1.0 General Information

- Shelter Assessment Number *
- Database Number *
- Surveyor 1 Name *
- Surveyor 2 Name *
- Date of Survey * 25/10/2017
- Time at Start of Survey * 09:55

2.0 Site layout and location

- How many shelters located in the settlement? *
- How are shelters in the settlement arranged? *
- Is the shelter attached to another shelter or building? * Yes / No
- Photos of shelter (normal camera) * Select File
- Is the shelter surrounded by a compound wall? * Yes / No
- Which of the following options best describes the land where the site is located? *
  - Flat land
  - Manmade elevated land
  - Natural elevated land
  - Depression
  - River infill channel
  - Base of a hill
  - Other
- Take two photos of surrounding area (normal camera) * Select File
- Are there water bodies within 1km of the shelter? *
  - No
  - Lake or pond
  - River
  - Natural water channel (smaller than a river)
  - Manmade water channel/canal
  - Other
- Is there a perceptible breeze/airflow/draft outside the shelter? * Yes / No
- External temperature during visit (degrees celsius) *
- External relative humidity during visit (%) *

3.0 Shelter Form

- Which of the following best describes the plan shape of the shelter? *
- Maximum internal width (m) *
- Maximum internal length (m) *
- Maximum internal height (m) *
- Minimum internal height (m) *

4.0 Shelter Environment

- Internal temperature during visit (degrees celsius) *
- Internal relative humidity during visit (%) *
- Number of electric light fixtures in shelter *
- Is there a perceptible breeze/airflow/draft inside the shelter? * Yes / No
- Is there a chimney or flue of any kind? * Yes / No
- How smokey is it within the shelter? *

5.0 Foundation

- What is the source for information regarding the foundation of the shelter? *
- What are the foundation material(s)?
  - Concrete
  - Stone rubble
  - Burnt brick
  - Adobe/ mud bricks
  - Compacted earth
  - Lime
  - Dung
  - Mud
  - Unknown
  - Other
- Depth of foundation (feet) - skip if not known
- Width of foundation (feet) - skip if not known

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6.0 Base of Shelter

Height of internal floor level above external ground level (inches) (if there is no step, height = 0) *

Have any measures been taken to protect the base of the shelter against flooding? *

- Platform
- Plinth
- Plinth protection
- Raised floor
- Plaster on foundation walls
- Damp proof course
- Stilts
- None of the above
- Other

Base of shelter (normal camera) * Select File

Is there noticeable damage or deterioration to the base? * Yes | No | N/A

7.0 Flooring

What material is the floor? *

- Mud
- Dung
- Lime
- Straw
- Concrete
- Compacted earth
- Other

Is any of the following damage noticeable on the floor of the shelter? *

- None
- Damage due to dampness on floor
- Damage due to dampness at base of walls
- Cracking
- Other

Floor (normal camera) * Select File

Floor surface temperature (degrees celsius) *

8.0 Walls - external observations

Are there any columns? *

Is the lower wall made from a different material to the rest of the wall? * Yes | No

Lower wall material *

How high is the lower wall? (m) *

Wall material *

Wall mortar material

- None
- Mud
- Lime
- Straw
- Dung
- Cement
- Sand
- Not known
- Other

Wall plaster material

- None
- Mud
- Lime
- Straw
- Dung
- Cement
- Sand
- Not known
- Other

What is the source for information regarding wall plaster and mortar material? *

How are walls connected to the foundations? *

Photo of one external wall (HDR camera with colour chart) * Select File

Moisture content at base of wall (%) *

Moisture content at mid height of wall (%) *

Moisture content at top of wall (%) *

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Minimum roof overhang over external wall (m) *

Maximum roof overhang over external wall (m) *

Is there a ring beam connecting external walls? * Yes No

Are there any gaps in the walls due to construction defects? * Yes No

What proportion of external wall plaster has been damaged? *

What proportion of wall structure is damaged or deteriorated? *

What proportion of external wall plaster shows cracking? *

What proportion of wall structure shows cracking? *

What extent of cracking is typically seen? *

What proportion of walls are tilting out of plane or bulging? *

What do you think might be the cause of the cracking/ damage/ deterioration/ bulging/ tilting *

Foundation settlement
Other structural movement
Construction defect
Flooding
Rain
Unknown
Other

