

Response to Reviewers (2nd round)

Reviewer 1

In general there's still sections that are not too the point or superfluous, methodological or discussion aspects that are included in the results section, and too many figures and tables.	All sections have been revised, the Methodology section has been edited to remove any references, although for some disciplines this is an accepted practice, we understand not in this case. The Study area section has been moved from the Methodology section and has been shortened, but information had to be added to this section when it was removed from the results and to clarify why analysis was carried out on the specific sites for Figures 8 & 9. Figures 3, 4 & 5 existing and planned NbS have been combined into one so there are now 5 in total.
For the figures I suggest that all separate figures that map the NbS (figure 3, 4, 5, 6, 7, 9) are supplied as supplementary/annex materials and that 1 overview map with the broad location indicators for each of the areas is created.	Combining 3, 4, 5, 6 & 7 has been done. Figures 8 and 9 have not been combined, as they show the GIS analysis undertaken to locate sites for additional NbS. These were not combined as it would mean losing too much detail in the spatial analyses.
In the final lay-outing of the paper the tables may better be positioned in landscape-format (will this be something that is done by the journal?) edit the full results section in line with these changes.	Should be done by the journal.
One of the key conclusions is posed in line 508-514. This is an important message, but it's not reflected well in the conclusions (in the abstract there is mentioning of it). Another one is the use of the TWI, which is not reflected well in the abstract and the conclusions.	In the abstract this deduction (line 508-514 is reflected in the following sentences: "The results demonstrate that multiple NbS have been implemented and are planned along the Rhine, but additional efforts are needed in the Erft and Wupper tributaries, despite several planned and implemented river restoration projects. NbS in these catchments focus on floodplains, while slopes and riparian areas, suitable for the existing urban and agricultural land uses, have not been systematically assessed for their effectiveness." In the Conclusions this is also stated: "By focusing on the geomorphological and hydrological dynamics of the region, particularly in areas prone to rapid runoff and erosion, this research underscores the need for strategic NbS implementations on slopes and upstream areas." TWI is now addressed in Abstract and Conclusions.

	Abstract: “Using GIS analyses, including the Topographic Wetness Index, potential intervention areas on slopes prone to rapid runoff and soil saturation were identified to inform targeted NbS implementation.” Conclusions: “The application of the Topographic Wetness Index provided essential spatial insights into areas of high runoff accumulation and soil moisture, guiding the identification of priority sites for slope-based NbS interventions.”
There is mentioning of the use of the sinuosity as an indicator for potential options for NbS in the results, but this method is not carried out for the entire study area, nor is it well described in the methods section. Ideally this analysis is carried out for the full study area and included in the methods. Together with the TWI it is an important method in the identification of potential areas for NbS and more emphasis may be placed on this methodological issue.	The stretch of river above Figure 9 has three renatured sections already implemented. The reason that this section was chosen was because of the damage that occurred in the July 2021 floods (this description existed in original submission but was removed at your request, because there was too much detail) and because there are no renatured sections in this stretch. The information on why this section was chosen for the analysis has been added back into the Study area section.
The case study description is too long, and contains too much detail and needs to be substantially shortened.	5-10 lines have been removed from the Study area section, however, as we needed to explain why the sections in the Wupper and Erft were chosen for additional analysis so we couldn't remove a lot more.
Results section: help the reader a bit and make clear how 3.1 is the first step of your analysis, and how this is then used for the further mapping -> how does the reporting of result fit with the analyses you described in the methods section.	Agreed, we have removed the Study area section from the Methodology, the analysis now starts with data sourcing and layer creation (for Figures 1, 2 & 3) and GIS analysis (for Figures 4 & 5).
In general: in results sections avoid reference to studies that are not your own, unless it is really necessary. Most of those referenced bits need to go to either introduction, methods or discussion .	Done, while some other disciplines allow this, we agree that it is not suitable in this case and it helps to make the paper better.
In the conclusions: add more on the TWI as a technique and the finding that the role of NbS on slopes is ignored to make this a stronger message coming from the paper to answer the question/recommendation on how to identify a full set of NbS for flood risk management, that includes both the valley and slopes, and that the TWI is a helpful too in mapping the opportunities for that.	Agreed. We have added this paragraph: “This study highlights the value of the TWI as a powerful tool for spatial analysis, integrating terrain and hydrological data to identify areas prone to soil saturation and runoff accumulation. Despite its relevance, the role of NbS on slopes – critical zones for mitigating rapid runoff and flash floods – is often overlooked in flood risk management strategies, which predominantly focus on measures in floodplains. By applying the TWI, we demonstrate a method for systematically

