Infrastructure shocks: tipping points to transition?

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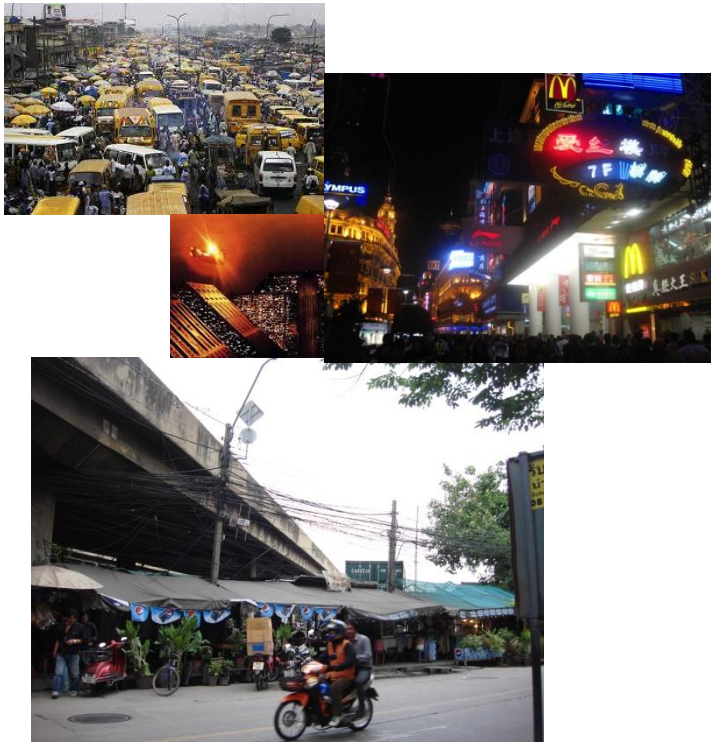
Agenda

1100	Welcome and introduction to the SHOCK project, aims and structure of the day
1120	Narratives and themes from medical interviews (Mark Powell, Newcastle University)
1135	Summer 2007 floods (Claire Walsh, Newcastle University)
1150	Economic crisis and infrastructure shocks (Vanesa Castan-Broto, UCL)
1205	Multi-level Perspective and workshops (Emma Dewberry, Open University)
1220	Decision Theatre events and 'app' development (Claire Walsh, Newcastle University)
1230	Key messages from the SHOCK project and discussion (Stephanie Glendinning, Newcastle University)
1300	Lunch
1345	Introduction afternoon activities
1350	Newcastle flood case study (Kate Cochrane, Newcastle City Council)
1410	Activity 1: mapping shock events
1430	Activity 2: 'tipping points'
1500	Refreshment break
1510	Feedback from activities 1 and 2
1530	Open discussion – knowledge and practice gaps (led by Stephanie Glendinning, Newcastle University).
1600	Close

How can we plan infrastructure for the XXII century?

- What will a resilient, integrated, sustainable infrastructure look like in 2100?
- Looking into processes leading to new visions rather than anticipating visions themselves
- Hypothesis:

  Shocks are key moments to learn about infrastructure and create opportunities for transformation



Vision

- **To unpick the potential for radical change**

  allegory of medical trauma

  challenge infrastructure stakeholders

  challenge the current organization of infrastructure

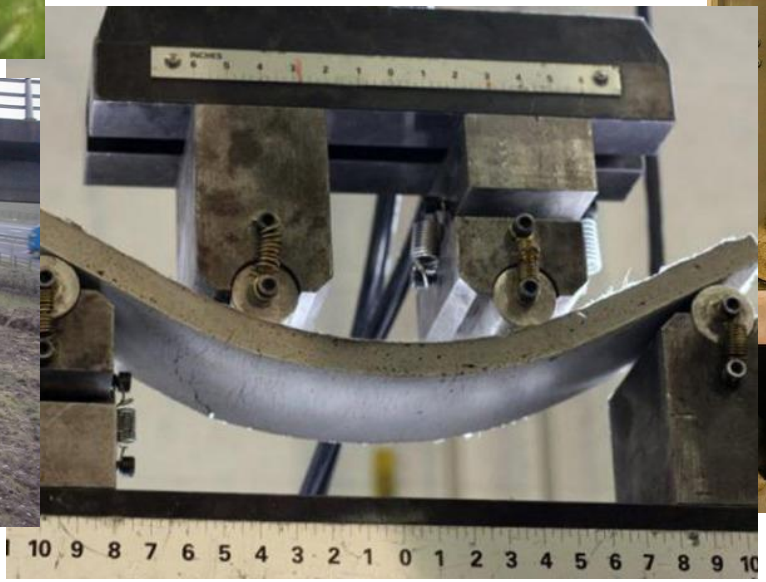
  rethink the nature of shocks

  devise new and transformative ways of thinking about infrastructure

Why study shocks?

- Ideas around failing to understand behaviour
- Ideas around re-evaluation
- Learning from disaster

Engineering - testing to failure



To develop a new concept of infrastructure resilience

using shocks as a way of highlighting interdependencies

Shocks can illuminate the whole and interconnected system – ecological, economic, infrastructure, community and governance, and can provide a window of opportunity when key actors come together to make decisions

Shocks as levers on re-evaluation

- The hypothesis of the
  infrastructure shocks
  shift in thinking of cu
  understanding it as a
  infrastructural interco
  sustainable futures.

- This research aims to **understand trauma** as a lever to unlock higher and more impactful levels of intervention across integrated infrastructure systems.

To develop a new concept of infrastructure resilience

improving infrastructure by restoring it to a better state after the shock

(rather than re-instating what was there before the shock)

Resilience often seen as 'ability to bounce back' in some contextualised way; we propose transformation.

It poses the question, is something that is resilient necessarily sustainable??

Learning from disaster

- Explanations of socio-technical obduracy *(Hommels, 2005, 2008)*
  - Technological frames
  - Embeddeness
  - Persistent traditions
- Infrastructure shocks opening opportunities for learning
  - Turner's learning about risk management culture in man-made disasters
  - Graham's learning about the politics of urban life, the interconnectedness of the social and the material
- Types of learning
  - Bateson's theory of individual learning
  - Meadows points of intervention in a system: Higher-order learning

Project Objectives

1. To produce a synthesis of medical and infrastructure knowledge to construct allegories (as storylines) of systems under shock
2. To develop models of the socio-technical configuration of infrastructure systems of systems which represent the interests and priorities of relevant stakeholders
3. To identify system intervention points that differentiate between higher level and lower level interventions within industry practice
4. To develop learning experiments to enable creative thinking for organizational change in responding to unsustainability
5. To develop a roadmap aimed at realizing the potential of 'shocks' as vehicles of transformation

Aims of the Day

- Present some case studies of shocks
- Showcase the different methodologies used
- Present where we have got to with objectives 1-4
- Develop ideas towards achieving objective 5 from both practice and research perspectives

Head of Directorate of Medicine

'I'm on the emergency department half a dozen times a month… matron is the daily presence…. I've got 500 beds, services across 3 hospitals… you focus… where there's a problem… I need to do the things that only I can do… I have to work on the business.'

Consultants

Matron

Senior nurses

Junior Doctors

Nurses

Nursing Assistant

Cleaners

Porters

Ward Clerk

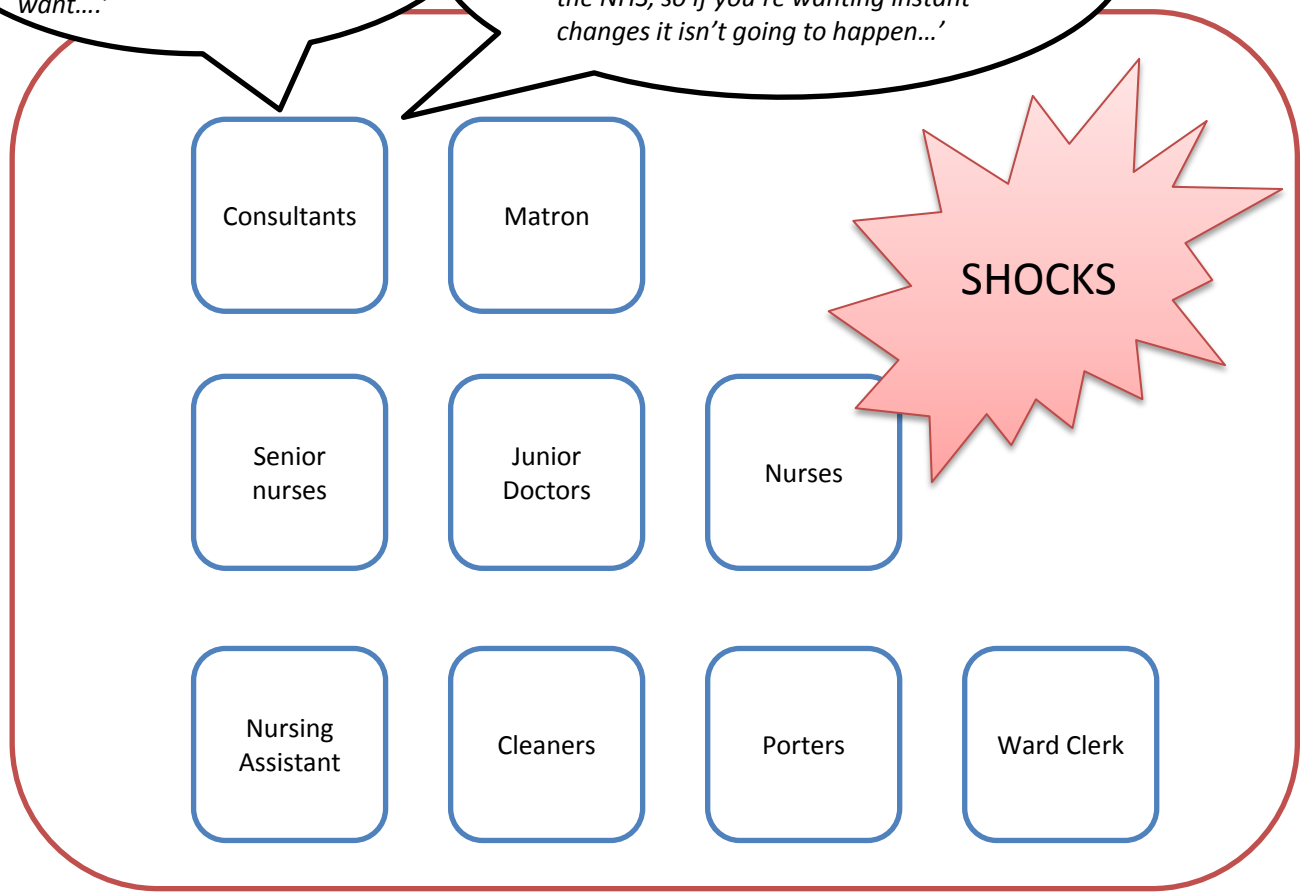
1. Positions and [their] framings:
the head of the Directorate of Medicine

2. Senior Sisters, Matrons and Consultants

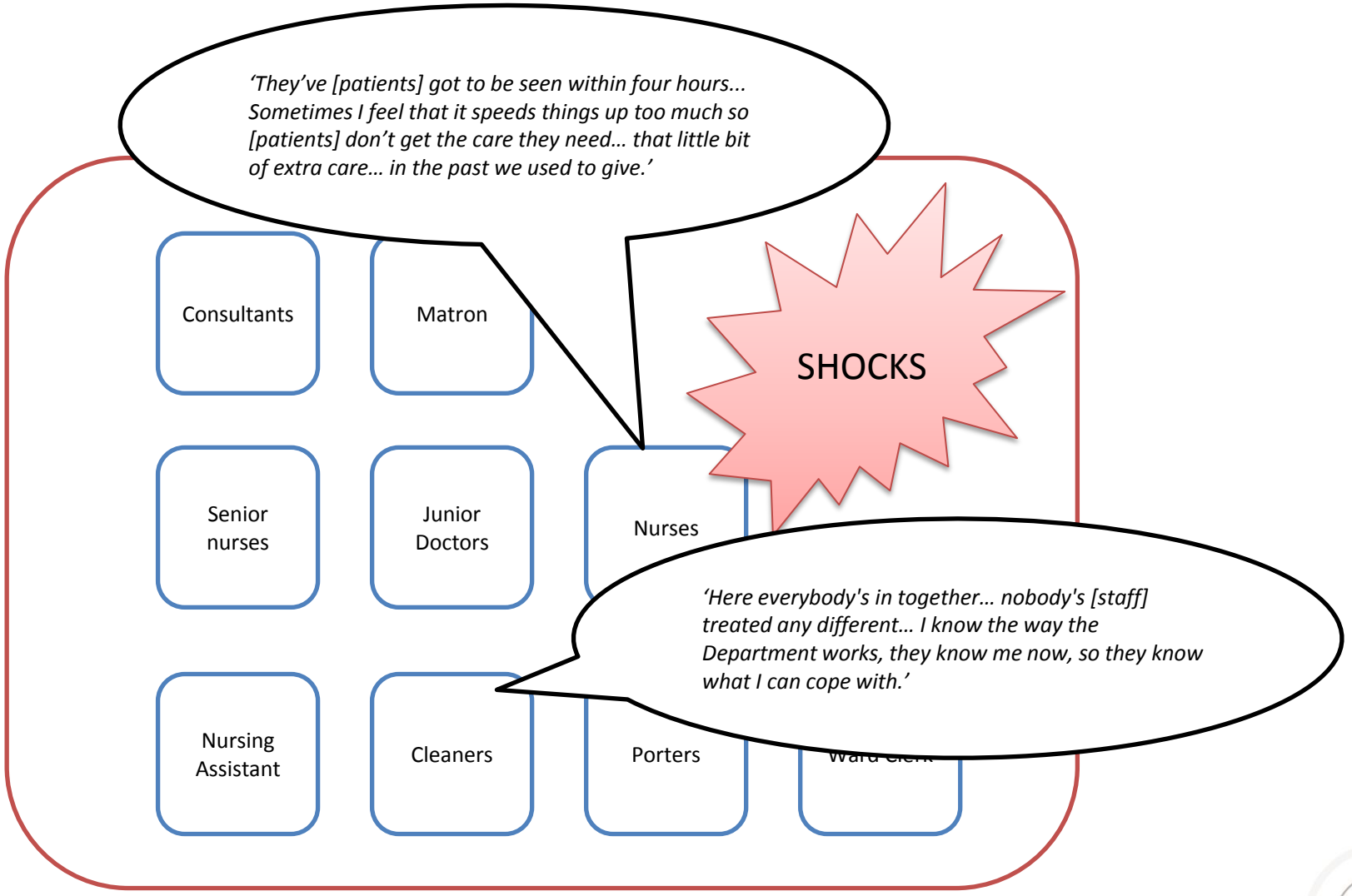
3. Positions and [their] framings: the emergency department consultant

'The pathways that are in place… there aren't enough staff… enough doctors… enough nurses… enough space for everybody to be seen instantly with the sort of treatment they want….'

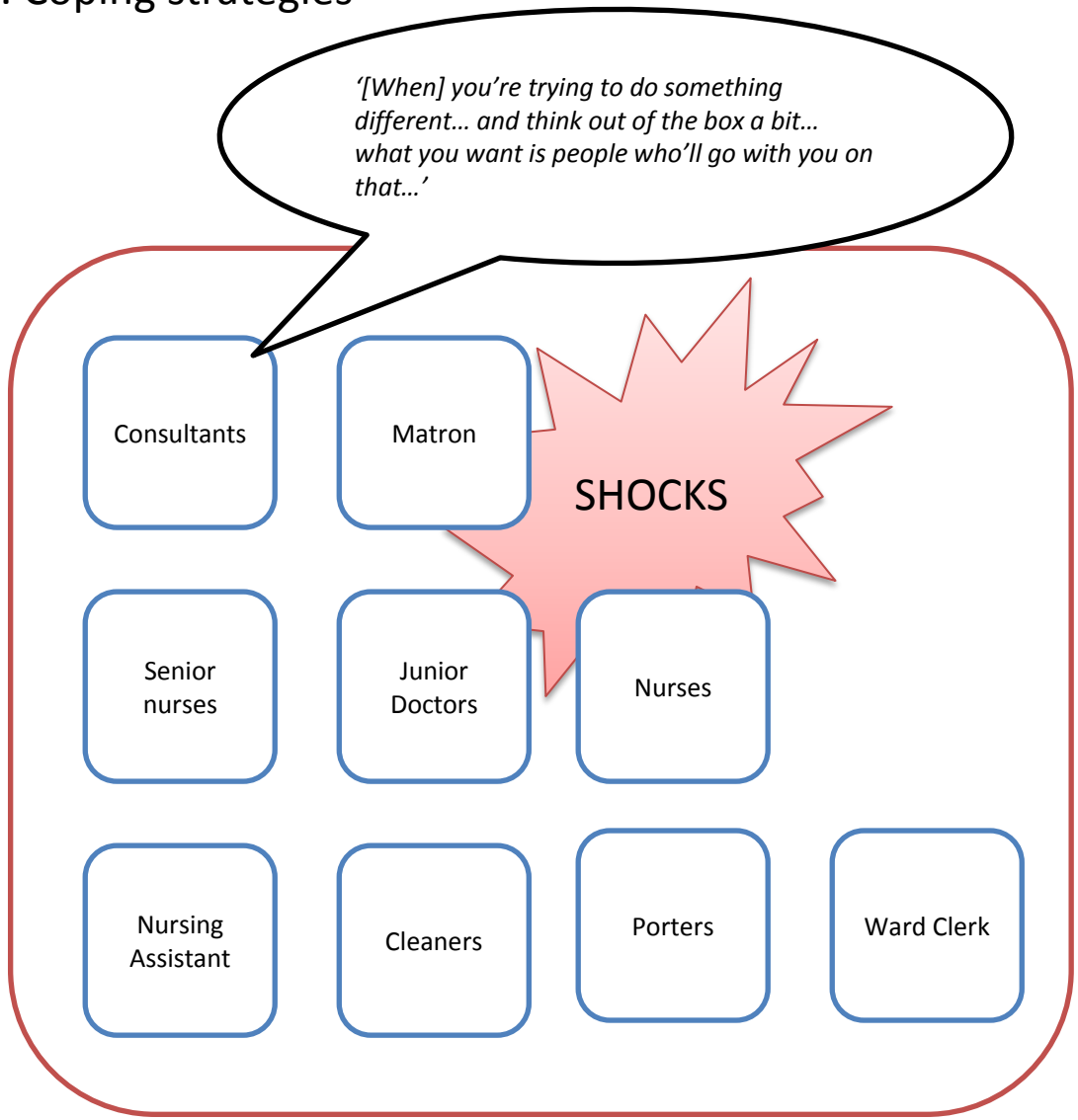
'You cannot change the system, it's ingrained now over sixty years and it evolves, it does develop but slowly, everything works at a glacial pace in the NHS, so if you're wanting instant changes it isn't going to happen…'