Photos of damage, cracking and tilting or bulging (normal camera) * Select File

9.0 Walls - internal observations

How many wall surfaces are there? Complete the next set of questions for each wall surface *

Wall information 0 Items

9.1 Internal wall information

Wall number *

Direction that outside of wall faces *

Wall surface temperature (degrees celsius) *

Photo of wall (HDR camera with colour chart) * Select File

Maximum height of wall (m) *

Length of wall (m) *

Wall thickness (inches) *

9.1 Doors

Number of doors * 1

Height of door (m) *

Width of door (m) *

Minimum distance of door to end of wall (m) *

Do the doors have lintels? * Yes No

Material of door *

What security measures are in place for doors? *

Pad lock
Bolt
Other type of lock
Security bars
None
Other

9.2 Windows

Number of ventilation openings * 1

Minimum distance of ventilation to end of wall (m) *

Total width of ventilation (m) *

Distance from floor to ventilation cill (m) *

Distance from floor to ventilation lintel (m) *

Number of window openings *

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10.0 Roof

Roof type *

Roof angle (degrees) *

Does the roof include roof drainage systems? * Yes No

What roof drainage systems are present on the shelter? *
- Water spouts
- Gutter
- Downtake pipes
- Ground level drainage channels
- Drainage slope on roof
- Other

Roof Drainage Photos * Select File

Material of main roof structure *

Material of secondary roof structure *

Roof structure photo * Select File

How is the roof structure connected to the wall? *

Roof to wall connection photo * Select File

Roof covering *
- Plastic
- Chicks
- Mud
- Lime
- Metal sheets
- Roof tiles
- Thatch / Grass
- Other

How is the roof covering tied to the roof structure? *
- None
- Wire
- String/rope
- Nails
- Screws
- J-hooks
- Other

Photo of roof covering * Select File

Is there any damage to the roof structure? *
- Damage at connection of roof to wall structure
- Damage to roof overhang
- Timber/bamboo rot
- Timber/bamboo insect attack
- Steel rusting
- None
- Other

Photo of roof structure damage * Select File

Is there any damage to the roof covering? *
- Holes/gaps in roof covering
- None
- Other

Photo of roof covering damage * Select File

Roof surface temperature (degrees celsius) *

11.0 Other Observations

Enter any other significant observations about the shelter not covered in the questions above

Photographs of any significant observations Select File

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1.0 General Information

Shelter Assessment Number: *	
Shelter Database Number: *	
Surveyor 1 Name: *	
Surveyor 2 Name: *	
Date of Survey *	24/10/2017
Time at Start of Survey *	17:58
Shelter Implementing Partner *	
Shelter Donor Agency *	
District and Taluka/Tehsil *	
Union Council *	
Village Name *	
Weather conditions during survey: *	
Name of Interviewee	
Has the interviewee signed the data consent form? *	Yes / No
Sex of interviewee *	
Source of income	Farm labourer Unskilled construction labourer Skilled construction labourer Crafts Other
Monthly average income (PKR)	
Distance to livelihood (Km)	
Number of people living in shelter *	

2.0 General Shelter Information

Who built the shelter? *	Community Contractor/skilled worker Implementing partner Self-built Other
What was the beneficiary contribution to the shelter? *	Salvageable material Materials Unskilled labour Skilled labour Cash contribution Other
Year of construction of shelter *	
For which flood year was the shelter built in response to? *	
How deep was the flood that year at the shelter? (feet) *	
How long did it take the flood water to drain away? (weeks) *	
Has the current shelter been flooded since it was constructed? *	Yes / No / N/A
When your current shelter was flooded how deep was the water? *	
If your current shelter has flooded what type of damage occured? *	Damage to floor or base of shelter Water damage to walls Wall collapse Minor roof damage Roof collapse Damage to doors/windows Other
Has the area near by been flooded since the current shelter was constructed? *	Yes / No / N/A
In the last ten years, how many times have you been affected by floods? *	
Has your current shelter been damaged by heavy rain? *	Yes / No
What type of damage did the rain cause? *	No major damage Damage to floor or base of shelter Damage to walls Wall collapse Minor roof damage Roof collapse Damage to doors/windows Other
When did the rain damage last happen? *	
In the last 5 years how many times has rainfall damaged your shelter? *	

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4.0 Shelter Environment

4.1 Comfort

In your opinion, right now, is the temperature in the shelter: *

During SUMMER DAYS, do you find the temperature inside the shelter to be: *

During SUMMER DAYS, do you generally find it more comfortable inside or outside the shelter? *

