of this work was a typical Samoan response to trauma in the community. During asiasiga workers approached village pulenu’u who were able to identify aiga who had been most affected by the tsunami and facilitate access to the support they most needed. These processes are valuable cultural resources which again facilitated the recovery.

Maintaining a sense of purpose and meaning, drawing on community, family, and faith-based, and cultural resources, as well as access to land allowed these communities to work together to restore normalcy following the chaos and loss caused by the tsunami thus demonstrating how truly resilient these communities were and are.
Conclusion and recommendations

The 2009 tsunami was a severe disaster for Samoa. In addition to the disastrous impact on human life, it caused widespread damage to resources and infrastructure. In the immediate aftermath of the tsunami much work was done to mitigate the impact and to rebuild resources and infrastructure. In 2009 the Catholic Archdiocese of Apia, the Family Centre, and Afeafe o Vaetoefaga worked together to provide asiasiga therapeutic support and reduce the psychosocial impact of the tsunami on children and young people.

The interviews carried out in 2011 demonstrated the continued high levels of trauma among households, children and young people. However, they also highlighted wellbeing and resilience within aiga, individuals, and communities.

As discussed earlier, there was a significant, 2-tailed, correlation between trauma and wellbeing. High levels of trauma correlated with low levels of wellbeing. However this review also drew attention to complexities within this relationship. It was found that despite high levels of trauma, many respondents also reported high wellbeing. Many respondents, despite experiencing trauma, were able to sleep at night, thought their lives were mostly happy, and felt mostly safe and calm. Thus, this review demonstrates that the relationship between trauma and wellbeing, although significant, is also complex.

The review also assessed access to key resources in 2011. It was found that access to some resources had been severely negatively impacted by the tsunami, particularly access to water, the sea, and fishing. Very poor access to all resources assessed was reported to have increased in 2011. However, many respondents said that access to key resources such as land, land for crops, schooling, and medical care/hospitals remained very good or good. Other resources, such as access to housing, transport, and animals and livestock, although clearly impacted (according to both youth and aiga) also remained good or very good for most people.

Changes to resource access following the tsunami may affect household ability to earn income and overall household health and wellbeing, however this review demonstrated that in 2011 this was not the case in Samoa. The livelihood survey undertaken among youth and aiga indicates that respondents overwhelmingly did not believe that changes to household health or access to resources had affected their ability to make a living. In addition, and connecting to wellbeing assessments, most aiga interviewed believed that the health and wellbeing of the household was better than, or the same as, before the tsunami, indicating again, that despite the catastrophic effects of the tsunami, respondents had resilience to cope with the disaster. Building on this assessment, the psychosocial survey among aiga, children, and youth, shows that despite trauma experienced children and youth had higher than expected wellbeing.

The combined effect of continued good access to some key resources such as schooling and land access may have contributed to the wellbeing of children and young people. As young people were still able to attend school, as aiga were still able to access land and earn income from this resource, this provided stability for children to recover from the trauma of the tsunami. In addition, as the early asiasiga work showed, community resilience to disasters was high in Samoa. Children, youth and aiga displayed resilience in their responses to the tsunami, both in the initial stage of the project and during the review two years later.

Resilience may be particularly important within the context of climate change. Research indicates that the number and severity of extreme weather events has increased as a result of climate change (Julca & Paddison, 2010).
This review has also drawn attention to the importance of culturally appropriate responses to disaster and culturally appropriate research methods following disasters. Culturally appropriate approaches, research, methods and responses were vital to the initial asiagiga work immediately following the tsunami and were also important in this review methodology, approach, and findings. It is important to emphasise the significance of the cultural responses and methodology of this review.

During the initial stage the team of psychiatrists, psychologists, family counsellors, and pastoral counsellors and workers visited aiga affected by the tsunami. They met with local leadership, including the Pulenu'u, before meeting aiga. At each stage Samoan protocol was followed, and where requested religious and spiritual support was offered. Asiagiga provided an opportunity for aiga and individuals to tell their stories of survival and loss and to then receive psychosocial support tailored to their specific needs. The children and youth seminars provided further support building on principles of psychological first aid and on recent research regarding resilience following disasters and incorporating these with cultural knowledge for a Samoan appropriate programme to help young people and children impacted by the tsunami.

