The costs and impacts of the winter 2013 to 2014 floods

SC140025 Annex 1 – Method Statements
Section 5
Residential Properties

National

Number of residential properties affected: 8,342

Select best estimate of damages based on source, robustness of data, clearly economic or financial

Estimated damages: £276,000,000 ABI data for 23 December 2013 to 28 February 2014

Adjustments and revisions required to obtain the best economic estimate of damages

Estimated damages for coastal surge (early December 2013) using extrapolation based on insurance claim per residential property impacted by fluvial/groundwater flooding

Extrapolation using average insurance claim per property during the period 23 December 2013 to 28 February 2014 of £23,000

where financial damage estimate used

Remove VAT (at 20%) from financial estimates

Adjust for 75% of damages covered by inventory items

Adjust for residual life (assume 50% depreciation)

Adjusted figure: £130,400,000 Average claim based on 6,296 properties flooded (fluvial/groundwater): £23,000

Coastal flood damages: £95,000,000 Average claim based on 4,169 properties flooded (coastal): £23,000 per claim

Total claims (fluvial, groundwater & coastal): £240,000,000

Adjust for under-insurance, assumed 25% for households

An average percentage of under-insurance is used for England and Wales as a whole, with no specific data found for individual locations

National estimate (to 2 significant figures): £320,000,000

Economic damage estimate for fluvial, groundwater and coastal floods based on adjusted claims data

Overall best estimate: £320,000,000

Local

Duration of flooding

Select best estimate of damages
Where more than one figure available, based on source and robustness of data

Not taken forward as the best estimate

Type of flood (coastal, fluvial, pluvial, groundwater)

Number of residential properties affected:
- 10,465 (for 72 LLFAs)
- Fluvial/Groundwater: 6,296 (for 7 LLFAs)
- Coastal: 4,169

Estimated damages as £

Government funding for repairs as £ (grants, etc.)
Moderate/good data - repair and renew grant for (42 LLFAs)

Assumptions
Uncertainty Rating

- Low
- Low-moderate
- Moderate
- Moderate-high
- High
Section 6

Businesses

National

Number of businesses affected: 4,897 (data from DCLG)

Select best estimate of damages
Based on source, robustness of data, clearly economic (or financial)

Estimated damages: £149,000,000
ABI data for 23 December 2013 to 28 February 2014

Estimated damages for coastal surge (early December 2013) using extrapolation based on insurance claim per business property (impacted by fluvial flooding)
Extrapolation using average insurance claim per property during the period 23 December 2013 to 28 February 2014 of £82,000

Adjustments and revisions required to obtain BEST economic estimate of damages

- Remove VAT (at 20%) from financial estimates
- Adjust for 45% of damages covered by inventory items
- Adjust for residual life (assume 50% depreciation)
- Adjust for 55% of damages covered by non-inventory items
- Coastal flood damages: £160,000,000
Average claim based on 1,964 properties flooded (coastal) and £82,000 per claim
- Adjust for under-insurance, assumed 5% for businesses
- Assumed that 95% of businesses will have insurance
- National estimate (to 2 significant figures): £270,000,000

Local

Duration of flooding

Type of flood (coastal, fluvial, pluvial, groundwater)

Number of businesses affected: 3,139 (for 66 LLFAs)
Limited data (for 7 LLFAs)
Fluvial: 1,175
Coastal: 1,964

Estimated damages as f.
Government funding for repairs as E (grants, etc.)
Moderate/good data - business support grant (for 39 LLFAs)
Income lost through business closure
Very limited data (2 LLFAs)

Assumptions

Uncertainty Rating
- Low
- Low-moderate
- Moderate
- Moderate-high
- High
Section 7
Temporary accommodation

National
- Number of people evacuated: 7,000 still out of their properties in August 2014
- Number of households for which insurance companies have arranged temporary accommodation: 2,900 (from the ABI)
- Select best estimate of costs based on source, robustness of data, clearly economic (or financial)
- Estimated costs: £30,000,000 (ABI data for 23 December 2013 to 28 February 2014)

Duration of homelessness

Adjusted costs for coastal surge (early December 2013) using extrapolation based on costs for temporary accommodation per household
- Extrapolation using average cost per household during the period 23 December 2013 to 28 February 2014 of £10,000
- Assumed to represent an economic cost
- Number of coastal households requiring temporary accommodation: 1,920

Coastal flood temporary accommodation costs: £20,000,000
- Average claim based on 1,920 households requiring temporary accommodation (coastal) and £10,000 per claim

Sum the costs of temporary accommodation for the period 23 December 2013 to 28 February 2014 (fluvial/groundwater) and early December 2013 (coastal) to give a total cost estimate

