

**Emergency Evacuations from  
Flood Prone Disaster Areas**

**A Winston Churchill  
Travelling Fellowship Report**

**By Andrew Goldston**

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## Outline summary

For twelve weeks at the end of 2006 I travelled through the south-eastern states of the USA, Jamaica, Honduras and Thailand, all areas that have in the recent past fallen victim to catastrophic events. Hurricanes Katrina, Rita, Ivan and Mitch (among many others) and the Indian Ocean tsunami have all wrought havoc upon people, property and land in these areas. My Fellowship saw me seek out those people who were affected or involved in some way. I met with emergency management departments, government agencies, emergency services representatives, voluntary agencies, academics, businesses and local people in the hope that I would learn lessons that could, upon my return home, be put into practice in order to increase, in some way, the UK's resilience to disaster.

While the UK is unlikely ever to suffer from hurricanes on the scale regularly encountered in the US or from a tsunami, other potential catalysts for large-scale evacuation exist. The generic nature of many aspects of emergency preparedness, response, recovery and evacuation meant that people in the areas I had chosen to visit were well placed to offer relevant expertise. Starting in Miami, I made my way down to the Florida Keys before moving on to Honduras. Having spent some time in San Pedro Sula, Copan Ruinas, La Ceiba and Tecugicalpa I continued on to Jamaica where I spent time in various coastal areas that had felt the brunt of previous storms. Returning to America I moved through Tallahassee, the Florida Panhandle and across to Alabama, Mississippi, Louisiana, Arkansas and Texas. My Fellowship ended in Thailand where I met people in both Bangkok and the Phang Nga province, the area of the country worst affected by the tsunami of Boxing Day 2004.

This report briefly describes some of the issues that I encountered along the way. I took the decision to extend this report beyond the guide length in order that it could be viewed as a useful starting point for further research in the area. Key learning points gained from my trip are summarised at the end of this report.

### Context

During 2004 until the early part of 2006 I was seconded to the government office for London to assist with the production of a large-scale catastrophic incident evacuation plan for the capital. It was during this time that I became interested in issues of emergency preparedness, management and recovery. Having been successful with my Fellowship application, I began to research more widely the factors that would influence the preparedness of London for disaster and its readiness for a successful evacuation.

### The risk to London

A number of catalysts for disaster face residents, commuters and visitors to London every day. The impact of some would be sudden, while the effects of others would be more gradual. Not all would call for evacuation. The introduction of a flu pandemic, for example is more likely to result in containment than evacuation. And whereas there is potential for incidents such as a fuel depot explosion as was witnessed at Buncefield, Hertfordshire in December 2005, the relatively small number of such sites and the control measures that they have in place make this unlikely. The most probable catalysts for large-scale evacuation of a part of London are chemical, biological or radiological terrorism and, primarily, flooding.

For large-scale evacuation to be instigated due to terrorism, the scale of the attack would need to be huge. Only credible intelligence about an impending chemical, biological or radiological attack, or the approaching effects of such an assault, like a moving plume cloud would realistically provoke a large-scale evacuation. Thankfully, London has never suffered from such an attack, but the potential for it is there. Currently however, the most likely event to give rise to the need for a large-scale evacuation from part of London due to the extent of its impact is flooding.

London has a long history of both tidal and fluvial flooding. Historical records of tidal flooding in London extend back to the 11<sup>th</sup> Century. Later, on 7<sup>th</sup> December 1663 Samuel Pepys reports, 'At White Hall I hear and find that there was the last night the greatest tide that ever was remembered in England to have been in this river: all White Hall having been drowned...' (<http://www.pepys.info/1663/1663dec.html>). The worst events of the last one hundred years occurred in 1928 when fourteen people drowned in central London and 1953 when one thousand houses were flooded in the East End of London alone and the streets of West Ham were deluged with 640,000 cubic metres of Thames water, (<http://www.metoffice.com/corporate/pressoffice/anniversary/floods1953.html>). In 2000, 320 properties in London were flooded by rivers such as the Roding overtopping their defences. Brown and Damery assert that:

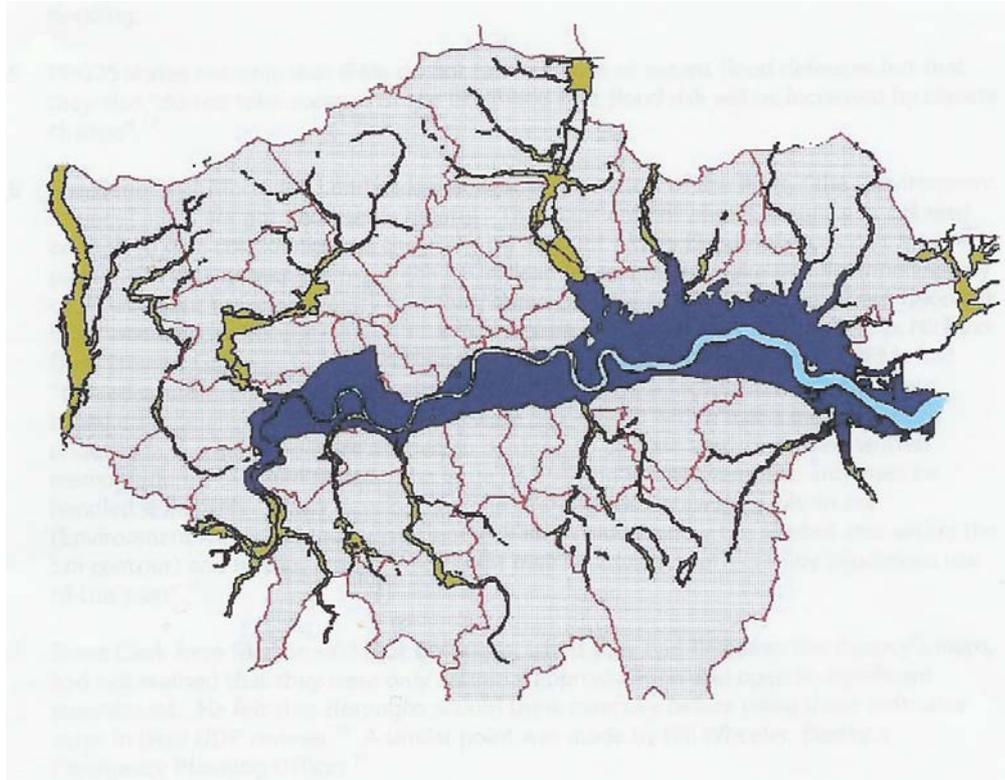
It is increasingly accepted that such events may become more frequent and severe in the future as a result of climate change and sea level rise, together with land use changes and urban development (*Managing Flood*

*Risk in the UK – towards an integration of social and technical perspectives, 2002: 1).*

Roger Evans, Chair of the London Assembly Flooding Investigative Committee opens the foreword to their Flooding in London Scrutiny Report of 2002 with the words 'London is vulnerable to flooding'. Over 150 square km of London lies below high tide level. The area now at risk from flooding by the Thames is home to over a million residents in five hundred thousand properties. It also includes thirty-eight Underground and Docklands Light Railway stations and London City Airport. Records show that tide levels in London have risen by over 1.5m since 1780. Much of this is due to the south-east of England tilting downwards by 30cm a century and the fact that settlements have narrowed the river. The width of the Thames at Westminster was two thirds greater in Roman times (Marsh, no year shown: [www.nbu.ac.uk/iccuk/indicators/10.htm](http://www.nbu.ac.uk/iccuk/indicators/10.htm)).