4. Positions and [their] framings: the cleaner and the nurse



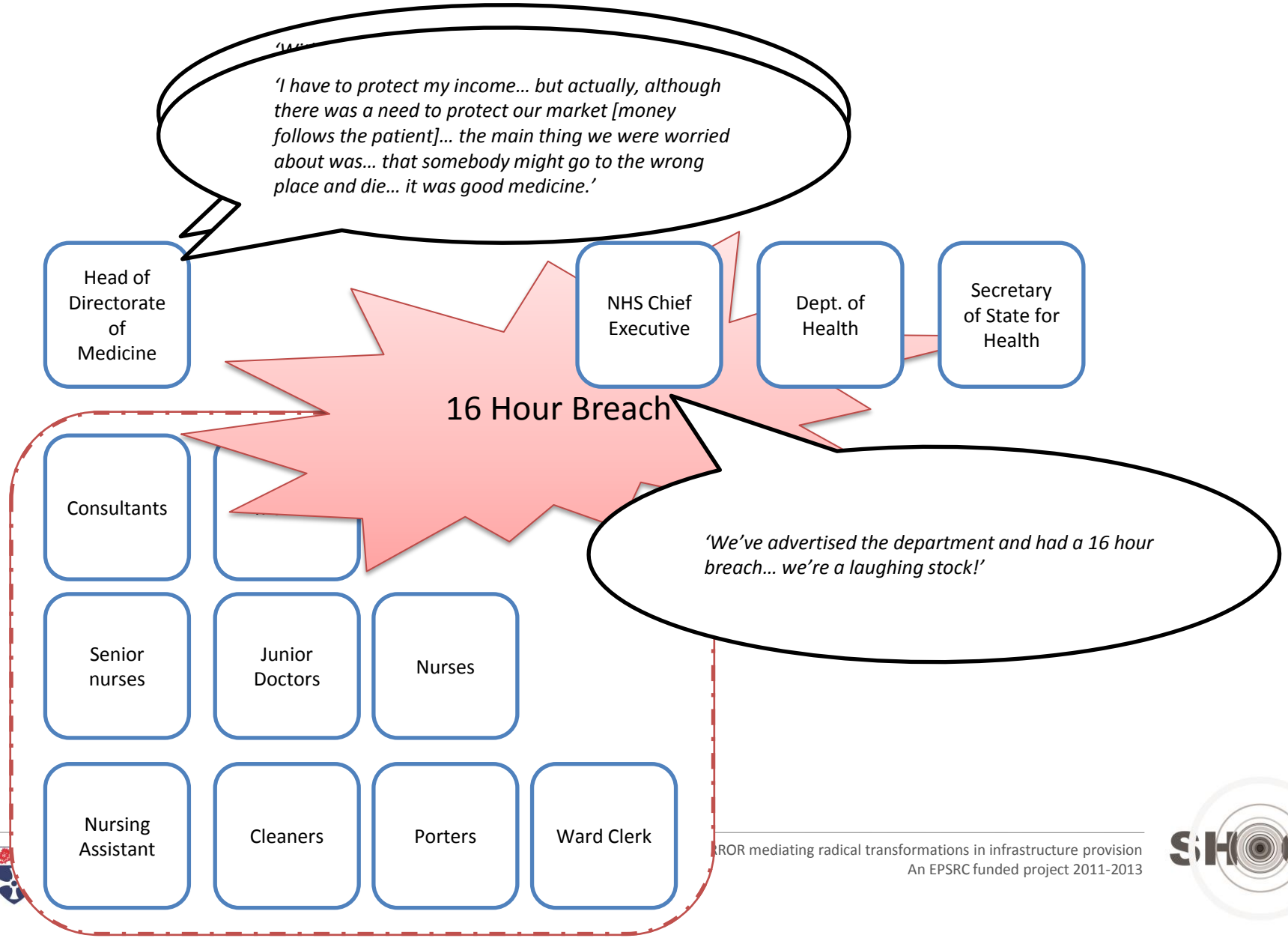
5. Coping strategies



'Learning starts from individuals, but does not necessarily lead to organisational learning' (Lindberg 2010: 6).

- Strategic leadership [within the department]
- Flexible team working
- Creating new 'pathways' within and beyond the Emergency Department
- Professionalism
- Informal learning and culture change

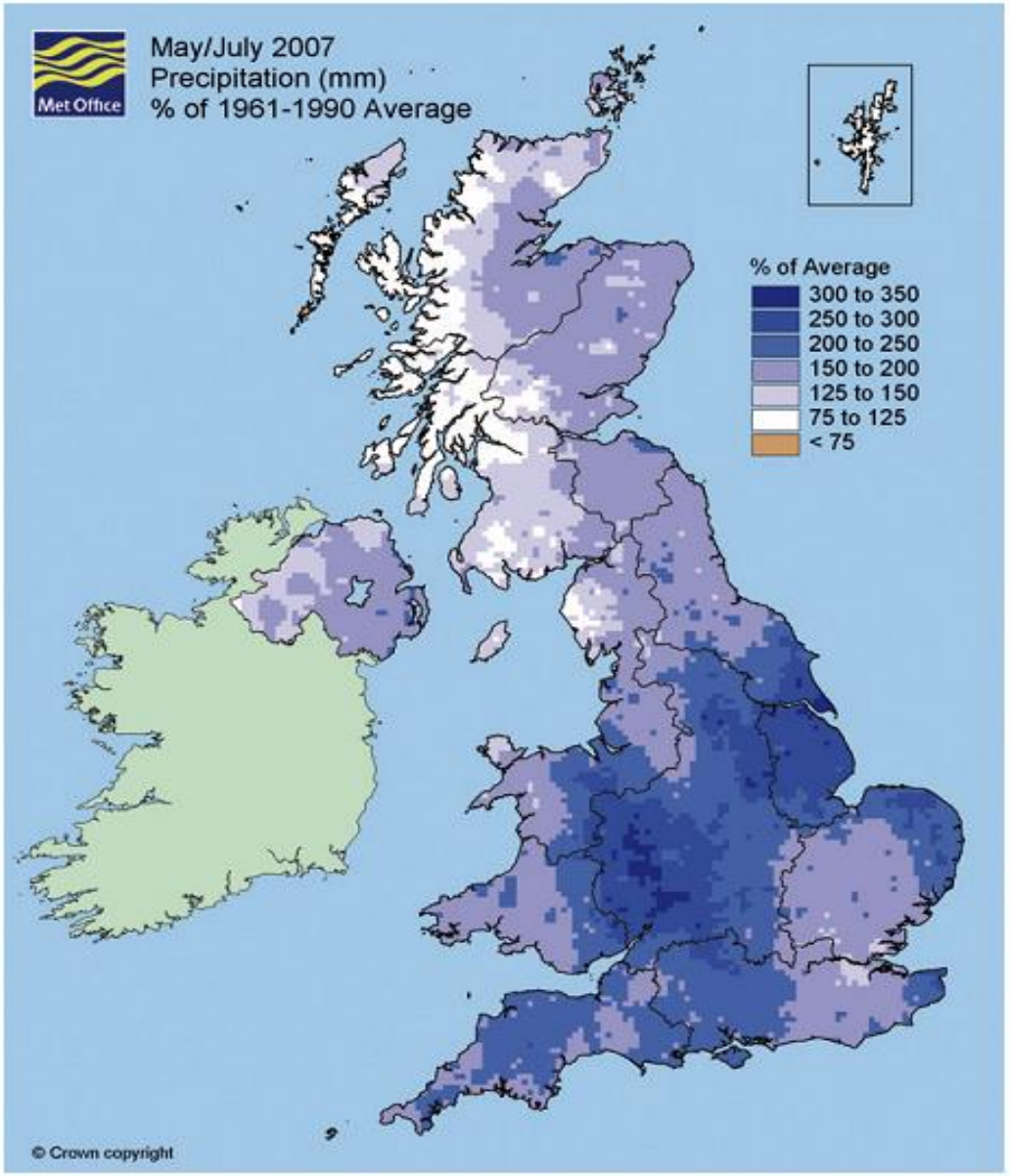
6. A tipping point for change: shock and formalised learning



Summer Floods 2007

"In terms of scale, complexity and duration, this is simply the largest peacetime emergency we've seen." Chief Constable, Tim Brain.

Unprecedented Weather



May-July rainfall as a percentage of the 1961-1990 average.

(Source: Marsh and Hannaford, 2007)

Impacts

- 13 people died
- 7,000 people were rescued from the flood waters by the emergency services and other organisations

- 55,000 properties flooded
- Drinking water was lost to 350,000 people for up to 17 days
- Tens of thousands of people lost power, some for more than two days
- Tens of thousands of people were stranded as the road and rail networks
- Source: EA, 2007

Economic Damage

£674m in damage to critical infrastructure and essential services. Source: EA, 2007

Sector	£ million	% of total	% of cost associated with property/infrastructure damage
Utilities			
Water (and waste water)	186	28	65
Electricity	138	20	6
Gas	<1	0	6
Communications			
Roads	191	29	45
Railways	36	5	29
Telecommunications	<1	0	90
Services			
Police, fire, LGA	8	1	10
Schools	49	7	76
Community leisure centres	14	2	30
Health service, hospitals	n/a		
Agriculture and food supplies	50	8	

"When it stopped raining, we knew there was flooding but we thought that was it, well my naive mind thought that was it, I hadn't banked on all the water coming down the tributaries and, and coming down the Severn and the Avon also, and, and that, and how that would affect us and, you know, essentially we were kind of cut off from most other areas."

"We had a lot of managers coming in asking us, almost bypassing the formal way of reporting, so instead of us sort of contributing to a teleconference as a forecaster, managers were coming in and saying what's going on outside of those teleconferences? And under some circumstances were keen to make decisions for us without considering the information we had in front of us, so almost like over overruling decisions , on issuing warnings or not issuing warnings."

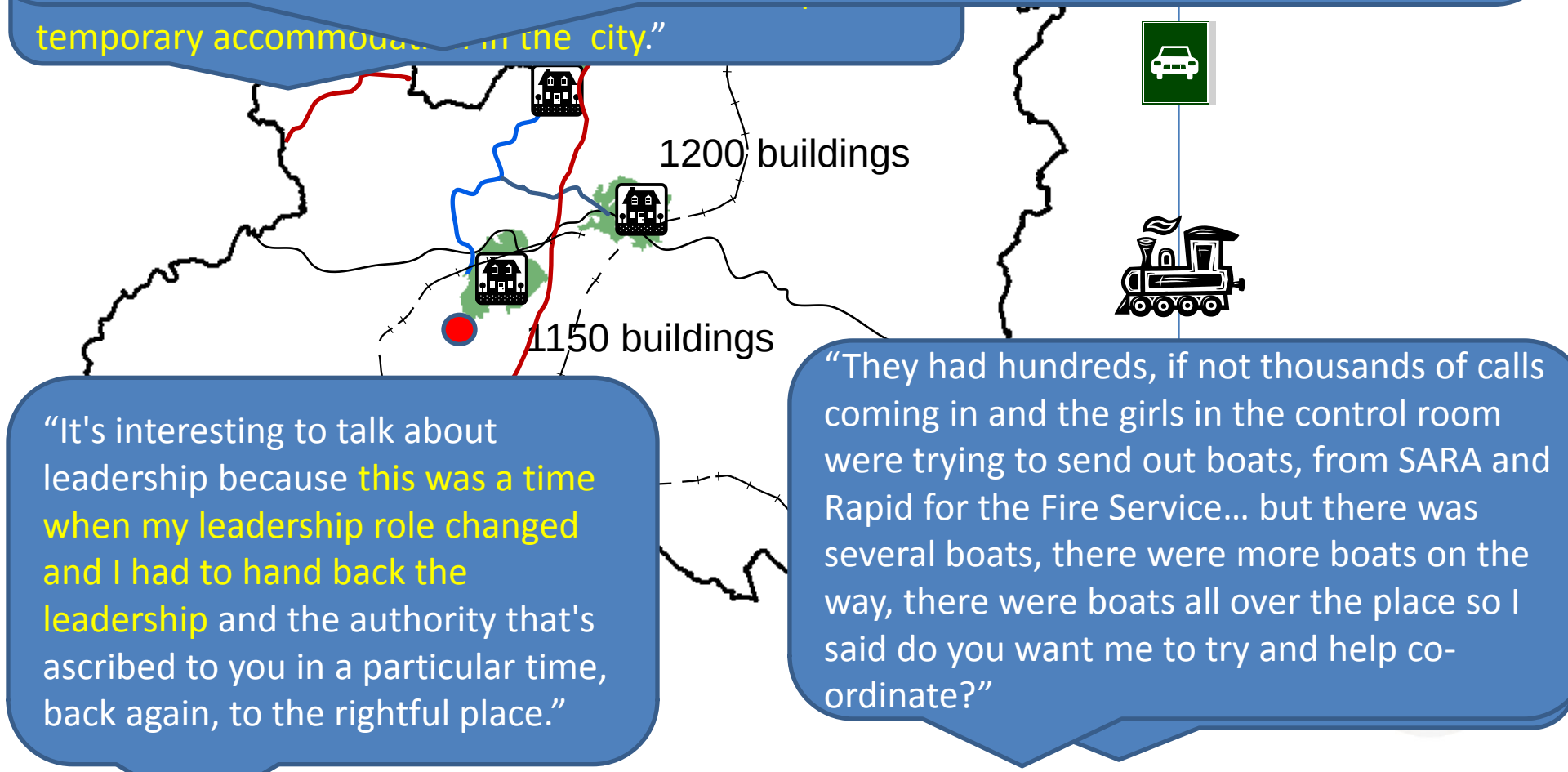
- 3.29pm Silver Command
  - Gloucestershire Fire and Rescue Service
  - Local Authorities
  - The Military
  - Great Western Ambulance Service
- 6pm Gold Command
  - EA
  - Severn Trent Water
  - Central Networks
  - Health Agencies
  - A40 closed
  - Rest Centres

"We were flooded, we

"There was a way into town, it's what's called the, the

"There are always people that will come in uninvited, whether that's best intentions or not but what they need to understand is there is a system in place and if you start doing your own thing then you could actually put yourselves in danger or other people, you know, you need to go through the system and you need to be part of that system, you know, whether you are a, you know, a government team or a non-government team, you know, charity or whatever and, you know, you need to be needed, there is a need for you then you need to liaise with the right, the coordinators."

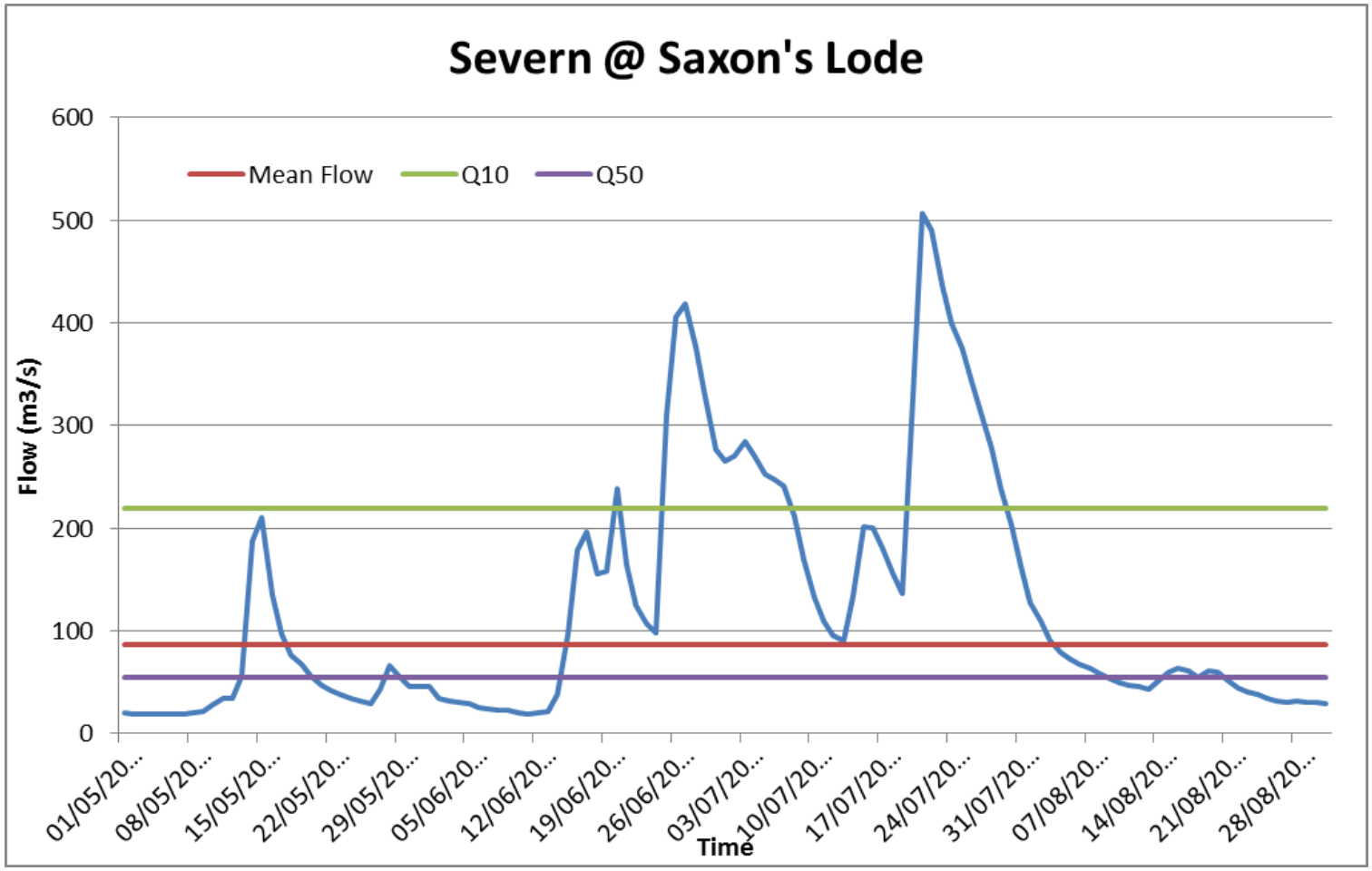
temporary accommoda[illegible] in the city."



