

BEHIND THE NEWS PROFILE

Microbiologist Ken Shortridge altered the world's view of flu viruses, and saved Hong Kong from possible devastation. He tells Peter Kammerer about the pandemic threat

Strain spotter

Influenza pandemics have been on microbiologist Ken Shortridge's mind since he was a small boy. The world - and Hong Kong in particular - have his mother to thank for planting such thoughts there.

Describing what life in a small Australian town was like during the uncalculated Spanish influenza outbreak of 1918-19, the mother painted for her son about 50 years ago an image so vivid that he eventually embarked on a career centred on preventing another such tragedy.

"My mother told me that when she was living in Maryborough, in country Queensland, that in the big flu outbreak, a man would come around with a horse and cart and pull away the bodies of people who had died," Dr Shortridge, 54, recalled during a recent visit to Hong Kong. "There are other minor reasons why I got involved in this - I've counted about 10 - but that had an impact on me and was the most fundamental."

Up to 22 million people were believed to have died worldwide in that outbreak, which was followed by the Asian flu pandemic in 1957 and the Hong Kong flu in 1968. Four years later, the young scientist was in Hong Kong, embarking on three decades of groundbreaking research and education that has helped change the way the world sees flu viruses - and in the process, saving Hong Kong from possible human and economic devastation.

At the core of that work have been theories about southern China being the epicentre of global flu pandemics and that viruses are jumping from birds and animals to humans to mutate into dangerous, new strains. Since the 1997 bird flu outbreak in Hong Kong, his focus has been on warning that the virus could evolve into something more easily between birds and people and had the potential to cause the next, long-overdue, pandemic.

Not all governments and officials have wanted to listen, and convincing them has sometimes been an uphill struggle. But the deaths of more than 60

people in Southeast Asia since bird flu took hold there in 2002 and the appearance of the virus in western Europe has changed a lot of minds.

Evidence of that was clearly on show on Wednesday at the World Health Organization's headquarters in Geneva. Heading the advice of Dr Shortridge and other prominent experts, a global co-ordinating meeting of 600 participants from more than 100 countries agreed that bird flu posed a serious threat and unanimously backed a US\$1 billion action plan.

Such efforts do not guarantee that a pandemic will be prevented, nor do they ensure that a viable vaccine will be created; but the work of scientists such as Dr Shortridge has created an understanding and awareness that barely existed just a few years ago.

Several vaccines are under development, for example, while the policy the new retired University of Hong Kong professor espoused in 1997 - culling infected and at-risk poultry - is a central part of the strategy of containing the virus. But given that more than half of the people who have so far become infected by bird flu have died and much is still unknown about it, the path ahead is far from clear.

"We're looking at the possibility of a pandemic and the alarm is greater because there is a virus with an apparent high mortality rate - it could be very, very severe," Dr Shortridge said. "Whereas, in the past we didn't have the warning of pandemic, we now have had one, but even eight years on, we still don't have a good vaccine available, for the very good reason that the particular virus we've got cannot be grown in cell culture because it depends on its oversight... It's a double-edged sword - we've got a warning, we know it could be potentially dangerous, but we haven't been able to get a vaccine ready."

Then there was the problem of what caused a pandemic, which had long puzzled the scientist.

"I do not understand, given all the influenza and viruses in the region, why we don't have a pandemic," he said. "It must be something special - in spite of all the information we have, we really don't understand what gives rise to a pandemic virus."

A lot of the information known about bird flu comes from Dr Shortridge's work. Born in the Queensland mining town of Mackay, he earned his bachelor's degree in microbiology from the University of Queensland in



The May 1968 was the closest proximity of humans to domestic animals," says Ken Shortridge of past bird flu outbreaks. Photo: May Tse

1962. The following year, he began his career as a bacteriologist at Royal Brisbane Hospital before moving to London, three years later. A prodigious researcher had been a co-discoverer of the human flu virus in 1933.

"Although we really didn't do much work on flu, it had an impact on us," he said. "We were very interested when the Hong Kong flu virus appeared in 1968."

His interest was further piqued while researching at London Zoo, where he found a black bear that had been moved there from Hong Kong had flu antibodies.