During SUMMER DAYS, what is the main reason affecting your comfort? *

During SUMMER NIGHTS, do you find the temperature inside the shelter to be: *

During SUMMER NIGHTS, do you generally find it more comfortable inside or outside the shelter? *

During SUMMER NIGHTS, what is the main reason affecting your comfort? *

During WINTER DAYS, do you find the temperature inside the shelter to be: *

During WINTER DAYS, do you generally find it more comfortable inside or outside the shelter? *

During WINTER DAYS, what is the main reason affecting your comfort? *

During WINTER NIGHTS, do you find the temperature inside the shelter to be: *

During WINTER NIGHTS, do you generally find it more comfortable inside or outside the shelter? *

During WINTER NIGHTS, what is the main reason affecting your comfort? *

In which of the following seasons do you sleep outside or on the terrace of the shelter? *

- Summer
- Monsoon
- Winter
- Never sleep outside
- Other

4.2 Space

Which of the following activities do you use the shelter for? *

- Cooking
- Working
- Studying/reading
- Storage
- Sleeping
- Sitting
- Sewing/handicrafts
- Family gathering
- Keeping cattle/animals
- Eating
- Worship
- Other

Which of the following activities would you like to use the shelter for, that you do not already? *

- None
- Cooking
- Working
- Studying/reading
- Storage
- Sleeping
- Sitting
- Sewing/handicrafts
- Family gathering
- Keeping cattle/animals
- Eating
- Worship
- Other

Why are you not able to use your shelter for these activities? *

- Not enough space
- Not enough daylight
- Not enough electric light
- Not enough ventilations
- Other

What sources of light are used after dark? *

- Electric lights
- Kerosene Lanterns
- Battery Lantern
- Candles
- Solar Lights
- None
- Other

On average how much do you spend per month on lighting (PKR)? *

ARUP

4.3 Protection

Do you feel safe in this shelter? *	Yes / No
Do you feel your possessions are safe in this shelter? *	Yes / No
In your opinion, for which of the following reasons is safety lacking in this shelter? *	No doors No windows No locks on doors and windows Walls can be broken through Roof can be broken through Too close to other shelters/houses Other
Have there been any break-ins since moving in? *	Yes / No
Do you feel you have sufficient privacy in this shelter? *	Yes / No
In your opinion, for which of the following reasons is privacy lacking in this shelter? *	Visibility through openings Sound transmission to outside Proximity to other shelters Other

4.4 Health and Safety

When do you cook or have an open fire in your shelter? *	
When was the last time you cooked or had an open fire in the shelter? *	
While cooking, is there visible smoke in the shelter? *	Yes / No
While cooking, does smoke cause you discomfort such as coughing? *	Yes / No
While cooking, is the amount of smoke in the shelter acceptable? *	Yes / No
Do you use mosquito bed nets? *	
Since moving to this shelter, has the occurrence of malaria and dengue in your family: *	

5.0 Roof Information

During rainfall, is there any leakage from the roof? *	
During high winds or storms, has the roof ever lifted off? *	Yes / No
Is the roof accessed for any reason? *	Yes / No
How is the roof accessed? *	No access Ladder Stairs Other
How often is the roof accessed? *	Daily Weekly Monthly Yearly During flooding Other
For which of the following activities is the roof accessed? *	During floods To make repairs Cooking Working Studying/reading Storage Sleeping Sitting Sewing/handicrafts Family gathering Keeping cattle/animals Eating Other

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6.0 Construction Process

Was your household involved during construction? *	Yes / No
What part of shelter construction were you involved in? *	
During shelter construction, would you have liked to be more or less involved? *	
Was anyone injured during construction? *	Yes / No
Were any electric or mechanical tools used? (Answer no if only hand tools were used) *	Yes / No
Did you have any concerns over the quality of materials used in construction? *	Yes / No
Which materials did you have concerns about? *	Timber Iron girder/ steel Bamboo Mud Adobe/ Mud bricks Fired bricks Lime Plastic sheet Chicks Other Other
Were any of the following materials left over during construction? *	None Mud Timber Bamboo Brick Cement Steel Other