"It's interesting to talk about leadership because this was a time when my leadership role changed and I had to hand back the leadership and the authority that's ascribed to you in a particular time, back again, to the rightful place."

"They had hundreds, if not thousands of calls coming in and the girls in the control room were trying to send out boats, from SARA and Rapid for the Fire Service… but there was several boats, there were more boats on the way, there were boats all over the place so I said do you want me to try and help co-ordinate?"

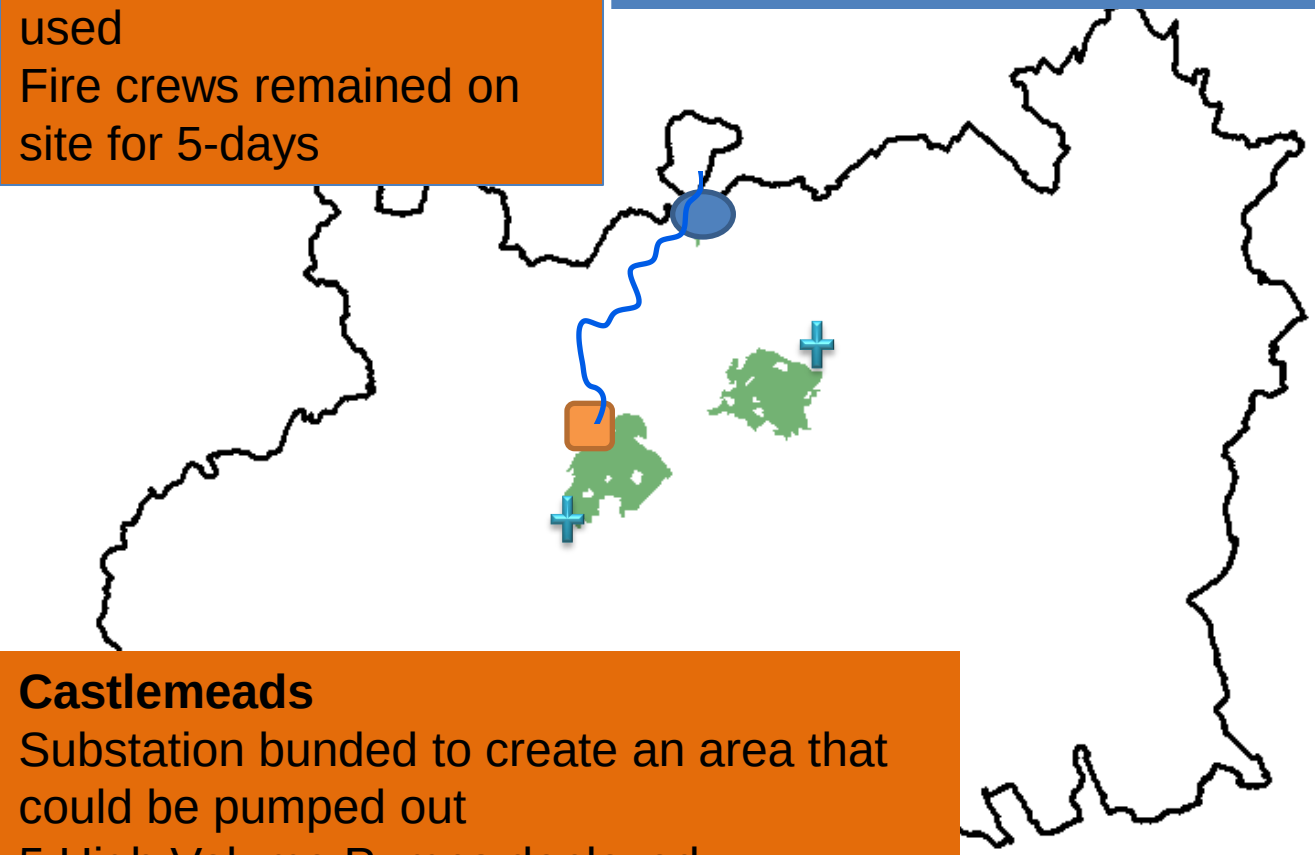
River Response



Source: derived from the National River Flow Archive Data.

Walham
Erection of 1Km defences around the substation
6 High Volume Pumps deployed
9 Light-portable pumps used
Fire crews remained on site for 5-days

Mythe
8 High Volume Pumps used
20 million litres of flood water pumped from the works overnight
Plant pumped out 15 hours ahead of schedule



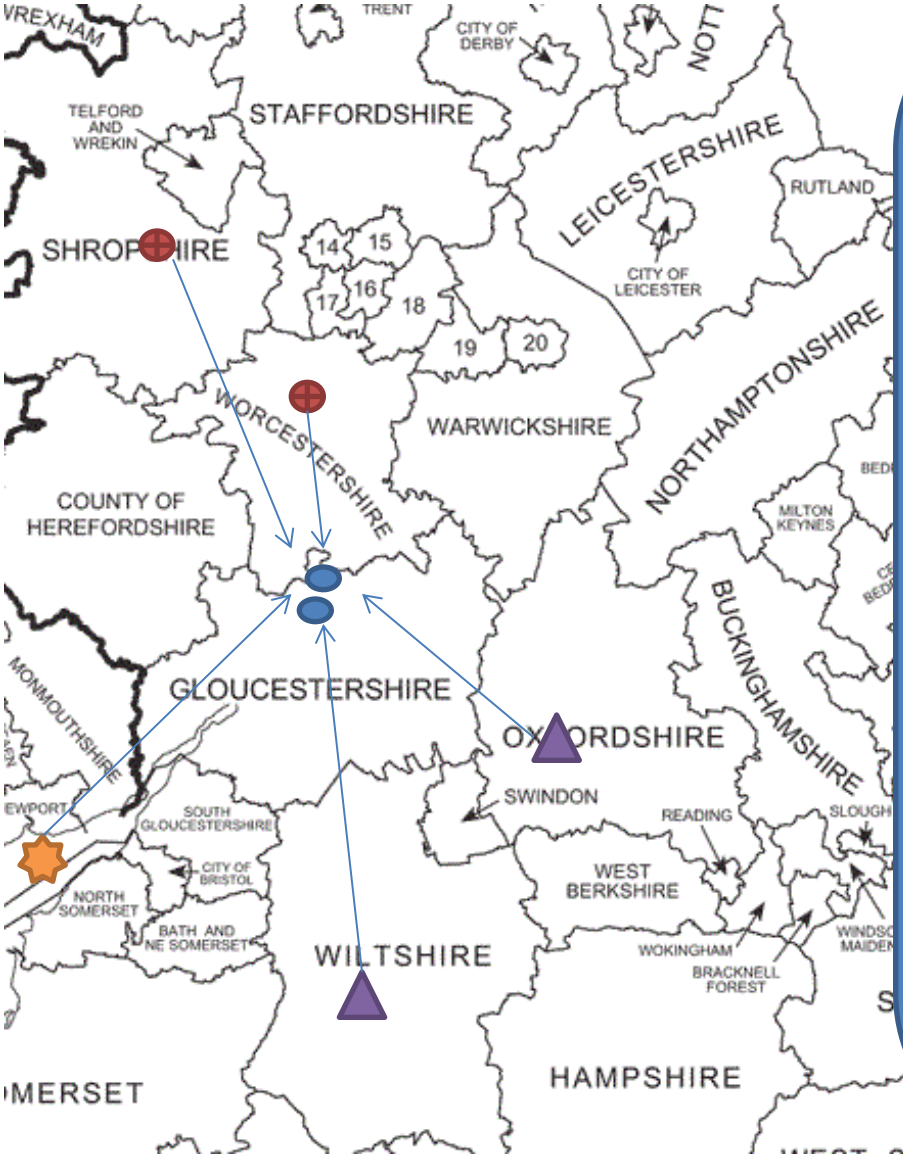
2.45am Mythe Water Treatment Plant

Walham Electricity Switching Station and Castlemeads Substation

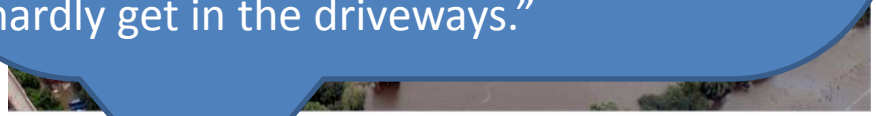
Water Distribution Centre

Castlemeads
Substation bunded to create an area that could be pumped out
5 High Volume Pumps deployed
2 Submersible pumps
Power reinstated 15 hours later
Fire crews remained on site for 5 days

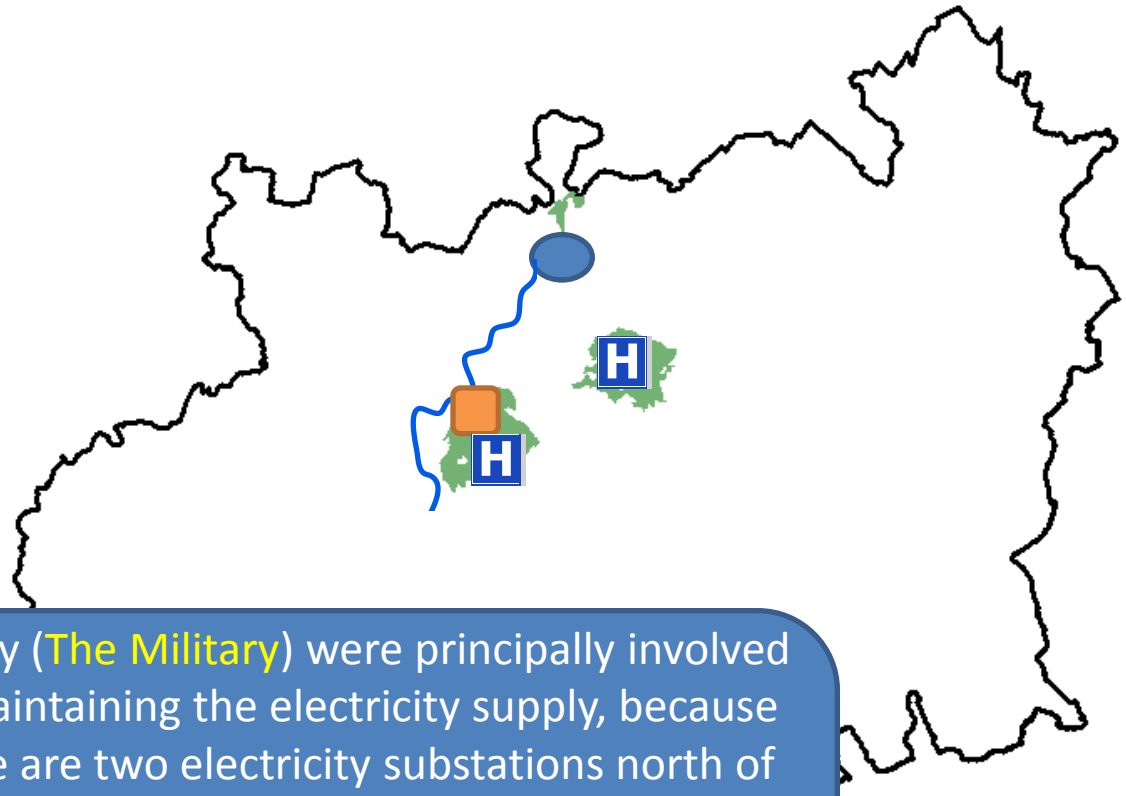
Resources



"As I say I came in at about four o'clock, I think by about five o'clock I got my first what I would call interesting call, phones were fairly quiet at that time surprisingly, apart from about five o'clock when a German voice came over the phone to sort of say we've heard about the, the problems that you've been having over there in, in Gloucestershire and we would like to send two lorries full of food supplies to the Tewkesbury area, from Germany. I think by about ten o'clock, they, they had these two lorries, very efficiently, sort of came straight across the Channel, straight into the Council offices, parked up and said right, where do you want all this stuff? And they were unloading it by the front gate. These lorries were so big they could hardly get in the driveways."



Monday 23 July



- 2.45am Walham secured
- 5am high tide passes
- 8am Castlemeads flooded
- RAF evacuations
- Power restored

"They (The Military) were principally involved in maintaining the electricity supply, because there are two electricity substations north of Gloucester, one just north of the A40 and one just inside Gloucester on Olney Island I think it's called, and I think what, if the report's true, there, it was something like half a centimetre off the top of it."

"I didn't particularly like the idea of sitting still and not doing anything, wasn't right..... I just felt I work for a local authority there's got to be some way that I can get involved to make this easier..... I got involved in the water distribution side of things so I managed a distribution point at North Gloucester..... but I've got to say that's actually pretty tough work, you know, it was pretty tough going."

"It's amazing how much you take things like being able to make a cup of tea or wash up for granted and then when it's taken away from you, a very surreal experience, you know, yeah, very odd."

...astlemeads substation being shut down.

...of bottled water in stock, with a further 20 mill...

Thursday 2 August

•100% county residen...

Friday 3 August

•5pm: press conferenc... boiled.

Monday 6 August

•Emergency Phase of ...

Tuesday 7 August

•Severn Trent Water a...

"There were issues I believe of some individuals contaminating the bowsers as well, which was frustrating but, you know, I really enjoyed doing that, I think initially from my experiences, the coordination wasn't brilliant, but it was probably as good as it could be given the fact that it was entirely unexpected and no-one quite, there were, there were no processes in place I don't think to deal with anything of, of this scale."

Overall Mythe treatme... flooding, leaving around 140,000 househo...

Reviews and Recommendations

"One of the outcomes was that we were turning up with like maps of flood coverage, theoretical flood coverage, under our arms, when other stakeholders were sort of appearing with laptops with the information on, so one of the directives in the Pitt Review, was to be a bit cleverer with the information that we've got at those gold controls and make it a bit more interactive and have it up to date and ready on the laptops too you could have a grab bag and take the information with you, so whoever was on gold control."

"That is a consequence of two thousand and seven as well where we know there's a group of people that are sort of medium to high risk, we will lump them all on to the system, write to them and say if you want to come off let us know, rather than the other way round."

"We've upgraded our boats now because we're part of the National Flood Response Team, so DEFRA funded the two boats, we put in for a grant from DEFRA, so yeah, more dry suits, [laughs] that was one, one issue, we had to sort of beg, steal and borrow at the time."

Learning

"From a planning perspective is that there is a disjoint between how long I'm planning for, twenty year plan and how long Severn Trent and the utility wise are planning for, which I think tends to be like a five year period, something along those lines……"

"Central Governments tend to go for these big pilot project or capital projects so people can say oh right, look they're doing something, but they need to regulate the system, it's not so glorified as big projects but get it right first, save money in the end. "

"There was too many decisions being made at Gold Command"

"The Mythe waterworks got flooded, right? Which for years we told them they were building in the flood plain, they didn't listen, not just us but local people as well."

"We've got quite a reputation now, we now know that they talk about water displacement in Houses of Parliament as opposed to water heights and levels during flooding, because our group, ……we've educated them and they talk about water displacement. "

"People will tell you now that since a lot of the ditches have been dug out the amount of water that they've had on the fields and that has, and it's gone away quickly and there hasn't been so much."

Learning from the economic crisis

- What kind of social learning emerges from infrastructure shocks?
- In particular, what kind of learning emerges from the shocks that infrastructure suffers during a economic crisis?

Two hypothesis

- Hypothesis 1: De-Growth
  - De-growth advocates propose that higher levels of well-being can be achieved without a focus on economic growth
  - Would an economic crisis help us understand how can we achieve higher well being without growth?
- Hypothesis 2: Socio-technical transformation
  - Technologies exist within a configuration of social norms, values and practices
  - Would an economic crisis be an opportunity to challenge those taken-for-granted configurations?