He completed his doctorate from University College Medical School in 1971 and learned of plans by the University of Hong Kong's medical faculty to include virology in the microbiology course. The following year, he was in Hong Kong with his initial aim on carrying out studies to try to understand the origins of influenza pandemics.

At the time he knew of research by New Zealand scientist Robert Webster showing that ducks were a part of the Hong Kong flu outbreak equation. In 1975, he launched a surveillance operation in southern China.

"I looked at many things and it came down to studying poultry and pig-

staply on the grounds that they're the animals most closely associated with humans," he said. "Concentrating on poultry, I found a lot of viruses in domestic ducks - very few in geese and hardly anything in chickens."

The key issue for me was the close proximity of humans to domestic animals of all kinds, and the fact that there is no historical record of viruses as yet seen.

"We're looking at a [possible] pandemic and the alarm is greater because there is a virus with an apparent high mortality rate," Ken Shortridge, microbiologist

viruses being carried by migratory birds. "The seeds for this were sown in the early 1980s and, had people taken more notice of it, then we might have been ahead of the game," Dr Shortridge said.

Then came the event that made the world take notice - the outbreak of the strain of avian influenza known as H5N1 - now popularly known as bird flu - in Hong Kong in 1997. An outbreak of the virus on three chicken farms in the New Territories caused the deaths of more than 6,000 birds and was identified as being the source of a human flu outbreak that killed six of the 16 people infected.

Dr Shortridge organised an international conference to discuss and characterize the virus and his recommendations led to the culling of poultry and the outbreak being contained. There have since been outbreaks among poultry in 2001 and 2002, but their impact has been minimal due to prompt action by officials.

Dr Shortridge believed a pandemic may well be smouldering, just as he suggests it was for 11 years prior to 1918, which has since proved to be an avian influenza, just like the outbreaks in 1957 and 1968. All are now perceived as having originated in southern China.

"The 1918 outbreak occurred in Europe before it occurred in southern China," he said. "I believe the virus was smouldering there for a number of years and that people were getting antibodies, and that it was carried to Europe and the US."

The virus occurred there before it manifested in our summer. There must have been a particular event that led to a build-up of that virus in a mild form and was carried to Europe and then because flu is a summer disease in the region, did not manifest here until June or July."

Dr Shortridge retired from the University of Hong Kong in 2002 and now lives near Auckland with his wife. He has not retired from bird flu work, though, and still advises and travels

around, but also that flu viruses could spread very easily in that part of the world just in the day-to-day activities in the villages.

"Once I saw that, I hit me straight away - this close association that I had never seen anywhere else in the world in my limited travel, provided this wonderful opportunity for humans and animals to exchange their viruses... I could very easily imagine a pandemic starting there."

Published in the British medical journal *The Lancet* in 1982, the work was initially given short shrift by many researchers more intent on studying

widely. As an emeritus professor at the University of Hong Kong, he comes to the city several times a year.

"I still do a fair bit of travel, but keep a fairly low profile," he said. "In a way, I feel my job had been done by 2002. The flu field has been opened with regards to a pandemic. I feel it's now up to others to take over."

"I support many people quietly and urge them on. I get lots of requests and blur out and pass on information and advice. I don't believe it's my prerogative to go around heading my views that you must do this and you must do that."

PAST BATTLES STEEL CITY FOR OUTBREAK

Leading bird flu expert Ken Shortridge is second to Hong Kong's authorities in leading the virus and believes the city is well-prepared for the outbreak of a pandemic.

The eminent professor of microbiology at the University of Hong Kong described the government's work to date as "brilliant" and the efforts of Hong Kong's citizens as "wonderful".

"Hong Kong has perhaps more experience on flu than anywhere else in how to deal with outbreaks of sources," he said. "We've been

through 1997, 2003, 2002 and we've had other events - so Hong Kong is really on the ball and its action has probably averted a pandemic a number of times."

That was no insurance policy, though, he said - if a pandemic struck, much would depend on the nature of the virus, the speed at which it was able to move, the incubation period and how well people were able to isolate themselves from one another.

