

Central Lancashire Level 1 SFRA - Appendix G

Catchment-level assessment of
Cumulative Impacts of
Development on Flood Risk

Final

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Prepared for:



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1 Introduction

Cumulative impacts are defined as the effects of past, current and future activities on the environment. The below assessment is a catchment based approach, which indicates potential cumulative impacts on the Central Lancashire Authorities study area. These cumulative impacts may be negative, such as development leading to an increase in the existing level of flood risk within a catchment. They may also be positive, such as effective surface water management within a development site helping to alleviate existing flooding issues within a catchment.

The cumulative impact of development should be considered at both the Local Plan making stage and the planning application and development design stages. Paragraph 171 of the National Planning Policy Framework (NPPF, 2024) states:

'Strategic policies should be informed by a strategic flood risk assessment and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.'

To understand the impact of future development on flood risk in Chorley, Preston and South Ribble, historic flood risk data has been compared with potential changes in developed area within each river catchment defined within the Water Framework Directive (WFD). This identifies the catchments where development may have the greatest impact on flood risk, and therefore where further assessment would be required within a site-specific Flood Risk Assessment (FRA).

Where catchments have been identified as sensitive to the cumulative impact of development, the assessment concludes with potential strategic planning policy suggestions to manage the risk.

2 Method

2.1 Cumulative impact assessment

2.1.1 Cumulative impact of development: assessing existing and future development scenarios

To ensure that the strategic policies of the Local Plan consider the impact of any future development on areas susceptible to flooding, the potential development pressures during the Local Plan period need to be considered.

The impact of development is assessed by establishing a growth scenario of development already committed prior to the Local Plan, as well as the potential future development pressures during the Local Plan period.

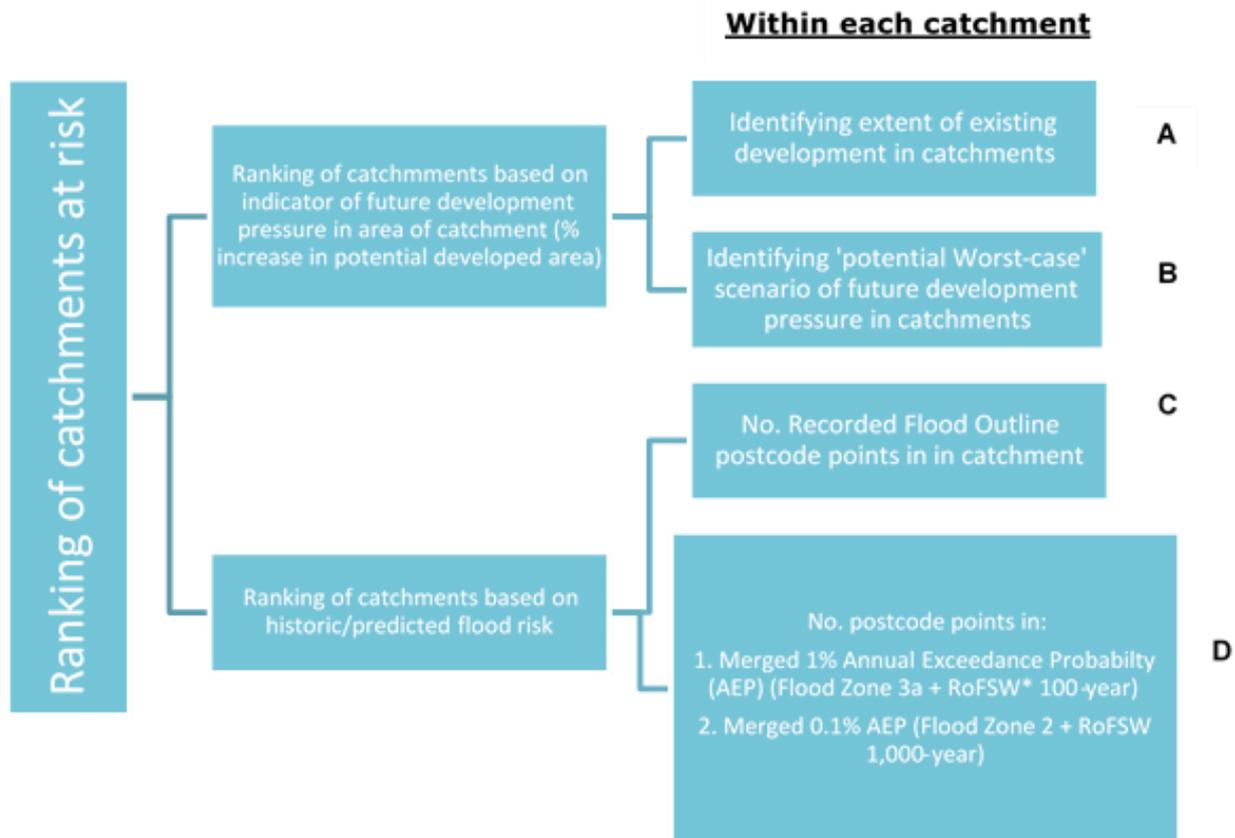
It should be noted that the inclusion of potential future development pressures makes the scoring method sensitive to future change, should any larger sites be removed, or additional sites come forward. However, it provides the best possible indication of development pressure across the Central Lancashire region at the time of assessment.