Case-study: economic crisis in Spain

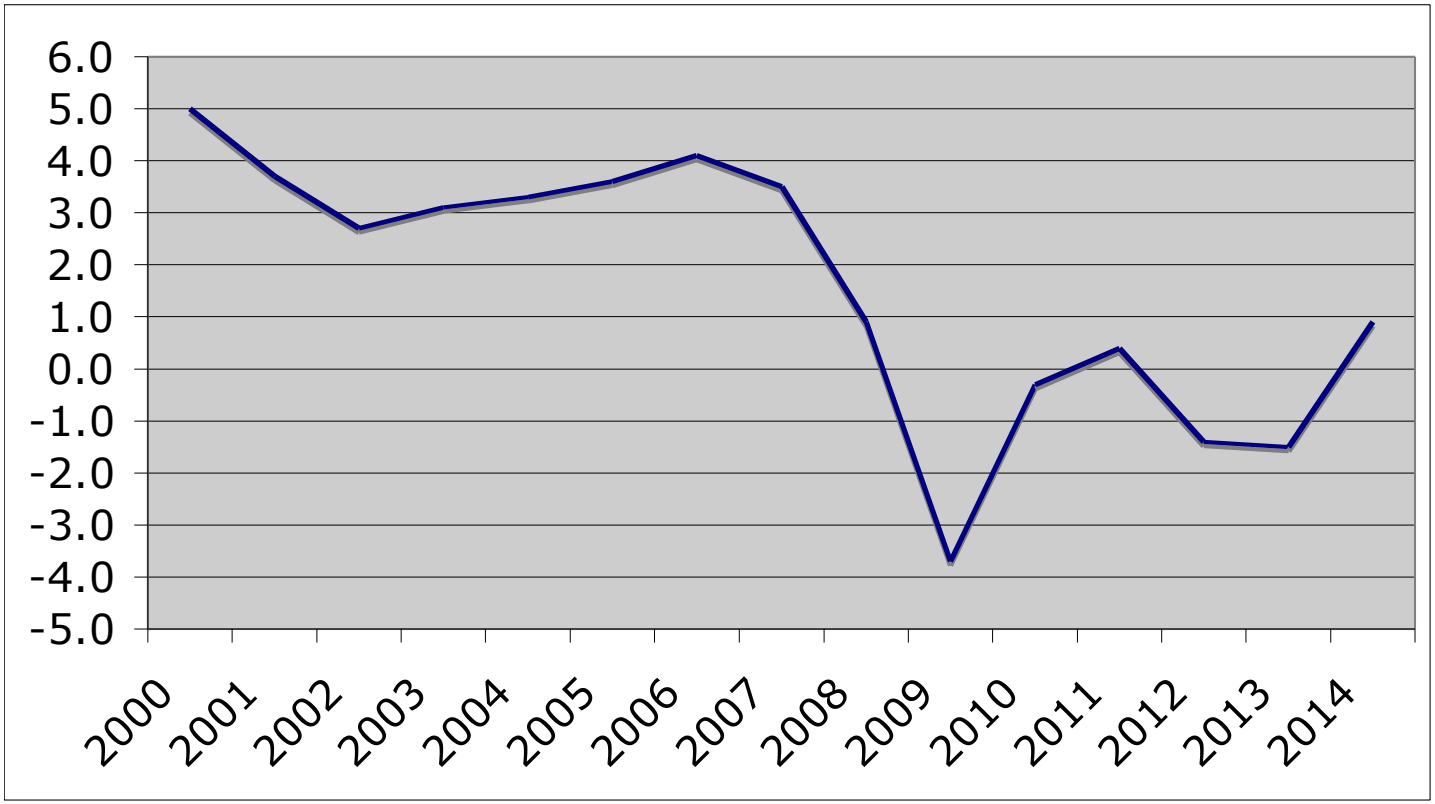


Figure 1: Percentage change in Gross Domestic Product in relation to previous period (data source: INE)

Key challenge: unemployment

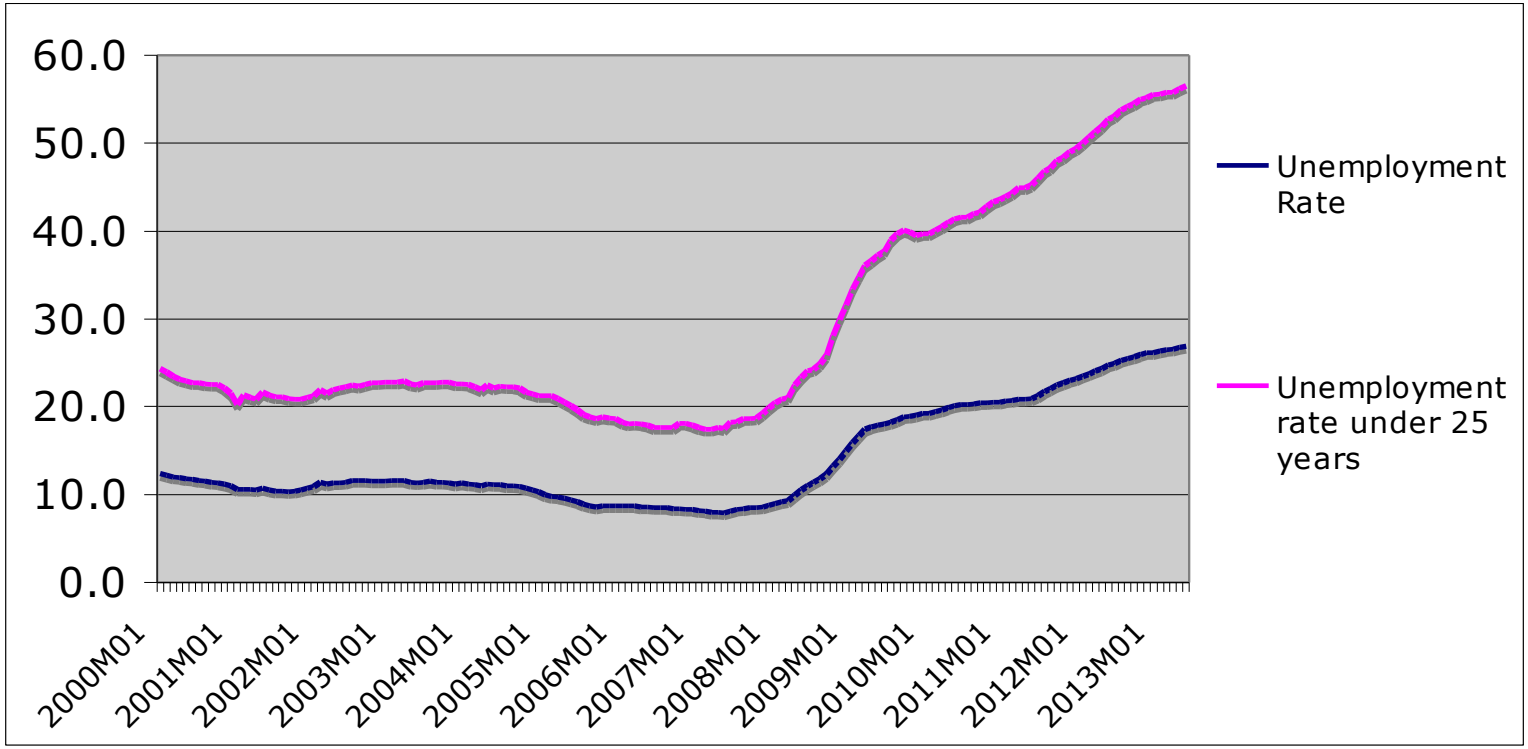


Figure 2: Unemployment rate from 2000 to 2013 (Source: Eurostat)

Change of economic structure

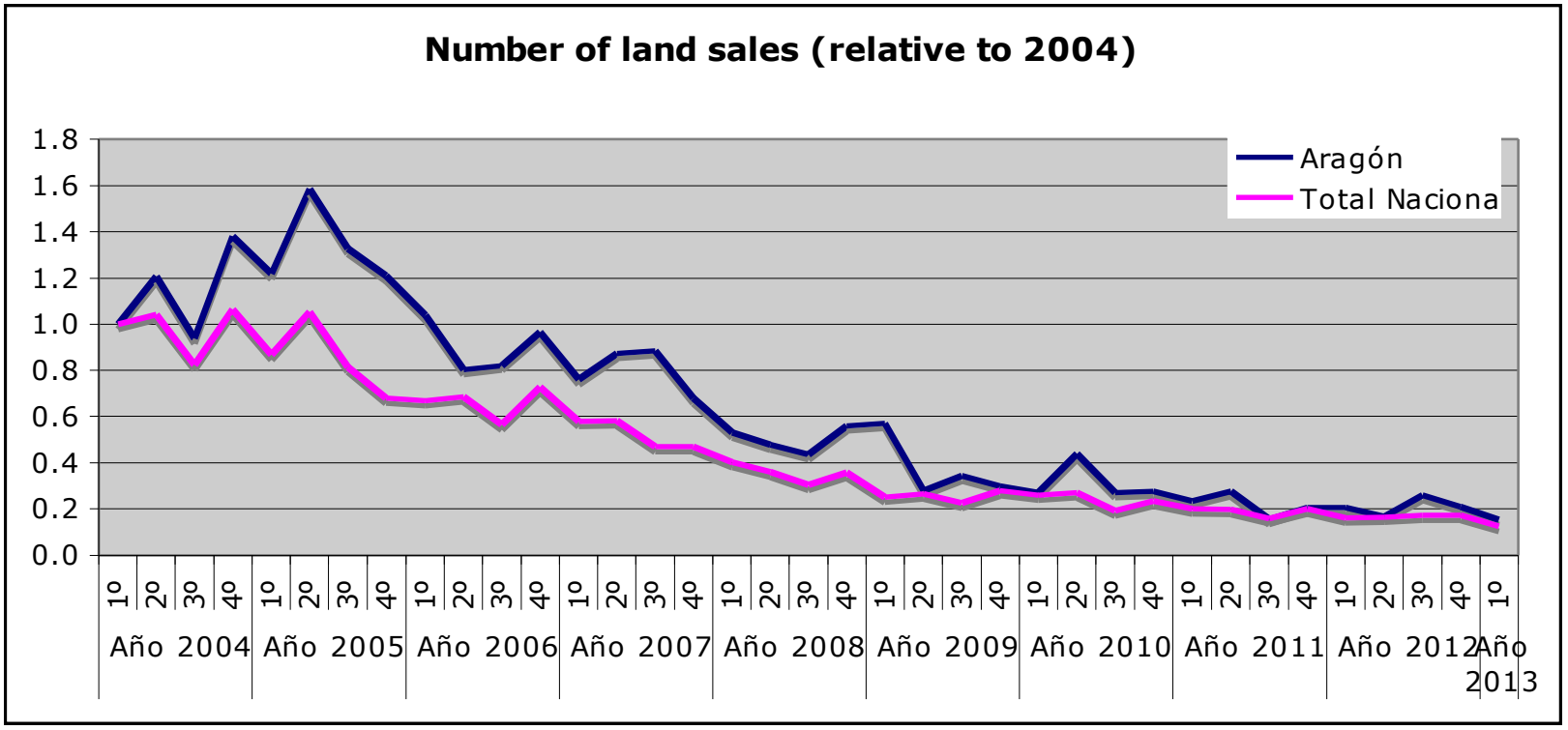


Figure 4: Changes in land transactions (source INE)

Cases of Jaca and Sabiñanigo

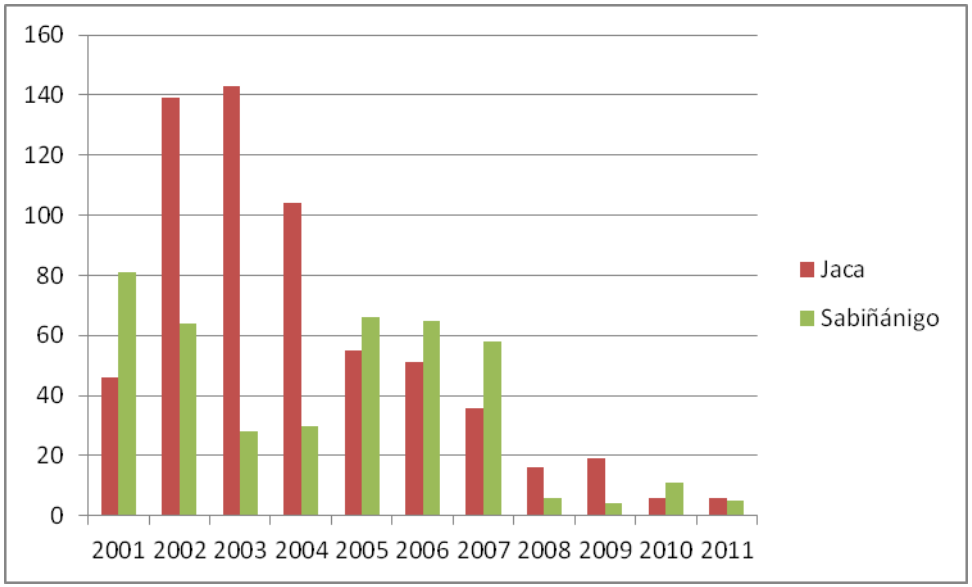


Figure 4: New buildings in Jaca and Sabiñánigo (total number)

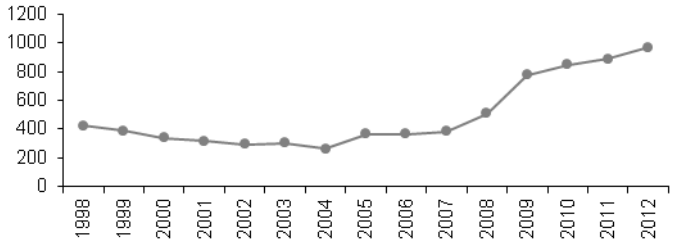


Figure 5: Unemployed population in Jaca, total count (source: Aragon's Institute of Statistics)

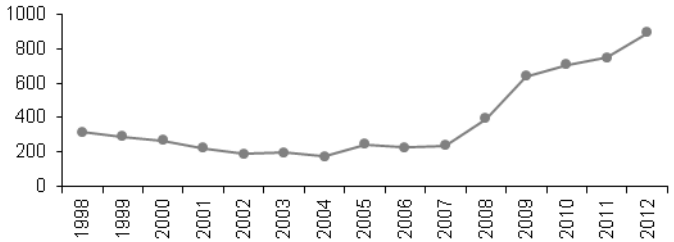


Figure 6: Unemployed population in Sabiñánigo, total count (source: Aragon's Institute of Statistics)

De-growth 1: Big infrastructure

Challenge to Jaca's Ice Rink

De-growth 2: The demise of the golf course

New socio-technical regimes: New infrastructure?

SME incubator

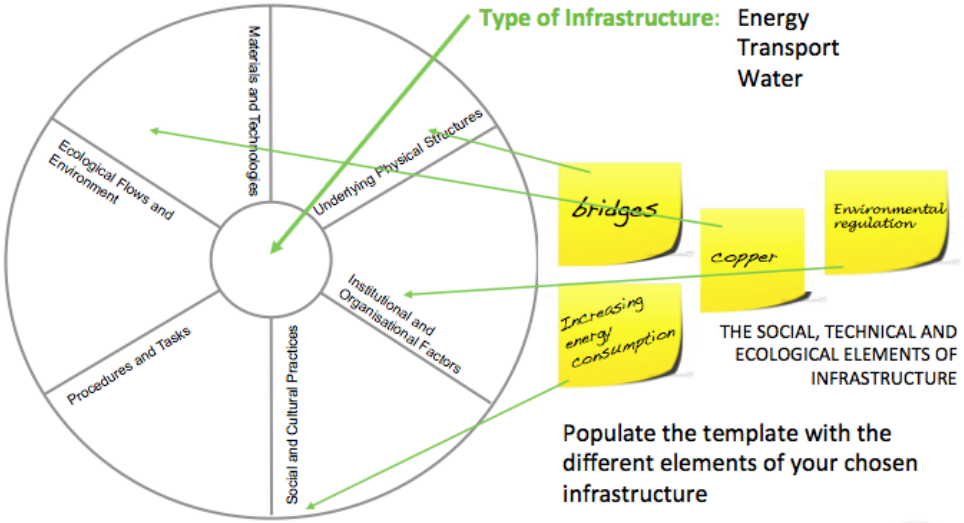
Conclusions

- Learning for de-growth
  - Changes in what is and not acceptable
  - Management for uncertainty
- Learning for socio-technical transitions
  - Understanding the [formal and informal] chain of power and knowledge
  - New forms of experimentation

Multi Level Perspective and Workshops

Mapping Infrastructures

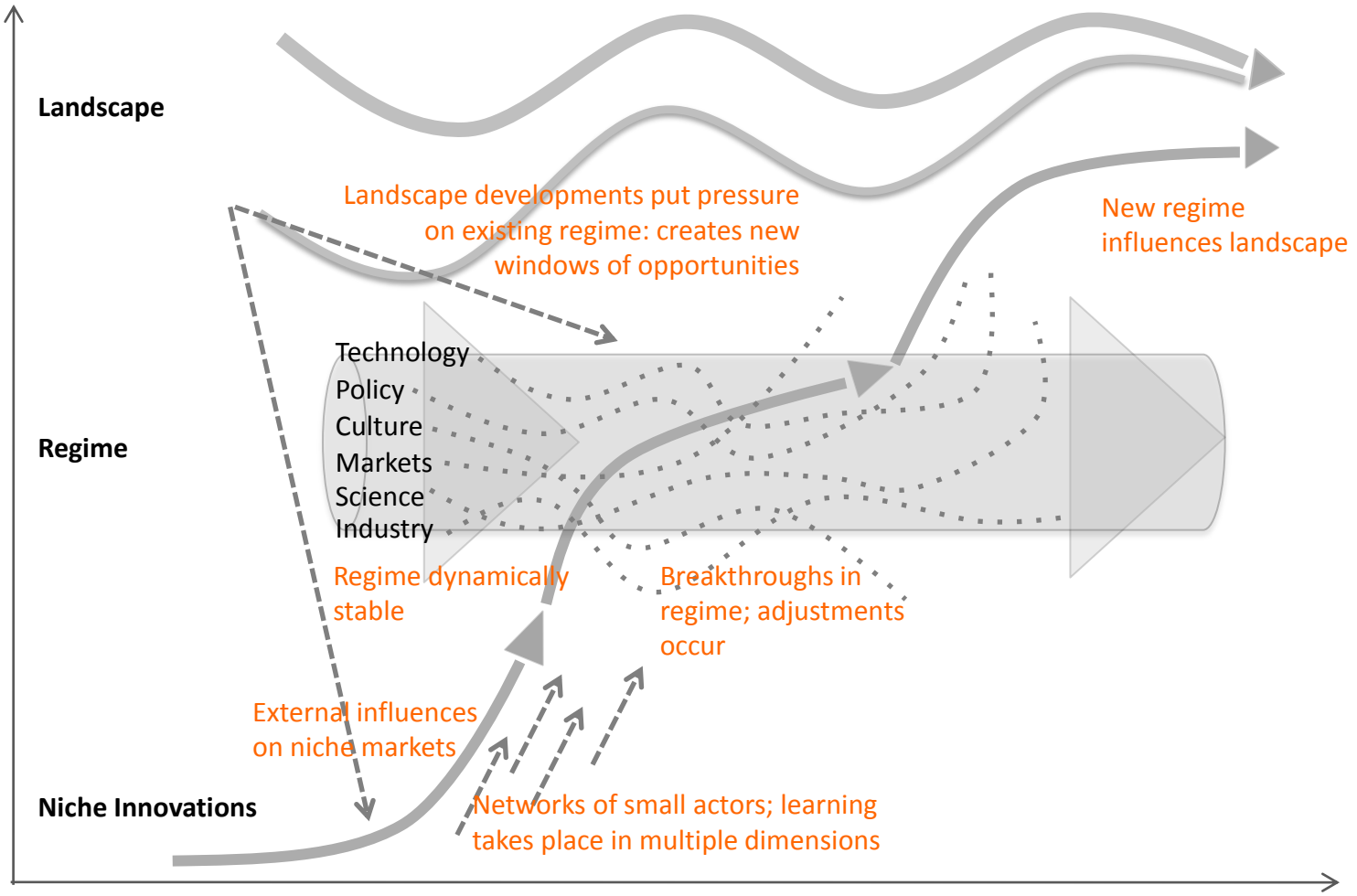
- materials and technologies;
- underlying physical structures;
- institutional and organisational factors;
- social and cultural practices;
- procedures and tasks; and
- ecological flows and environment