The Thames Barrier opened in 1984 and forms part of the overall flood defence scheme for London which includes smaller barriers at Barking and the Old Royal Docks, in addition to several kilometres of raised walls in the upper and lower reaches of the estuary. The Thames Barrier, unlike other parts of the flood defence system was designed to protect London from a 1:1000 tidal flooding event until 2030. However, continual development and increased global warming is accelerating water level rise at a rate greater than had been predicted. Storm events are also becoming more frequent, increasing the risk of storm surges due to atmospheric pressure and wind exaggerating tidal peaks (Marsh, no year shown: [www.nbu.ac.uk/iccuk/indicators/10.htm](http://www.nbu.ac.uk/iccuk/indicators/10.htm)).

Widespread tidal flooding of London could affect a massive area:



Blue Area: 1 in 1,000 risk of flooding from the sea

Green Area: 1 in 100 risk of flooding from Thames tributaries

Source: Environment Agency

Parliament, Whitehall, New Scotland Yard, HMP Belmarsh, approximately 20 hospitals and 200 schools, Underground stations, BT exchanges, gas, electricity and water supply points all fall within the flood zone. It is not only the threat of drowning that could necessitate evacuation. London's sewage system drains to the east at Beckton and Crossness. These areas could be flooded resulting in huge areas of contamination. The addition of household and industrial waste and animal excreta would result in a cocktail of disease such as Hepatitis A, E. coli, salmonella, protozoa cryptosporidium, Weil's disease, typhoid and cholera (Doyle, 2002: [www.floodlondon.com/floodlt.htm](http://www.floodlondon.com/floodlt.htm)). The effect of a serious flood in

London upon individuals, businesses and the running of the country would be immense.

The Thames Barrier is both effective and crucial to London and has, on a number of occasions prevented serious flooding. However, if it, or other key parts of the flood defence system were damaged or destroyed, London would be put at great risk. This is something that terrorists are aware of.

### Parameters

These and other factors mean that emergency preparedness and associated issues such as evacuation are rising up the agenda in both London and the UK as a whole. As my Fellowship progressed, I quickly realised that I was gaining a valuable insight into issues that went beyond evacuation alone and decided to broaden the scope of my learning to include these as well. This report will not be a day by day account of my trip as its scope will not allow for it and some days offered more insight than others. Much of the detail that I elicited, some of it confidential, I shall disseminate to the relevant people and will not include in this report. The remainder of the report then will focus, briefly, on those meetings and associated learning that may be of more general interest.

## USA

### Miami, Florida



My first meeting was with the disaster co-ordinator and others from the Greater Miami and the Keys chapter of the American Red Cross (ARC) in Miami.

It quickly became apparent to me that agencies such as the ARC play a much greater day to day role in the US than they do in the UK. In 2005 the Greater Miami and the Keys chapter alone supported victims from over 400 house fires by providing lodging and basic requirements. I was told that the majority of their work revolves around fire emergencies, whether supporting the victims or the fire-fighters at the scene. While I was at the HQ the fire department radio channels were being constantly scanned. Whereas the support they offer is of great value, there did seem to be some issues of process that needed to be resolved. I had been told during my meeting that they would only ever deploy to an incident if they had been requested by the 'client' (victim) or 'authority' (such as the fire department). However, one of my hosts cut our meeting short to self-deploy to a chemical leak at a hospital that he had been alerted to via radio scanning. This was not considered proper by his colleagues who were visibly embarrassed by what I had seen.

The role of the ARC goes beyond domestic incidents and they are integrally involved in responding to all types of event up to the worst kind of disaster. Independent of government and reliant upon donations, the ARC are *responsible* for providing shelter, food and water at an incident, thus removing any grey areas concerning remits. They have a seat at the state / county Emergency Operations Center and also run their own operations rooms during incidents.

A key role is to identify, check and approve evacuation shelters. Using a standardised check-sheet, county and state emergency agencies rely on the ARC to identify buildings that have suitable construction, access and facilities to deal with displaced people during times of need. The Greater Miami and the Keys chapter are able to accommodate 240,000 people in existing shelters. Using a network of vendors consisting mainly of event caterers that regularly cater for large numbers, they are also able to feed evacuees within hours. Local supermarkets are also used for food provision but to a lesser extent. Some of the vendors involved in the partnership place ARC logos on their products in recognition of the contribution that they make. I saw this on a commercially available bottle of mineral water. A member of staff in Miami is dedicated solely to building up support within private industry to provide supplies at reduced cost.

With a core staff of paid workers, supported by volunteers, the ARC fulfils many other functions. They will provide staff to major pre-planned events such as the Superbowl in order that, if required, the appropriate resources can be quickly deployed. They support the families of military personnel whose loved ones are stationed around the world. They set up Family Assistance Centres and provide routes into counselling for affected people. They provide

training in a number of emergency related subjects, including chemical, biological and radiological de-contamination. And they produce educational leaflets on issues such as flooding, disaster preparedness, terrorism, insurance and heatwaves.

The ARC can be relied upon to provide a number of important support services in the US and protocols are in place that incorporate them into the emergency response structure. Whether they are feeding and supporting emergency workers at the scene of a disaster, providing evacuated families with emergency provisions, or identifying suitable shelters for future events, the ARC are an integral part of America's response to disaster.

#### Monroe County, Florida



Moving down through the Florida Keys, I met the Director of Monroe County Emergency Management, the Monroe County Sheriff and Monroe County Fire Chief in Marathon. Monroe County incorporates the whole of the Florida Keys which, in most places is a narrow strip of land. The southernmost part of the USA, a single road connects the keys to the mainland via a network of bridges spanning the sea. There is one way in and one way out by road and often one lane in

either direction. This, coupled with the fact that the Keys are often at risk of being in the path of hurricanes means that the area has significant emergency evacuation issues.

A category 1, 2 or 3 hurricane would see evacuations to local shelters. The approach of a category 4 or 5 hurricane results in a mandatory evacuation of the entire Keys to Miami. If there is insufficient accommodation in Miami, evacuees would continue north, possibly into Georgia. The point was emphasised that ordering an evacuation is a tough call. Not only does it cause chaos, but if the expected hurricane does not hit the Keys, the public quickly become frustrated and are less likely to heed future calls to evacuate. Officials in the Florida Keys are already in the position where people don't take a lot of notice of their warnings. There is a "we've heard it all before" blasé attitude that results in relative inaction. I was told that on one occasion, when 27 people were found in a local shelter, emergency staff were surprised to see so many there. The authorities will not force people to leave their homes if they do not wish to.

During a previous hurricane, 70% of the vehicles in Key West were written off, mostly by the associated flooding. On that occasion, buses were brought in from Miami to transport the displaced residents to shelters. All the shelters in the Florida Keys are schools and, initially, food from the school canteens is used. Many Americans have pets. However, the majority of shelters do not allow them. Separate pet shelters are provided but are few in number so many owners prefer to find a pet friendly hotel out of the danger zone.