	mapping and prioritising opportunities for implementing NbS in both valley floors and on slopes, offering a more comprehensive and effective approach to flood risk reduction. These interventions not only reduce flood peaks and enhance water retention but also support biodiversity conservation and provide valuable ecosystem services. Integrating slope-based NbS into flood risk management, guided by TWI-informed spatial analysis, enables a more resilient and sustainable response to the full range of flood hazards, from slow riverine floods to rapid flash floods, particularly under changing climatic conditions.”
Language wise: avoid the word ‘also’ and similar where possible, avoid the use of ‘we’ , ‘our’ etc. e.g in section starting at line 92	Done, as much as possible, even though “we” is widely accepted in scientific papers, particularly when there are multiple authors. Major style guides, such as the APA Style Guidelines, specifically encourage using "we" to describe the actions the authors and co-authors took.
Detailed comments:	
Line 14: add ‘qualitatively’ before evaluating	Done.
Line 16: instead of multiple: how many? => add the number	The number itself is not particularly meaningful, as a single large NbS can be just as effective in hazard reduction as multiple smaller ones. What is truly important are the specific details, such as the type of hazard (fluvial or pluvial), the river system involved (Rhine, Wupper, Erft), the kind of NbS implemented (blue, green, or hybrid), and the associated co-benefits. For these reasons, we do not see a need to include a numerical count.
Section starting at line 88 – 104 is too long and needs shortening by condensing the sentences in the objectives.	Done.
Line 106: after mitigation add ‘for this area’	Done.
Line 124-132 can be removed as it is not relevant for this study.	It is important for the study to mention the different responsibilities because they also affect NbS implementation. However, we have shortened the paragraph slightly.
Line 143-148: too detailed: either shorten or remove	We have removed the paragraph, as future climate impacts are already addressed in the introduction.
Line 148-151: sentences more suited in the introduction	We believe this information fits best in the study area section, where we have expanded it to explain the rationale behind the GIS analyses for Figures 4 and 5. In the Introduction, we provide only the general context, stating: “In particular, the catastrophic floods of July 2021 underscored the region's vulnerability to severe hydrological events, resulting in human losses