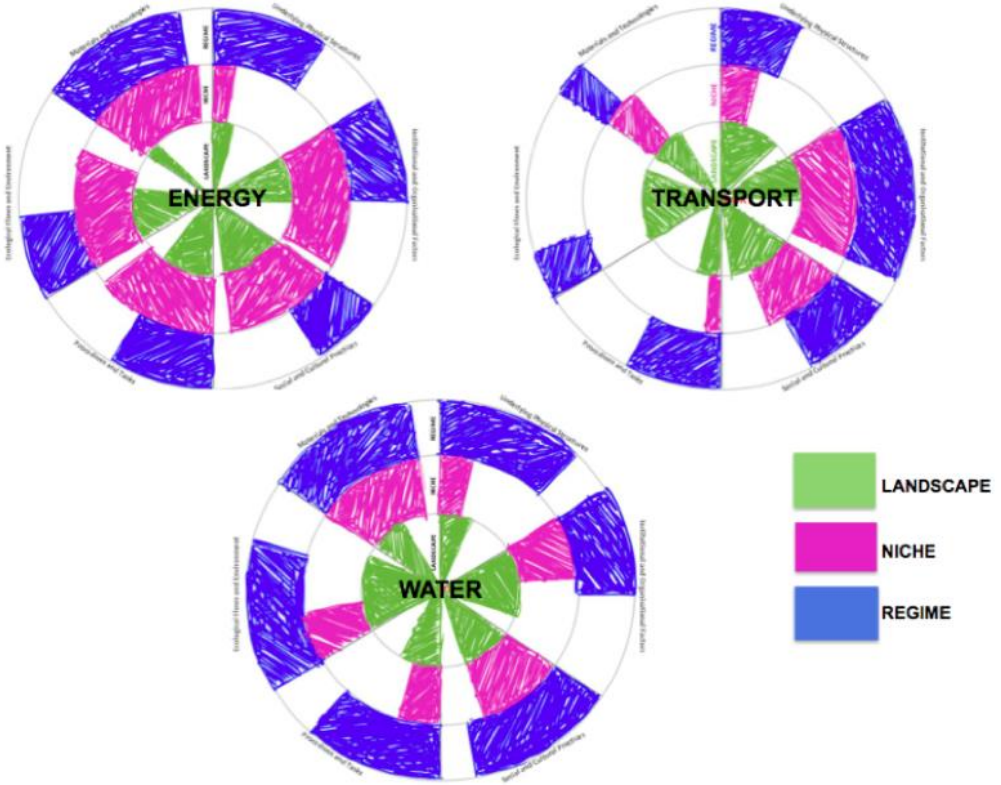
Workshop 1 Image of socio-technical transitions

INCREASING STRUCTUATION OF ACTIVITIES IN LOCAL PRACTICES

Multi Level Perspective based on Geels 2002



Representations of Infrastructure Systems



Systems of infrastructure – emerging narratives

- The emergent obviousness of regime blockages and their rigidities (e.g. limits to innovation within regulatory frameworks);
- The limits of 'silo' mentality: from regulation and governance to education, training and corporate memory;
- The interrelationships between landscape, regime and niche levels of infrastructure and the impacts of each on the other (e.g. innovation re. carbon storage relies heavily on regional issues such as water supply);
- Interdependencies need to be at the top of the agenda in terms of strategic innovation;
- The potential institutional barriers to seeing resilience as 'radical change' rather than as 'states of stability';
- Social/cultural drivers are key. For example issues of demand and supply connect to expectations of service provision.

Workshop 2 – Ingredients of resilience

Medical Trauma Analogy
(resilience = ability to adapt)

Flows
Formal/informal
Professionalism
Teamwork
Cross-sectoral relationships
Relationship between physical 'stuff' and people

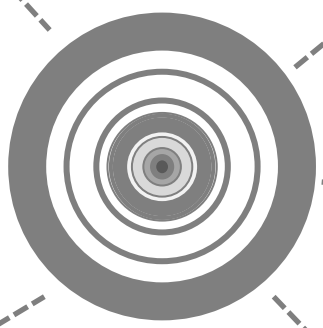
Tewkesbury Floods
(resilience = remain the same)

Rules and regulation
Education and knowledge

Discussing shocks, learning and change

Some system elements generate rigidities and represent a blockage for more innovative and longer-term thinking

Shocks can facilitate co-operation and collaboration of multiple infrastructure providers.



Shocks present useful learning opportunities

Shocks have the potential to disrupt regime 'rules'

Shocks create different perceptions of infrastructure

Shocks have the potential to evoke behavioural change and challenge existing expectations of service provision

Shifts in thinking and practice

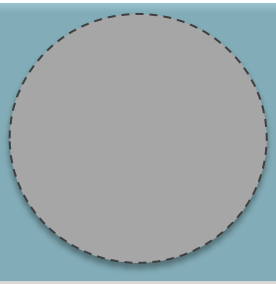
Meadows D 1999, *Leverage points: places to intervene in a system*

system paradigm

Need for greater emphasis in innovation

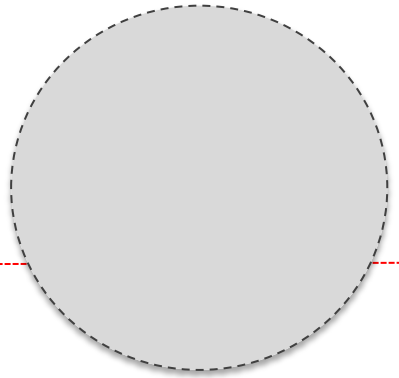
Most effective interventions

values,
goals



rules
feedback,
information flows

regime level focus:
regulations and processes of systems; the need to improve information flows.



resource stocks,
flows,
quantification

Current emphasis in innovation

Least effective interventions

Long-term adaptable infrastructure

'Shocks disrupt systems and make visible the different institutional, material, social and political relations that sustain them.' (**Graham S**. 2010, *When infrastructures fail*)

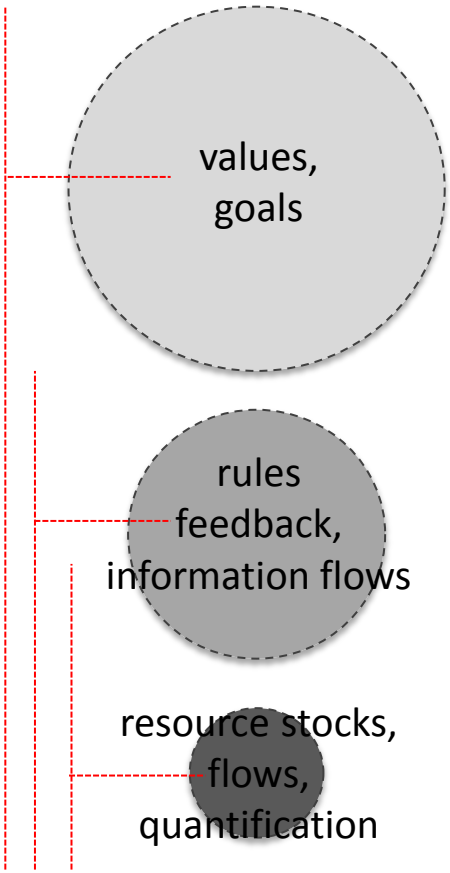
Complex challenges require transformations and strategic interventions that enable transitions in practice

Need better ways of seeing and understanding infrastructures to imagine their future adaptability

The importance of making people more resilient as well as a focus on physical infrastructure

Systems of learning and organisational wisdom seen as important in developing resilient and adaptable infrastructure

Rethinking infrastructure services requires integrated strategic thinking to co-ordinate assets to deliver effective services



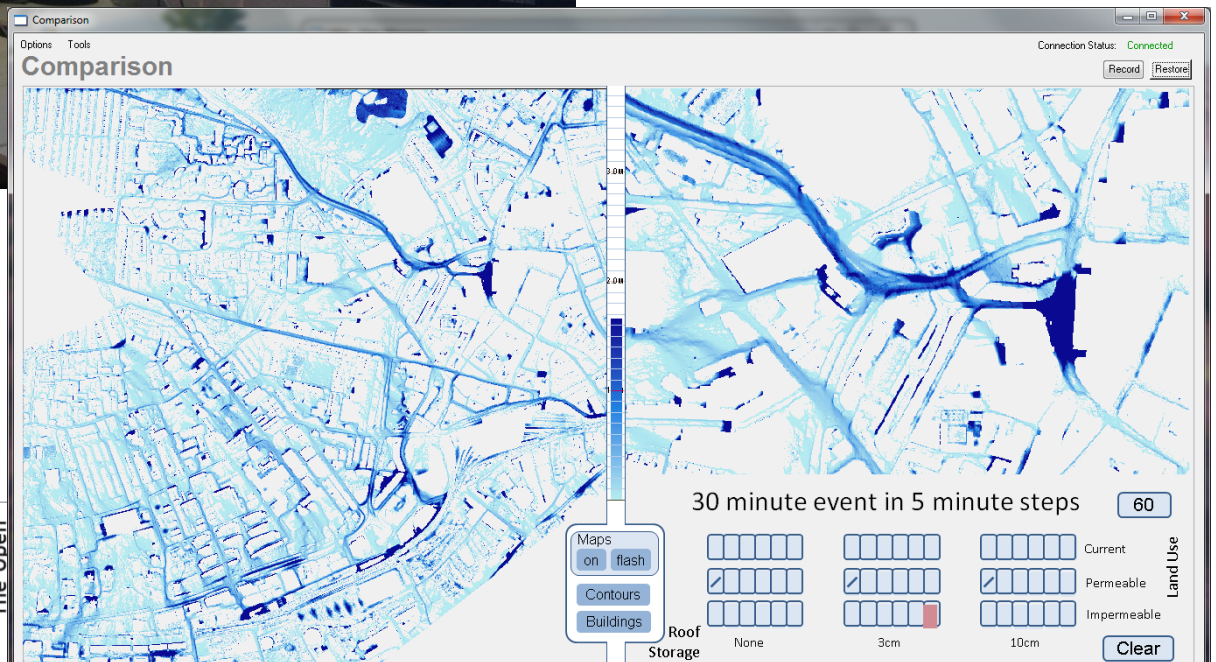
Decision Theatre and App

- Objective 4: development of a framework to maximise learning

The Decision Theatre

Collaborative decision making process

Enhanced visualisations of model outputs



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The Open

katrina05.blogspot.co.uk

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KATRINA AFTERMATH

A PUBLIC GALLERY OF THOUGHTS, IMAGES AND SOUNDS IN RESPONSE TO HURRICANE KATRINA

WEDNESDAY, OCTOBER 25, 2006

Accounting for Katrina's Dead

URL http://www.earth.columbia.edu/news/2006/story10-23-06.php

How do we fully account for the people killed by Hurricane Katrina? Should we count the kidney dialysis patient who died when treatment was interrupted? What about a despondent evacuee who committed suicide months after leaving New Orleans? Or the suspected looter shot in the street?

More importantly, what happens to our understanding of the storm's impact on society if these and other uncounted are added to the list of those who drowned?

These are the questions John Mutter, deputy director of The Earth Institute at Columbi University, hopes to answer through a new project that seeks to compile an online list all Gulf Coast residents who died as a result of direct and indirect effects of the storm, a as a result of the victims' social standing or decisions made by policy makers.

The list is now freely available on the Internet.

POSTED BY GRACE LEE AT 12:13 PM

MONDAY, FEBRUARY 20, 2006

Katrina Artists.com

This is a free space for Gulf Coast artists in the tri-state area affected by Hurricane Katrina to post information about their work, to let customers know where they are now and to sell their work online. If you would like to feature your work here, e-mail katrinaartists AT at@gmail.comfor more information.

Though much attention is focused on rebuilding efforts after the hurricane, many don't realize the full extent to which local artists depended on a thriving local economy to survive. Art vendors often sold work to tourists who flocked to the areas for wonderful food, beach getaways, quaint shopping areas and gambling.

https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1... (or the money) to wait for the area to rebuild. They need ou

SYNDICATE THIS SITE (XML)

POST COMMENTS

katrina2005.comments @ blogger.com

No attachments, please

SHARE PHOTOS

Post pics on Flickr
Tag them "hurricanekatrina"

POST A PODCAST

Dial 1-415-856-0205

ceg-morpethflood.ncl.ac.uk/toonflood/timeline/view/

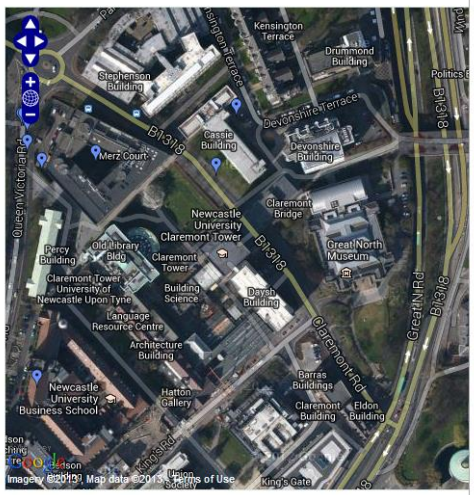
Getting Started | Latest Headlines | Imported From Firef...

ToonFlood

ToonFlood | Add ToonFlood Comment / Photo | View ToonFlood Comments / Photos | Outputs | Links
Acknowledgements | Contact | MorpethFlood 2008 | MorpethFlood 2012

ToonFlood - View Comments / Photos

Help - interactive map



- Left mouse click on the blue comment markers to see a photo and d

If you have any general comments, a large number of photographs to upload, or
Water Group, School of Civil Engineering and Geosciences.

ToonFlood Comment

ToonFlood: Merz Court

Time: 2012-06-28 16:29:00

Description:

After watching the storm come across exhibition park from the north side of the building we had a look at queen victoria road and noticed the back yard of Merz flooding a few short minutes later the bins were floating about and the water was rushing in the back door. Both the lobbies of Merz Court were flooded as well as the basements and labs on the ground floor. I live at Framlington place in a basement flat and that had got flooded too

Close

ToonFlood - Add ToonFlood Comment / Photo - View ToonFlood Comments / Photos - Outputs - Links -
Acknowledgements - Contact - MorpethFlood 2008 - MorpethFlood 2012