7.0 Shelter Modifications

7.1 Repairs and maintenance

Have you repaired your shelter? *	Yes / No
How many times have you had to repair your shelter? *	
Which of the following parts of the shelter have needed repair? *	Walls Roof Doors and windows Flooring Other
How easy is it for you to repair/maintain the shelter? *	
When repairs are needed, who normally carries them out? *	
Are local materials sufficient for repairs and maintenance? *	Yes / No
Why are they not sufficient? *	Not available on local market Quality is too low Other
In the last year, how much have you spent on repairs and maintenance? (PKR) *	

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7.2 Modifications and extensions

Have you made any modifications to the shelter? * Yes / No

How many times has the shelter been modified? *

How were the modifications paid for? *

- Self-help
- Assistance from an NGO
- Assistance from government
- Other

How much have you spent on modifications?

What was the purpose of modifying the shelter? *

- To add a toilet
- To add a cooking area
- To add a verandah
- To add a storage area
- Other additional space use
- Additional window or door openings
- Adding door or window covers/shutters
- Other

7.3 Local Supply Chain

Can you repair or modify the shelter using locally available tools? * Yes / No

Was this training sufficient? * Yes / No

Were you provided training for construction, repair or maintenance? *

Where are materials normally procured from? *

- The surroundings
- Market
- Neighbours
- NGO
- Other

For the following materials, indicate how far away they came from approximately?

Wall material (km)

Roof structure material (km)

Roof covering material (km)

Door/window material (km)

Flooring material (km)

For the following materials, is the route taken to source materials easily accessible?

Wall material * Yes / No

Roof structure material * Yes / No

Roof covering material * Yes / No

Door/window material * Yes / No

Flooring material * Yes / No

What mode of transport was used to transport material to the shelter site? *

- On foot
- Handcart
- Animal drawn cart
- Motorbike
- Motorcyle cart (Chin Qui)
- Tractor trolly
- Truck
- Bus
- Other

Which materials in your shelter could you re-use? *

- Mud
- Timber/wood
- Bamboo
- Brick
- Cement
- Steel
- None
- Other

Are you able to sell any of the salvaged material? * Yes / No

8.0 Customer satisfaction

Are you satisfied with your shelter?	*	Yes / No
How does this shelter compare to where you lived before the floods?	*	
What type of shelter did you have before?	*	Adobe Burnt Brick Concrete blocks Loh Kaat Mud Mud with Lime Other
Do you know of anyone who has copied this shelter design or parts of this shelter design?	*	Yes / No
If yes, which parts of the design were copied?	*	None Raised platform Raised floor Pukka lower wall Lime Roof overhang Other
Why did they copy them?	*	
What reasons prevent people you know from copying your shelter design?	*	Cost Material availability Time Construction skills Knowledge Not interested Don't know Other
If you had to construct a new shelter, which of the following materials would you rather use?	*	Adobe Burnt Brick Concrete blocks Loh Kaat Mud Mud with Lime Other
What would you improve about your shelter?	*	

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Local partner evaluation form

Team management/leadership

1 It would be beneficial for the project to be led locally by a person with prior research experience in Shelter and of managing teams. Experience of Monitoring and evaluation would also be beneficial. Please score 1 - 5.

Shelter assessments

2 Shelter assessments would benefit from being conducted by someone with technical construction knowledge such as an engineer or engineering student. If engineering students are engaged they should be in the 3rd or final year of graduation. It is important that they are able to understand technical terminology and can identify building components. Please score 1 - 5

Beneficiary surveys and stakeholder consultations

3 Beneficiary surveys and stakeholder consultations should ideally be conducted by people with experience of user consultations and or participatory planning. Please score 1 - 5.

Organisational Experience

4 Prior experience in the field of shelter and flooding. Please score 1-5.

5 Prior experience working with IOM

Data gathering

The local partner must credibly demonstrate how they will conduct up to 1000 assessments in 12 weeks within Sindh province.

6 Does the local partner have a presence and or good access to Sindh province? (Please score 1-15)

7 Methodology (Please score 1-5).

8 Staff resourcing (Please score 1-5).

9 Quality assurance (Please score 1-5).

Testing facilities

10 Access to credible testing facilities for material testing within suitable distance of the study area to enable transportation of limited samples.