In addition the review process in 2011 was guided by culturally appropriate methods. The CTSQ, after piloting, was adapted to fit the Samoan context and translated in to Samoan. The ethical guidelines of the Samoan Ministry of Health research were followed. Furthermore, experienced Samoan pastoral, researchers and field workers were involved in the design, implementation, analysis and writing stages of the research at all levels of organisational control. Haney and Elliott (2013) write that residents in disaster areas who are asked to participate in research may be suspicious of researchers and reluctant to share their stories with people who have not experienced the disaster. For this reason it can be important for local researchers to direct research in disaster areas and for the research to meet cultural requirements. As outlined above, this review mitigated these issues through engagement at every stage with local partners and leaders. All of the pastoral and field workers participated in ensuring the review processes met cultural protocols and practices in order to build trust and safety, while strengthening relationships with aiga, youth leaders and children. In addition cultural protocols and respectful relationships were accorded to village governance and church ministers, alongside supporting Samoa Government Ministries.

Psychosocial responses
Culturally appropriate therapy responses following a disaster were effective and important in the post-disaster recovery stage. This review provided an outline of one way in which this could be carried out in Samoa – the asiagiga approach.

The culturally based psychosocial ‘Asiagiga approach’ intrinsically encourages collective responsibility for one another, especially post-disaster, in order that no-one is left alone in trauma. The asiagiga approach was based on the relational aspect of Samoan identity, that individual identity exists through a relationships, shared genealogy, and mutual roles responsibilities.

Working with children and youth within the context of families and communities was a central part of the asiagiga response and supported the trauma recovery for children, young people, and aiga within highly affected regions. Working within family and community contexts was further important within the relational context of Samoan culture. Individuals should be treated or responded to within the broader context of families,

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42 Piloting was funded through was funded by the Head of Mission fund of the New Zealand High Commission.
churches, and communities. Providing support within this framework worked well for the asiasiga response team in Samoa following the tsunami.

Resilience can be an influential feature of psychosocial responses to trauma. As this review demonstrates, the relationship between trauma and wellbeing is complex even among those severely affected by disasters. Acknowledging and supporting resilience in disaster affected populations is important to recovery.

In the initial asiasiga stage of disaster response, aiga, individuals, and communities told stories of hope and survival. These messages were then passed on to other affected communities. Facilitating these story-telling spaces and passing on messages was an important way in which the asiasiga approach supported recovery and fostered resilience. As stories of survival were told families demonstrated their own resilience to themselves and to others.

Psychosocial responses are an integral part of any post-disaster responses. In addition to following best practice (such as WHO guidelines on 'psychological first aid'), psychosocial disaster response teams need to be careful not to re-traumatise children and adults by encouraging them to relive or re-express their trauma. The focus was on highlighting resilient and adaptive responses in culturally 'normal' ways.

For culturally appropriate therapy responses to occur there must be considerable understanding among response teams as to:
- what constitutes wellbeing or trauma in the disaster affected country
- what examples of resilience and hope can be drawn upon or be useful
- what services or resources are already available and how can these be further supported?

Responses will consequently vary extensively from country, culture or region.

The review suggests psychosocial disaster response teams can
- draw on a range of familiar responses that are identified as useful in the affected country and not be limited by typical practice in a funding country or country of origin
- follow best practice disaster response guidelines identified by WHO and Sphere with an emphasis on resilience and stories of survival rather than psychological debriefing.

This review also shows how using local resources (cultural, physical, human, spiritual) can be beneficial. The asiasiga approach worked with village structures and local leadership. In each nu’u local leaders were met with. These leaders provided information on which families were most affected and support for the asiasiga process. The asiasiga response utilised buildings such as schools and churches to hold workshops and trainings and local workers were trained, equipped, and supported to undertake the asiasiga work. Local workers and leaders were also instrumental the 2011 review.