The Emergency Operations Center is run by the Emergency Management Director who chairs the meetings. Matters are

escalated via state authorities before going to the federal level, if necessary. However, there are many jurisdiction issues pertaining to which agency has primacy over which issues and to what level. A recent exercise saw a lack of co-ordination, duplication and uncertainty as interested parties could not agree on jurisdiction issues. I witnessed some discussion over this between those present at my meeting. The matter remained unresolved between them by the time I had left.

### **Honduras**

Having spent some more time speaking to a variety of people in South Florida, I flew to Honduras. Seventy per cent of Honduras is mountainous. Her towns are densely populated and many people live along the river bank. In October 1998 Hurricane Mitch dumped a year's rain on the country in 48 hours. Flash floods and mudslides wreaked devastation on a vast scale. Honduras, the second poorest country in the western hemisphere was hardest hit. Almost 6000 people were killed and another 11000 declared missing, presumed dead. A third of the country's six million population were left reliant on aid and 70 per cent of the country's productive infrastructure was damaged or destroyed. Mitch was officially declared as the western hemisphere's worst ever disaster. Poverty had much to do with the extent of the impact of the hurricane. Natural disasters in impoverished areas always cause more human destruction than in wealthier areas for many, well documented reasons. This has relevance to London as the area likely to be worst affected is the poverty-stricken inner city. The scale of Honduras' suffering and the associated issues of resilience meant that I ensured that the Project Honduras '*Conference on Honduras*' was on my agenda.



The conference was held in Copan Ruinas, a beautiful small town near the border with Guatemala and home to fascinating ancient Mayan civilisation ruins. Running over a period of four days and with delegates from a variety of agencies from around the world, particularly America, the programme focused on how the country can develop in the face of the challenges that it faces. While not specifically about flooding, emergency preparedness or evacuation, it dealt with a number of associated issues, including water cleanliness and the consequences of poverty on health. In the aftermath of floods comes the threat of disease, including dengue fever, typhoid, cholera and diarrhoea. More flood-related deaths are due to a lack of clean water than drowning. Potentially, this could be the case in London as much as anywhere else. I thought, therefore, that the conference would be a valuable part of my Fellowship that would put some of the issues in context. It was also a great opportunity to network.

Of all the presentations that I witnessed, there was one that stood out and it happened to be the first. With *Sustainability* as the subject, the presenter spoke from experience about how to run enduring and worthwhile support programmes within a charitable context. Appearing strangely ruthless at times, the over-riding

message was one of remaining effective at all costs. The points raised have relevance in a variety of situations, particularly disaster relief. Although the speaker didn't refer to it, an example of the kind of intervention that has benefited the country is the implementation of an early warning flood system and training for the local community in La Masica. When Mitch struck the town, not a single life was lost.

The first key lesson from the presentation was the need to be clear on what the scope of your project is and to stick to this field of activity. Proper research should be carried out and assumptions should not be made about what people want or need. They should be asked and consulted with lest inappropriate or unwanted measures are introduced, or crucial elements missed. This point was made again during my meeting with D-Trac in the Phang Nga province of Thailand. The temptation to broaden out beyond the scope of the set agenda should also be resisted as it usually only results in a reduction of the ability and capacity to be effective.

Money, time and effort should not be wasted on raising general awareness or facilitating visits if tangible action is not going to follow. It is more beneficial to target smaller audiences who are more likely to deliver a return. Following on from this, those involved in relevant ventures must not be afraid to say 'no' to well-meaning offers of help if they do not fit properly within the specific area that is being developed. The final message was that no-one should be trusted. The speaker advocated, for example, two people opening all the mail to reduce the risk of contributions being stolen.

On more than one occasion the ethos of the whole conference was summed up with the phrase "Giving someone a fish provides them

with a meal. Teaching them how to fish provides them with a lifetime of meals.”

## **Jamaica**

Having spent more time in Honduras and visiting some of the areas that suffered during hurricane Mitch, I made the short flight to Jamaica. Unfortunately, I was ill for some of the time that I spent on the island meaning that I had to cancel three of my key meetings.

Hurricane Ivan passed along the south coast of Jamaica on 10<sup>th</sup> and 11<sup>th</sup> September 2004 with sustained winds of 180km/h. Despite not making landfall, Ivan resulted in 14 deaths and extensive damage across the island, particularly in the south and not least from flooding. There have been many other hurricanes in recent times that have also battered the island. The Office of Disaster Preparedness and Emergency Management (ODPEM) places great import on continual public awareness programmes to ensure that the population has the information that they need to protect lives and property. They employ a number of techniques to ingrain their message into the public’s mind, using celebrities to promote awareness and holding regular disaster preparedness days with different areas of focus such as businesses and schools. Due to its vulnerability from storm surge Portmore, a coastal town close to Kingston, holds regular large scale evacuation exercises. In the past, these have identified problems that have been subsequently addressed such as inter-agency co-operation. Significantly, the media in Jamaica now offers prime time slots at hugely discounted rates to messages aimed at raising public awareness of disaster risk and mitigation techniques.

While I was unable to follow this learning up in the way that I would have wished, I was still able to visit some of the areas that had been touched by the hurricane and speak to local people about how Ivan and other hurricanes had affected them. There was a general reluctance to think back to the hurricanes that had occurred and the attitude towards them seemed to be one of fear, reverence and hatred. Many of those I spoke to vented their anger by personalising the storms and verbally abusing them with extensive use of expletives as if they were their worst enemy. There was an almost unanimous expression of helplessness amidst a recognition of the power that wind and water unleashes during a hurricane and the damage that they cause. I was surprised that there was little evidence of resilience on the part of local people, rather there was a grudging acceptance that however hard they try and however aware they are, hurricanes will still come to 'mash the whole place up' and there is nothing they can do to mitigate against them. In the face of so much awareness, preparedness information and training there was still an attitude amongst the people that I spoke to that hurricanes are an evil phenomenon that do not have any capacity for mercy.

## **USA**

### Tallahassee, Florida

Returning to the US, one of my first stops was at the Florida Division of Emergency Management in Tallahassee where I was able to speak to the Director and some of his colleagues. My timing was excellent as I arrived on the day of their Thanksgiving office lunch. Having parked my car I was summoned to the rear of the car park and handed one end of a kayak paddle. As someone held the other end, a whole (prepared) turkey was suspended from a hook in the

middle and we lowered it into a large vat of boiling peanut oil. After 45 minutes of talking about evacuation issues, the deep fried turkey was cooked and ready to be added to the rest of the luncheon feast.

My day at the Florida Division of Emergency Management was fascinating and I was able to learn a lot from a team of very experienced individuals. I have left the fine detail out of this report for dissemination to my contacts in and around the workplace. However, some of the headlines that have relevance to the UK and could be followed up are:

- Florida has enough evacuation space for 15% of the population. They have only ever had to cater for a maximum of 5%. It is usually the poorer people who require evacuation assistance. Wealthier people will use their vehicles. There is no need to plan for 100% evacuation.
- Only 10% (the critical mass) of people need to hear an evacuation order. The rest will hear by word of mouth and follow.
- Evacuation routes and shelters are spread across the state to enable flexibility. Evacuation is always staged to avoid bottlenecks.
- Panic does **not** set in.
- Local Emergency Management departments will run the disaster unless it gets too big for them or requires state co-ordination.
- The military are not used (except for the National Guard in the case of an evacuation from the Florida Keys). It is considered too

close to martial law, risks the blurring of boundaries, is not the remit of the military and is considered un-American.