11 Labs should have experience of testing vernacular construction (mud, loh kat, adobe)

Written English

12 Local partners will need to be able to produce reports in clear written English. The written English of the proposal can be used as an indicator (please score 1-5)

Cost effectiveness

13 Local partners will need to determine cost effective methods for gathering the data. (30 points if less than £14,000 (Proposal budget for data gathering). Subtract one point for every £1,000 above the budget)

Electronic data capture - monitoring

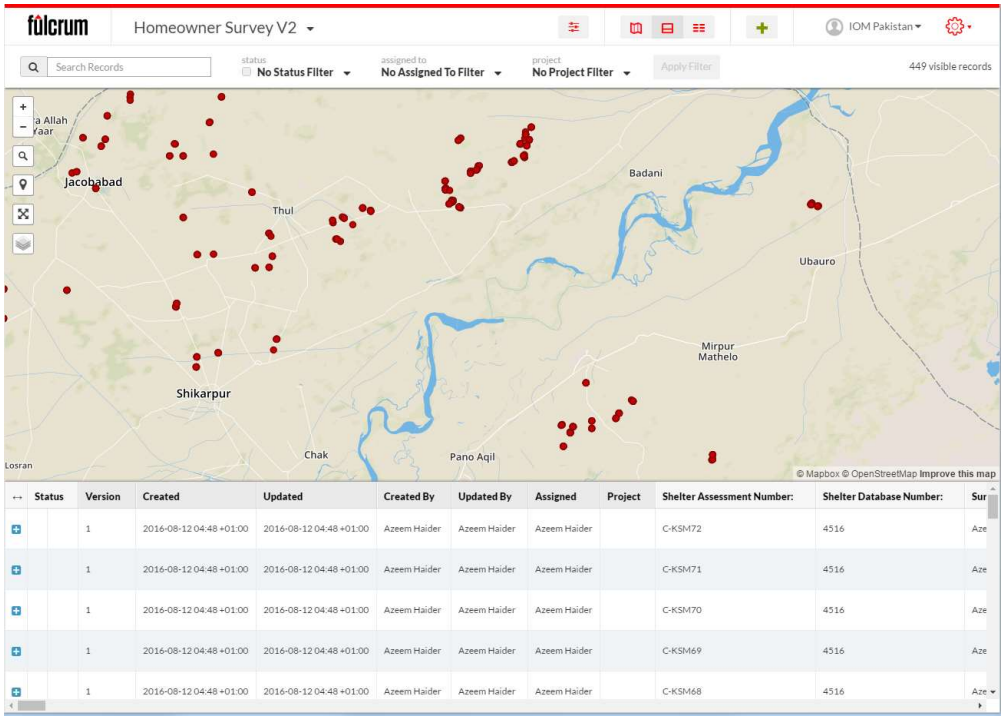

Figure 3 – Electronic data capture online dashboard

Field equipment

	**Laser Distance Measure** **To enable one person to measure distances quickly** **+/- 3 millimetres up to ranges of 15 metres**
	Digital infra-red thermometer For measuring surface temperature of walls, floor and ceiling Weight: 132g Emissivity: 0.95 preset Resolution: 0.1¡æ or 0.1F Spectral response: 8-14 um Distance to spot size: 12 : 1 Accuracy: ±1.5% or ±1.5¡æ Temperature range: -50 to 380¡æ(-58°F~716°F) Repeatability: 1% of reading or 1¡æ Operating humidity: 10 ~ 95 % R.H. Response time: 500mSec, 95% response Dimensions: Approx. 155 * 100 * 45mm
	Compass To measure direction that walls face

	Moisture measurer To measure moisture content of walls
	**Therma-Hygrometer** **To measure air temperature and humidity** **range - temperature:** -20 to 70°C **range - humidity:** 0 to 100%rh **resolution - temperature:** 0.1°C/°F **resolution - humidity:** 0.1%rh **accuracy - temperature:** ±1°C ±1 digit ±0.4 °C over the range 10 to 40 °C otherwise ±1 °C **accuracy - humidity:** ±3% (20 to 80 %rh) **battery:** 3 x 1.5 volt AAA **battery life:** 10000 hours **sensor type:** temperature: silicone bandgap - humidity: capacitance polymer **display:** 12mm LCD **dimensions:** 25 x 56 x 128mm **weight:** 160 grams **case material:** ABS plastic with Biomaster anti-bacterial additive **country of manufacture:** United Kingdom **guarantee:** two years **measurement scale:** Celsius, Fahrenheit, %rh & dew point

Stakeholder consultation

Overview

Purpose: To gather data on Sustainability Key Criteria (Cost, Labour, Materials, embodied energy, durability, re-use)

Duration: Approximately 1hr

Who with: ideally you want to talk with two people - One should be a senior Shelter manager or similar who can provide a high level overview. The second should be someone more technical with more detailed knowledge of what happened on the ground. Ideally both will have been at the agency since at least 2012, ideally 2010.

