Appendix A: GeoPDF User Guide

Please tick the boxes next to the dataset titles in the map legend to display data. If data does not display, it means it is not present in that particular area.

Legend	Description	Reference
Authority Information • YDNP Boundary • Watercourses • United Utilities • Yorkshire Water	• YDNP Boundary - the boundary of the Yorkshire Dales National Park, the study area for this SFRA. • Watercourses – the Environment Agency (EA) Detailed River Network representing the river network based on Ordnance Survey (OS) MasterMap for surface features and EA culvert surveys for underground features (where available). • United Utilities – the part of the study area covered by United Utilities as the water and sewerage provider. • Yorkshire Water – the part of the study area covered by Yorkshire Water as the water and sewerage provider.	**Section 1.5** SFRA study area **Figure 1.1** **Figure 1.4** **Figure 1.5** **Section 5.6** Sewer flooding
Historic • Recorded Flood Outlines (EA) • Historic Flood Map (EA)	• EA Recorded Flood Outlines show all records of historic flooding from rivers, the sea, groundwater and surface water. This may not include all LA/ LLFA flood incidents or records. • The EA Historic Flood Map shows areas of land that have been previously subject to fluvial flooding in the area. This includes flooding from rivers, the sea and groundwater springs but excludes surface water. If an area is not covered by the Historic Flood Map/Recorded Flood Outlines, it does not mean that it has never flooded, only that currently there are no records of flooding in this area from the EA records. Other historic information is supplemented in the Level 1 report (section 5.1).	**Section 5.1** Historical Flooding **Figure 5-1** **Appendix E**
Risk of Flooding from Surface Water (EA) • RoFSW 3.3% AEP • RoFSW 1% AEP • RoFSW 0.1% AEP	The EA's Risk of Flooding from Surface Water (RoFfSW) flood maps give an indication of the broad areas likely to be at risk of surface water flooding. This includes flooding that takes place from the surface runoff generated by rainwater. • 3.3% - each year the area has greater than a 1 in 30 chance of flooding • 1% - each year the area has between a 1 in 100 and a 1 in 30 chance of flooding • 0.1% - each year the area has greater than a 1 in 1000 chance of flooding	**Section 5.5** Surface water flood risk **Appendix E**
Flood Zones (Surface Water) • Flood Zone B • Flood Zone A	The surface water flood zones were created from the EA's Risk of Flooding from Surface Water (RoFfSW) flood maps in order to address the requirement that flood risk from all sources is included in the Sequential Test.	**Section 3.2.2** Flood Zones – surface water risk and other

Legend	Description	Reference
	• Flood Zone B – each year the area has greater than a 1 in 1000 chance of flooding (this is the same as the RoFSW 0.1% AEP flood extent) • Flood Zone A – each year the area has less than a 1 in 1000 chance of flooding	sources of flooding
Risk of Flooding from Rivers and Sea (EA) • Very low • Low • Medium • High	The Risk of Flooding from Rivers and Sea maps have been generated from the EA's National Flood Risk Assessment (NaFRA) and National Receptor Dataset (NRD). • Very low risk: each year there is a chance of flooding of less than 1 in 1000 (0.1%) • Low risk: each year there is a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%) • Medium risk: each year there is a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%) • High risk: each year there is a chance of flooding of greater than 1 in 30 (3.3%)	**Section 5.4** Fluvial flood risk **Appendix E**
Flood Zones • Indicative Flood Zone 3b • Flood Zone 3b • Flood Zone 3a • Flood Zone 2	The EA's Flood Map for Planning (FMfP) is an online mapping portal which shows the Flood Zones in England. They are formed from older national 2D generalised (broadscale) modelling and updated periodically every year with detailed modelling outputs. In most places they should therefore reflect latest modelling where available. Within this SFRA, all model data has been fully incorporated into the EA Flood Zones. The Flood Zones are for use in development planning and flood risk assessments. • Flood Zone 3b – Functional Floodplain: This zone comprises land where water has to flow or be stored in times of flood. Flood Zone 3b is identified as land which would flood with an annual probability of 1 in 20 years (or 1 in 25 years), where detailed hydraulic modelling exists. • Indicative Flood Zone 3b – as above, but where no detailed modelled 20-year (or 25-year) flood extent exists, then Flood Zone 3a has been used as a proxy – this is hatched to show the difference. This is conservative and developers would need to refine in a detailed site assessment. • Flood Zone 3a – High probability: greater or equal to a 1% chance of river flooding in any given year or greater than a 0.5% chance of sea flooding in any given year. (Excludes Flood Zone 3b, which is derived as part of the SFRA). • Flood Zone 2 – Medium probability: between a 1% and 0.1% chance of river flooding in any given year or 0.5% and 0.1% chance of sea flooding in any given year. This also includes the Historic Flood Map.	**Section 3.2.1** Flood Zones – river risk

