Date: 08 Feb 2023
To: "Abdul Rivai Suleman" rivai.suleman@poliupg.ac.id
From: "Water Practice and Technology" wpt@iwap.co.uk
Subject: WPT-D-22-00365 - please submit revised manuscript for further review
Attachment(s): WPT-D-22-00365_MyReviewComments.pdf

Water Practice & Technology

Water Practice and Technology
Article title: 'Flood Mitigation of Bila River in Sidrap Regency Indonesia Based on Eco-drainage Retention Pond'
Reference No: WPT-D-22-00365

Dear Mr Abdul Rivai Suleman,

I am pleased to inform you that we have received the reviews of your paper, and invite you to submit a revision, taking into consideration the reviewer comments as detailed at the end of this message.

We will be happy to consider your article for publication in *Water Practice and Technology*, if you can address the reviewer comments to their satisfaction. Please be aware that your article may still be rejected if the revised version is not satisfactory.

For your guidance, any specific reviewers' comments are appended below the signature lines. If the reviewers have uploaded any extra files for your reference, you should find them attached to this message. You may also view them by logging in to Editorial Manager, and clicking on the 'View Reviewer Attachments' Action Link for the paper.

You must also make sure that the correct information for your co-authors has been added to the manuscript details and that all of your co-authors have verified their involvement through the links emailed to them. We will not be able to proceed with the next stage of peer review unless all co-authors have confirmed their involvement with the paper.

Please ensure that your revised manuscript also contains the following:

- **Marked-Up Copy of Changes:** Please include a manuscript copy detailing the changes made to your revised article as a separate document.
- **Response to Reviewers:** Please include a document detailing the changes made and why or why not you have made the changes recommended by your Editor and Reviewers.
- **Graphical Abstract**: This should offer readers an at-a-glance visualisation of your paper via a single, concise image.
- **Data Availability Statement**: Please ensure that you have selected the correct Data Availability Statement option in the 'Additional Information' section of your submission.
- **Conflict of Interest Statement**: Please ensure that you have selected the correct Conflict of Interest Statement to certify that the authors are not affiliated with or involved with any organisation or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this paper. You will be able to enter your statement in the 'Additional Information' section of your resubmission to Editorial Manager. Please address queries about Conflicts of Interest to the journal office: editorial@iwap.co.uk.

To submit the revised version of your article, go to https://www.editorialmanager.com/wpt/, log in as an Author and click on the Submissions Needing Revision folder. You will find your submission record there.

We would like to receive your revision by 01 Mar 2023. If you do not submit your revision by this date, we will consider your paper withdrawn from the review process.

This email has only been sent to you, as the corresponding author; please pass on this message to your co-authors.

Your username is as follows:

****

Once again, thank you for submitting your manuscript to *Water Practice and Technology*, and I look forward to receiving your revision.

Yours sincerely,

Lucy Ibbotson
Journals Manager
Water Practice and Technology
IWA Publishing
https://www.editorialmanager.com/wpt/

Reviewers' comments:

Dear Author,

Especially in figures 1-5 and 6, the texts on the maps are too small to be read. You have to make it readable.

Nese Yilmaz
Editor

Reviewer #1: Please elaborate the principal differents (construction, aim, function) between eco-drainage systems and retention ponds a little bit more clear.

Please see Reviewer #2's comments in attachments.

WPT-D-22-00365: Flood Mitigation of Bila River in Sidrap Regency Indonesia Based on Eco-drainage Retention Pond

Comments to the authors:

1. Since the retention ponds require a large land, how suitable and feasible is it for that particular region and remediate to that scourge?
2. What is the plan in place in terms of adequately maintaining the retention pond due to invasive species, health, and safety associated with it?
3. How did you validate the data obtained? As I can see there is time invariance as time is not exactly uniformly distributed to the hydrographs you have presented in your study.
4. Furthermore, The base periods of the hydrograph over effective rainfall uniformly distributed over a given period of time are not the same, why? And how can this significantly affect the accuracy of your hydrographs?
5. What are the strategies to manage water quality? Especially since anaerobic conditions can occur without regular inflow and no reduction in runoff volume.

Response to reviewer's comments on "FLOOD MITIGATION OF BILA RIVER IN SIDRAP REGENCY INDONESIA BASED ON ECO-DRAINAGE RETENTION POND, Reference No: WPT-D-22-00365", Paper, by Rivai et al.

Dear Nese Yilmaz,

We are pleased to resubmit an improved manuscript of Flood Mitigation of BILA river in Sidrap Regency Indonesia based on Eco-Drainage Retention Pond. We would greatly appreciate the editor and the reviewers for revising the manuscript and giving some further comments.

According to the comments and suggestions of the editor and the reviewers, we have addressed the comment (given in italics) from the reviewer and our responses are detailed below. We acknowledge that the reviewer input allowed for significant improvements to be made to this article.