- Large pharmaceutical retailers (such as Walgreens) will often take a mobile pharmacy to a disaster zone.
- Large retail companies that are hit by disaster do not want to lose business and, recognising the need to look good against competitors, will open up a marquee in the car park to sell essential lines if their store becomes inaccessible. Many have also fitted emergency generators to deal with power outages. This has the added advantage of negating the need for emergency agencies to source supplies from elsewhere.
- Evacuees are not registered at evacuation centres except by the American Red Cross who keep personal details confidential. Federal agencies would like to be able to register people. Emergency management organisations are concerned that people might not seek shelter through fear of registration if they were, for instance, an illegal immigrant, thus putting lives at risk.
- Deaths are not acknowledged to the media until a qualified person has pronounced the victims dead. Estimated numbers are **not** given.
- Geographical and administrative boundaries are not a bar to providing help. The Florida Division of Emergency Management was the first team on the ground in Mississippi following Hurricane Katrina and the only team there for three days.
- During wildfires a few years ago the whole of Flagler County was evacuated.

- Websites are seen very much as a pre-education tool. They are not used much **during** emergencies.
- Prisoners are transferred via buses with security guards or secure vehicles depending on the category. They will be taken to other prisons.

I was also lucky enough to be given a tour of the state Emergency Operations Center (EOC). It is an outstanding facility and an excellent model for UK Strategic Co-ordination Centres (SCC) to follow. I was so impressed with what I saw that I fed back the learning to the relevant people in the UK the following day. Again, without going into detail:

- The EOC can host multiple agencies in their own separate 'cells'.
- Single Points of Contact for each agency are kept relevant and up-to-date.
- The EOC takes calls relating to incidents state-wide. Standard Operating Procedures are then followed and the relevant people informed.
- Inter-agency radios can be patched together.
- The EOC can interrupt a broadcast on any radio – eg can break in to the City Police radio in Miami or the County Sheriff's radio in Broward.
- Radio and TV broadcasts can be interrupted to issue warnings. This can be done on any channel in the state without recourse to

the broadcaster. For instance, Larry King Live could be interrupted but only Floridians would see the interruption.

- Broadcasts can be made anywhere around the world from the EOC. They can feed a broadcaster's hub, negating the need for lots of TV company trucks to arrive at the EOC.
- There is a top-secret room from which the state Governor can have direct access to the US President. Access to this and other restricted areas is by fingerprint scan.
- The EOC has a number of briefing and break-out rooms.
- Anything, including meetings can be broadcast to screens across the complex.
- Staff at the EOC can monitor and communicate with ham radio users if all else fails.
- Huge screens in the EOC room can display data, video, TV. Satellite TV carries channels well beyond those available to the public via cable.
- Rooms that need 24-hour staffing have their own toilets, meaning that people will not have to leave during their shift.
- Hotlines to all County Emergency Management SPOCs and those at every level of the legislature are wired in for easy contact at the touch of a button.

## Gulfport, Mississippi

Moving through Alabama, into Mississippi en route to Louisiana and New Orleans, I came across my first real exposure to recent large-scale disaster in a developed country. While the eyes of the world were on the floods in New Orleans following Hurricane Katrina, Gulfport and large areas of the Gulf coast were battered by extraordinarily strong winds. The coastal road and a significant distance inland bears testimony to this in the most graphic way possible; hardly anything is left standing. I hadn't quite prepared myself for the extent of the damage that I was to witness. What was clearly once a beautiful place had been devastated. There was little remaining but rubble and twisted metal. I have many photos of the wreckage. The following four examples give some indication of what, just over year on from the storm, is left of Gulfport.



## New Orleans, Louisiana

Having reached New Orleans and acquainted myself with the city, my first meeting was at Tulane University. My contact there explained some of the weaknesses in the response to Hurricane Katrina. The American Red Cross (ARC) was accused of being inflexible. According to my source, they refused to take action without pre-certification. Their method of volunteer management was criticised and I was told that the ARC had too much of a monopoly over shelters and volunteers. The summation was that the ARC are accomplished at dealing with small-scale incidents but that they cannot cope with anything catastrophic.

I was given an interesting insight into State-v-City politics, learning that the state wanted the Superdome to be a special needs shelter, whereas the City didn't want it to be used as a shelter at all. In the event, it became an over-crowded and wholly unhygienic make-shift shelter. I was also told how transportation was an issue, especially for the poor in a city with 30% below the poverty line and 60% around it, and how a breakdown in communications caused huge delays to the evacuation and subsequent recovery effort.

As seems to be the case everywhere that I visited, there was confusion over which agencies, at which levels were doing what. The point was made that the system had too many layers and was too bureaucratic with too much reporting and not enough decision making and effective action. A key point that was made to me was that elected officials in government simply don't know enough about disaster management to be able to make effective decisions. Both the Mayor of New Orleans and the Governor of Louisiana were blamed for micro-managing and not knowing what to do. The

recommendation was made that elected officials should undergo training in disaster management.

We then spoke about recovery and the point was made that the opportunity should be grasped to do a proper job of re-constructing the city and rectifying some of the problems that had been present for years, such as replacing the ageing water pipes during an 'aggressive' re-build.

There is a high instance of mental health suffering in the city, brought on by the slow pace of recovery. The effect of disasters on the mental health of those affected was mentioned several times during my trip and is something that needs to be factored into planning in the UK. Hurricane Katrina wiped out livelihoods, and for some they will never be re-built. Most in the city couldn't afford insurance. Many of those who could are not having their policies honoured due to spurious technicalities. Corruption in the awarding of construction contracts is apparently rife. Interestingly, for the first six post-Katrina months, the remaining population was euphoric due to the huge reduction in crime. This reduction was in large part due to the low numbers that remained in the city. Whole crime gangs had left after the storm. However, while the rate of returning population to the city is incredibly low (only 50% have returned), levels of crime are beginning to rise again. The well publicised looting that occurred in the immediate aftermath of the storm was apparently quashed on the arrival of the National Guard.

The worst affected areas of the city were the Lower 9<sup>th</sup> ward and St Bernard Parish. I was lucky enough to be shown around the worst parts of each of these, those that most people don't usually see and from which tour buses are banned. My guide was the Sheriff of St Charles Parish who was also kind enough to invite me to stay with

him and his family over the Thanksgiving holiday. He gave me an in-depth insight into what happened during and after the storm.

In a similar way to my experience in Gulfport, I was astounded by the extent of the damage. St Bernard Parish and the Lower 9<sup>th</sup> ward exhibit little but block after block of wrecked, deserted houses and broken streets. The desolation hit me as much as the damage. Many houses are still standing but closer inspection reveals they are nothing more than empty shells. A watermark could be seen on the upper levels of many houses. Those upon which one could not be seen often had foliage growing on the roof (if the roof remained), a constant reminder of how high the waters rose. Chillingly, on every house there was a spray painted cross showing who had checked it after the waters had receded, when, and how many dead were found inside – humans and animals.