Legend	Description	Reference
Climate Change Extent (Modelled) • Climate Change Central • Climate Change Higher Central	These extents are from existing hydraulic models, where the 1% AEP (100-year flow) is upscaled by the EA's climate change allowances for the 2080s epoch for the relevant management catchment. As most of the National Park is not covered by detailed modelling, Flood Zone 2 should be used as a proxy for climate change, until detailed modelling is undertaken at the site-specific FRA stage.	**Section 4** Impact of Climate Change
EA Flood Alert and Warning Areas • Flood Warning • Flood Alert	• Flood Warnings are issued to designated Flood Warning Areas when a river level hits a certain threshold, heavy rainfall or high tides and strong winds are forecast. "Flooding is expected, immediate action is required". • Flood Alerts are issued when there is water out of bank for the first time *anywhere in the catchment* and when forecasts indicate flooding may be possible. "Flooding is possible, be prepared". • Both of these datasets are a polygon GIS shapefile where the above are issued; they are not flood extents.	**Section 5.10** Flood Alert and Flood Warnings **Appendix D** Flood Alert and Flood Warnings
Groundwater Levels Risk Mapping (JBA) • Less than 0.025m below surface • Between 0.025-0.5m below surface • Between 0.5-5m below surface • At least 5m below surface • No risk	JBA's Groundwater Flood Risk map shows the level of groundwater below the surface, at a resolution of 5m. Flood risk could increase when groundwater is already high or emerged, causing additional overland flow paths or areas of still ponding.	**Section 5.7** Groundwater flooding **Appendix E**
Susceptibility to Groundwater Flooding (EA) • <25% • >=25%<50% • >=50%<75% • >=75%	The EA's groundwater flooding susceptibility data shows the degree to which areas of England, Scotland and Wales are susceptible to groundwater flooding on the basis of geological and hydrogeological conditions. This is shown at a resolution of 50m. It does not show the likelihood of groundwater flooding occurring, i.e. it is a hazard not risk-based dataset.	**Section 5.7** Groundwater flooding **Appendix E**

Legend	Description	Reference
<u>Defences</u> • Other • Embankment • Natural High Ground	EA Asset Information Management System (AIMS) spatial Flood Defence dataset, shows flood defences currently owned, managed or inspected by the EA. A defence is any asset that provides flood defence or coastal protection functions. The main defences within the Yorkshire Dales National Park are embankments and natural high ground, but there are also some walls and areas of engineered high ground which are included in the 'Other' category.	**Table 6-2** Locations shown in the 'EA AIMS' dataset **Section 6.6** Existing and future flood alleviation schemes
<u>Reservoir Flood Extents (EA)</u> • Dry Day • Wet Day	The EA reservoir flood extents show the predicted flooding which would occur if a dam or reservoir fails. The EA provide two scenarios: • Dry Day – the predicted flooding which would occur if the dam or reservoir fails when rivers are at normal levels. • Wet Day – the predicted worsening of the flooding which would be expected if a river is already experiencing an extreme natural flood.	**Section 5.9** Flooding from reservoirs