The SARS outbreak in 2003 had shown Hong Kong people had understood what they were doing

and their use of face masks, attention to hygiene and keeping a distance helped well.

"Hong Kong is a crowded community and it would be very difficult to remain isolated from other humans," Dr Shortridge said. "If we're able to be well stocked with food and water and if there wasn't a breakdown in the public health services, then Hong Kong would be good. Our experience has given us a warning that we need to be prepared with our anti-viral agents and need to wear face masks."

Peter Kammerer

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Main Identity

Friday, November 11, 2005

Strain spotter

PETER KAMMERER

Influenza pandemics have been on microbiologist Ken Shortridge's mind since he was a small boy. The world - and Hong Kong in particular - have his mother to thank for putting such thoughts there.

Describing what life in a small Australian town was like during the so-called Spanish influenza outbreak of 1918-19, the mother painted for her son about 60 years ago an image so vivid that he eventually embarked on a career centred on preventing another such tragedy.

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At the core of that work have been theories about southern China being the epicentre of global flu pandemics and that viruses are jumping from birds and animals to humans to mutate into dangerous, new strains. Since the 1997 bird flu outbreak in Hong Kong, his focus has been on warning that the virus could evolve into moving more easily between birds and people and had the potential to cause the next, long-overdue, pandemic.

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His interest was further piqued while researching at London Zoo, where he found a black bear that had been moved there from Hong Kong had flu antibodies.

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11/19/2005



Waitakere City Council
te tauira o Waitakere

CIVIL DEFENCE EMERGENCY MANAGEMENT EMERGENCY OPERATIONS CENTRE

PROJECT CHARTER

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● Project Services

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A5

CIVIL DEFENCE EMERGENCY MANAGEMENT EMERGENCY OPERATIONS CENTRE

Table of Contents <

1. PROJECT GOAL	3
2. BACKGROUND	3
3. ISSUES	<u>4</u>
4. STAKEHOLDERS	<u>4</u>
5. REPORTING AND COMMUNICATION	<u>5</u>
6. RISK ANALYSIS	<u>6</u>
7. SCOPE/METHODOLOGY	<u>7</u>
8. PROGRAMME	<u>10</u>
9. BUDGET/FUNDING	<u>10</u>

one <

Project Goal

To design, construct and occupy a new Civil Defence Emergency Management Emergency Operations Centre (EOC) which meets the needs of Waitakere City Council for a local EOC and Civil Defence Emergency Management Office and is capable of acting as a group EOC in the event of a regional emergency event.

Two <

Background

The existing EOC is located at 7 Elcoat Avenue, Te Atatu South. This site is a good site for an Emergency Operating Centre due to its elevation, good communications and ease of access. However, the existing building is no longer up to the necessary standard.

Council has recognised the need to upgrade the facilities to meet the current and future needs and therefore the possible upgrade options have been considered. No suitable alternative sites have been identified for the new headquarters and so the preferred option is to utilise the existing 7 Elcoat Ave site.

A report on the EOC was presented to Council in August 2005 and it was resolved :

- *That work on a preliminary concept and feasibility for a new Civil Defence Emergency Management Headquarters be commenced and reported back to Council for consideration at the earliest opportunity.*

It is intended that an architect and quantity surveyor be engaged to produce a preliminary design and cost estimate so that this can be reported back to Council in April 06 for approval. Upon approval of the design, the architect and quantity surveyor will then be engaged to carry out the balance of the project, assuming that their fees are acceptable to Council.

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Issues

Architectus were engaged to produce a comparative design option on the 7 Elcoat Ave site in June 2005, as part of an evaluation of a since discarded alternative site option. This option demonstrated that with a two storey building the site would be large enough for a new headquarter facility. Given that so much of the existing facility would have to be demolished in order to construct a second storey, the cost of upgrading and extending the existing facility would be only slightly cheaper, if at all, than constructing a new purpose built facility. Furthermore, there are significant advantages associated with the construction of a new facility, including flexibility of design and the opportunity to relocate the position of the building on site to maximise the available space for parking and training requirements. Therefore, the preferred option is to construct a new purpose built facility at 7 Elcoat Avenue.