	as well as extensive damage to property, critical infrastructure, and significant disruptions to daily life (Fekete & Sandholz, 2021)."
Line 156-158: this aspect needs to go to 2.3	Agreed; we have moved it to methodology (now section 3.2).
Line 159: remove the start of the sentence and start with 'The erft basin'	We believe that the phrase 'In terms of landscape hydrology' is important, as it helps to set the context when describing the landscape hydrology. Therefore, we did not change the sentence.
Line 161 – what do you do with the information you provide on the mining in the rest of your analysis? (why does a reader need to know? It feels a bit like 'ballast/too much detail'	Some of the NbS are located on former coal mines. We have added this point to section 4.5 of the discussion; although it was already included in the table, its significance may not have been fully apparent. Additionally, coal mining has significantly influenced the hydrology of the Erft, which we believe is important information for readers to understand.
Line 170: remove the start of the sentence, and start with 'the study area lies...'	Since the study area does not include the Upper and Middle Rhine, this is why the phrase "our analysis extends beyond the immediate study area" is included.
Line 175: I'm a bit puzzled by how you report your methodology, as you start with the data gathering, but I don't know for what: start the analysis section with a short explanation of what you will be analysis, and then go into data acquisition	Lines 89-103 in the introduction outline the research aims, stating that the first objective is to record, categorize, and map existing NbS. We have now renamed the first section of the Methodology to "Data sourcing and layer creation to document hazards and existing and planned NbS" to help clarify this and resolve any potential confusion.
Paragraph 2.2 reads very much like a report, shorten and make more concise, avoid the 'we'. E.g. baseline data was gathered from x and y (table 1 for details). Remove the 'aim' part (that's introduction)	This section has been made more concise; the "aim" sentence has been removed.
Line 190: clarity 'containing the implemented pilot multifunction'.	Changed to stormwater retention areas.
Line 191: what type of NbS?	There are different types of NbS for flood risk reduction, such as retention basins, retained floodplains, and renatured meanders (see figures).
Line 194: how was it calculated?	Method added to 2.3 (now 3.1).
Paragraph 2.3 – lacks mentioning of the analysis on sinuosity	Added to 3.2.
Line 202: why are you using an American DEM that is 26 years old for your analysis? Surely there's something better available from national sources and at higher resolution? Resolutions of 1 arc second (better write approx.. 30 m) is quite poor for flood mapping	The 30m is added. There is a difference, but we wonder how much additional accuracy a 10m DEM would provide for mapping NbS, given that we are not

if local terrain shifts (such as levees and infrastructure may be blocking water flow).	mapping floods, levees, or infrastructure that might obstruct water flow.
Line 205: slope classes	While there are many different slope classifications, this is a straightforward concept that most readers are likely already familiar with. Including a detailed explanation here might add unnecessary length to the text.
Line 208-209: the added sentence the dem and slope were use to do what? (to calculate the topographic wetness index (this index still needs more explanation on how it is calculated and why you select the specific classes you selected.	The calculation of TWI has been added to the Methods section. However, our study does not involve comparing different TWI methods; rather, we use a straightforward tool in QGIS to obtain results that help identify suitable slopes for NbS implementation. For context and reference, we have included published studies that apply TWI for similar purposes. We chose to highlight the highest 50% and 75% of values, as focusing on the lowest TWI would be less relevant for our objectives.
Line 211-213 – I don't understand the added sentence: how does the TWI influence higher soil moisture – if you don't take into account a soil composition map, or land use practises (after all: the amount of organic matter in a soil is highly important in the soil moisture content, and this is influenced by agricultural practice/management and soil composition rather than by slope alone.) □ The whole section on TWI will benefit from more emphasis in the full methods section, results and discussion.	The TWI indicates areas where water preferentially flows due to topography; water may either infiltrate slowly or flow quickly, and when the soil is saturated, this can result in runoff. TWI has been used in other studies to identify the location and suitability of different plant species, as well as for drainage-related NbS. Land use practices are considered at a broad scale, focusing on farmland and urban areas, with recommendations made accordingly, though not in a highly specific manner. Actual soil composition can vary significantly over very short distances, especially in modified soils commonly found in Europe. Available soil maps provide information at relatively low resolution. Detailed planning of interventions would require subsequent fieldwork, including soil sampling; however, our study serves as a preliminary step and does not address this level of detail.
Paragraphs line 214-219: I don't fully understand what you do with this information. In general it's unclear how you merge the different pieces of analysis, and also why in some cases you discussed the sinuosity in the results, but it's lacking in the methods. It would be good to add a figure on how the different bits of mapping and analysis fit together in selecting which NbS is suitable where.	The sinuosity calculation has been added to the Methods section. While using land use layers and buffers provides a straightforward indication of whether a river has riparian vegetation, we believe it may not be necessary to explain the well-known benefits of vegetation along rivers for reducing flood impacts.