Preparation: Email them to find out who is best placed to answer the questions before the interview. The questions in section 3 should be sent to them at the same time so they are prepared. Ask if they have evaluation reports or similar and if so ask to see them in advance of the meeting.

Key Topics that must be covered:

1. Cost
2. Labour
3. Materials
4. Durability
5. Re-use/recycle

Question Framework:

1. When discussing each topic you must follow the following question framework:
2. What was their strategy or plan
3. What were the key drivers and influences on the strategy
4. How did it go in practice
5. What were the key challenges
6. What were the lessons learnt, what would they do differently

Interview Introduction

- Explain the project and why we are meeting them.
- Purpose is to gather data on costs, materials, labour and implementation
- Explain that data is being gathered through a scientific approach
- Data will be used alongside other field data
- Get interviewee to introduce themselves - what is their role - how long have they worked there
- In which location did they work – get an overview of their programme

Questions

Cost

Open questions	Detailed questions
What in your opinion were the key drivers of shelter cost? How did cost influence your shelter design? Did you have a target cost for your shelter design? What were the key cost challenges? What were the key lessons learnt?	How much did one shelter cost? What was included and not included? Are you able to provide a cost overview of your shelter implementation programme? Did construction involve donated labour? - Aim is to understand 'True cost' accounting for sweat equity. Did construction involve donated materials? Are you able to provide break downs of costs for specific shelter designs (Materials, labour, overheads and other costs) To what extent were material costs impacted by inflation and market distortions during shelter implementation? What was the cost of the community contribution (time / material and cost) Variation of cost with location? Causes?

Labour

Open questions	Detailed questions
What type of labour did you use? What were the key drivers affecting labour What were the key issues you encountered? What were the key lessons learnt?	Contractor vs self build vs community build vs shelter agency direct implementation vs mixed Average daily wages? What is the lowest daily wage of a construction worker? (in PKR)

	What equipment was used during construction? How many people would it take to construct one shelter? How long did a shelter typically take to construct? Did you come across any issues with child labour? If so how did you respond to them?

Materials

Open questions	Detailed questions
Which materials did you use? What were the key drivers affecting material choices? How were materials procured? What were the key issues you encountered? What were the key lessons learnt?	Which were your preferred construction materials? What influenced these choices? Which materials would you avoid? And why? Were there issues procuring materials? If so please describe what the issues were and the impact they had How were materials purchased? (Bulk buy/stock piled / community bought/ etc…..) Where were materials typically procured from? How far from site? How were materials typically transported to site? Were there issues with accessibility? Can you estimate what proportion of materials are wasted during construction?

Reuse

Open questions	Detailed questions

Was there a strategy for reuse or recycling of material How did sustainability influence the programme? What were the key issues you encountered? What were the key lessons learnt?	Were materials from damaged shelters re-used or recycled? Did you consider sustainability and environmental impact in your shelter programme? If so please describe how it is considered and what impact it has on the shelter design? How was sustainability integrated in to the implementation program? Was recyclability/ reusability considered as part of the shelter design? (recycled = turned into something else, reuse = reused in current or similar state) If any of the materials are recyclable, how far away is the nearest recycling facility? Is there a sustainable and safe disposal site for waste material that is not reusable? Is the appropriate recycling technology available locally? Which materials used in shelter are reusable? Which materials used in shelter are recyclable?

Maintenance/durability

Open questions	Detailed questions
How was maintenance considered in your shelter design? What were the key challenges for durability? What are the lessons learnt?	Did you provide the community with training/ guidance on how and when to undertake maintenance How long is the shelter intended to last for? Do you think it will be achieved? Is the expectation of the shelter design to be resilience against future flood events?

	What steps are taken to improve durability of the design? Did you treat timber or bamboo? What treatment is available? Do you have any data on ongoing maintenance costs?

Close

For you what were the overriding drivers that influenced your shelter design and implementation programme?

What were 3 key learning points?

What would you do differently next time?

We are going to conduct a supply chain analysis in the next phase. In your opinion what is the best way to analyse the cost of materials and labour?