National costs (to 2 significant figures): £50,000,000
- Economic cost estimate of temporary accommodation for fluvial and coastal floods based on adjusted claims data
- Overall best estimate: £50,000,000

Adjustments and revisions required to obtain BEST economic estimate of damages

Duration of flooding
- Type of flood (coastal, fluvial, pluvial, groundwater)

Local
- Number of people received at rest centres: 758
- Duration of homelessness
- No data obtained
- Estimated costs as £ Very limited data (2 LLFAs only)

Select best estimate of damages
- Where more than one figure available, based on source and robustness of data
- Not taken forward as the best estimate

Assumptions
- Data

Uncertainty Rating
- Low
- Low-moderate
- Moderate
- Moderate-high
- High
Section 8
Motor vehicles, boats and caravans

National

Number of insurance claims for vehicles: 5,400 (ABI data for 23 December 2013 to 28 February 2014 - mainly fluvial/groundwater flooding)
8,976 (extrapolation of ABI data to include fluvial/groundwater and coastal flooding)

Select best estimate of damages
Based on source, robustness of data, clearly economic (or financial)

Estimated damages: £22,000,000
ABI data for 23 December 2013 to 28 February 2014

Adjustments and revisions required to obtain best economic estimate of damages

Estimated damages for coastal surge (early December 2013) using extrapolation based on the proportion of residential properties impacted by fluvial/groundwater flooding impacts during the period 23 December 2013 to 28 February 2014 and coastal flooding.

Extrapolation using the proportion of residential properties impacted by fluvial/groundwater flooding (60%) and coastal flooding (40%) (assumed to apply to vehicles damaged by flooding)

Assumed to represent an economic cost

Estimated damages to vehicles: £22,000,000
Refers to insurance claims between the period 23 December 2013 and 28 February 2014 (mainly fluvial/groundwater flooding)

National damages (to 2 significant figures): £37,000,000
Economic damage estimate for fluvial/groundwater floods (based on claims data) and extrapolated to include coastal floods

Overall best estimate: £37,000,000

Select best estimate of damages
Where more than one figure available, based on source and robustness of data

Not taken forward as the best estimate

Estimated damages as £1 Very limited data (for 1 LLFA)

Assumptions

Data

Uncertainty Rating
Low
Low-moderate
Moderate
Moderate-high
High

Local

Duration of flooding

Type of flood (coastal, fluvial, pluvial, groundwater)

Estimated damages as £1 Very limited data (for 1 LLFA)
Section 9
Local Authorities & local government infrastructure

National

- Select best estimate of damages
  - Based on source, robustness of data, clearly economic (or financial)
- Not taken forward as the best estimate

Adjustments and revisions required to obtain best economic estimate of damages

- Estimated damages using extrapolation based on number of assets affected by flooding
  - Limited data, means extrapolation of the local data has not been undertaken
- Where financial damage estimate used
  - Not all estimates are clear whether they are financial or economic
  - Adjustments have been made on the basis that damages are most likely to be financial

Local impacts:
- Direct damages (to 2 significant figures): £58,000,000
- Overall best estimate: £58,000,000

Local

- Numbers of staff hours involved overtime
  - Limited data
- Type of flood (coastal, fluvial, pluvial, groundwater)
- Number of assets damaged
  - Limited flood outline data
- Duration of flood

- Government funding received by the Local Authorities for recovery work in £ (grants, etc.)
- Money spent by the council in £ (including damage to LA assets)
  - Moderate/good data (for 56 LLFAs)
  - Moderate data (for 25 LLFAs)

Assumptions
- Uncertainty Rating
  - Low
  - Low-moderate
  - Moderate
  - Moderate-high
  - High
Section 11
Flood risk infrastructure

**National**

- Number of shifts (8 hr) worked by Environment Agency staff involved in flood response: 34,507
- Number of flood defence repair projects allocated funding: 890 with 844 relating to repair damages flood defences
- Cost of undertaking repairs to flood risk management infrastructure in England: £137,000,000,000 (information provided by the Environment Agency)
- Cost of restoring coastal defences in Wales: £11,400,000 (financial cost) (Natural Resources Wales, 2014)

**Estimations and revisions required to obtain BEST economic estimate of damages**

- Estimated damages using extrapolation based on damages per flood infrastructure asset
  - Limited data on number/length of assets damaged means extrapolation has not been possible
- Cost of undertaking repairs to flood risk management infrastructure in England considered to represent an economic cost
- Cost of restoring coastal defences in Wales relate to reinstatement of infrastructure to pre-storm conditions rather than betterment to provide improved standards or protection. Therefore adjustment of the figures to account for betterment is not necessary
- Economic estimate of total costs of repairs to flood risk infrastructure in England and Wales
  - Sum of economic costs for England and Wales
- National damages: England: £137,000,000,000
  - Wales: £9,500,000
- Overall best estimate (England and Wales): £146,500,000,000