	Additionally, the Methods have been updated to clarify which approaches were used for mapping existing NbS (Section 3.1) and those identifying the potential for additional NbS (Section 3.2).
Figure 1 was probably not your own results, but general data and should either be part of 2.1, or be provided as supplementary material.	Correct, that is why we made the links available in Table 1. And we have written in the text: “We used spatial data available through state and federal German government bodies to identify the spatial extent of hazards, land cover, protected areas and designated floodplains.” This is written above Table 1. The reader can also see below Figure 1 what the data sources are, and can even find them in Table 1.
In general 3.1 should describe the most relevant figures and tables that represent your results. The text is currently difficult to navigate in relation to these figures and tables and there seems to be a lot of general information in it. (e.g. line 225-226, should be part of the case study description, same goes for 231-233)	3.1 (now 4.1) is a description of the results only (all references moved to introduction or discussion). This text sets the scene for the comparison of different topology across the study area, which refers to Figure 3. This then sets the scene for later discussion on suitability of existing NbS and the analysis to define where additional NbS is required. The context is that there are differences in slope and land availability also differences in flood type which means that different NbS are suitable. We have documented, classified and mapped the NbS, this is only explaining why specifically Rhine floods in Cologne do not need any further attention, but pluvial flooding and areas in the Wupper/Erft do. We literally cannot move this to the study area description and also reduce the length of the study area description.
Line 243: remove the ‘as previously mentioned’ part and ‘also’	Done as much as possible.
Line 247: what are ‘vegetation based NbS’	Vegetation-based NbS include for instance riparian buffer strips, floodplain reforestation and reforesting slope areas, which we have now added to the text.
Section 237-252 – what are really new results? What was already known and you added it to your inventory?, what did you do with the information you describe here in the mapping? Why do you refer to literature here? That should be part of the discussion. Same goes for the discussion on fragmented ownership.	Thank you for your thoughtful feedback regarding lines 237-252 (now section 4.1). We appreciate the opportunity to clarify the content and structure in this part of the manuscript. In the revised version, we have more clearly distinguished between background information drawn from existing literature and the new results generated from our spatial analyses. Specifically, section 4.1 now focuses on our original mapping and assessment of

	geomorphological and hydrological characteristics across the Cologne District, highlighting elevation, slope, and land use patterns as fundamental factors that influence the type and suitability of NbS across the study area. These results provide a detailed spatial context that forms the basis for selecting appropriate NbS interventions. We have also clarified how this information was utilized in our GIS mapping workflow to identify priority zones for different NbS types, such as retention basins in low-slope floodplains and vegetation-based measures on upland slopes characterized by rapid runoff and erosion risk. This represents a novel integration of spatial data specifically applied to the Cologne District catchments. Regarding the citation of relevant literature, we have relocated much of the broader contextual discussion, including socio-spatial constraints such as fragmented land ownership and urbanization impacts, to the Discussion section. This allows the Results section to remain focused on presenting new data and mapping outputs, while the Discussion elaborates on implications supported by existing research. We trust these revisions address your concerns and improve the clarity and focus of the manuscript.
Line 263-265: not a result – remove from the results chapter.	Agreed, the text is deleted.
Line 269: you state a volumetric nr of retention capacity-> how is this linked to what is needed overall in terms of capacity? => in order to better understand this value it is helpful to refer to the overall needed volume for a certain floodlevel	This refers to the retention capacity in the Upper Rhine. Typically, authorities aim to provide protection against floods with a return period of around 1 in 100 years. However, as we note in the paper, the extent to which upstream flood infrastructure, such as retention polders, reduces flooding impacts in Cologne is not precisely quantifiable. Floods can originate both from tributaries downstream of these retention basins and from the Upper Rhine itself, making the overall required retention capacity difficult to determine. In other words, the question of “how much capacity is needed” is somewhat like asking “how long is a piece of string?”—it largely depends on the level of protection authorities aim to provide, which is not always clearly defined.