The assessment is undertaken on a river catchment scale, using catchments defined by the Water Framework Directive (WFD). Several of the WFD catchments assessed within the cumulative impact assessment cross administrative boundaries into neighbouring districts. To account for this in the study, all neighbouring councils were contacted to provide information of future development within their administrative area. The councils are:

- Blackburn with Darwen
- Bolton District
- Fylde District
- Ribble Valley District
- West Lancashire District
- Wigan District
- Wyre District

The site data received from these councils was combined with that of Chorley, Preston and South Ribble to understand the risk to each WFD catchment, based upon potential future growth.

The approach to understanding the catchments most influenced by the cumulative impact of development is conceptualised in Figure 2-1.



*Risk of Flooding from Surface Water (RoFSW)

Figure 2-1: Overview of the method used in the Cumulative Impacts Assessment

A. Existing development scenario

To understand the level of existing development within the study area, the OS Code Point Open postcode points covering the Central Lancashire Authority area were used. This data set contains points plotted at the average co-ordinates representative of all individual addresses within a particular postcode. This also covered the neighbouring authority areas.

B. Indicator of Development pressure

To understand which catchments within the study area are likely to experience the greatest pressure for future growth, all sites which were either allocated or preferred for allocation within the Local Plan for Chorley, Preston, South Ribble and the neighbouring authorities were analysed.

This analysis has been used as an indicator of areas likely to be subject to the greatest development pressure in future. This is the only spatial data indicator available at the time of preparing the assessment because definitive development areas have not yet been allocated within all Local Plans within the study area.

The data allows calculation of the overall area of sites within each catchment which are either proposed, or submitted to each Local Planning Authority to consider, for allocation within the Local Plan, illustrating the relative pressures on the catchments. This data is

used to identify catchments likely to be under the greatest pressure for development. The percentage total proposed area of development is calculated and ranked with the catchment with the highest proportion of growth ranked as '1'.

Bolton District provided one site allocation that could potentially impact Chorley, however this was not located within a WFD catchment covering Central Lancashire. Therefore this site wasn't included in the analysis.

Ribble Valley District shared their proposals map containing the housing and economic development allocations. GIS data was not available to be shared, therefore the locations of the allocations in comparison to the WFD catchments and associated development area could not be confirmed. Areas containing allocated development locations with the potential to impact flood risk within Central Lancashire include:

- Longridge
- Osbaldeston
- Mellor
- Hurst Green
- Mellor Brook
- Ribchester

Fylde Council did not have any allocations to share for consideration as part of this cumulative impacts assessment, given where the LPA are in their Local Plan cycle. Their current development strategy is to direct the majority of their new development to four strategic locations for development:

- Lytham St Annes
- The Blackpool Periphery
- Warton
- Kirkham and Wesham

Lytham St Annes and Warton are within the WFD coastal catchment 176, the majority of which lies outside of the study area. The Blackpool Periphery and Kirkham and Wesham do not fall within a WFD catchment that impacts any of the Central Lancashire authorities.