Many trailers can be seen. Some are in trailer parks, others parked outside what used to be a home, having now become the home. America's biggest sugar company, Domino Sugar transformed its parking lot into a trailer park as almost every one of its employees had lost their house. Hurricane Katrina affected the rich and poor in New Orleans. Thankfully, however, not every part of the city suffered to the same extent, with areas such as the French Quarter trying to lure the tourists back again to an area that was largely unaffected. However, it is difficult to put into words the scale of the devastation in the areas that were underwater for so long. Again, I have many photos and have included a few here to try to illustrate the current situation just over a year after the storm hit.





Having visited the Director of St Charles Parish Emergency Preparedness and gained some useful learning in connection with zonal planning and CAMEO, an IT system that can assist with emergency evacuations and forecasting by profiling many aspects of a geographical area, its infrastructure and its inhabitants, I moved on to the state capital, Baton Rouge. There I met two fascinating people at Louisiana State University.

#### Baton Rouge, Louisiana

My first meeting was with Professor Jeanne Hurlbert who gave me an insight into research that she had been carrying out into the social consequences of the 2005 storms. In the face of a slow recovery, her research showed that one third of the remaining population were thinking of leaving New Orleans within two years. In keeping with my findings at Tulane University, mental health was flagged as an issue, with the added complication of there not being enough mental health specialists to deal with the need in the city. 60% of the businesses closed down by the hurricane have not yet re-opened. Further to this there seems to be a reticence from local people to find work. Burger King have been offering \$6000 for recruits to sign-on. The jobs are not being taken.

Professor Hurlbert also confirmed the common view that poorer people are less likely to evacuate for a number of reasons, whereas

people in networks are more likely to do so due to both shared purpose and shared means. An operation 'Operation Brother's Keeper' had been run in the city to try to work out how the church could assist the effort to get people to leave during an evacuation. And, in contrast to the view expressed in Tallahassee, registration of evacuees in shelters by the government was considered a good thing due to the potential that it has to catch criminals.

I then spoke to Professor Ivor van Heerden. He is a controversial figure in Louisiana as he had predicted a storm on the scale of Hurricane Katrina but been ignored. He has recently published a book entitled *'The Storm: What went wrong and why during Hurricane Katrina – The inside story from one Louisiana scientist'*. He explained to me what the effects of different traffic management systems had been during different hurricanes in the past and how any system will only work if those jurisdictions to which the traffic is heading know the plan and have the resources to support it. 290,000 cars got out of New Orleans once the evacuation order had been given. However, it was a known fact that 127,000 people in the city did not have access to a car. Yet no plans were put in place for them to be helped out of the city.

Professor van Heerden advocated involving the public by asking for their views and experiences following evacuations, whether real or false alarms. Ideally this would be in the form of a multi-agency survey. He stated his belief to me that half of the people who died in New Orleans during Hurricane Katrina, did so due to the levees breaking. The other half, mainly the elderly who were left to sit unaided for a week or more, he says, died because of a failed response.

He then spoke about MERLIN, a course that he had been on that teaches how to design a functional and efficient refugee camp, lessons from which could be employed in response to a range of emergencies. He went on to state that a key factor in any evacuation centre is medical surveillance. Professor van Heerden is a keen exponent of capturing medical requirements as people arrive at an evacuation shelter in order that they can be properly looked after, something which, according to him, more often than not does not happen. The added advantage to this, he pointed out, is that infectious people can be kept separate from others.

He also asserted that if people know what will happen to them when they are evacuated and they are not all shepherded towards an unknown situation, they are much more likely to leave and comply with instructions. Aligned to this, he says, is the need to graphically show people what might happen to them and their families if they don't leave. Education then is once again shown to be a key factor. Professor van Heerden was adamant that sending flyers with information on will not work. Far more effective, he says, is the advice coming from a well known, well liked television or radio presenter, somebody who many people will trust, probably more than a figure of authority.

Infrastructure is also a key consideration when mitigating against risk, not least in the case of flooding. None of the hospitals in New Orleans had opening windows. None of the water tanks were elevated. Very few had electricity generators. Those that did were located on the ground floor. In fact a common theme was that all emergency infrastructure was on the ground floor, the area that will always be worst affected during times of flooding. Since Hurricane Katrina, some hospitals have built towers to raise essential

equipment up to a safer level and this should be replicated elsewhere.

Once again, social considerations were mentioned. Professor van Heerden suggested that people should be invited to evacuation centres to advise on mortgages, insurance and the like and that monitoring of partner abuse, alcoholism and drug taking should also be the norm. He is a passionate believer that the greatest anchor in society is for children to go to school and as a result he strongly advocates setting up some kind of school for displaced children to attend. This would have the knock on effect, he surmises, of urging the rest of the shelter population to move faster towards normality. As for registration, Professor van Heerden believes that if people are in a shelter, with a name recorded for them, then there is some control over them that wouldn't otherwise be there. He went on to say that the level of control can then be manipulated to fit the need.

Professor van Heerden went into much other detail, most of it specific to the New Orleans situation and not therefore for this report.

### Lake Charles, Louisiana

My next stop was Lake Charles where I visited the Director of the US Meteorological Service. His first piece of advice, that can be applied to any disaster scenario, was to be prepared for the long haul, ensuring that your family is catered for so that the job in hand can be concentrated on. During Hurricane Rita, he and his staff remained at work for 11 solid days, sleeping in the office, just in order to service the needs of a variety of agencies. He went on to promote the weather service, stating that their forecasts can be a key factor in both planning and responding to events, incidents and

disasters. Early joined up planning between partners can ultimately mitigate the effect of disasters and speed recovery. Having shown me around the weather centre and outlined exactly what meteorologists are capable of, I left in the knowledge that I would, upon my return to the UK, need to advocate them as a key partner in emergency planning and disaster response.

### Bentonville, Arkansas

I then made my way through Arkansas' worst ever November snow storm to the Wal-Mart headquarters in Bentonville.



I was aware that Wal-Mart are one of the world's biggest companies, but that knowledge hadn't quite prepared me for the extent of their presence. Much of Bentonville is, indeed, Wal-Mart. Having negotiated the swathe of headquarters buildings, I met with the Director of Emergency Management and the Senior Operations Manager. Their emergency operations room has a global function and is more impressive than anything that I have ever seen in the UK.

I had chosen to visit Wal-Mart as during my London evacuation research, I had learnt that they have a unique emergency supply system that can respond around the US at times of disaster without

detriment to the day to day running of the business. Put simply, I discovered during my visit, there is a percentage of the types of supplies that are needed during an emergency permanently held for emergency response alone. 20,000 – 30,000 square feet of storage space is set aside in each of their nine major distribution centres in order to facilitate this. If a disaster occurs, they are then in a position to load commonly required products on to a lorry and supply the community that needs it.

Local branches of Wal-Mart, aware of an impending incident will often order extra supplies two or three days out in order to ensure that they have enough stock to deal with the surge in demand from customers. Equally, aware that goods vehicles are unable to travel in winds above 45mph, distribution centres will deliver to outlets before the winds arrive. Using global monitoring software, Wal-Mart often pre-positions its vehicles and a whole team of staff including security, logistics, assessment, HR, operations and telecoms both sides of an impending disaster so that the response can be swift once it is safe to move in. Pre-event, Wal-Mart aim to deliver supplies to their outlets 24 hours before news of an impending storm is on the Weather Channel, thus ensuring that there is enough stock to provide for panic buying. The timeframe for providing emergency supplies direct to most evacuation centres across the country post-event is 4-12 hours – quicker in many cases than the response time of state emergency agencies.