This review also found that aiga and youth affected by the tsunami thought that access to some key resources had remained very good or good. This is an important finding, showing that the disaster responses from the Samoan Government, and national and international NGOs was effective and that recovery was good.

In particular restoration of access to education, health and medical services, land for crops and land, remained good. Access to housing and transport was also reportedly good for most aiga.

The asiasiga approach was further tested in Christchurch after the major earthquakes of February 2011 whereby the Ministry of Social Development in New Zealand contracted
the Family Centre to deliver trauma counselling and disaster orientation workshops for frontline workers responding to families and individuals who were experiencing grief and trauma symptoms. This was a direct result of the success of the psychosocial work in Samoa after the tsunami and the inexperience in New Zealand of responding to widespread disasters. Resilience focussed training workshops were delivered to 790 frontline workers in Christchurch over a period of six weeks in order to ensure they didn’t run the risk of re-traumatising people but focussed on hope, resilience, and stories of survival.

Livelihood responses
The government of Samoa made considerable progress with the recovery process between 2009 and 2011. However the affected households in this review identified some areas where access to resources was still problematic. In particular access to water, the sea, animals and livestock, tools, and paid employment were considered poor by a considerable number of households interviewed.

Land was found to be a very important resource following the tsunami. Access to customary land contributed to a quick recovery as households and communities were able to quickly relocate to higher (unaffected) land. In addition, increased proximity to plantation land reportedly facilitated growth and productivity on these lands.

Relocation, while in many ways very positive, also meant considerable additional work to restore services (particularly water supply). Furthermore relocation may have impeded access to the sea and fishing. Relocation (particularly forced relocation) in the wake of the Indian Ocean 2004 Tsunami had negative outcomes for some of those most affected by the tsunami, in particular coastal fishing communities. Reports from Samoa so far indicate that this has not been the experience of Samoa, in large part due to the accessibility of customary lands for affected populations. However caution needs to be applied if advocating whole scale relocation. Relocation should be voluntary to be an effective post-disaster reconstruction response. It is also worth noting that Samoa has a history of inland migration following disasters with subsequent returning to the coast, an outcome which may happen again.

Despite the areas of loss since the tsunami, it is quite an achievement that a high proportion of respondents in this study considered schooling, medical care, hospitals and access to land for food had remained good or very good since the tsunami

Recommendations: Psychosocial responses post disasters
This Asiasiga project delivered a psychosocial response approach which was developed together with our Samoan partners and the most recent informed approaches to disaster relief and resilience internationally.

1. Given the increased threat of natural disasters through climate change impacts and the level of trauma and psychological stress they create, Pacific nations including Samoa are not well prepared with developed psychosocial and mental health therapeutic services to address the range of stress problem people undergo. The New Zealand Aid Programme and the Non-Governmental Organisations Disaster Relief Forum (NDRF) seriously consider investing in the development of culturally based contextualised psychosocial and mental health services appropriate to the region.

2. A systematic approach to culturally appropriate therapeutic responses for those in need of more intensive interventions should be developed well before future disasters with the aid of experienced psychological and psychiatric professionals because of the very limited ability to provide these services within Samoa and across the region. Disaster responses need to focus on children and youth, particularly in the context of families, communities, schools and churches. These institutions can and do provide
contextualised supports to the therapeutic responses within the normal environments for children and young people while they are recovering from situations of severe stress and trauma;

3. Disaster responses should also recognise and employ local networks of support people like the Pastoral workers in this project, who can be trained to carry out the psychosocial first response work. The Asiasiga approach, developed in partnership with the local Pastoral counsellors, led to this same group undertaking the Asiasiga as well as visitation to gather review data on the progress.

4. In the same way disaster responses need to recognise and work with local leadership at both cultural and governance levels. Village Matai, Pulenu'u Village Mayors and the Deputy Mayors or Sui Pulenu'u Tama'itai have all been crucial in identifying families in need of psychosocial support as well providing accurate feedback about village situations for water, fisheries and plantations.