Table 2-1: Summary of datasets used to define river catchments

Dataset	Coverage	Source of data	Use of data
Catchment boundaries	Central Lancashire Authority area	Water Framework Directive (WFD) catchments	Existing development / flood risk

Table 2-2: Summary of datasets used to estimate future development pressure

Dataset	Coverage	Source of data	Use of data
Sites received for consideration to allocate in Local Plan	Central Lancashire Authority study area	Chorley Council Preston City Council South Ribble	Indicator of relative development pressure

Dataset	Coverage	Source of data	Use of data
		Borough Council	
Neighbouring authority Local Plan allocations and committed developments	Catchments covering the Central Lancashire Authority study area	Blackburn with Darwen West Lancashire District Wigan District Wyre District	Indicator of relative development pressure

Table 2-3: Summary of datasets used to rank catchments by flood risk

Dataset	Coverage	Source of data	Use of data
Merged 1 in 100-year flood extent (Flood Zone 3a and 1 in 100-year RoFSW extent)	Catchments covering the Central Lancashire Authority study area	Environment Agency (EA)	Potential fluvial and surface water flood risk
Merged 1 in 1000-year flood extent (Flood Zone 2 and 1 in 1000-year RoFSW extent)	Catchments covering the Central Lancashire Authority study area	Environment Agency (EA)	Potential future fluvial and surface water flood risk
Recorded Flood Outline	Catchments covering the Central Lancashire Authority study area	Environment Agency (EA)	Historic fluvial flooding
OS Code Point Open postcode points - plotted at the average co-ordinates representative of all individual addresses within a particular postcode	Catchments covering the Central Lancashire Authority study area	Ordnance Survey (Open source)	Proxy for number of properties at risk

2.1.2 Cumulative impact of flood risk: assessment of flood risk

A composite flood risk score is derived for each catchment, by taking an average ranking of both recorded fluvial risk (historic incidents) and modelled (predicted) fluvial and surface water flood risk.

To understand the relative flood risk within the catchments, a ranking system is adopted, with the worst-case flood risk numbered '1'.

C. Historic flood risk

Data used in assessment:

- EA Recorded Flood Outline (number of property postcode points affected) - flood extents mapped following flood events (largely relates to fluvial flooding). This is intersected with postcode points, to approximate the number of properties affected.

D. Sensitivity to increases in flood flows

Data used in assessment:

- Present day risk: Merged fluvial and surface water 1 in 100-year (1% AEP) flood extent - Flood Zone 3a and RoFSW 100-year (number of postcode points at risk within catchment).
- Future risk: Merged fluvial and surface water 1 in 1,000-year (0.1% AEP) flood extent - Flood Zone 2 and RoFSW 1000-year (number of postcode points at risk within catchment).
- Postcode point data is used to identify properties within the Huntingdonshire study area.
- The postcode data is separately intersected with the Present day (1 in 1,000-year) and Future (1 in 100-year) risk merged fluvial and surface water flood extents, to approximate the increase in the number of properties at risk of flooding. The flood extents are merged to prevent double counting of properties at risk where fluvial and surface water flood risks overlap.
- The difference between the Present and Future risk is then calculated and given as a percentage of the total number of OS Code Point Open points in the catchment. This gives an indication of which catchments are most sensitive to increases in surface water runoff from upstream. For example, if there were 100 postcode points in a catchment, 15 within the 1 in 1,000-year merged flood extent and 5 within the 1 in 100-year merged flood extent, 10% of properties in that catchment are considered sensitive to increased flood risk.
- The assessment is an indicator of where local topography makes an area more sensitive to increases in flood risk. This may be due to any number of reasons, including climate change, new development etc. It is not an absolute figure or prediction of the impact that new development will have on flood risk.
- It should be noted that the Flood Zones represent flood risk from watercourses designated by the Environment Agency as Main Rivers, with a catchment area greater than 3km². There is no national dataset of flood risk mapping from smaller, ordinary watercourses. However, as the RoFSW mapping identifies the lowest points in the topography which includes the river floodplains, it can be used as a proxy to represent fluvial flood risk from ordinary watercourses. This approach has been used within the cumulative impacts assessment.

2.1.3 Assessment assumptions and limitations

Table 2-4 sets out the assumptions and limitations of the cumulative impacts assessment.

Table 2-4: Assumptions and limitations of the assessment

Assessment aspect	Assumption made	Details of limitation in method	Justification
Development pressure	Assumption of housing density and impermeable areas	Where potential development densities were not known for the sites, it is assumed that 70% of the site area would contribute surface water runoff to the wider catchment. This takes into account a 30% allowance for landscaping and requirements for SuDS within sites, which lessens the impacts of new development.	With housing densities and proportions of undeveloped areas not known, the approach aims to provide a more realistic indication of site development in the growth scenario.
Development pressure	Potential development site area not provided for all neighbouring authorities	Potential development sites were either not made available or were not provided in a format that is compatible with GIS to feed into the assessment, for Ribble Valley and Fylde District. Bolton District provided one site with the potential to impact Central Lancashire however this did not fall within a WFD catchment shared with the study area.	Potential development pressure was not taken into account for the WFD catchments shared between Central Lancashire and the aforementioned neighbouring authorities. Cumulative impacts were assessed through flood risk only.
Development pressure	Current site use assumed to be greenfield (undeveloped)	The current use of the sites (e.g. greenfield/brownfield) is often undefined. Brownfield sites are likely to have a less	The assessment considers the 'worst case' development scenario, that all sites were