	For the city of Cologne and the Erft/Wupper catchments, however, we do provide an answer to this question.
Line 270 – flood retention is expected to be reaching around 339Mm3 by 2027 (by today – spring 2026, the question arises if this is going to be reached -> discussion?	This is to be expected, as there are many stakeholders and factors involved in implementation, which are beyond the control of the authors and the timeframes of the study.
Line 271-276 -> move to discussion	We believe this paragraph is appropriately placed in the Results section because it directly contextualises the quantitative data on flood retention capacity upstream of Cologne. It clarifies the inherent limitations and uncertainties involved in quantifying how these infrastructures affect downstream flood peaks, which is essential for interpreting the figures presented. By providing this explanation alongside the retention capacity data, the paragraph helps maintain a clear and logical flow for the reader, grounding the results in real-world complexities without venturing into broader discussion or speculation better suited to later sections.
Line 284 : remove ‘founded by the romans’, move rest of the sentence, and the one after to the case study description or remove.	Founded by the romans is removed. The rest remains as it explains the results of documenting and classifying existing NbS.
Line 286: edit: NbS ‘in the Colonge area’	We are talking about Cologne City specifically in this sentence, as the preceding sentence explains, not the area.
Line 290: ‘flood wave peaks will be’ => unclear sentence, edit.	We have rephrased as follows: “Flood retention basins are designed to reduce peak flood levels and are activated when river heights reach 11.3 m and 11.7 m, respectively. In contrast, retained floodplains accommodate smaller floods by allowing excess water to spread naturally without causing significant impact to the city.”
Table 2: are the risks and challenges those identified in the documents you got the information from? => might be good to specify this.	The "risks and challenges" listed in Table 2 are based on the information and assessments provided in the original source documents cited for each NbS feature. We have specified this in the table caption/footnote to clarify that these risks are those identified in the referenced materials.
Table 2: the first 2 measures are expressed in reduced flood wave heights, the others in M3 => can this be harmonized for clarity?	We already explained this in the first review round, we are not modelling flooding so we cannot provide that information where it isn't already provided by public authorities.
Table 2: some of the measures list as a risk “limited retention capacity” while they don’t seem much smaller than others or that	Thank you for pointing this out. The designation of "limited retention capacity" as a risk for some measures reflects information provided in the original source documents, which may

argument is not mentioned for similar sized ones. -> why?	consider factors beyond just physical size—such as operational constraints, design specifics, or catchment characteristics—that affect retention effectiveness. For some similarly sized measures, such limitations might not have been explicitly mentioned in the sources.
Line 310-219: case study description, not result.	This has been re-written, but not removed, because it explains the results from Objective 1. to record, categorise and map existing NbS.
Table 3: for the pluvial NbS I miss dedicated ones such as wadis/bioswales, green roofs, why are they not in?	They are not implemented or not implemented in sufficient numbers to map or even make a difference. Table 3 describes existing NbS (as does Table 2, Table 4 and Table 5) - not simply suitable NbS.
Line 343: small retention basins sentence => move to discussion.	Removed altogether.
Related to line 379-380: are you familiar with the Dutch concept of cyclic floodplain rejuvenation that the way this is helpful in floodplain vegetation management in line with flood risk management? It would be good to discuss this in the discussion. See e.g. Baptist, Martin J., et al. "Assessment of the effects of cyclic floodplain rejuvenation on flood levels and biodiversity along the Rhine River." River Research and Applications 20.3 (2004): 285-297. Or Cornelissen, Perry, et al. "Forest development in a restored floodplain: Effects of grazing, inundation and vegetation." European Journal of Environmental Sciences 9.1 (2019): 21-32.	Thank you for your valuable suggestion regarding the Dutch concept of Cyclic Floodplain Rejuvenation (CFR). We have now added a paragraph in the Discussion section addressing CFR, its relevance to floodplain vegetation management, and its potential applicability within the Cologne District context. Currently, CFR is not among the planned approaches, likely because it is primarily suited to (a) large meandering to anastomosing rivers, (b) areas with ample available space, and (c) less urbanized environments. However, we agree that it should be discussed.
Line 403-408: not results: move elsewhere or remove.	Done, moved to the study area section.
Line 408: remove 'with'	We are not discussing unsealing permeable pavements (which is what the sentence is when 'with' is removed), the idea is to unseal by using (with) permeable pavements.
Line 416: remove 'as discussed above'. Sentence starting with 'the topographic wetness: move to methods, and explain better the 'response to drought part. Why use the word 'forest plant species' (you mean trees?)	As discussed above is removed. Topographic wetness sentence and references moved to methods. There are plant species other than trees in forests. But this is now changed to plant species.
Sentence starting with 'across' in line 421: edit for clarity	This is very clear already, not all of Leverkusen and RBK are located in the Wupper basin, not all of the Wupper basin is located in Leverkusen and RBK. See Figures 1 and 2.
Line 328: and further: move to methods.	Should probably be line 428 (TWI is calculated to demonstrate the initial spatial analysis step

