

6. References

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Forecast cost estimates do not include such costs associated with any negotiations, appeals or other non-technical actions associated with the agreement on measures to meet the requirements of the authorities, nor are potential business loss and interruption costs considered that may be incurred as part of any technical measures.

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Appendix A - Data Review

A review of the data provided as part of Drain London Tier 1 package of works and that used within this SWMP has been undertaken. An assessment of the quality of the data has been completed, using the criteria set out in the Defra SWMP Guidance, which is summarised in Table A-1.

Table A-1 Data Review Scoring System (from Table 3-1 in Defra SWMP Guidance 2010)

Data Quality Score	Description	Explanations	Example
1	Best possible	No better available; not possible to improve in the near future	High resolution LiDAR River/sewer flow data Rain gauge data
2	Data with known deficiencies	Best replaced as soon as new data are available	Typical sewer or river model that is a few years old
3	Gross assumptions	Not invented but based on experience and judgement	Location, extent and depth of much surface water flooding Operation of un-modelled highway drainage 'future risk' inputs e.g. rainfall, population
4	Heroic assumptions	An educated guess	Ground roughness for 2D models

Colour Label used in Data Review Columns

GY	No data (hidden column)
R	Not useful information
O	Potentially useful / needs further work
GN	Useful information

Appendix B - Asset Register Recommendation

Appendix C - Risk Assessment Technical Details

Appendix C1 – Pluvial Modelling Methodology

Appendix C2 – Intermediate Assessment of Groundwater Flooding Susceptibility

Figure 1 Bedrock Geology Map

Figure 2 Bedrock and Superficial Geology Map

Figure 3 Increased Potential For Elevated Groundwater (Drain London Assessment)

Figure 4 Infiltration SUDS Suitability Map

Appendix D - Maps

- D1 Environment Agency Flood Map for Surface Water**
- D2 1 in 100 year Rainfall Event Maximum Flood Depth & Surface Water Flooding Incidents**
- D3 Environment Agency Flood Map and Fluvial Flooding Incidents**
- D4 Thames Water Sewer Network**
- D5 Recorded Incidents of Sewer Flooding**
- D6 Infiltration SUDS Suitability**
- D7 Bedrock Geology**
- D8 Bedrock and Superficial Geology**
- D9 3.3% (1 in 30 year probability) Surface Water Flood Depth**
- D10 3.3% (1 in 30 year probability) Surface Water Flood Hazard**
- D11 1.5% (1 in 75 year probability) Surface Water Flood Depth**
- D12 1.5% (1 in 75 year probability) Surface Water Flood Hazard**
- D13 1% + climate change (1 in 100 year probability) Surface Water Flood Depth**
- D14 1% + climate change (1 in 100 year probability) Surface Water Flood Hazard**
- D15 0.5% (1 in 200 year probability) Surface Water Flood Depth**
- D16 0.5% (1 in 200 year probability) Surface Water Flood Hazard**

Appendix E - Options Assessment Details

The Options Assessments for each CDA have been undertaken in Excel Worksheets. These are provided electronically as part of this report.

List of Excel Worksheets

KIN_GP8_008 Acre Road/North Kingston Options Assessment Table_01.xls
KIN_GP8_009 New Malden North Options Assessment Table_01.xls
KIN_GP8_010 Kingston Town Centre Options Assessment Table_01.xls
KIN_GP8_011 New Malden High Street Options Assessment Table_01.xls
KIN_GP8_012 Surbiton Crescent Options Assessment Table_01.xls
KIN_GP8_013 Network Rail Mainline Options Assessment Table_01.xls
KIN_GP8_014 Alexandra Drive Centre Options Assessment Table_01.xls
KIN_GP8_015 A3 Options Assessment Table_01.xls
KIN_GP8_016 Old Malden Options Assessment Table_01.xls
KIN_GP8_017 King George Trading Estate Options Assessment Table_01.xls
KIN_GP8_018 Hook/Kelvin Grove Options Assessment Table_01.xls
KIN_GP8_019 Chessington North Station Options Assessment Table_01.xls
KIN_GP8_020 Barwell Business Park Options Assessment Table_01.xls
KIN_GP8_021 Malden Rushett Options Assessment Table_01.xls

Table E-1 Drain London Prioritisation Matrix Unit Costing Spreadsheet

Defra Classification	Measure	Cost Rate (£)	Unit	Notes / Source
Source	green roof;	£146	m2 of roof	GLA - Living Roofs and Walls - Technical Report: Supporting London Plan Policy (2008)
	soakaways;	£219	m3 of stored volume	CIRIA SUDS Manual (2007)
	swales;	£16	m2 of swale area	CIRIA SUDS Manual (2007)
	permeable paving;	£44	m2 of surface	CIRIA SUDS Manual (2007)
	rainwater harvesting;	£1,100	m3 of stored volume	Adapted from: http://www.rainwaterharvesting.co.uk/
	detention basins	£22	m3 of detention volume	CIRIA SUDS Manual (2007)
	ponds and wetlands.	£33	m3 of detention volume	CIRIA SUDS Manual (2007)
	Other 'Source' measures	N/A	N/A	Justification to be supplied by consultant
Pathway	increasing capacity in drainage systems;	Table 21	m of culvert	EA FRM Estimating Guide (2010) – Refer Appendix B
	separation of foul and surface water sewers;	£465	m2 of separation catchment area	Adapted from Thames Water Counters Creek Project (http://www.thameswater.co.uk/cps/rde/xchg/corp/hs.xsl/9344.htm)
	improved maintenance regimes;	N/A	N/A	Justification to be supplied by consultant
	managing overland flows	N/A	N/A	Justification to be supplied by consultant
	land management practices.	N/A	N/A	Justification to be supplied by consultant
	Other 'Pathway' measures	N/A	N/A	Justification to be supplied by consultant
Receptor	improved weather warning;	N/A	N/A	Justification to be supplied by consultant
	planning policies to influence development;	N/A	N/A	Justification to be supplied by consultant
	temporary or demountable flood defences;	£25,000	Per property protected	Adapted from: http://www.floodguarduk.co.uk/ AND http://www.ukfloodbarriers.com/
	social change, education and awareness	N/A	N/A	Justification to be supplied by consultant
	improved resilience and resistance measures	£22,000	Per property protected	Adapted from Defra "Flood resistance and resilience solutions: an R&D scoping study" (2007)
	Other 'Receptor' measures	N/A	N/A	Justification to be supplied by consultant

Appendix F - Peer Review

Appendix G - Spatial Planner Information Pack

Appendix H - Resilience Forum and Emergency Planner Information Pack

Appendix I - Action Plan