**Local**

- Types of flood prevention/remedial works undertaken
- Type of flood (coastal, fluvial, pluvial, groundwater)
- Number, length, type of flood infrastructure affected
  - Very limited data (for 3 LERAs)
- Duration of flooding

- Select best estimate of damages
  - Where more than one figure available, based on source and robustness of data
  - Includes Local Authority data
  - Estimated damages/repair costs as £
  - Limited data (for 6 LERAs)
  - Costs to Internal Drainage Boards (IDBs) as £
  - Includes Environment Agency data
  - Government grants received to undertake repairs as £
  - Includes Environment Agency data
- Not taken forward as the best estimate

***Uncertainty Rating***
- Low
- Low-moderate
- Moderate
- Moderate-high
- High
Section 12
Utilities - Energy

National

- Number of properties in which power/water supply was affected: 1 million consumers had disruptions to electricity supply
- Estimated damages/repair costs as £: No data obtained
- Estimated impacts of service disruption as £: No data obtained
- Select best estimate of damages: Based on source, robustness of data, clearly economic (or financial)
- No national damages: No national estimates available

Adjustments and revisions required to obtain BEST economic estimate of damages

- Estimated welfare impacts using extrapolation based on number of consumers that experienced power supply disruption (data from electricity DNOs)
- Number of customers affected by power outages (flood incidents only): East of England/East Midlands: 10,341, North East: 3,061, North West: 2,100, South East/London: 10,234, West Midlands/South West/Wales: 2,584, Total: 28,321
- Assuming 4.5% of customers impacted by outages caused by flooding (based on data for the East of England/East Midlands)

- Welfare costs caused by disruption estimated to be £3 per hour: Based on payments for more than 18 hours disruption of £54 for domestic customers. Used as a surrogate for the impacts caused by power outage, rather than any estimate of compensation due (in addition, this compensation payment is for normal weather conditions)

- Estimate of welfare costs for flood related incidents: Based on number of customers affected, mean number of hours disrupted and disruption costs (£3/hr)
- Estimating the average (median) number of hours each customer was affected: East of England/East Midlands: 11 hours, North East: 2 hours, North West: 4 hours, South East/London: 12 hours, West Midlands/South West/Wales: 3 hours

- Operational costs (in this case) are considered to represent an economic cost and have not been adjusted
- Sum across all LLFAs affected
- Very limited data with estimates for 1 LLFA
- Local impacts (to 2 significant figures):
  - Damages/operational costs: £644,000
  - Welfare/disruption costs: £780,000
  - Overall best estimate: £820,000

Local

- Number of properties in which power supply was affected: 124,450 properties had power outages (local level data), 632,247 consumers had disruptions to electricity supply during the 2013/14 winter period

- Number/length of utility assets/infrastructure affected: No data
- Duration of flooding/service impact: 15,572 affected by power outages for more than 48 hours (data from electricity DNOs), Not specific to flooding
- Estimated damages/repair costs as £: No data
- Estimated impacts of service disruption as £: No data
- Type of flood (coastal, fluvial, pluvial, groundwater)

Uncertainty Rating
- Low
- Low-moderate
- Moderate
- Moderate-high
- High
Section 21
Agriculture

National

- Number of assets affected: No data obtained
- Estimated damages: £18,300,000 (from ADAS, 2014)
- Loss of production as £ No data obtained
- Forestry Commission damages as £

Area of land affected:
- England - 44,400 ha (from ADAS, 2014)
- Wales - 500 ha (range of 360 to 640 ha) (from Natural Resources Wales, 2014)

Select best estimate of damages
- Based on source, robustness of data, clearly economic (or financial)

Government grants received to undertake repairs as £ Defra grant funding

Estimated impacts of flooding during the 2013/14 winter on agriculture in England:
£18,300,000 (£2014 prices)

- The costs by impact type are as follows:
  - Arable: £6,900,000 (range: £5,500,000 to £8,200,000)
  - Grassland: £1,700,000 (range: £1,400,000 to £2,000,000)
  - Livestock: £4,100,000 (range: £2,100,000 to £6,200,000)
  - Other: £5,600,000 (range: £2,800,000 to £8,400,000)

Total: £18,300,000 (£11,900,000 to £24,800,000)

These are assumed to represent economic costs and have therefore not been adjusted

Estimated impact of flooding to the Forestry Commission in England:
£180,000

Considered to represent an economic cost

Sum across England and Wales
- Sum damages to agricultural land for England and Wales to provide a total estimate