	within the sequence of steps required to design placement of NbS interventions). We have moved it to discussion
Line 431: what is a 'plain landscape'?	We could use flat landscape, but it sounds a little unscientific. Basically, where slope is low (<5%) on average as in the plains, across the landscape.
Line 434: remove sentence starting with 'riparian vegetation'	We do not see a reason to remove this sentence, as it clearly highlights the important role of riparian vegetation in supporting riverbank cohesion, reducing runoff, and slowing overbank flows during flooding (Cooper et al., 2021; Murphy et al., 2021).
Line 436: replace 'below' with 'downstream'	'below' replaced with 'upstream'
Line 450: why did you do this analysis only for this section of the study area? Unclear, also add to methods and do for the full study area.	Sinuosity method is added to methods. Because downstream of this area there are already three sections of restored meander and riverbank structures. This area was badly eroded during the July 2021 floods this explanation been re-added to the study area section.
Line 454-467: remove paragraphs– unnecessary discussion, not in line with the results, nor the discussion of the used methods. Same goes for more parts of the discussion – keep the discussion focussed on the topic that is the core of your work, so e.g. 471-478 can be removed too.	This section addresses historic flood risk as well as the July 2021 floods. We believe both topics are essential and highly relevant to the discussion.
Line 480: what do you mean by 'different challenges'?	Literally the next sentences answers this question: "Heavy rainfall over short time periods can overwhelm natural and man-made drainage in these catchments, producing highly damaging, fast-moving floods. River floods in the smaller tributary catchments of the Wupper and Erft operate on a different scale and time-frame to the multi-landscape traversing Rhine River. As such these river systems are subject to fast floods as occurred in July 2021 or even flash floods."
Line 487: edit sentence 'with some simple...to remove the word 'some' and not use 'we', change 'designed' to 'identified'	Done.
Line 489. Remove sentence 'the TWI indicates...=> move to methods	The sentence establishes important context for the discussion and has therefore been retained in its original position.
Line 508-512: this is a major and important result and conclusion that needs a lot more attention in your full paper. It's now hiding away here, but must but more emphasised in the discussion and conclusion.	This comment is also addressed earlier on page 1, where we have provided a response.
Line 520: what do you mean by 'some time'? => too vague	Changed to years.

Line 522: remove 'also'; rather than ... floodplains- add 'only focus on' at the dots	Done.
Line 525: remove 'often exacerbated by cc	Done.
The newly added part of the discussion from line 531-573 is relevant, but a bit long, please see if it can be condensed and more closely aligned with the results and core messages from this paper. (as in: discuss your results, not start a philosophic tract far wider than the topic of the paper on NbS in general)	We have shortened this section.
Table 6: caption 'potential NbS': do you mean 'the mechanisms of the NbS'/core functional properties?, for the caption river section: do you mean catchment, or only the study area, or also the topographic zone in the landscape (from the top of the hill, to the slopes, to the river valley?.	We have rephrased the caption as follows: "Potential NbS interventions categorized by their core functional mechanisms and suitability across different landscape typologies within the study area, ranging from upland catchments and slopes to river valleys."
Table 6: I often feel the classification in the 'river section class can be expanded. (e.g. all 3 last lines can be implemented everywhere, same for the bufferstrips. Reforestation in the upper and middle section, grass swales and ditches in the valley of the entire river, terracing on the hills (upper/middle?) etc. please revise.	Agreed. New caption: "Potential NbS interventions categorized by landscape unit and their core functional mechanisms. The catchment zone specifies the position within the catchment where the intervention is most applicable." We have changed the column headers accordingly.
Next time you submit a paper: please be careful in proofreading with the check whether pieces of text are in the right section of the paper (intro/method/results/discussion) as it has taken me a lot of time to go over all these style errors that should have been fixed before submitting, and I could have easily rejected the paper based on just that if I was not of the opinion that the core message was sufficiently interesting.	Agreed; thanks for your time to fix these issues