5. The focus of psychosocial work following disasters needs to avoid risk laden interventions like psychological debriefing and its dangers of re-traumatising children and adults. The emphasis should follow WHO guidelines and emphasise resilience, hope, and stories of survival.

Recommendations: Livelihoods and resources

6. The customary land tenure arrangements in Samoa proved to be a saving grace for many families whose livelihoods and homes were destroyed by the tsunami. Their ability to move inland and replant crops enabled a speedy resumption of their lives when compared with the disturbing survival processes of such disasters in other countries. It is vital that maintaining customary land tenure arrangements becomes intrinsic to New Zealand’s policies and approaches to bilateral relationships between New Zealand and Samoa. The recognition of the contribution of the Samoan land tenure systems to the alleviation of poverty needs to be included within the MFAT development policy of the future.

7. Cultural, local and regional governance leadership groups are able to quickly identify resource difficulties, such as water supply and quality and any ongoing problems within their Nu’u. They proved to be more efficient than seeking information from the centralised government ministries or the corporations responsible. Working with these structures, and developing relationships with them at village levels, as occurred in this project, will enable an efficient delivery of and use of resources to respond to disaster situations.

8. The supply of clean fresh water is essential after a disaster where water supplies are often polluted or destroyed. The challenge for the Samoan Government was immense as people moved inland and onto higher ground where water and sewerage infrastructure was often absent. In 2014 twenty four Sui Pulenu'u confirmed that centralised water supply was still a considerable problem. Independent water supply systems, infrastructure and the sources of village water need to be invested in and restored as a matter of priority in order to meet basic requirements hygienically. Village young people and women can be trained in testing water quality and methods to maintain healthy water within villages. Investment needs to focus on water security as the prime goal and good water management through widespread water harvesting, using water tanks, other water containers and desalination plants. High quality water management has to become a government and village priority to meet disaster preparedness, climate fluctuations and periods of drought.

9. Attention needs to be given to both the more successful and less successful aspects of recovery this project demonstrated to increase the quality of responses in any future disaster. The respondents in this review considered the Samoan Government and local professional people, to their great credit, managed to restore a similar level of
schooling, medical care, hospital service and access to food as was experienced prior to the tsunami. The nuts and bolts of those achievements should be recorded and taught. Although housing is still a problem in some villages, the overall effort to repair and re-house aiga seems to have been reasonably successful. This, like water supply, is a critical area of recovery after a disaster. The greater losses appeared to be with access to water, the sea, fishing, animals and livestock, tools, and paid employment. These areas require concerted analysis prior to any future disaster so that planning can restore access and resources quickly, and help adaptation to new circumstances where full restoration is not possible.

Recommendation: General
10. There is a need for baseline psychosocial and livelihood data in Samoa (and in the Pacific in general) so that disaster responses can be more strategically managed and prepared for. The data needs to be developed transparently and record the services and resources available nationally and locally throughout the country. The data could then become publicly available and be used to assess what services and resources are needed currently, what are needed in preparation for a future disaster and it will offer a baseline of information after a disaster to guide recovery and restore health and livelihoods.
References


Rajkumar, A., Premkumar, T., & Thayan, P. (2008). Coping with the Asian tsunami: Perspectives from Tamil Nadu, India on the determinants of resilience in the face of adversity. Social Science and Medicine 67, 844-853


APPENDICES

Appendix 1: Psychosocial questions for aiga

NB In the Samoan language ‘Ioe’ means ‘Yes’ and ‘Leai’ means ‘No’.

NAME___________________________________

Please tell us whether any of these things happened to your family during the tsunami 2 years ago?

<table>
<thead>
<tr>
<th>Question</th>
<th>Ioe</th>
<th>Leai</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Were members of your family in the path of the tsunami?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Did you lose a loved one in the tsunami?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Was your house damaged in the tsunami?</td>
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<td></td>
</tr>
</tbody>
</table>

Please tell us whether any of these things happen to your family these days, two years after the tsunami. (Yes or no)?