Based on preliminary advice taken, it is not envisaged that there will be any significant planning issues associated with this option.

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Stakeholders

Council

Once the EOC preliminary design has been produced, approval of the design and the necessary project budget will be sought from Council. Thereafter regular project reports will be provided to the Emergency Services Special Committee or such other Committee as the Council deems appropriate.

Director: Corporate and Civic Services – Ross McLeod

Ross McLeod is the project sponsor. The Emergency Management Manager, Bill Morley, reports to Ross McLeod.

Emergency Management Manager – Bill Morley

Bill Morley is the Civil Defence Manager and will therefore occupy the new headquarters. Bill is the 'principal stakeholder'.

Special Projects Manager – John Schermbrucker

Special Projects will be the section of Council responsible for the delivery of this project. Council's project manager for this project will report directly to John Schermbrucker.

Special Projects Engineer – Peter Sewell

Peter Sewell works for the Special Projects section of Council and will be Council's project manager, responsible for the delivery of the project, management of budgets, reporting and communication etc.

Emergency Management Staff

The relevant staff need to be involved with the project to offer expertise and provide operational input into the decision making process. The key liaison person will be Bill Morley and Bill will involve the relevant staff on an as required basis.

Professional Service Providers

Professional service providers will be engaged by Council to carry out all design and construction supervision. It is intended that Architectus be engaged to provide architectural services. Planning expertise will be provided through a sub-consultant to be engaged by Architectus.

A tender process will be conducted in order to engage a quantity surveyor.

Regular meetings will be held between the professional service providers and Council's Project Control Group.



Reporting and Communication

5.0 PROJECT CONTROL GROUP

A Project Control Group (PCG) will be formed comprising of the project sponsor, lead stakeholder and project manager. In the event that the project manager cannot attend the meetings then the Special Projects Manager, or other nominated representative, will attend and run the meetings. Other Council staff with specific areas of expertise (e.g. security, IT, landscape etc) will be invited to attend PCG meetings and input to the design process on an 'as required' basis. The PCG will meet at various stages of the project in order to make key decisions and recommendations to the

Project Services •

relevant Council Committee. The project manager will be responsible for providing meeting minutes and circulating the minutes to the PCG members and external service providers as required.

5.1 COUNCIL COMMITTEE REPORTS

The project manager will be responsible for preparing the necessary committee agenda reports based on recommendations from the Project Control Group and obtaining sign off from the Sponsor.

5.2 COMMUNICATION WITH INTERNAL STAKEHOLDERS

Periodic updates will be provided to the internal stakeholders consisting of:

- A copy of the project timeline and budget breakdown sheet and updates of this information as the need arises.
- E-mails informing stakeholders as to recent happenings in the project. These e-mails may be irregular, depending on what there is to report, but will occur at least every month.

5.3 COMMUNICATION WITH EXTERNAL SERVICE PROVIDERS

All communication between the PCG and external service providers shall be via the project manager. The project manager will also be responsible for ensuring that regular meetings with the external service providers take place (e.g. design coordination meetings).

six<

Risk Analysis

The design process will include a risk analysis workshop which will involve all members of the project team. Assistance in running this workshop will be requested from the Director: Quality Assurance. This type of study is designed to identify and project risks in a workshop type environment through a collective brainstorming effort. The likelihood and impact of these risks are then assessed and the methods to eliminate or minimise the risks are then identified. These risk items will then be reviewed on a regular basis throughout the project.

seven <

Scope / Methodology

The project will comprise the following stages:

- a) Engage external service providers (for preliminary design only)
- b) Preliminary Design
- c) Preliminary Design approval
- d) Engage/Confirm external service providers (for remainder of project)
- e) Developed Design
- f) Developed Design approval
- g) Resource Consent process
- h) Detailed design
- i) Building Consent process
- j) Tender process
- k) Construction & commissioning
- l) Building Handover

A – Engage External Service Providers for preliminary design (November 05 – December 05)

- Approval to engage Architectus will be sought from the Tenders Subcommittee
- Tender process for quantity surveyor. Approval by project sponsor

B – Preliminary Design (November 05 – March 06)

- Preliminary design produced by Architectus (based on feasibility study option)
- Cost estimate developed by quantity surveyor

C – Preliminary Design Approval (April 06)

- Preliminary design review by Project Control Group
- Preliminary design and overall project budget approval by Council

D - Engage/Confirm external service providers (for remainder of project)

- Engage/confirm architect for balance of project works
- Engage/confirm quantity surveyor for balance of project works

In all likelihood the same architect and quantity surveyor employed for the preliminary design may be re-engaged for the balance of the project works, subject to their satisfactory performance during the preliminary design stage.