Assessment aspect	Assumption made	Details of limitation in method	Justification
		<p>significant impact on flood risk as they have previously been developed. Therefore, in absence of this information, a 'worst case' assessment is produced, which assumes that all sites are greenfield (undeveloped) and may overestimate the risk within each catchment.</p>	<p>greenfield (undeveloped) prior to growth. With the former land uses for each site not known, the approach overestimates the potential impact, but this is a precautionary approach.</p>
Flood risk	Overlap between fluvial and surface water flood extents	<p>The Risk of Flooding from Surface Water mapping identifies the lowest points in the landscape, and therefore low-lying river floodplains are also classified as being at surface water risk. This can lead to 'double counting' of flood risk.</p>	<p>To prevent double counting, the Flood Zone and Risk of Flooding from Surface Water datasets are merged, to create a composite flood risk layer, with any overlapping areas dissolved.</p>
Flood risk	Use of OS Code Point Open postcode point data to represent properties affected by historic/predicted flood risk	<p>As postcode points represent the average location of all properties within a postcode area, there may be properties at the edges of a catchment or the study area which are counted within the neighbouring area, or not picked up at all. The dataset is based on full postcodes.</p>	<p>The postcode points are an available open source dataset. Postcode area sizes are also relative to the density of properties in a location, providing better data coverage in areas where a greater number of properties were likely to be affected.</p>

2.1.4 Ranking the results

The results are ranked for each of the above assessments from 1 to 29. For example, the catchment with the highest percentage of code points within the recorded flood outline dataset would be ranked at number 1. The individual flood risk, historic flooding and development ranks are added to give an overall ranking for each catchment, as indicated in Table 2-5. The catchment with the lowest combined rank is the most sensitive to the cumulative impact of development.

Table 2-5: Breakdown in rankings for each assessment

Catchment Name	Growth rank	Historic Flood Risk rank	Predicted Flood Risk rank	Total Combined rank	Overall rank
Coastal catchment 174	6	1	1	8	1
Woodplumpton Brook	1	4	12	17	2
New Draught Brook	13	8	2	18	3
Douglas - Upper	7	3	7	25	4
Lostock DS Farington Weir	10	11	9	26	5
Ribble - conf Calder to tidal	9	7	16	34	6
Tarra Carr Gutter	16	9	3	34	7
Yarrow Culbeck Brook to tidal	15	15	17	34	8
Back Drain and Sluice	19	2	4	35	9
Lostock US Farington Weir	17	12	15	38	10
Syd Brook	12	6	21	38	11
Eagley Brook	5	5	14	39	12
Savick Brook	2	20	18	39	13
Coastal catchment 176	18	19	5	40	14

Catchment Name	Growth rank	Historic Flood Risk rank	Predicted Flood Risk rank	Total Combined rank	Overall rank
Yarrow US Big Lodge Water	14	17	11	41	15
Roddlesworth	3	16	20	43	16
Many Brooks	4	20	21	45	17
Coastal catchment 175	26	20	10	46	18
Darwen - conf Roddlesworth to tidal	25	10	7	46	19
Barton (Westfield) Brook	8	14	21	49	20
Douglas - Lower	24	20	13	50	21
Astley Brook (Irwell)	27	13	6	51	22
Brock	22	18	21	51	23
Loud - Upper	11	8	19	52	24
Yarrow DS Big Lodge Water	20	20	21	59	25
Lords Brook	21	20	21	62	26
Deepdale Brook	23	20	21	64	27
Buckhow (Hic Bibbi) Brook	27	20	21	68	28

A Red Amber Green (RAG) rating is then applied to the catchments, with red being high sensitivity, amber being medium sensitivity, and green being low sensitivity. It should be noted that this assessment provides a relative assessment of sensitivity to increases in flood risk and development between catchments within the study area.

Specific policies are provided for each resulting risk category. Catchment-specific planning policy considerations are identified for the catchments where cumulative development is likely to have the greatest impact on flood risk to communities. The overall analysis provides context for further appropriate consideration of catchment-scale flood risk issues.