Newcastle University | UCL

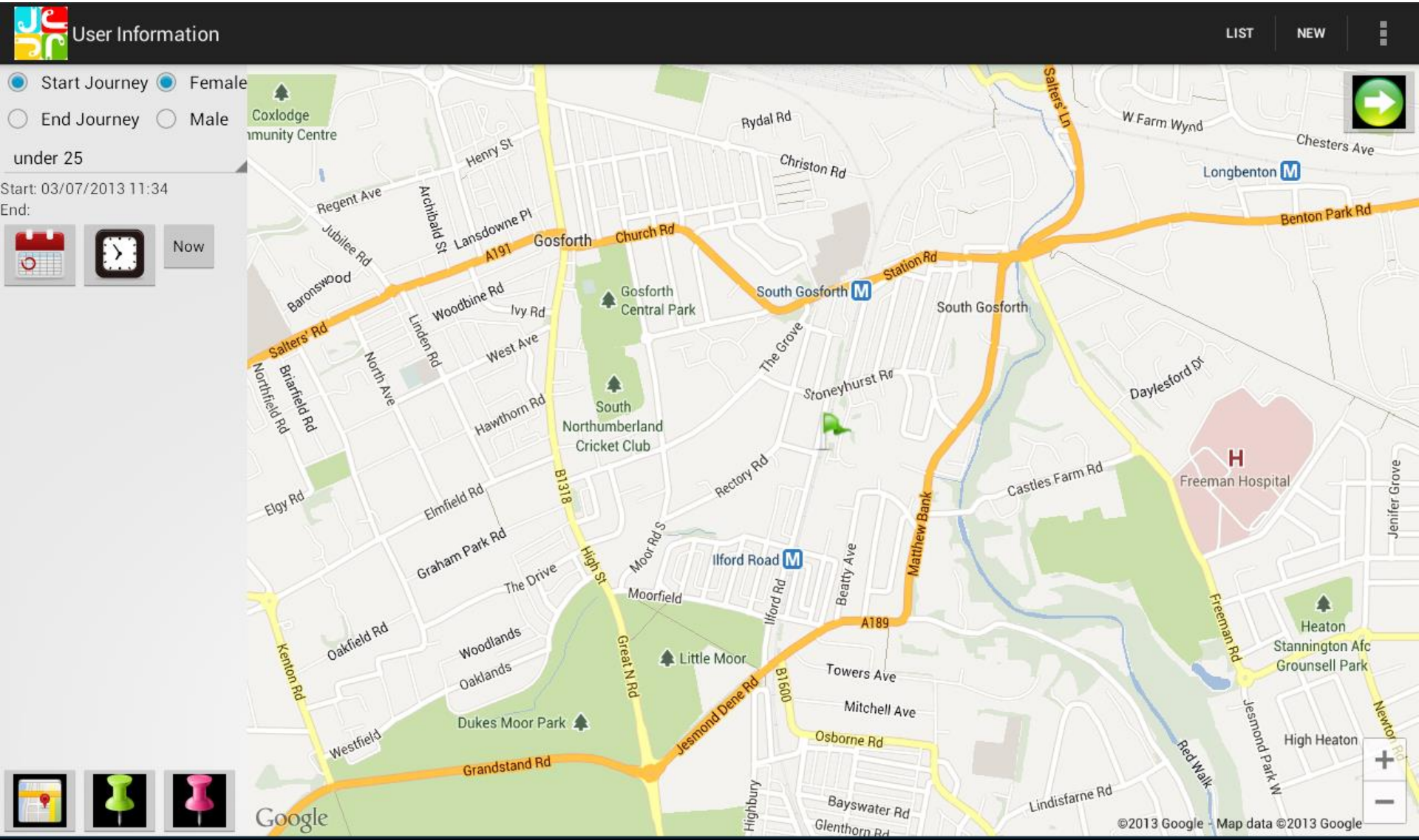
EN 10:17 03/07/2013

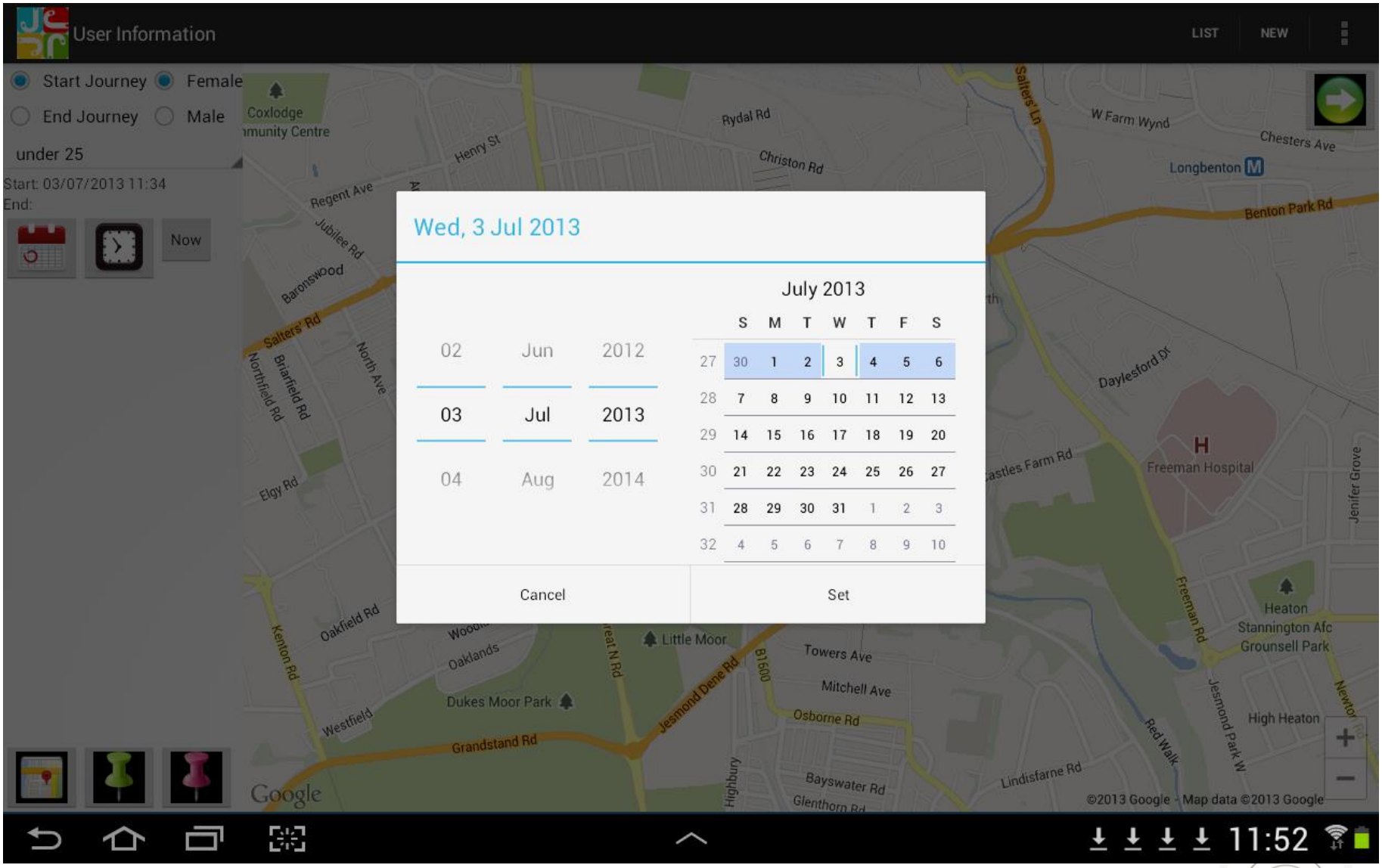
My A2B App

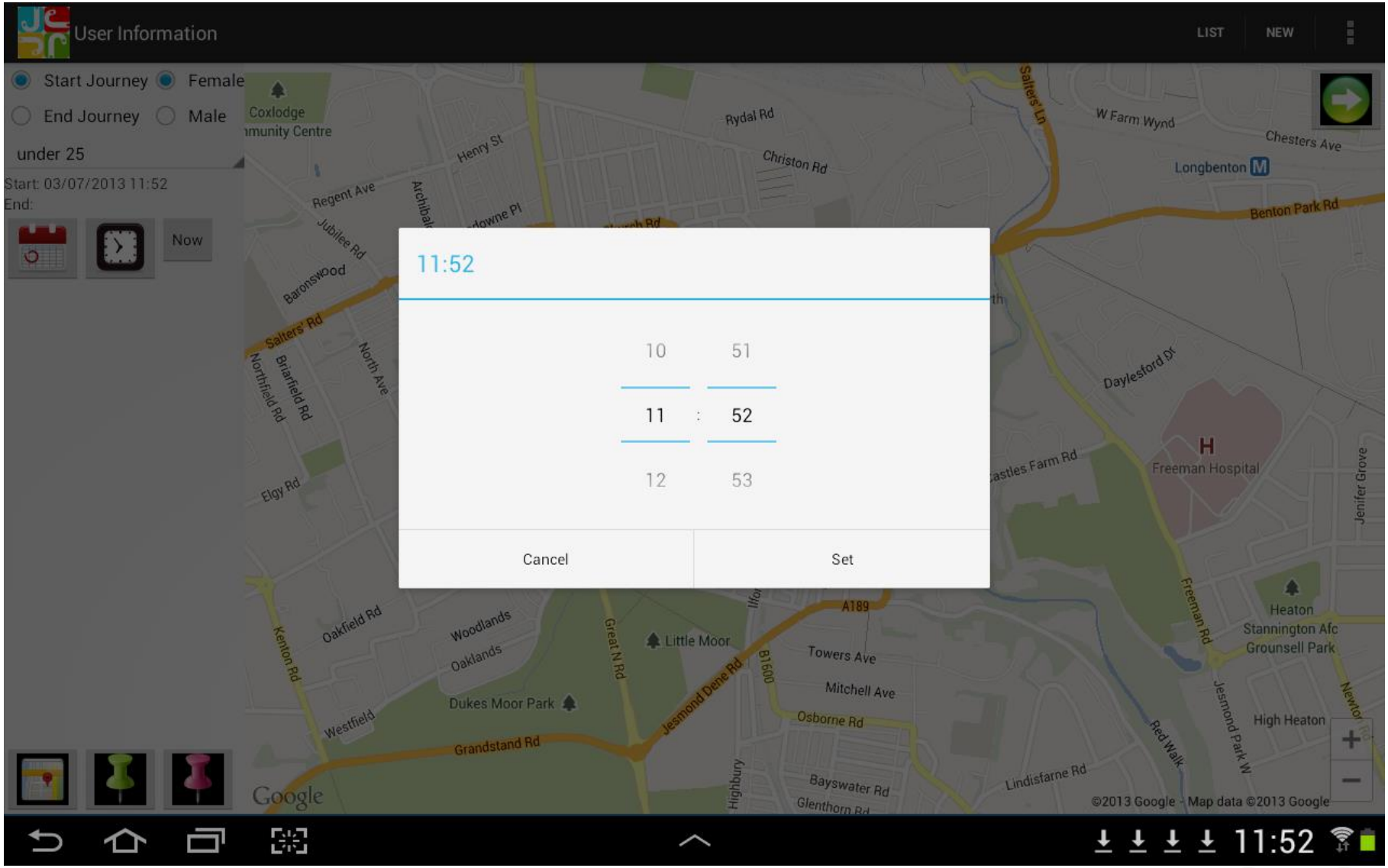
- My A2B – records details of journeys
- App objectives to determine:
  - Usefulness of an app as a mechanism for gathering demand data
  - Whether the public recognise infrastructure during routine journeys

My A2B

- Personal data: gender and age.
- Information about a journey: time, date, location, speed.
- Information about a journey : purpose, frequency, solo or group journey, modes of transport used.
- Observations: level of disruption, description of incidents, photo capture.


User Information
LIST
NEW
Start Journey
Female
End Journey
Male
under 25
Start: 03/07/2013 11:34
End:
Now
Coxlodge
Community Centre
Henry St
Regent Ave
Archibald St
Jubilee Rd
Lansdowne Pl
A191
Gosforth
Church Rd
Baronswood
Woodbine Rd
Ivy Rd
Linden Rd
West Ave
Salters' Rd
Northfield Rd
Briarfield Rd
North Ave
Hawthorn Rd
Gosforth Central Park
South Northumberland Cricket Club
Rydal Rd
Christon Rd
Salters' Ln
W Farm Wynd
Chesters Ave
Longbenton
Benton Park Rd
Station Rd
South Gosforth
South Gosforth
The Grove
Stoneyhurst Rd
Daylesford Dr
Rectory Rd
Castles Farm Rd
Freeman Hospital
Jenifer Grove
Elgy Rd
Elmfield Rd
Graham Park Rd
B1318
High St
Moor Rd S
Ilford Road
Beatty Ave
Matthew Bank
The Drive
Moorfield
Ilford Rd
A189
Freeman Rd
Heaton
Stannington Afc
Grounsell Park
Oakfield Rd
Woodlands
Oaklands
Kenton Rd
Great N Rd
Little Moor
Towers Ave
Jesmond Dene Rd
B1600
Mitchell Ave
Jesmond Park W
Newton Rd
Dukes Moor Park
Westfield
Osborne Rd
High Heaton
Red Walk
Grandstand Rd
Highbury
Bayswater Rd
Glenthorn Rd
Lindisfarne Rd
Google
©2013 Google - Map data ©2013 Google
11:38
16:24


User Information
LIST
NEW
Start Journey
Female
End Journey
Male
under 25
Start: 03/07/2013 11:34
End:
Now
Wed, 3 Jul 2013
02
Jun
2012
03
Jul
2013
04
Aug
2014
July 2013
S M T W T F S
27 30 1 2 3 4 5 6
28 7 8 9 10 11 12 13
29 14 15 16 17 18 19 20
30 21 22 23 24 25 26 27
31 28 29 30 31 1 2 3
32 4 5 6 7 8 9 10
Cancel
Set
Coxlodge
Rydal Rd
Christon Rd
Henry St
Regent Ave
Jubilee Rd
Baronswood
Salters' Rd
Northfield Rd
Briarfield Rd
North Ave
Elgy Rd
Oakfield Rd
Kenton Rd
Oaklands
Westfield
Dukes Moor Park
Grandstand Rd
Little Moor
Towers Ave
Mitchell Ave
Osborne Rd
Jesmond Dene Rd
B1600
Bayswater Rd
Highbury
Lindisfarne Rd
Red Walk
Jesmond Park W
High Heaton
Freeman Rd
Freeman Hospital
Heaton
Stannington Afc
Grounsell Park
Daylesford Dr
Benton Park Rd
Longbenton
Chesters Ave
W Farm Wynd
Salters' Ln
Jenifer Grove
Google
©2013 Google - Map data ©2013 Google
11:52