The company has 6800 of its own trucks and many times more trailers. Following Hurricane Katrina, 2498 extra truck loads of emergency supplies were laid on. Goods supplied will normally be viewed as donations for the first 24-72 hours after which payment would be expected unless there is plenty of specific warning about an incident in which case an attempt would be made to draw up a

contract of agreement prior to the event. Interestingly, contrary to what I had been told at my meeting at Tulane University, the American Red Cross were heralded by Wal-Mart as being the agency that provided the best detail during the response to Hurricane Katrina. Early real-time comprehensive plotting of evacuation shelters by the ARC greatly assisted Wal-Mart to be able to plan their distribution tactics.

Wal-Mart also appears to be very staff focused at times of crisis. The company will provide mutual aid, shipping in staff from unaffected areas so that those who have been affected can be left to tend to their homes and families. It will also, where appropriate, set up vaccination posts and mobile pharmacies to service the needs of staff in a stricken area. Additionally, it will provide a 1-800 toll free number for staff to call for emergency advice. Questions that are dealt with include 'where can I sleep tonight', 'how can I get some food to feed my family' and other such fundamental issues. During the four weeks following Hurricane Katrina, the company took 43,000 calls from its staff. Occupational health advisers were also put in place to support the phone operators who had to deal with many emotional issues.

The emergency operations centre (EOC) at Wal-Mart monitors the globe 24 hours a day for any incidents that may affect its stores or associates in any of the countries where the company has a presence. It can mobilise assistance anywhere in the world as it did following the south-east Asian tsunami in order to find a missing colleague. The Bentonville EOC deals remotely with 2.6m store alarm activations per year and EOC staff activated the police or fire department 15,000 times in the last twelve months. Asda, the British arm of Wal-Mart, has an increasing emergency operations capability and deals with its own issues. However, if it is a major

issue, the EOC in Bentonville would be told and they would subsequently monitor and assist as required. This would be the case with a major incident anywhere in the world, each of which, however minor goes on a 24 hour report that is logged at the EOC. While Wal-Mart is far bigger than any similar business in the UK, there are many lessons that can be learnt in relation to corporate business continuity, staff welfare and emergency response. Whether the frequency and type of disaster encountered in the UK would warrant the same extent of similar protocols being put in place here in relation to availability of emergency supplies is debatable. However, there are without doubt elements of the operation in Bentonville that could be of great benefit to disaster relief planners and responders across the UK.

### Denton, Texas

My next major stop was Denton in Texas where I visited the Region VI headquarters of the Federal Emergency Management Agency (FEMA) whose jurisdiction includes Louisiana.



FEMA had been much criticised in the media following Hurricane Katrina, and indeed by many of the people I had met during my trip, so I was keen to get their point of view.

In keeping with issues raised elsewhere, a lack of clarity of roles and responsibilities and poor communication channels between local, state and federal responders during the response to Hurricane Katrina became apparent to me. However, it was the opinion of FEMA that this had not, historically been an issue. The evacuation of New Orleans was described as having gone very well, the main problem being the number of people that remained.

Staff at FEMA were open with me about the weaknesses displayed by the organisation in 2005. One such weakness was the fact that FEMA displayed an inability to deviate from normal procedures during Hurricane Katrina, an event that was bigger than ever before and therefore required new thinking. The organisation was slow to acknowledge the difference between a very large incident and a catastrophic one, allowing days of insufficient activity to pass.

300,000 people used evacuation shelters during and following Hurricane Katrina for a period of weeks when there would usually be far less for only 2-3 days. Many still require ongoing housing. If prolonged accommodation is required, historically, in some cases flats would be rented, but more often hotel rooms would be used. However, a number of issues were identified with the use of hotel rooms, including isolation, unfamiliarity and de-personalisation. Uncertainty is also a key factor with displaced people not knowing whether they should look for jobs as they are unsure how long they will be remaining at the location. This leads to an issue repeatedly mentioned in relation to the aftermath of disaster during my trip, namely mental health problems.

FEMA provided thousands of trailers to satisfy accommodation needs following the storm, but many were a long time coming. While they offered shelter for some people, they did not provide

jobs, shops or local infrastructure leading again to feelings of disenfranchisement and isolation.

During the live phase of an emergency, FEMA activates the National Response Co-ordination Center in Washington and will also run a Regional Response Co-ordination Center (Denton for region VI) that sits between the national and state (Baton Rouge in Louisiana) and local (New Orleans) levels. An emergency response team of 35-50 people will deploy close to the affected area. Liaison with the state takes place via the state EOC. Any requests made at state level will be escalated by the FEMA representative at the state EOC to regional and / or national level. Any financial contribution by FEMA will be made under the Stafford Act following a Presidential declaration releasing federal funds.

Lessons were learnt during and after Hurricane Katrina. During the subsequent storms of 2006 there was a quicker response and provision of a greater capacity of evacuation shelter places with more resilient critical infrastructure. For instance, generators had been installed in all hospitals. During Hurricane Wilma, 52 FEMA representatives deployed to 26 county EOCs, giving a much bigger Federal presence than before. FEMA requested a state representative at each EOC too in order to avoid the issue of a level of administration being out of the loop and accusations of bypassing the state being made.

FEMA have also become more focused on raising awareness and educating the public, employing new methods of doing so since 2005. A key aspect of this is the fact that TV companies are encouraged to make good news stories their own, avoiding the problem of making it appear that the government is the source and thus causing some sectors of society to disengage. One FEMA

representative told me that in many cases the local TV weather man is a more trusted source to the community than the Director of Homeland Security. This was similar to other comments that had been made to me during my trip.

While the multiple levels of administration in most aspects of American life is greater than in the UK (for example, there are over 2000 law enforcement agencies alone), and despite other issues of scale, the generic points that were brought to my attention throughout my time in the US can be equally applied here and thus lessons learnt.

## **Thailand**

Having gathered a wealth of learning and seen some amazing sights in America, I made the long flight from Dallas to Bangkok, Thailand where the focus of my interest would be issues relating to the Boxing Day tsunami of 2004. While Thailand was not the worst hit country in the region, it is the place where most British people were affected. There had also been a great deal of co-operation between the Thai and British governments following the incident, not least with the deployment of many UK police officers to help with body recovery and identification. Equally important to me on my trip was the fact that my pre-trip research appeared to show that Thailand had perhaps done more than anywhere else in the region since the tsunami to better prepare for a repeat.

## **Bangkok**

Having spent a couple of days beginning to explore and soaking up the sights and sounds of one of the most vibrant cities in the world,

my first meeting was with the Asian Disaster Preparedness Center (ADPC).



Their remit is to co-ordinate preparation for all kinds of disasters across Asia, increasing the knowledge of authorities and residents across the region in relation to what needs to be done to mitigate against disaster. I was immediately struck by the diversity of work that they were simultaneously undertaking. Their ability to do so is in part due to governments taking a greater interest in disaster preparedness since the tsunami.