In addition to assessment at a Strategic Flood Risk Assessment (SFRA) level, it is recommended that site-specific Flood Risk Assessments (FRAs) are required to include consideration of the cumulative effects of the proposed development. It should be demonstrated that flood risk downstream will not be made worse by the combination of effects from more than one development allocation.

A map of the RAG rating for each catchment is shown in Figure 2-2 and a summary of the final results is shown in Table 2-6, Table 2-7 and Table 2-8.

Table 2-8 Specific policies are provided for each resulting risk category.

The catchments rated as at high sensitivity to the cumulative impacts of development are:

- Coastal catchment 174
- Woodplumpton Brook
- New Draught Brook
- Douglas - Upper
- Lostock DS Farington Weir
- Ribble - conf Calder to tidal
- Tarra Carr Gutter

The catchments rated as medium sensitivity to the cumulative impacts of development are:

- Yarrow Culbeck Brook to tidal
- Back Drain and Sluice
- Lostock US Farington Weir
- Syd Brook
- Eagley Brook
- Savick Brook
- Coastal catchment 176

The catchments rated as low sensitivity to the cumulative impacts of development are:

- Yarrow US Big Lodge Water
- Roddlesworth
- Many Brooks
- Coastal Catchment 175
- Darwen - conf Roddlesworth to tidal
- Barton (Westfield) Brook
- Douglas - Lower
- Brock
- Loud - Upper
- Yarrow DS Big Lodge Water
- Lords Brook
- Deepdale Brook

No growth or development was proposed in the following catchments. These catchments have been included in the cumulative impact assessment. However, they only represent sensitivity to flood risk and not growth:

- Astley Brook (Irwell)
- Buckhow (Hic Bibbi) Brook

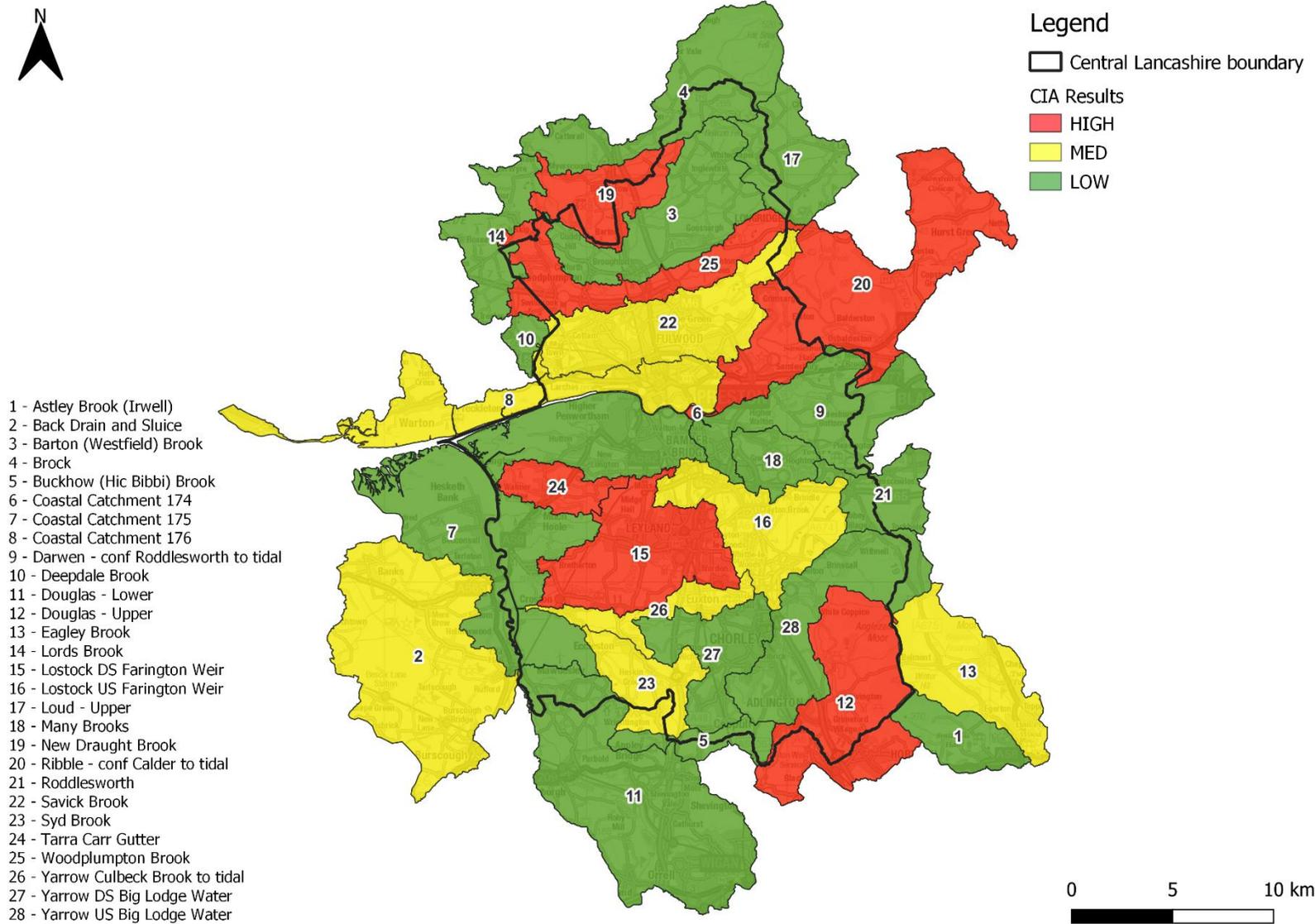


Figure 2-2: Sensitivity of catchments within and around the Central Lancashire study area to cumulative impacts

Table 2-6: Results of cumulative impacts assessment (High Overall Rank)

Map label	Catchment Name	Drainage direction	Growth RAG score	% area of growth	Postcode points in historic flood outlines	% increase in properties at risk: 1 in 100 to 1 in 1,000-year flood extent	Flood Risk RAG score	Overall RAG score	Overall rank
6	Coastal Catchment 174	Remains within study area	Medium	3.4%	5	13.3%	High	High	1
25	Woodplumpton Brook	Into Central Lancashire from the east	High	11.3%	5	3.6%	High	High	2
19	New Draught Brook	Out of Central Lancashire to the north	Medium	1.3%	2	9.5%	Medium	High	3
12	Douglas - Upper	Out of Central Lancashire to the south	Medium	3.4%	6	4.9%	Medium	High	4
15	Lostock DS Farington Weir	Remains within study area	Medium	1.6%	18	4.4%	Medium	High	5
20	Ribble - conf Calder to tidal	Into Central Lancashire from the east	Medium	2.7%	3	2.5%	Medium	High	6
24	Tarra Carr Gutter	Remains within study area	Medium	1.1%	1	6.2%	Medium	High	7

Table 2-7: Results of cumulative impacts assessment (Medium Overall Rank)

Map label	Catchment Name	Drainage direction	Growth RAG score	% area of growth	Postcode points in historic flood outlines	% increase in properties at risk: 1 in 100 to 1 in 1,000-year flood extent	Flood Risk RAG score	Overall RAG score	Overall rank
26	Yarrow Culbeck Brook to tidal	Remains within study area	Medium	1.1%	20	2.1%	Medium	Medium	8
2	Back Drain and Sluice	Out of Central Lancashire to the west	Low	0.7%	4	6.1%	Medium	Medium	9
16	Lostock US Farington Weir	Remains within study area	Low	0.9%	10	2.6%	Medium	Medium	10
23	Syd Brook	Into Central Lancashire from the south	Medium	1.5%	3	0.0%	Low	Medium	11
13	Eagley Brook	Out of Central Lancashire to the east	Medium	4.7%	0	2.7%	Low	Medium	12
22	Savick Brook	Into / out of Central Lancashire from east to west	High	10.1%	1	1.9%	Low	Medium	13

Map label	Catchment Name	Drainage direction	Growth RAG score	% area of growth	Postcode points in historic flood outlines	% increase in properties at risk: 1 in 100 to 1 in 1,000-year flood extent	Flood Risk RAG score	Overall RAG score	Overall rank
8	Coastal Catchment 176	Out of Central Lancashire to the west	Low	0.8%	12	5.9%	Medium	Medium	14

Table 2-8: Results of cumulative impacts assessment (Low Overall Rank)