Best wishes,

Abdul Rivai Suleman

Reviewer:

Especially in Figure 1-5 and 6, the texts on the maps are too small to be read. You have to make it readable.

Response:

Thank you very much for your precious suggestion and we have revised the Figure 1-5 and 6 according to your suggestion. We have marked the changes in the file name of 'marked-up of changes' with yellow mark.

Reviewer 1:

Please elaborate the principle different (construction, aim, function) between eco-drainage system and retention ponds a little bit clearer.

Response:

In terms of construction, eco-drainage is a building made in accordance with the geological, geographical, ecological, and hydrological conditions of the area, while a retention pond is a building that requires special treatment, such as embankments, inlet and outlet buildings.

In terms of objectives, eco-drainage regulates quantity (flooding), water quality, amenities, conservation, and ecological restoration while ponds cut off peak floods that occur in bodies of water/rivers.

From a functional standpoint, eco-drainage is an attempt to dispose of/flow the excess water into rivers in the optimal time, therefore, it is not causing health problems and flooding in the rivers concerned (due to increased peak discharge and shortened time to reach peak discharge). While the retention pond temporarily holds rainwater by providing an opportunity to seep into the ground whose operations can be combined with pumps or floodgates. Thus, in general, the retention pond can also function as eco-drainage which is known as the offsite retention method.

Reviewer 2:

1. *Since the retention ponds require a large land, how suitable and feasible is it for that particular region and remediate to that scourge?*

Response:

The placement of this retention pond is very feasible because it is at the confluence of the river to cut off the peak discharge of floods originating from the Bulucenrana Sub-watershed and Bila Sub-watershed which contribute greatly to flooding in the lower reaches of the river. furthermore, the retention pond was also placed in the channel of the old Bila River, which is connected to the currently defunct Kalola River. In addition, it can be seen from the results of the analysis that the recommended retention ponds can reduce the inundation area by 8.28% km^2 or 85.71% of the inundated area before the retention pond was created.

2. *What is the plan in place in terms of adequately maintaining the retention pond due to invasive species, health, and safety associated with it?*

Response:

In this study, we only focus on information on the application of retention ponds as a way of mitigating to reduce the impact of flooding on the Bila River. Regarding the maintenance of ponds against invasive, health, and safety associated with it are not taken into account in this study, but what is certain is that with the existence of this retention pond, apart from functioning as flood control, it also indirectly functions as a groundwater conservation medium which can fertilize plants or benefit the area around the retention pond.

3. *How did you validate the data obtained? As I can see there is time invariance as time is not exactly uniformly distributed to the hydrographs you have presented in your study.*

Response:

The data we obtained were validated with previous research data using rainfall data for 1994-2019 to obtain a design discharge Q20 of 1602.60 m^3/s. Based on the results of a comparison using the Mean Absolute Percentage Error (MAPE) method, a percent error of 5.27% was obtained (Suleman *et al.*, 2021). The hydrograph is an illustration of the response of the watershed to the rain that falls in the watershed area. As we know that the hydrograph has 5 main parameters, namely peak time, base time, peak discharge, and rising and falling sides. These five parameters are very dependent on the characteristics and the rain that falls in the area, so this is what causes the time to be not evenly distributed to the hydrograph because each Bulucenrana sub-watershed and Bila Sub-watershed has different characteristics, which are then superimposed to get a combined discharge. from the two sub-watersheds which will later flow downstream.

4. *Furthermore, the base periods of the hydrograph over effective rainfall uniformly distributed over a given period of time are not the same, why? And how can this significantly affect the accuracy of your hydrographs?*

Response:

Because the hydrology/flood discharge analysis of the design in this study was carried out in 2 watersheds and the effective rainfall differed depending on the analysis of the influence of rain stations in a watershed (polygon thiessen). Visually on the graph, it can be seen that the return period of 2 – 10 years is the same but for 20 years there is a slight difference, but basically everything is not the same. For the Bulucenrana sub-watershed Q2 = 338.50 m^3/sec, Q5 = 519.10 m^3/sec, Q10 = 648.10 m^3/sec and Q20 = 779.50 m^3/sec, while for the Bila sub-watershed Q2 = 351, 40 m^3/sec, Q5 = 522.20 m^3/sec, Q10 = 634.00 m^3/sec and Q20 = 738.60 m^3/sec. This

difference is due to the fact that each sub-watershed has its own characteristics which are part of the synthetic unit hydrograph analysis

5. *What are the strategies to manage water quality? Especially since anaerobic conditions can occur without regular inflow and no reduction in runoff volume?*

Response:

Basically, the retention pond functions to temporarily accommodate flood discharge that occurs, after the downstream water recedes, the runoff that enters the pond is released back into the river using either a pump or gravity. Thus, the water stored in the retention pond is only temporary so that anaerobic conditions will not occur.