Reviewer 2

The authors have satisfactorily addressed the comments from this reviewer. The updates have strengthened the paper and improved its structure. However, there are a few technical corrections that should be addressed in future revisions. Specific comments and recommendations are provided below:	Thank you for your review, it has been really helpful.
- While the figures have been improved with the addition of inset maps or boxes, Figures 6, 7, 8, and 9 would be easier to comprehend if a box or boxes were added to the inset map to show which area on the inset map is represented by the larger map.	Ok thank you, done. You should also note that at the request of the other reviewer we have combined figures 3, 4, 5, 6 & 7 (all maps of existing NbS in the study area). Figure 8 & 9 (now 4 & 5) have the additions to the inset maps.

- Lines 85-88: the sentence beginning with “This is important for the evaluation of existing NbS...” should be split into multiple sentences or otherwise reworded.	Done.
- Line 110: “2.1 Study Area” should be bolded to match the other subheadings	Agree, and done. We have moved study area outside of the methodology section as a standalone section (at request of reviewer 1).
- Line 208: the acronym SAGA should be spelled out the first time it is used.	Agreed, and done.
- Line 214: the acronym CORINE should be spelled out the first time it is used.	Agreed, and done.
- A number of sentences would benefit from restructuring, e.g., lines 40-42 (beginning with “Furthermore...”, lines 70-72 (beginning with “All the ecosystem-based measures...”), lines 180-182 (beginning with “Our aim being...”), lines 310-312 (beginning with “The StEB (2025c) are piloting...”), and 487-487 (beginning with “Both the Wupper and Erft basins...”).	“Furthermore, settlements, often with historic town plans, built around smaller watercourses face the prospect of severe and more frequent flash floods (Alobid et al., 2024)” changed to “Furthermore, settlements—often featuring historic town layouts and located along smaller watercourses—face the risk of increasingly severe and frequent flash floods.” “All the ecosystem-based measures aim to improve flood peak management, water absorption and reduce runoff and can be summarized under the umbrella term nature-based solutions (NbS).” Changed to All ecosystem-based measures aim to improve flood peak management, enhance water absorption, and reduce runoff, and can be collectively described under the umbrella term nature-based solutions (NbS). “Our aim being the identification of near-natural to hybrid NbS (existing and planned) that function in a way that reduces the impact of flood hazards through flood peak reduction or water retention.” We removed this sentence at the request of Reviewer 1. “The StEB (2025c) are piloting “multifunctional retention areas” for stormwater retention, which include the use of a park for stormwater retention and installation of rainwater storage underneath open spaces including that of a car park and public square, to contain stormwater. This section has already been restructured in response to Reviewer 1’s request. “Both the Wupper and the Erft basins contain a large percentage of agricultural lands on the periphery of the rivers and streams, and small cities along the waterways, which provide a

	range of challenges but also opportunities in particular for runoff reduction.” changed to “Both Rheinisch-Bergischer Kreis and Rhine Erft Kreis contain a large percentage of agricultural lands on the periphery of the rivers and streams and small cities along the waterways. These factors provide a range of challenges but also opportunities in particular for runoff reduction.”
- There are a number of lines where commas may help with comprehension, including lines 74 (after "enhancing"), 185 (after "Cologne city"), 338 (after "forests"), 416 (after "Wupper Basin"), 422 (after "waterways rise"), and 597 (after "nature-based").	Done; thank you.