<table>
<thead>
<tr>
<th>Question</th>
<th>Ioe</th>
<th>Leai</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Since the tsunami has your family life returned to being normal again?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Do members of your family have lots of thoughts about the tsunami that they don't want to have?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Do they sleep okay without any problems?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Are their lives mostly happy?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Does it sometimes feel like the tsunami is about to happen again for family members?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Do they have bad dreams about the tsunami?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Are they calm with friends and not often grumpy?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Do they struggle to pay attention and concentrate on things without being distracted?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Do they feel upset by things that remind you of the tsunami?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. When they think of the tsunami, does their body do things like their heart beat fast or their stomach feel funny?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Do they mostly feel safe?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Do they think about the tsunami every day?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thank you
**Appendix 2: Psychosocial questions for children**

IGOA ______________________ TAUSAGA _____ VASEGA _______

Fa’amolemole tau mai pe na tutupu ni mea o mea nei ia te oe poo lou aiga ina ua tupu le sunami, i le 2009.

<table>
<thead>
<tr>
<th>Question</th>
<th>Ioe</th>
<th>Leai</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sa iai ni tagata o lou aiga na maua e le sunami?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>2. Na maliu i le sunami se tasi o lou aiga poo sau uo?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>3. Na fa’aleagaina lou fale e le sunami?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
</tbody>
</table>

Faamolemole ta’u mai poo tutupu mea nei ia te oe poo le tou aiga, talu mai le sunami i le 2009, tali mai i le loe po’o le Leai

<table>
<thead>
<tr>
<th>Question</th>
<th>Ioe</th>
<th>Leai</th>
</tr>
</thead>
<tbody>
<tr>
<td>4A. Talu mai le sunami po ua toe foi le tou aiga i aga poo uiga sa masani ai.?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>4B. Talu mai le sunami po ua e toe foi i au aga ma ou uiga sa masani ai.?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>5A. O tele ni mafaufauga i le sunami o faalavelave atu i lo outou aiga?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>5B. O tele ni mafaufauga i le sunami o faalavelave atu i a te oe?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>6A. Po o maua se moe lelei e tagata o lo outou aiga?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>6B. Po o e maua se moe lelei?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>7A. Poo tele lava ina ola fiafia le aiga?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>7B. Poo tele lava ina e ola fiafia?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>8A. Pe iai ni taimi e lagona ai fa’apei ole a toe sau le sunami?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>8B. Pe iai ni taimi o e lagona ai faapei o le a toe sau le sunami?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>9A. Poo fai ni miti taufa’afefe i le sunami e nisi o lou aiga?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>9B. Poo fai ni au miti taufaafefe i le sunami?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>10A. O fa’aalia e tagata o lo outou aiga le filemu ma le le ma’aleale?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>10B. O e fa’aalia le filemu ma le le ma’aleale?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>11A. E iai nisi o lou aiga o faigata ona tumau o latou mafaufau i se galuega o faia?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>11B. O faigata ona tumau lou mafaufau i se galuega oe faia?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>12A. O lagona e nisi o lou aiga le fa’apopoleina i mea fa’amanatu ai le sunami.?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>12B. O e lagona le fa’apopoleina i mea fa’amanatu mai ai le sunami.?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>13A. A mafaufau i le sunami, e iai ni tagata o lou aiga o tatavale le fatu pe lagona le gaogao o le manava?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>13B. A e mafaufau i le sunami, e tatavale lou fatu pe lagona le gaogao o le manava?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>14A. O lagona le toafilemu ma le saogalemu i le tele o taimi?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>14B. O e lagona le toafilemu ma le saogalemu i le tele o taimi?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>15A. Po’o mafaufau pea i le sunami i aso uma?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>15B. Poo e mafaufau pea i le sunami i taimi uma?</td>
<td>Ioe</td>
<td>Leai</td>
</tr>
<tr>
<td>16A. Faailoa mai le fiafia poo le le fiafia o lou aiga i aso faipea.</td>
<td>Matua le fiafia</td>
<td>Le fiafia</td>
</tr>
<tr>
<td>0 --------1---------2---------3---------4---------5---------6---------7---------8---------9---------10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16B. Faailoa mai lou fiafia poo lou le fiafia i aso faipea.</td>
<td>Matua le fiafia</td>
<td>Le fiafia</td>
</tr>
<tr>
<td>0 --------1---------2---------3---------4---------5---------6---------7---------8---------9---------10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
17A. Faailoa mai le malilie poo le le malilie o lou aiga i le tulaga ua iai nei.