E – Developed Design (April 06 – Jun 06)

- Risk workshop
- Drawings
- Specifications
- Schedules
- Cost estimate developed by quantity surveyor

F – Developed Design Approval (Jul 06)

- Design review by Project Control Group
- Design approval by Emergency Services Special Committee

G – Resource Consent Process (Jun 06 – Aug 06)

- Application prepared and submitted by architect

H – Detailed Design (Jul 06 – Aug 06)

- Tender documentation
- Cost estimate prepared by quantity surveyor
- Review by project manager

I – Building Consent Process (Aug 06 – Sep 06)

- Application prepared and submitted by architect

J – Tender process (Aug 06 – Oct 06)

- Tender period
- Tender evaluation
- Contract award by Tenders Subcommittee

K – Construction & Commissioning (Nov 06 – Apr 07)

- Supervision of construction

Project Services •

- Commissioning and handover
- Fit out period

L – Building Handover (May 07)

- Building handover
- The move
- Staff training

eight<

Programme

Refer attached timeline

nine<

Budget/funding

Whilst the exact size of the of the new EOC will be determined during the preliminary design process when a detailed analysis of client requirements will be carried out, it is expected that the facility will need to be in the order of 500 - 550 sq.m (gross floor area). Based on the preliminary estimates provided by a quantity surveyor (WT Partnership) in June 2005, the construction budget is expected to be in the range \$1.0M – \$1.5M, which translates to an overall project budget of \$1.5M – \$2.2M including fees, disbursements, contingency etc.

An approximate budget breakdown sheet is included overleaf.

There is \$750,000 of funding for the CDEM project included in the 2005/2006 Annual Plan and additional funding will be required in the 2006/2007 Annual Plan. A more accurate estimate of this required funding will be identified once the preliminary design and the associated costings have been approved.

Project Timeline

ID	Task Name	Start	Finish	2006				2007												
				Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4								
1	Engage External Service Providers	Thu 3/11/06	Fri 23/12/06																	
2	Preliminary Design	Fri 25/1/06	Wed 15/03/06																	
3	Preliminary Design Approval	Wed 5/04/06	Wed 5/04/06																	
4	Engage/confirm external service providers	Wed 5/04/06	Wed 12/04/06																	
5	Developed Design	Wed 12/04/06	Thu 15/06/06																	
6	Developed Design Approval	Thu 13/07/06	Thu 13/07/06																	
7	Resource Consent Process	Wed 14/08/06	Wed 16/08/06																	
8	Detailed Design	Thu 13/07/06	Thu 17/08/06																	
9	Building Consent Process	Thu 17/08/06	Fri 29/09/06																	
10	Tender Process	Thu 17/08/06	Thu 19/10/06																	
11	Construction and Commissioning	Wed 1/11/06	Wed 25/04/07																	
12	Building Handover	Tue 1/05/07	Thu 31/05/07																	

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Civil Defence Emergency Management Headquarters	
Budget Breakdown Sheet	Rev 1 (3/11/05)
Budget Item Breakdown	Total
Architectural Services	\$120,000 - \$180,000
Project Management	\$40,000 - \$55,000
Quantity Surveyor	\$30,000 - \$45,000
Internal recovery (Quality Assurance)	\$10,000 - \$20,000
Construction + siteworks	\$1,000,000 - \$1,500,000
Construction contingency	\$100,000 - \$150,000
Fit out & move	\$100,000 - \$150,000
Other - Consents, disbursements, legal, opening, communication etc	\$50,000 - \$75,000
TOTAL ESTIMATED BUDGET	\$1,450,000 - \$2,175,000