National impacts (to 2 significant figures):
Cost of flooding for agriculture (England and Wales): £19,000,000

Overall best estimate: £19,000,000

Adjustments and revisions required to obtain BEST economic estimate of damages

Estimated damages using extrapolation based on damages per ha of land

Best estimate of damages to agricultural land in Wales based on area of land affected (500 ha) and damages per hectare of land (£425/ha)

- Based on data from ADAS (2014)

Estimate of the average cost of flooding during the 2013/14 winter per hectare of agricultural land in England:
£425/ha (£2014 prices)

Local

Duration of flooding
- Select best estimate of damages
  - Where more than one figure available, based on source and robustness of data
  - Not taken forward as the best estimate

Type of flood (coastal, fluvial, pluvial, groundwater)

Number of assets affected
- Limited anecdotal evidence

Area of land affected:
- England - 46,318 ha
- Wales - no local data obtained

Estimated damages as £
- Limited data (for 3 LLFAs)
- Loss of production as £ No data obtained

Government grants received to undertake repairs as £
- Moderate data obtained - 26 LLFAs (Farming Recovery Fund)
Section 23

Heritage sites

National
- Number and type of heritage sites affected: No data obtained
- Estimated damages to features and their services: No data obtained
- Impact on visitors, trade and associated value added as £: No data obtained
- Government grants received to undertake repairs as £: No data obtained

Select best estimate of damages: No data obtained

No national (Top-down) estimate available

Adjustments and revisions required to obtain BEST economic estimate of damages
- Estimated damages using extrapolation based on damages per heritage site: An average damage cost per asset of £290,000 derived from local data has been used to estimate damages to assets for which no specific cost information is available
- Remove VAT (at 20%) from financial estimates: Not all estimates are clear whether they are financial or economic. Adjustments have been made on the basis that damages are most likely to be financial
- Adjust for 45% of damages covered by inventory items: Where insurance information is available
- Adjust for residual life (assume 50% depreciation)
- Adjust for 55% of damages covered by non-inventory items: Where insurance information is available
- Estimated economic cost of damages across all LLFAs: £2,700,000
- Estimated total cost of damages to heritage assets: Extrapolation to assets for which no cost information is available based on an average damage cost of £290,000 per asset (from local data)
- Local damages to heritage assets: £7,400,000

Overall best estimate: £7,400,000

Local
- Duration of flooding
- Type of flood (coastal, fluvial, pluvial, groundwater)
- Number and type of heritage sites affected: 49 (includes flood outline data)
- Estimated damages to features and their services as £: Limited data for 8 LLFAs
- Impact on visitors, trade and associated value added as £: No data obtained
- Government grants received to undertake repairs as £: Very limited for 1 LLFA

Select best estimate of damages: Limited data for 8 LLFAs

where economic damage estimate used

Assumptions

Data

Uncertainty Rating
- Low
- Low-moderate
- Moderate
- Moderate-high
- High
Section 24
Tourism & recreation

National

- Number of tourism and recreation assets affected: No data obtained
- Number of tourism trips disturbed: 6,384,040 (VisitEngland, 2014)
- Estimated damages as £ of repairs: No data obtained

Select best estimate of damages
- Only one estimate available
- Not taken forward as the best estimate

Remove VAT (at 20%) from financial estimates
- Not all estimates are clear whether they are financial or economic. Adjustments have been made on the basis that damages are most likely to be financial

Estimated economic cost across all LLFAs:
- £1,300,000
- Based on adjusted repair/damage costs

Damage to assets has been adjusted to account for betterment (taken as 50% of repair cost)

Estimated the total cost of damages to tourism and recreation assets
- Extrapolation to assets for which no cost information is available
- Based on an average damage cost of £3,800 per asset (from local data)

Estimate based on local data (to 2 significant figures):
- Damages: £1,300,000
- Extrapolated costs: £3,500,000
- Overall best estimate: £3,500,000

Adjustments and revisions required to obtain BEST economic estimate of damages

- Estimated damages using extrapolation based on damages per tourism/recreation asset
- An average damage cost per asset (of £3,800) derived from the local data has been used to estimate damages to assets for which no specific cost information is available

Where financial damage estimate used

Local

- Duration of flooding
- Type of flood (coastal, fluvial, pluvial, groundwater)
- Number of tourism and recreation assets affected: 1,072 (including flood outline data)
- Estimated damages as £ of repairs
- Limited data (for 13 LLFAs)
- Number of tourism trips disturbed: No data obtained

Select best estimate of damages
- Where more than one figure available, based on source and robustness of data

where economic estimate used

Assumptions
- Data

Uncertainty Rating
- Low
- Low-moderate
- Moderate
- Moderate-high
- High