<table>
<thead>
<tr>
<th>Matua le fiafia</th>
<th>Le fiafia</th>
<th>Fa’anoanoa</th>
<th>Fiafia</th>
<th>Mita mita</th>
<th>Matua mimita lava</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td></td>
<td></td>
<td></td>
<td>10</td>
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<td></td>
</tr>
</tbody>
</table>

17B. Faailoa mai lou malie poo lou le malie foi i le tulaga ua iai nei.

<table>
<thead>
<tr>
<th>Matua le fiafia</th>
<th>Le fiafia</th>
<th>Fa’anoanoa</th>
<th>Fiafia</th>
<th>Mita mita</th>
<th>Matua mimita lava</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tbody>
</table>

Faafetai
Appendix 3: Livelihood questions for aiga
Question line for interviews with families/aiga about tsunami impact on livelihoods

Introduction:
“We want to understand your household’s life and ways of making a living before the tsunami and then compare it with the situation now so that we can see the changes that have come about as the result of the tsunami”.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Before the tsunami, how many people lived in your household?</td>
<td>(Record number in box)</td>
</tr>
<tr>
<td>2. How many people are now living in your household?</td>
<td>(Record number in box)</td>
</tr>
<tr>
<td>3. Comparing your household’s health and wellness before the tsunami and now, would you say it is about the same, better, or worse? (Tick in box)</td>
<td>Same Better Worse</td>
</tr>
<tr>
<td>4. Have any changes in your household or health affected your household’s ability to make a living? (Tick in box)</td>
<td>Yes No</td>
</tr>
<tr>
<td>5. How would you describe your household’s access to these resources Before the tsunami</td>
<td>Very poor Poor Barely enough Just enough Good</td>
</tr>
<tr>
<td>6. How would you describe your household’s access to these resources After the tsunami</td>
<td>Very poor Poor Barely enough Just enough Good</td>
</tr>
<tr>
<td>(Tick all that apply in Before and After boxes)</td>
<td>(Tick all that apply in Before and After boxes)</td>
</tr>
<tr>
<td>a. Land for food crops?</td>
<td></td>
</tr>
<tr>
<td>b. Forest/Bush?</td>
<td></td>
</tr>
<tr>
<td>c. Sea?</td>
<td></td>
</tr>
<tr>
<td>d. Fishing?</td>
<td></td>
</tr>
<tr>
<td>e. Animals &amp; livestock?</td>
<td></td>
</tr>
<tr>
<td>f. Tools?</td>
<td></td>
</tr>
<tr>
<td>g. Means of transport?</td>
<td></td>
</tr>
<tr>
<td>h. Housing?</td>
<td></td>
</tr>
<tr>
<td>i. Paid employment</td>
<td></td>
</tr>
<tr>
<td>7. In a few words please tell me if any changes in your household’s health, membership or access to resources have affected its ability to make a living? (Write down responses)</td>
<td></td>
</tr>
<tr>
<td>8. In a few words please tell me what things your household has done to cope with the impacts of the tsunami on its ability to make a living? (Write down responses)</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4: Ministry of Women, Community and Social Development
Supplementary Questions for aiga

MoWSq1 Are there any works or developments that the youth of your family are engaged in?

MoWSq2 How many male youth are engaged in these?

MoWSq3 How many female youth are engaged in these?