Map label	Catchment Name	Drainage direction	Growth RAG score	% area of growth	Postcode points in historic flood outlines	% increase in properties at risk: 1 in 100 to 1 in 1,000-year flood extent	Flood Risk RAG score	Overall RAG score	Overall rank
28	Yarrow US Big Lodge Water	Into Central Lancashire from the east	Medium	1.2%	3	3.8%	Low	Low	15
21	Roddlesworth	Into Central Lancashire from the east	High	7.82%	0	1.1%	Low	Low	16
18	Many Brooks	Remains within study area	High	7.3%	0	0%	Low	Low	17
7	Coastal Catchment 175	Out of Central Lancashire to the west	Low	0.1%	11	4%	Medium	Low	18
9	Darwen - conf Roddlesworth to tidal	Into Central Lancashire from the east	Low	0.1%	4	4.9%	Medium	Low	19
3	Barton (Westfield) Brook	Out of Central Lancashire to the west	Medium	3.2%	0	0%	Low	Low	20
11	Douglas -	Into Central Lancashire	Low	0.2%	16	2.9%	Low	Low	21

Map label	Catchment Name	Drainage direction	Growth RAG score	% area of growth	Postcode points in historic flood outlines	% increase in properties at risk: 1 in 100 to 1 in 1,000-year flood extent	Flood Risk RAG score	Overall RAG score	Overall rank
	Lower	from the south							
1	Astley Brook (Irwell)	Out of Central Lancashire to the south east	Low	0%	1	5.8%	Medium	Low	22
4	Brock	Into Central Lancashire from the north	Low	0.4%	1	0%	Low	Low	23
17	Loud - Upper	Out of Central Lancashire to the north east	Medium	1.6%	0	0%	Low	Low	24
27	Yarrow DS Big Lodge Water	Remains within study area	Low	0.6%	0	1.8%	Low	Low	25
14	Lords Brook	Out of Central Lancashire to the north west	Low	0.5%	0	0%	Low	Low	26
10	Deepdale Brook	Out of Central Lancashire to the west	Low	0.3%	0	0%	Low	Low	27

Map label	Catchment Name	Drainage direction	Growth RAG score	% area of growth	Postcode points in historic flood outlines	% increase in properties at risk: 1 in 100 to 1 in 1,000-year flood extent	Flood Risk RAG score	Overall RAG score	Overall rank
5	Buckhow (Hic Bibbi) Brook	Into Central Lancashire from the south	Low	0%	0	0%	Low	Low	28

2.1.5 Planning policy considerations

Catchment-specific planning policy considerations have been identified for the catchments where cumulative development is likely to have the greatest impact on flood risk to communities.

In addition to assessment at a SFRA level, it is recommended that site-specific FRAs are required to include consideration of the cumulative effects of the proposed development. It should be demonstrated that flood risk downstream will not be made worse by the combination of effects from more than one development allocation.

1. Considerations for all developments in Chorley, Preston and South Ribble

- Developments should seek betterment of existing flood risks both within the site and in surrounding areas. As a minimum, developments must meet national and local standards for Flood Risk Assessments and Surface Water Drainage Strategies. By looking at flood risks beyond the site boundary, developers should be encouraged to implement sustainable solutions which manage flood risk.
- New settlement areas should be accompanied by an overall Surface Water Drainage Strategy. This should cover:
 - How the cumulative impacts of potential peak rates and volumes of surface water runoff from development sites would impact on the peak flows, duration of flooding and timing of flood peaks on receiving watercourses. This should be used to develop and implement appropriate drainage sub-catchments for the management of surface water, as well as specific runoff rate and volume requirements for each phase of the development.
 - The risk of flooding from all sources, including for rainfall events greater than the design standard of the surface water drainage system should be taken into account. This is to ensure there is no flood risk to new properties and that exceedance flows in extreme events are safely routed around those properties.
 - The consideration of how SuDS, natural flood management techniques, green infrastructure and green-blue corridors can be designed into the development master plan to facilitate drainage flood risk management. As well as managing the quantity of water, they should also ensure the wider benefits of biodiversity, amenity, water quality and recreation are realised.
 - Based on the above, a drainage phasing plan aligned with the SuDS train method should be developed. Firstly, it should consider how water can be infiltrated / stored at a plot level, then conveyed through the site. It should also identify any regional storage needs at a settlement level.
 - The provision of drainage shall be based on the drainage phasing plan, to ensure adequate drainage is provided implemented throughout the lifetime of the development. This includes provision of adequate drainage during the

construction phase, to manage the risk of flooding, erosion and pollution during construction.