ADPC work closely with village communities, particularly in relation to early warning systems. These can be as simple as signs along the side of a road warning of potential hazards.



They also tap into indigenous knowledge and village folklore as a source of preparation and response techniques that cannot be

scientifically found. While the culture in the UK is clearly very different, authorities would do well to similarly listen to and take heed of the rich sources of local knowledge in communities around the country.

ADPC also works closely with charities such as CARE, Oxfam, the Red Cross and others to introduce physical mitigation methods such as dams and human mitigation such as training people in search and rescue techniques. They also promote good urban governance, urging city authorities to address vulnerabilities such as weak structures and the like. Good governance leads to good stakeholder communications and relationships where all pull together with a common aim. In the belief that the message is more likely to get through to society in the long run if young people are made aware of the issues early, children are a focus. An interesting point made to me was that the success of preparedness cannot be measured until something happens. Other topics of conversation included the Rapid Action Force in India, a police department formed post 9/11 specifically to deal with evacuation and rescue, and the annual test day in Japan where, each year, tsunami warning sirens are sounded and everybody must evacuate to shelters.

I then visited the Department of Disaster Prevention and Mitigation (DDPM) at the Ministry of the Interior.



Established three years ago, DDPM runs two evacuation exercises per year and maintains a Disaster Management Plan that is subject to a three year review. Each individual province in Thailand has its own Disaster Response Plan. However, while government officials are aware of their contents, I was told that the people are not. Despite this, in the case of an evacuation, DDPM are satisfied that people know where to go, if nothing else by word of mouth in the community. DDPM have begun to actively engage communities, discussing risks and solutions with them wherever possible.

Tsunami shelters are already well sign-posted along the coast and the media are used in order to issue warnings. For example, Channel 5 will have a yellow sign in the top right corner of the television screen if a disaster is likely. At the national level, the National Disaster Warning Center (NDWC) is responsible for identifying imminent disaster. If the public need to be warned, the NDWC will ask the DDPM to do so. If the disaster is weather related, the Thai Meteorological Department will also be involved. DDPM will work closely with provincial governors in an attempt to get the message through to the more remote areas of the country. Each governor has 50m Baht (approx £800,000) at their disposal to deal with a disaster and can request more from the government if it is required. During the response to the tsunami, one cabinet minister acted on behalf of the Prime Minister and had all authority and power across the country.

DDPM keeps a permanent stock of essential relief supplies such as bottled water, food and medicine in regional centres across the country so that they can be distributed quickly should the need arise without initial recourse to suppliers.

There is an emphasis on volunteers in Thailand. There are over 800,000 Civil Defence Volunteers who each receive five days training to deal with disaster response, First Aid and the like. DDPM wants to increase this number to 1m, or 2% of the population. There are many other voluntary agencies in the country and the DDPM is trying to bring them all under one umbrella organisation to make them more efficient, effective and controllable.

My next stop, the National Disaster Warning Center (NDWC) was set up following the tsunami.



Start-up costs were covered wholly by donations, whereas the 2006 budget includes 229m Baht of government funding. The Executive Director of the centre is Dr Smith Dharmasaroja, a controversial figure who had warned of a possible tsunami while working with the Thai Meteorological Office but had been ignored in a similar way to Dr van Heerden in Louisiana in relation to Hurricane Katrina. His predictions had a perceived negative effect on tourism and he was not welcomed by officials in tourist hotspots such as Phuket.

The NDWC has many functions, one of which is the ability to remotely activate warning alarms by satellite on towers erected in highly populated coastal areas. There is an emphasis on community engagement with an education programme rolled out to local

people, advising them what to do prior to an emergency being called. I was told that NDWC staff make themselves visible in local communities, visiting provinces, districts, towns and villages to share knowledge, particularly in schools. Fear and rumour has led some villages to unnecessarily evacuate over thirty times since the tsunami. One of NDWC's aims is to teach people to rely on its message alone. Evacuation plans remain the responsibility of DDPM and local governments, with NDWC taking primacy for issuing warnings which are given in four stages: Information giving, Watching, Warning and Termination. Currently NDWC is geared up only for tsunami and earthquake warnings but there are plans to expand this remit soon into a multi-hazard capability.

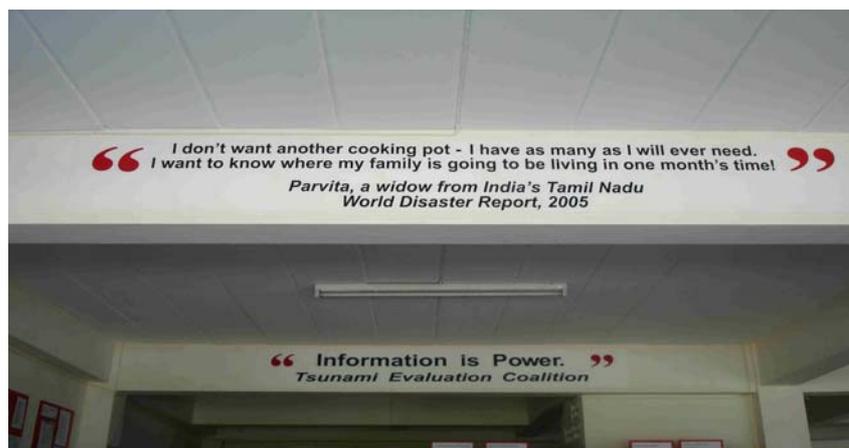
In the case of earthquakes, anything over 5 on the Richter scale, an almost daily occurrence, generates an SMS message and local governments would be informed. If this results in news getting onto television, NDWC staff will appear to assure people not to worry, if appropriate. 7 or above on the Richter scale generates a watching warning that is sent to TV outlets. If 7.5 or above is reached the Executive Director of NDWC will appear on television to express the seriousness of the warning. Recently, areas of Phuket province were evacuated within forty minutes following an evacuation command.

Having spoken at some length about tsunami specific issues, the point of education being so important was re-iterated, along with the need to inform residents of communities as much as, if not more so than authorities, thus empowering them to help themselves. People need to know what they are faced with AND what to do. For example in the case of a tsunami warning, the advice would be to take boats out to sea, whereas, if waves are caused by wind, vessels should be taken to shore. Dr Dharmasaroja

was content that people in Thailand listen to and take heed of the NDWC and states that this is due to the accuracy of their warnings.

### Khao Lak

Having spent some time exploring the areas affected by the tsunami, my final stop before returning to Bangkok was in Khao Lak, a coastal village in which I had arranged to visit D-Trac, a voluntary organisation whose mission is to gather and disseminate up to date, accurate and bi-lingual information on and to all stakeholders involved in a disaster.



Located in one of the areas worst affected by the tsunami, D-Trac acts as a co-ordinating body for the plethora of recovery activity that is taking place in the area, ensuring that it is focused and

beneficial to local people. The feeling of those who established the organisation was that prior to their arrival the response had been totally uncoordinated to the extent that it could be considered chaotic.