User Information
LIST
NEW
Start Journey
Female
End Journey
Male
under 25
Start: 03/07/2013 11:52
End:
Now
11:52
10
51
11
:
52
12
53
Cancel
Set
Coxlodge
Rydal Rd
Christon Rd
Henry St
Regent Ave
Jubilee Rd
Baronswood
Salters' Rd
Northfield Rd
Briarfield Rd
North Ave
Elgy Rd
Salters Ln
W Farm Wynd
Chesters Ave
Longbenton
Benton Park Rd
Daylesford Dr
Freeman Hospital
Jenifer Grove
Castles Farm Rd
Heaton
Stannington Afc
Grounsell Park
Freeman Rd
Jesmond Park W
High Heaton
Newton
A189
Towers Ave
Mitchell Ave
Osborne Rd
Red Walk
Lindisfarne Rd
Bayswater Rd
Glenthorn Rd
Highbury
Little Moor
Great N Rd
B1600
Jesmond Dene Rd
Oakfield Rd
Woodlands
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Kenton Rd
Dukes Moor Park
Westfield
Grandstand Rd
Google
©2013 Google - Map data ©2013 Google
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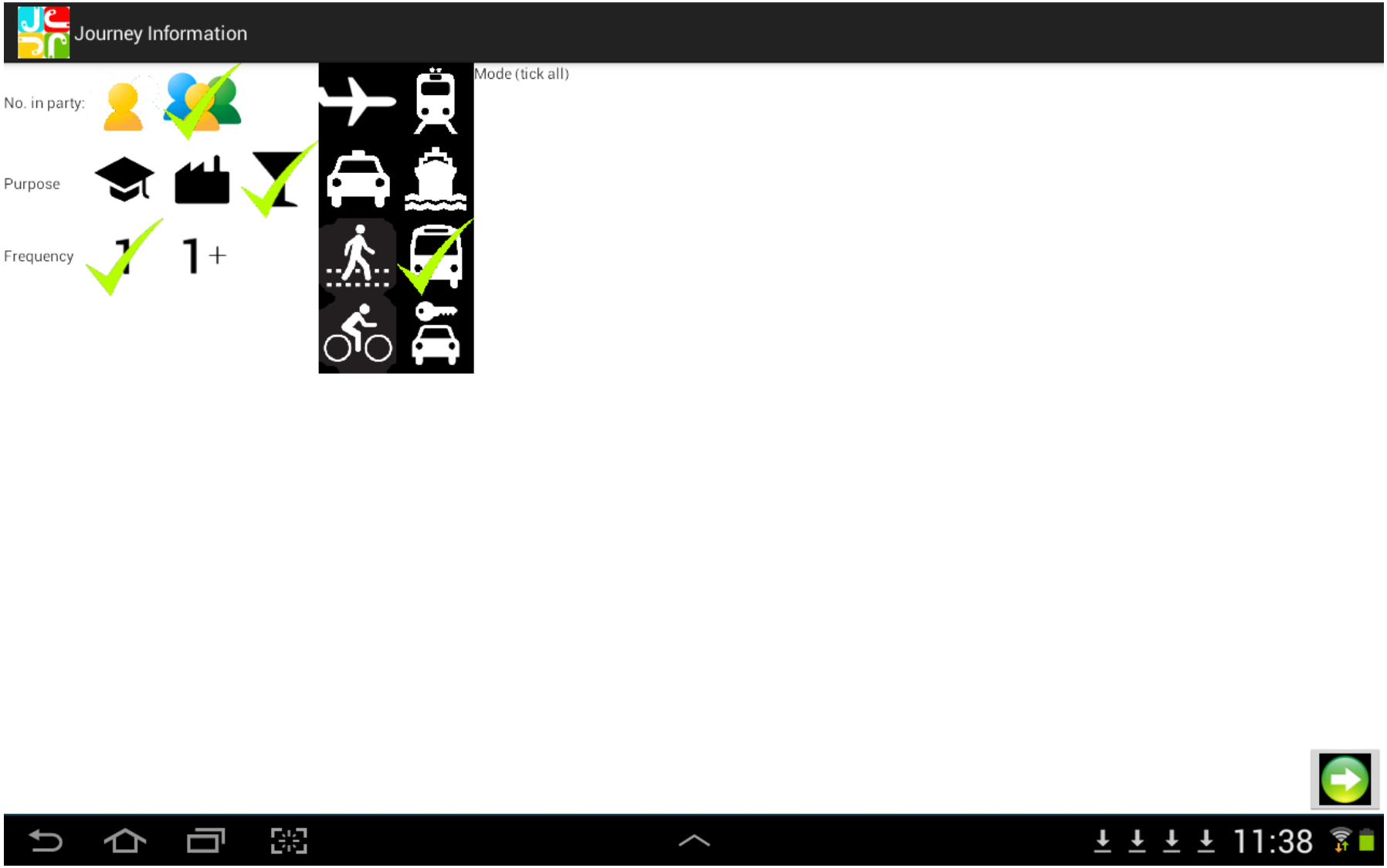
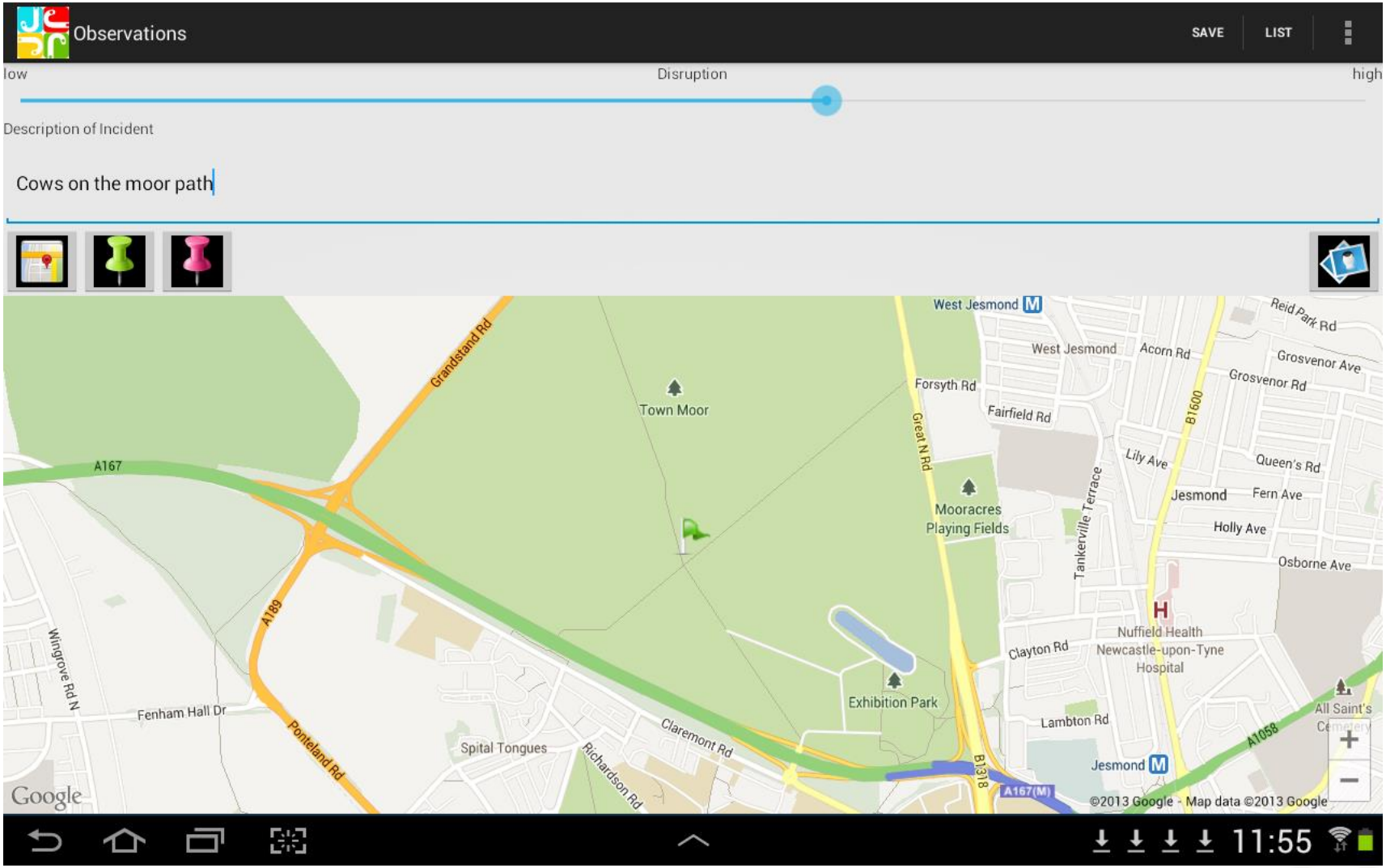
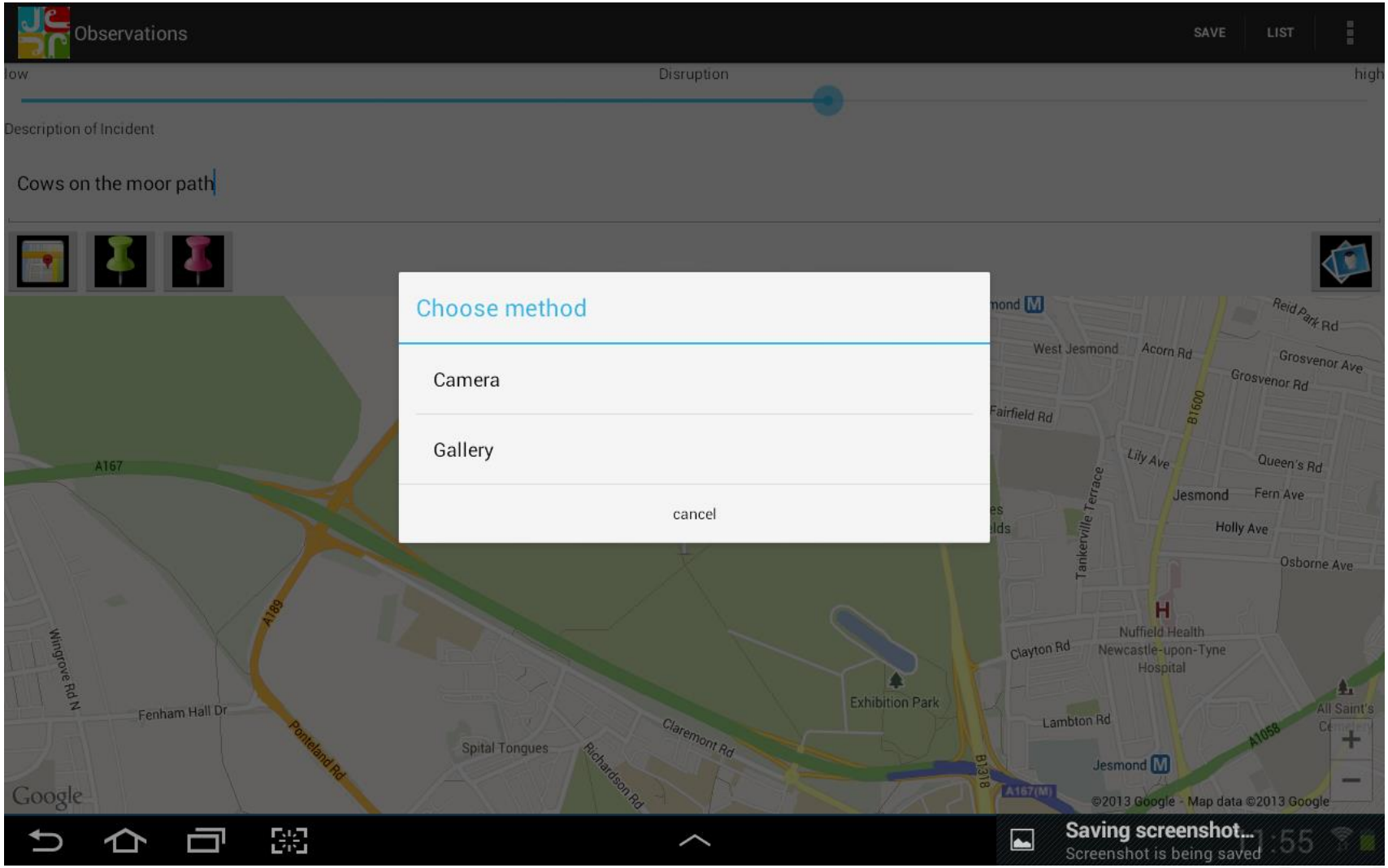
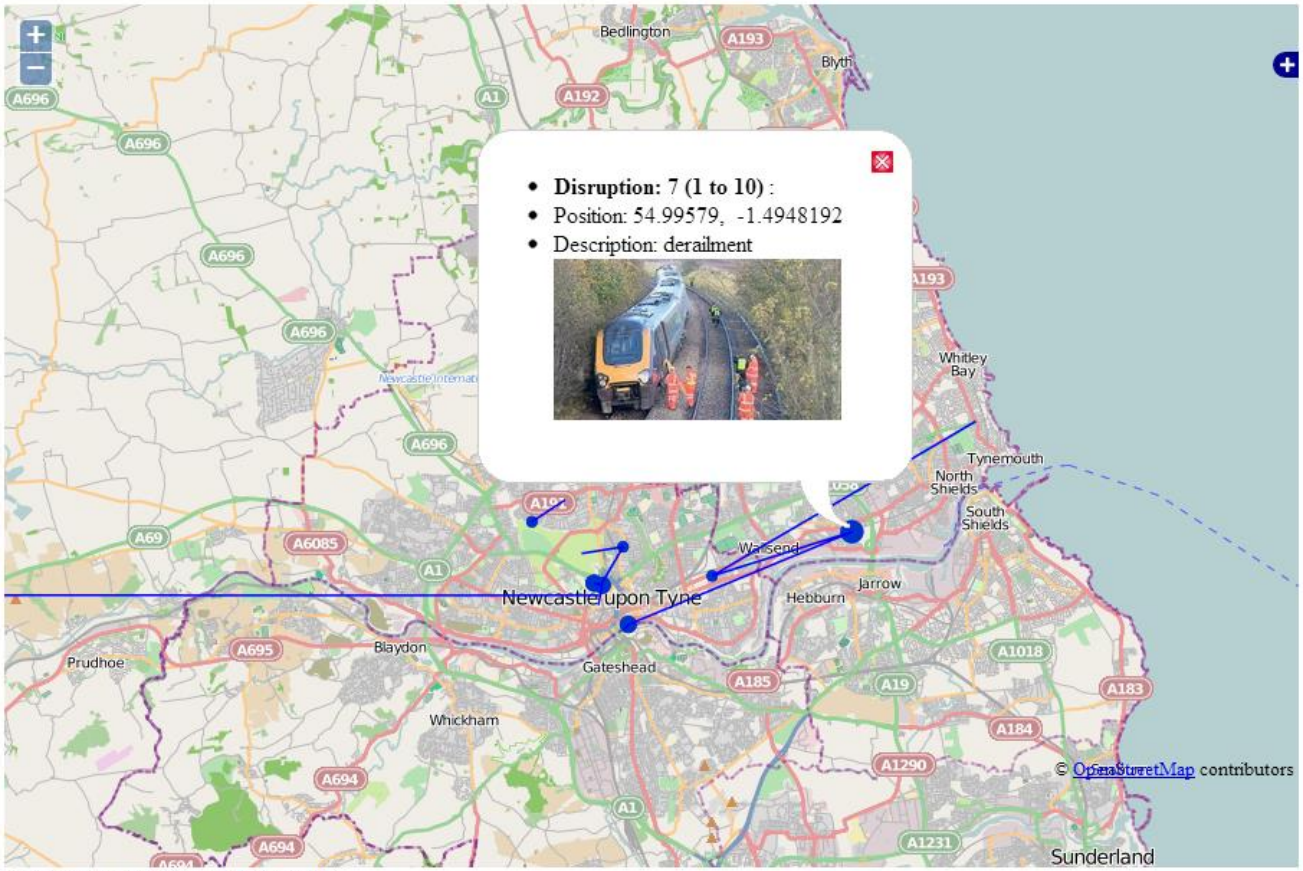

Journey Information
No. in party:
Purpose
Frequency
1
1+
Mode (tick all)
11:38


Observations
SAVE
LIST
low
Disruption
high
Description of Incident
Cows on the moor path
Town Moor
Grandstand Rd
A167
A189
Ponteland Rd
Fenham Hall Dr
Wingrove Rd N
Spital Tongues
Richardson Rd
Claremont Rd
Exhibition Park
Mooracres Playing Fields
Great N Rd
Forsyth Rd
Fairfield Rd
West Jesmond
Acorn Rd
Reid Park Rd
Grosvenor Ave
Grosvenor Rd
B1600
Lily Ave
Queen's Rd
Jesmond
Fern Ave
Holly Ave
Osborne Ave
Tankerville Terrace
Nuffield Health Newcastle-upon-Tyne Hospital
Clayton Rd
Lambton Rd
Jesmond
B1318
A167(M)
A1058
All Saint's Cemetery
Google
©2013 Google - Map data ©2013 Google
11:55


Observations
SAVE
LIST
Disruption
Description of Incident
Cows on the moor path
Choose method
Camera
Gallery
cancel
Saving screenshot...
Screenshot is being saved
Google
©2013 Google - Map data ©2013 Google

My A to B Map

Powered by NCLSenseCloud http://www.geoanorak.co.uk/nclsensecloud.html



Click on the map to get feature info

A Geoanorak Production

Key Messages

‘Narratives of resilience’

Ingredients of resilience (resilience = ability to adapt)

- Flows
- Formal/informal
- Professionalism
- Teamwork
- Cross-sectoral relationships
- Relationship between physical ‘stuff’ and people

Regular shocks increase resilience

Resilience = remain the same

- Rules and regulation
- Education and knowledge

Key messages - MLP

- A greater identification of infrastructure elements at the level of the regime;
- The obviousness of regime blockages and their rigidities;
- Significant opportunities to intervene in the regime may occur when landscape pressures and niche opportunities align
- Increased awareness of the number of shocks that transcend different infrastructures

Key Messages - Shocks

- Need differentiate between shocks and stresses
- Shocks disrupt the current regime
- Shocks provide opportunities for learning
- Shocks facilitate co-operation and collaboration of multiple infrastructure providers

Key Messages- Shocks

- Shocks affect perceptions and visibility of infrastructure
- Shocks provide opportunities for behavioural change and re-evaluating the provision of infrastructure
- Shocks provide the opportunity to consider ‘less’

Afternoon Sessions

Newcastle Flood

- Kate Cochrane

Agenda

1345 Introduction afternoon activities

1350 Newcastle flood case study (Kate Cochrane, Newcastle City Council)

1410 Activity 1: mapping shock events

1430 Activity 2: ‘tipping points’

1500 Refreshment break

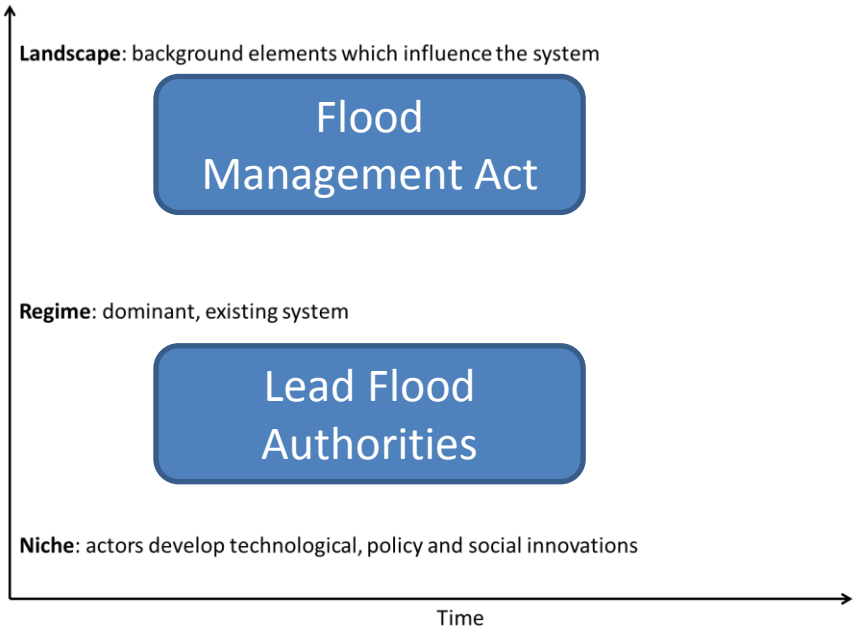
1510 Feedback from activities 1 and 2

1530 Open discussion – knowledge and practice gaps

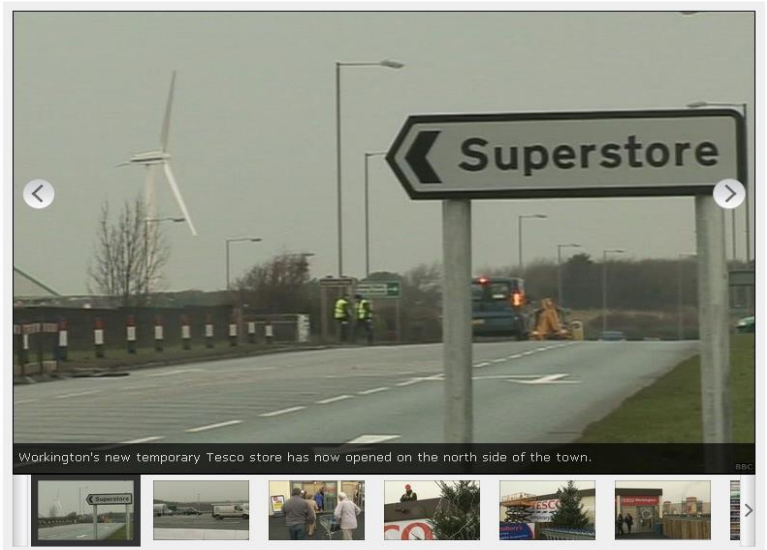
1600 Close

Activity 1: Mapping Shock Events

Think about shocks with which you are familiar, in particular consider any responses or changes that occurred following the event. Map these events onto the MLP template below, to indicate at what level interventions occurred.



New Tesco store opens in Workington



Flooded Workington united by new army-built bridge

Heavy rain fell in Workington throughout the morning

A Cumbrian town divided when floods destroyed its river crossings, killing a police officer, has been re-united by a temporary footbridge.