- Chorley Council, Preston City Council and South Ribble Borough Council (as LPA), Lancashire County Council (as LLFA) and the Environment Agency should be consulted during the development of the Surface Water Drainage Strategy.
- In upland and rural areas of the catchments, Natural Flood Management (NFM) techniques, such as woodland planting and earth bunds, can be used to slow down and store flood waters upstream of settlements.
- In urban and suburban locations, SuDS should be integrated into the site design, to manage the existing surface water flow paths on the site and to help mitigate the flood risks to downstream communities.
- Successive minor developments have the potential to significantly impact on existing surface water and flood risk issues, particularly as the LLFA is not currently consulted on these applications. Therefore, planning policy for minor developments should support existing LPA guidance on the reduction of existing runoff rates, through the use of SuDS.
- Any development within the fluvial floodplain (i.e. Flood Zones 3b, 3a and 2) should provide suitable flood compensation storage, in consultation with the Environment Agency, to avoid a net loss in floodplain storage.
- The LLFA and other Risk Management Authorities (RMAs) should use the information in the SFRA to inform a long term pipeline of flood alleviation studies and schemes to determine where further developer contributions on / off site would be beneficial.

2. Planning considerations for medium sensitivity catchments

All new developments (other than minor extensions) in these catchments should:

- Incorporate SuDS and provide details of adoption, ongoing maintenance, and management, in line with the Lancashire SuDS Guidance¹. Preference will be given to above ground, vegetated SuDS, which contribute to the conservation and enhancement of biodiversity and green infrastructure in the study area.
- Developments in these areas should be incentivised to provide wider betterment by being requested to demonstrate in site specific Flood Risk Assessments and Surface Water Drainage Strategies what measures can be put in place to contribute to a reduction in flood risk downstream. This may either be through provision of additional storage on site e.g. through oversized SuDS, natural flood management techniques, green infrastructure and green-blue corridors and/or by providing a Partnership Funding contribution towards a wider community scheme.
- Both greenfield and brownfield developments are to aim to achieve greenfield runoff rates and volumes in their post-development state.
- Surface Water Management Plans should be developed as required.

[1 Lancashire SuDS Guidance](#)

3. Planning considerations for higher sensitivity catchments

All new development (other than minor extensions) in these catchments:

- National and local flood risk planning policy must be stringently applied within these areas, with flood risk from all sources given the appropriate priority, particularly when applying the Sequential and Exception Tests.
- Both greenfield and brownfield developments to achieve 20% betterment over pre-development greenfield runoff peak flows² and volumes³ in their post-development state, to counter cumulative impacts of development within the catchment.
- A Surface Water Drainage Strategy should be required for all developments in these catchments, regardless of development size. This would mean that a site-specific Flood Risk Assessment would be required for all developments, regardless of their size.
- The Environment Agency (EA) may designate higher sensitivity catchments as Areas with Critical Drainage Problems (ACDPs) as required. If an area with critical drainage is identified, the Local Planning Authority (LPA) (supported by the Lead Local Flood Authority (LLFA)) should draft a policy within their Local Plan to manage flood risk from local sources in these catchments with critical drainage problems.
- For larger sites and strategic developments (e.g. new settlements and urban extensions):
 - The LLFA, Environment Agency and LPA should be consulted at pre-application stage.
 - The FRA should examine the cumulative impacts of proposed peak surface water runoff rates and volumes from across the site on the peak flows, duration of flooding and timing of flood peaks in receiving watercourses. This should include the impact of other developments within the WFD catchment, if appropriate, as advised by the LPA/LLFA.
 - A Surface Water Drainage Masterplan should be developed and implement appropriate drainage sub-catchments for the management of surface water, with specific runoff rate and volume requirements set for each sub-catchment, in line with the SuDS management train.
- Particular attention should be given to limiting runoff volumes to greenfield volume, with long-term storage to be provided where required. The timing of runoff released from the development site will need to be assessed against peak

² For the 1 in 1 year rainfall event and the 1 in 100 year rainfall event

³ For the 1 in 100 year, 6 hour rainfall event

flow timings on the receiving watercourse, to ensure that discharges do not have a detrimental impact on downstream flood risk.

- The timing of flows released from the development site will need to be assessed in the context of peak flows on the receiving watercourse.
- Every opportunity should be taken to infiltrate and/or store water at a plot level.
- Longer-term measures for managing flood risk should be considered, including river restoration and contributions to pipeline flood alleviation schemes.
- Where development sites receive runoff from, or drain towards, neighbouring authorities, the LPA should work closely with neighbouring LPAs and the LLFA to develop complementary Local Planning Policies on cumulative flood risk and sustainable drainage.

Offices at

Bristol
Coleshill
Doncaster
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