One of the problems with the uncoordinated approach had been needs assessment burn-out. Displaced people had been asked the same questions many times by different agencies. Some of these went on to make promises that they subsequently failed to deliver on which did nothing for the relationship between agencies and the community. D-Trac encouraged villagers to stop being passive and to visit the organisations that had made promises to them, ask what was going on and to make them accountable. They advocate a route of complaint for the victims to ensure that they are helped and not merely used as a cheap organisational publicity stunt. Consultation is also encouraged. Many villagers have been supplied with items that they do not actually need or have been given accommodation that is inappropriate for their requirements. D-Trac want them to be seen as more than victims, rather individuals with a voice. Voluntary agencies, or Non-Governmental Organisations (NGOs) were described to me as the largest unaccountable agency in the world, many have no offices so cannot be found and most remain unregistered.

One of the main issues with this is that NGOs can actually do more harm than good by interfering in what is often a sensitive and complicated process, to the detriment of the very people that they purport to help. For example, 'stop and droppers' often distributed 1000 Baht notes to local people following the tsunami. The monthly wage in the affected area averages out to about 5000-600 Baht (approximately £95). The 'stop and droppers' resulted in labourers staying at home waiting for handouts rather than going to work to

make a living and aid the recovery effort. Stop and droppers also tend to go to built up areas resulting in people moving away from their homes to enter the 'catchment area' for handouts. Another example of inappropriate action resulting from a lack of co-ordination is the provision of baby food to families who may never have seen such a product before and would therefore not use it to feed their child.

D-Trac is trying to educate people away from the pitfalls and provide standards training. It also offers more holistic recovery methods such as art therapy classes to aid psychological recovery. These are provided by Thai people as foreigners would approach the issue from an entirely different and potentially less effective perspective. They also facilitate the co-ordination of multi-national aid in the region and all organisations have bought into this except the UN who already report in to another system.

In the future, D-Trac wants to get to the position where it will carry out the needs assessment for villages and feed requirements in to other organisations to avoid burn-out and inappropriate provision. They want to establish one team per 58 agencies and one team for every 50 villages. Currently there are 200 active agencies in the areas of Thailand affected by the tsunami and 600 in Aceh, Indonesia. 412 villages were affected in Thailand and over 6000 in Aceh. D-Trac also want to map communities so that they are aware of who lives in an area and what resources they have available to them prior to an event occurring. The vision is that this database will be kept up-to-date, allowing for rapid and effective deployment of assistance in future. Another proposed initiative is the introduction of an ID card that will allow the tracking of what has been provided to individuals and families to prevent greed, corruption and unfairness.

Another issue that D-Trac have come up against in Thailand is that of families splitting up and living apart purely so that they can get more handouts, many of them duplicates, all of which will aid the family cause in an unethical and unfair way. As a result, some families now have more than one house and more boats than they need. The organisation also hopes to gain agreement from governments that aid agencies should sit in on post-event multi-agency meetings, something that according to D-Trac didn't happen following the tsunami.

D-Trac are also trying to convince governments that they can offer them real help. Governments do not have the resources to monitor the activity of NGOs. Taking the DDPM as an example, it has three databases which are, according to D-Trac not kept up-to-date and are therefore unusable. D-Trac also claims that NDWC have not achieved their aim of communicating with all levels of the community as they would like people, including me, to think. They suggest that at the time of an incident NDWC should contact DDPM in each province who should then disseminate the information to the governor who should subsequently pass it on to the district office, who should inform the sub-district office who would tell the village headman. The village headman will not ask questions as he would consider this to be a sign of weakness. Therefore, he needs to be provided with all the information that he needs up front.

D-Trac were also critical of the NDWC warning system, stating that there was only one warning tower per district, in tourist areas only. In some areas, residents are not even aware what the warning towers are, let alone what to do if the siren sounds. The message, according to D-Trac has not got through. They advocate allowing experts in the field to design requirements in support of

government agencies and local communities in a joined up partnership approach.

While the make up of communities in the UK is very different to that of the villages of Thailand, there are some common themes that can offer learning, particularly in relation to community engagement and the embracing of diversity.

### Summary

Having returned to Bangkok, I flew home to the UK. My trip had been utterly fascinating. This report gives a flavour of the learning that I gathered, the detail of which has been appropriately disseminated elsewhere. There was real value in visiting parts of the world that have recently had to deal with disaster. Equally, the fact that the culture in each country that I visited is so different means that their approach to both emergency evacuation and disaster preparedness in general is equally diverse. Yet despite this there were some common themes that can be applied anywhere. Much of what I have learnt, despite being from other parts of the world can be directly overlaid to the situation in the UK in part or as a whole and the process of dissemination began even before I returned from the trip.

On those days when no meetings were scheduled I was able to speak to local people to gain a better understanding of the places I was in and immerse myself in their culture. I also took many opportunities to visit some of the sights I had long wanted to visit and do some of the things I had long wanted to do. The overall experience of my Fellowship was one that I will never forget and that I will be forever grateful that I was given the opportunity to have.

## Key learning points

To conclude, I have condensed this report into thirty primary learning points that can be followed up and developed in the UK:

- Review the role of the Red Cross in relation to emergency management and evacuation. Is there scope to employ them more gainfully than they currently are?
- Keeping people informed promotes greater support to plans.
- Ensure that the information given is checked for accuracy and communicated clearly in order to remove the risk of mistrust.
- Clarify and agree roles, responsibilities and governance arrangements well before an incident.
- Ensure that planning incorporates secondary issues, such as the risk of disease from flooding or ongoing accommodation needs.
- Stay focused on issues within an agreed scope and do not blur boundaries.
- Apply resources to those activities that will give the greatest return.
- Engage with the people to whom assistance is provided. Do not assume an understanding of their needs.
- Promote awareness through the media. Consider using well known and trusted figures prior to and during an emergency

rather than traditional figures of authority in order to reach more people.

- Only a small percentage of displaced people will ever use evacuation facilities.
- Only a critical mass of approximately 10% of people need to hear an evacuation warning directly. The rest will become aware via word of mouth.
- Panic does not generally set in during an evacuation.
- Large retail outlets (including pharmacies) should be integrally involved in emergency plans.
- Do not rely on the internet during emergencies. The web should be seen as a pre-education tool.
- The Florida Emergency Operations Centre should be considered as a model for a new Strategic Co-ordination Centre in the UK.
- Make plans for transporting the poor and vulnerable out of an affected area.
- Elected officials should undergo disaster management training.
- Methods of dealing with mental health issues should be written into emergency plans.
- The CAMEO system should be explored further.

- The issue of whether or not to register evacuees should be resolved.
- Medical requirements should be captured upon arrival at an evacuation centre.
- Agencies should realise that as many people can die from a failed response as from the initial incident.
- Practical, relevant support should be offered at evacuation centres, eg insurance claims advice.
- Schooling should be made available as a priority to promote a sense of normality.
- Staff welfare needs should be written into plans in order that they can both look after the needs of their homes and families and concentrate on the job at hand. Consider mutual aid.
- Review emergency supply distribution methods if necessary.
- Build flexibility into plans to allow for the unforeseen in type or scale.
- Capture lessons from experience in a methodical way and act upon them.
- Ensure a community engagement strategy is in place that will reach all levels of the community. Incorporate the needs of diverse societies and children.

- Ensure volunteer / NGO / all contributions to planning and relief efforts are co-ordinated and managed effectively.