BBC Cumbria
Sport, travel, weather, to do, features and mu

UK FLOODS

LATEST NEWS

- Flood victim fund gives out £500k
- Icy weather aids dredging succes
- Firms bid for flood town bridge
- Tax relief for flood-hit houses
- Free train link service extended
- New road crossing for flood town
- Commons inquiry into flood damag
- New rail station for flood town
- Royal praise for community spirit

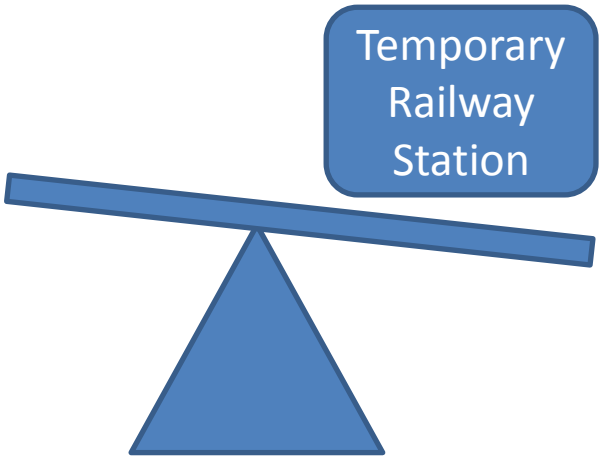
Workington's shiny new bridge is lowered into place

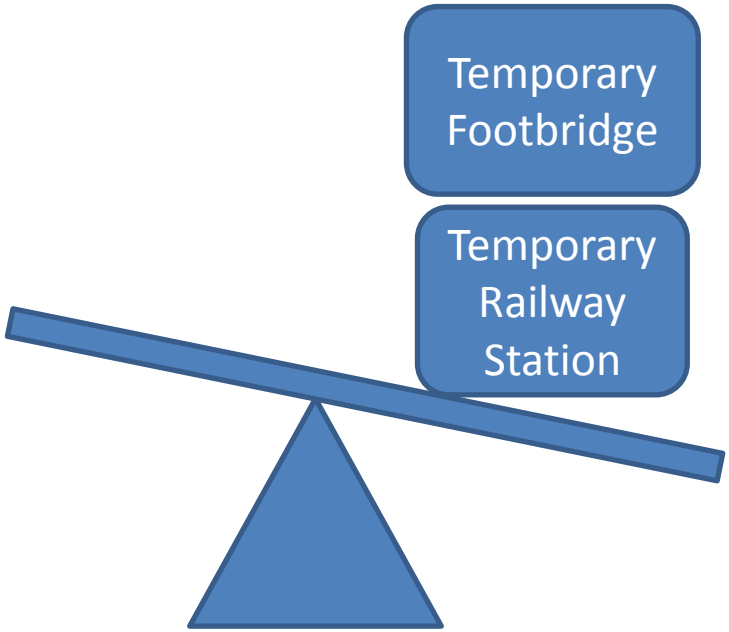
The town cut in half by the Cumbria floods has helped to design a new £1.7 million crossing of the river Derwent

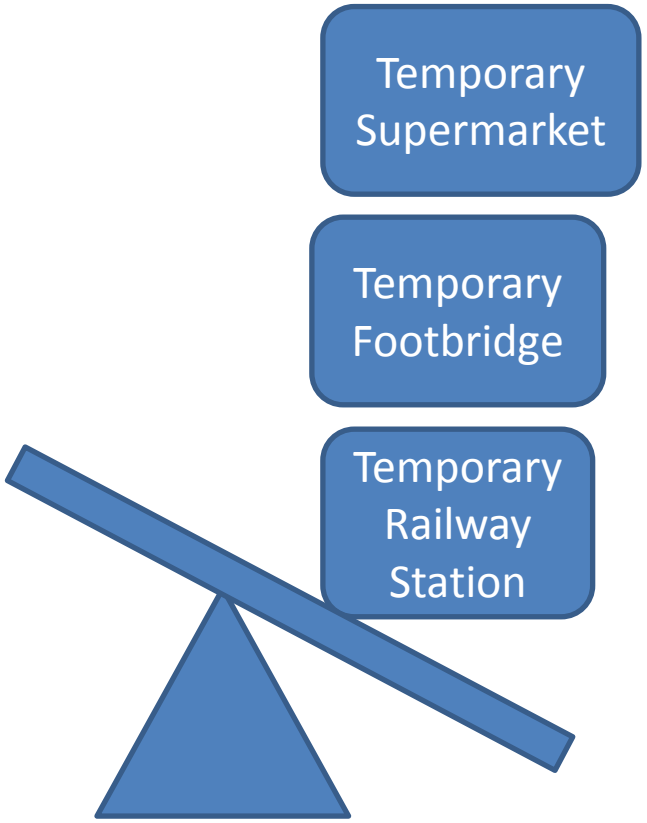
Heave-ho - the new Nawies Bridge dangles over the Derwent. It's nicely in place now. Photograph: Steve Barber/Cumbria County Council

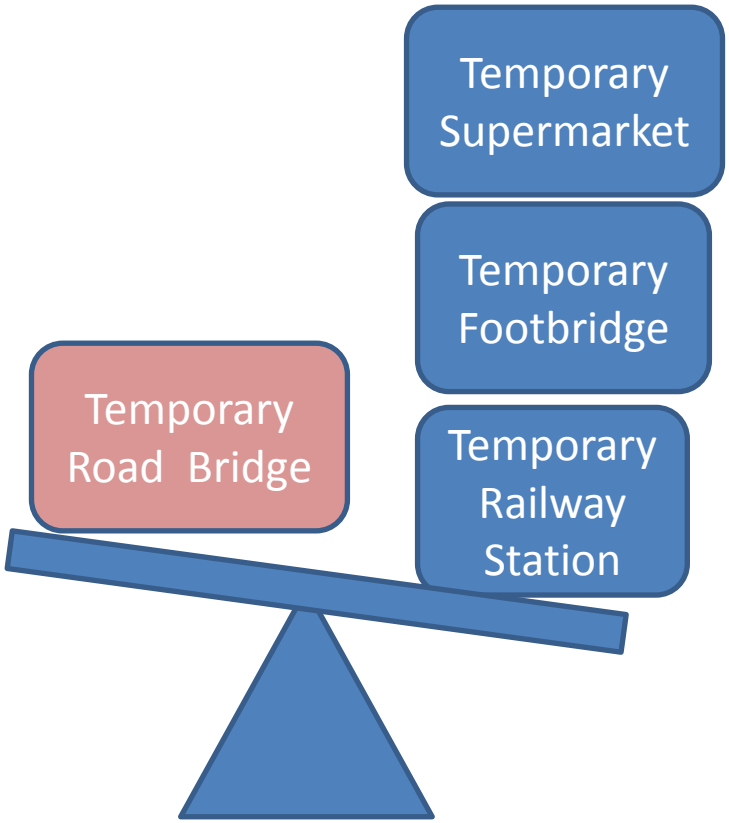
Workington Example

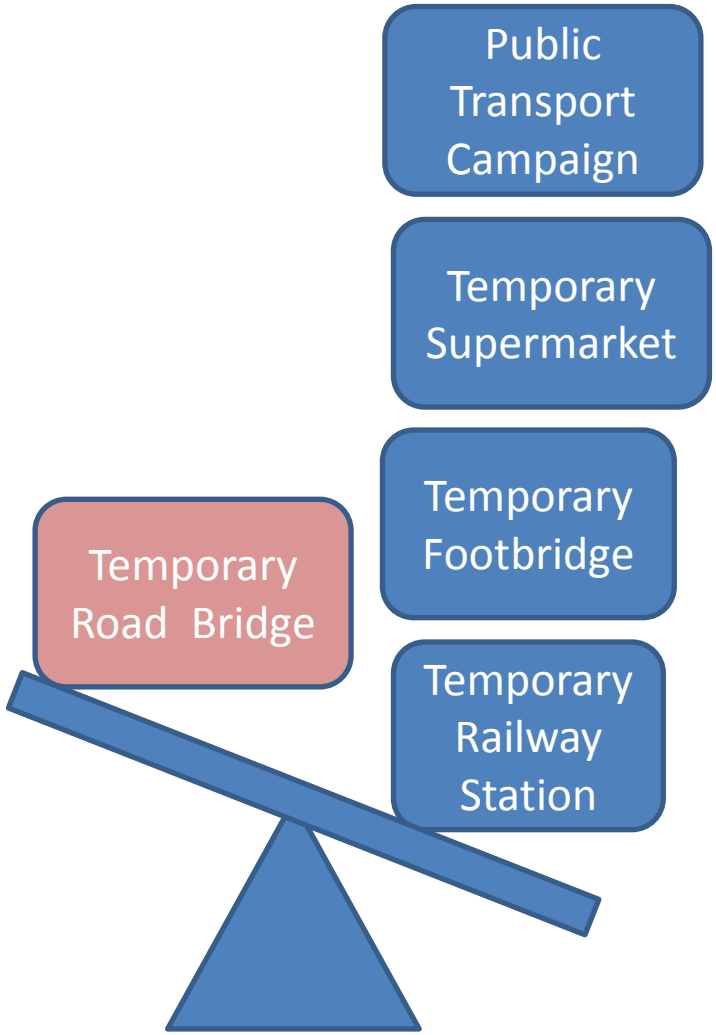
19 November 2009: River Derwent flooded Cockermouth and Workington, destroying or damaging every bridge, disconnecting the north and south side of Workington. 80 mile detour to cross the river by car.

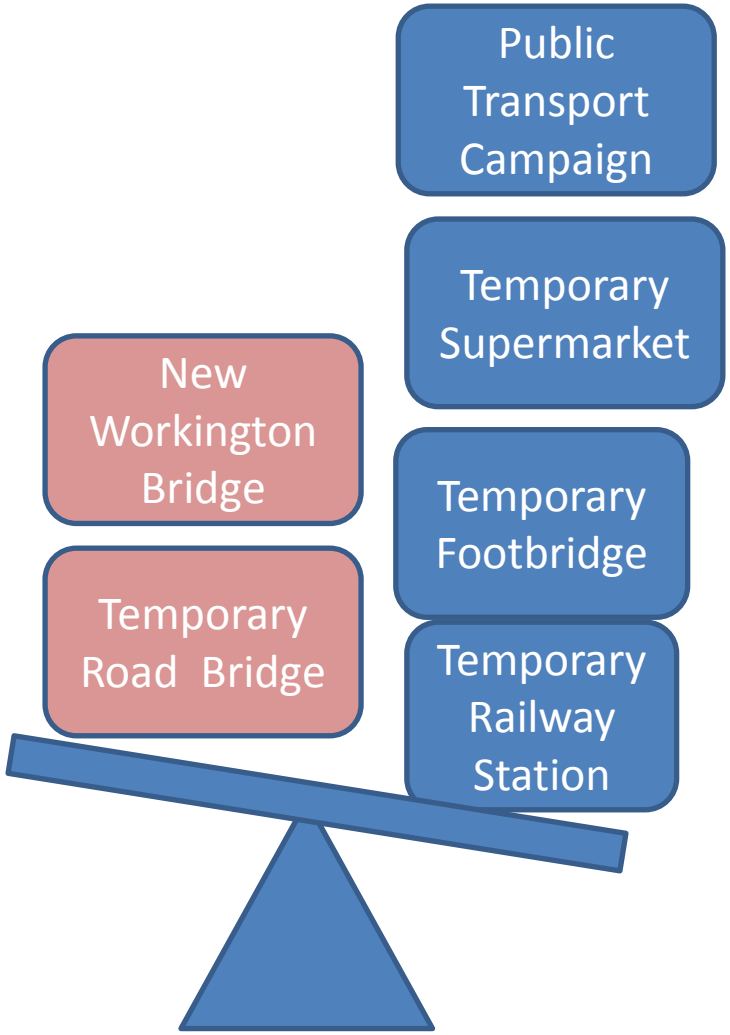



Temporary Footbridge
Temporary Railway Station


Temporary Supermarket
Temporary Footbridge
Temporary Railway Station

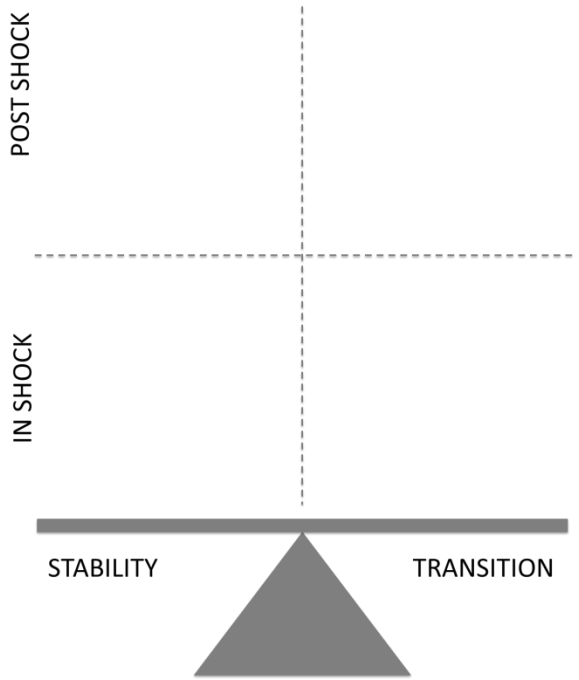

Temporary Supermarket
Temporary Footbridge
Temporary Road Bridge
Temporary Railway Station


Public Transport Campaign
Temporary Supermarket
Temporary Footbridge
Temporary Road Bridge
Temporary Railway Station


Public Transport Campaign
Temporary Supermarket
New Workington Bridge
Temporary Footbridge
Temporary Road Bridge
Temporary Railway Station

Activity 2: Tipping Points

Based on the shocks identified during Activity 1, to consider the immediate and longer-term, changes and response to these events. Map onto the 'tipping point' template



Agenda

1345 Introduction afternoon activities

1350 Newcastle flood case study (Kate Cochrane, Newcastle City Council)

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1430 Activity 2: ‘tipping points’

1500 Refreshment break

1510 Feedback from activities 1 and 2

1530 Open discussion – knowledge and practice gaps

1600 Close

Outputs and Outcomes

- Papers: at least three more are in preparation/being planned:
  - Castán Broto V; Glendinning S; Dewberry E; Walsh CL; Powell M. What can we learn about transitions for sustainability from infrastructure shocks? Technological Forecasting and Social Change, in press. http://dx.doi.org/10.1016/j.techfore.2013.08.002
  - Walsh CL; Glendinning S; Dawson RJ; England K; Martin M; Watkins CL; Wilson, R; Glenis V; McLoughlin A; Parker D. 2013. Collaborative platform to facilitate engineering decision-making. *Engineering Sustainability* 166, ES2, 98-107.
  - Walsh CL; Glendinning S; Dewberry E; Castán Broto V; Powell M. Learning from shocks to infrastructure systems. Journal of Critical Infrastructure Systems, in review.
  - Dewberry E; Castán Broto V; Glendinning S; Walsh CL; Powell M. 2013. Looking through the lens of shock: exploring opportunities for learning and innovation for adaptable infrastructure. Sustainable Innovation 18th International Conference 4-5 November 2013, Epson, UK.
  - Walsh CL; Glendinning S; Dewberry E; Castán Broto V; Powell M. 2013. Adaptive, integrated infrastructure: creating new learning in response to system shocks. Sustainable built environment for now and the future, 26-27 March 2013, Hanoi, Vietnam.
  - Castán Broto V; Dewberry E. 2013. Crisis and urban infrastructure in Spain: social learning, degrowth and socio-technical transitions, Urban Studies/Urban Studies Foundation Conference "Interrogating Urban Crisis: Governance, Contestation and Critique", 9th-11th September, De Monfort University, Leicester

ibuild
www.ibuild.ac.uk

WS1: The business of interdependence

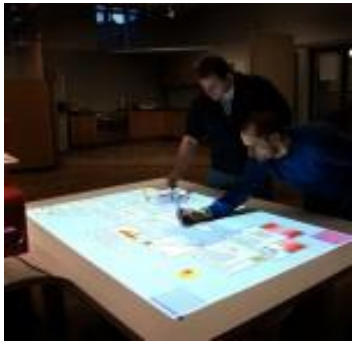
WS2: Re-thinking infrastructure value

WS3: Issues of scale in local delivery

WS4: Integrative case studies

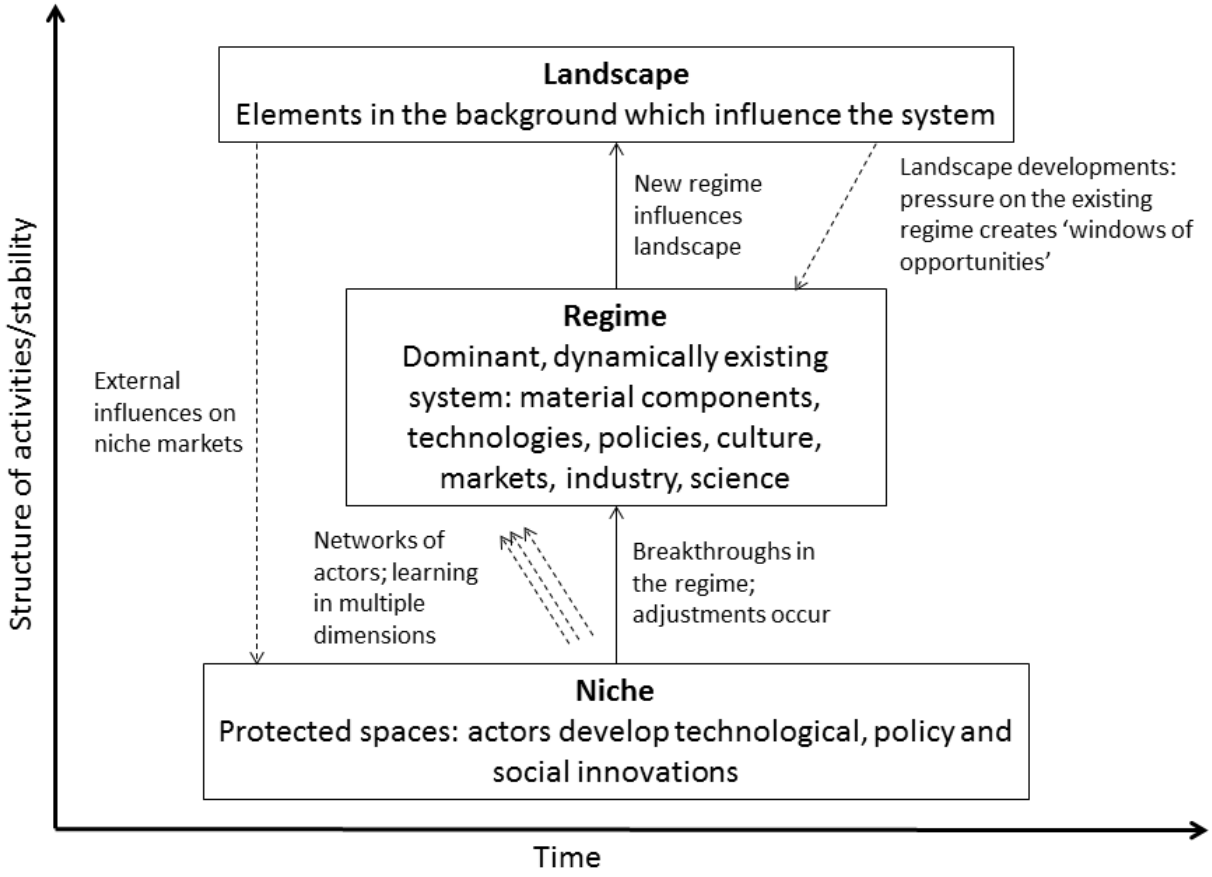
WS5: Co-creation phases

Newcastle University
UNIVERSITY OF BIRMINGHAM
UNIVERSITY OF LEEDS
EPSRC Engineering and Physical Sciences Research Council
E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL



Collaboration with Culture Lab

MLP in Engineering Research and Practise



Challenges

- Can we design for/anticipate shocks rather than being reactive to shocks?
- Evaluate the ‘blockage’ using MLP, determine what transition is required, and what shock might be expected, hence plan for transition?
- Can we anticipate landscape changes and niche innovations?
- How can we match issues of transition to sustainable infrastructure with user demands?
- Can we use shocks to consciously moderate user behaviour?