MoWSq4 What are the income sources that your family has. Please indicate from the following:
   - fishing (1) - Faiga Faiva
   - agricultural or plantations (2) - Faatoaga
   - employment (3) - Tagata Faigaluega
   - business (4) - Pisinisi
   - remittances (5) - Tupe mai
   - other income sources (6) - Isi Auala

MoWSq5 Please indicate from the above sources, which ones provided the most income
   - fishing (1) - Faiga Faiva
   - agricultural or plantations (2) - Faatoaga
   - employment (3) - Tagata Faigaluega
   - business (4) - Pisinisi
   - remittances (5) - Tupe mai
   - other income sources (6) - Isi Auala

MoWSq6 What is your weekly income (in tala)
   - $10 - $50
   - $51 - $100
   - $101 +
Appendix 5: Nu’u included in the 2014 livelihoods follow-up

A total of 23 village Sui Pulenu'u Tama'ita'i contributed to the review of the current situations in 24 rural nu’u in the tsunami affected districts.

**Siumu/Safata District**
1. Maninoa
2. Siumu Sa’aga
3. Siumu Sisifo
4. Tafitoala

**Falealili District**
1. Poutasi
2. Salani
3. Satalo
4. Vaovai

**Aleipata District**
1. Aufaga
2. Lalomanu
3. Lepa
4. Lotopu’e
5. Malaela
6. Mutiatele
7. Saleapaga
8. Saleaumua
9. Satitaoa
10. Ulutogia
11. Vailoa
12. Vavau

**Manono Island**
1. Apai
2. Faleu
3. Lepuia’i
4. Salua
Appendix 6: Water supply in 2014: report from the Sui Pulenu'u Tama'ita'i

This table gives a summary of the nu'u where the water situation had improved or was progressing well in 2014.

<table>
<thead>
<tr>
<th>Good water supply</th>
<th>Vastly improved</th>
<th>Progressing well</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aufaga</td>
<td>Lotopue</td>
<td>Saleaumua</td>
</tr>
<tr>
<td>Lalomanu</td>
<td>Malaela</td>
<td>Vaovai</td>
</tr>
<tr>
<td>Poutasi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saaga Siumu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siumu Sisifo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ulutogia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following table gives a summary of the nu'u where water supply is still considered to be poor and where water is the most serious challenge they face in 2014.

<table>
<thead>
<tr>
<th>Problems identified with supply</th>
<th>Water their biggest problem in both supply and quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maninoa</td>
<td>Apai Manono</td>
</tr>
<tr>
<td>Salani</td>
<td>Faleu Manono</td>
</tr>
<tr>
<td>Taftoala</td>
<td>Lepuiai Manono</td>
</tr>
<tr>
<td>Satalo</td>
<td>Salua Manono</td>
</tr>
<tr>
<td>Vavau</td>
<td>Mutiatele</td>
</tr>
<tr>
<td>Vailoa</td>
<td>Lepa</td>
</tr>
<tr>
<td>Satitoa</td>
<td>Saleapaga</td>
</tr>
</tbody>
</table>
Appendix 7: Fishing access in 2014: report from the Sui Pulenu'u Tama'ita'i

The following table sets out the nu’u and their current fisheries levels.

**Current situation of fisheries in review nu’u**

<table>
<thead>
<tr>
<th>Fisheries/seafood meeting household and livelihood needs</th>
<th>Some improvement since Tsunami, but reductions in some species</th>
<th>Seriously reduced catches/damaged coral/disrupted weather impacting fisheries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aufaga</td>
<td>Saleapaga</td>
<td>Mutiatele</td>
</tr>
<tr>
<td>Vavau</td>
<td>Ulutogia</td>
<td>Lotopue</td>
</tr>
<tr>
<td>Lalomanu</td>
<td>Poutasi</td>
<td>Malaela</td>
</tr>
<tr>
<td>Saleaumua</td>
<td>Vailoa</td>
<td>Maninoa Siumu</td>
</tr>
<tr>
<td>Vaovai</td>
<td>Lepa</td>
<td>Salani</td>
</tr>
<tr>
<td>Satalo</td>
<td></td>
<td>Satitoa</td>
</tr>
<tr>
<td>Taftoala</td>
<td></td>
<td>Saaga Siumu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Siumu Sisifo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Salua Manono</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lepuiai Manono</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Faleu Manono</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apai Manono</td>
</tr>
</tbody>
</table>