Matters Arising (i)
for Consideration by the
Town Planning Board
on 15.12.2023

Review on Noise Mitigation for the Proposed Fanling Bypass (Western Section) and Design and Layout of the Proposed Public Housing Development in Wa Shan

1. Purpose

The purpose of this Paper is to report the review conducted by the Civil Engineering and Development Department (CEDD) and Housing Department (HD) as a follow-up to Members' suggestions of addressing traffic noise at source along Fanling Bypass (Western Section) (FLBP(W)) as well as improving the layout and design of the proposed public housing development (PHD) in Wa Shan, Sheung Shui.

2. Background

2.1 On 3.11.2023, after considering the representations and comment in respect of the draft Fu Tei Au and Sha Ling Outline Zoning Plan (OZP) No. S/NE-FTA/17, the Town Planning Board (the Board) decided not to uphold the representations and agreed that the draft OZP, including the "Residential (Group A)" zoning for the proposed PHD, should not be amended. However, Members considered that traffic noise from the FLBP(W) to the south of the proposed PHD should be mitigated at source as far as practicable to allow greater design flexibility for the latter. The building height (BH), layout and design of the PHD, particularly the public transport terminus (PTT) and car park block, should be optimized to create more openness with minimized visual impact, and achieve reasonable massing, building separation and stepped height arrangements. After discussion, Members agreed that:

(a) relevant government departments should be requested to review the possibility of addressing traffic noise at source and improving the layout and design of the proposed PHD and report back to the Board in about a month's time; and

(b) the Explanatory Statement of the OZP should be amended to spell out the views of Members as mentioned in paragraph 2.1 above.

2.2 Extracts of the minutes are at **Annex I**.

3. Noise Mitigation at Source along FLBP(W)

3.1 FLBP is an essential infrastructure planned to serve the Fanling/Sheung Shui New Town, Fanling North (FLN) New Development Area (NDA) as well as the North District[1]. The North East New Territories NDAs Planning and Engineering Study covering the FLBP was completed in 2013, and the relevant amended OZPs incorporating the land use and infrastructure proposals under the Study including the FLBP were gazetted in 2015 before the PHD in Wa Shan was proposed. As for the PHD in Wa Shan, in 2021, CEDD commissioned an engineering feasibility study (EFS). To address the traffic noise impact arising from the FLBP(W) on the subsequently proposed PHD, the option of at-source noise mitigation was examined in the EFS. Taking consideration of the construction cost and possible noise mitigation measures, at-receiver mitigation measures within the PHD to address the noise impact were adopted.

3.2 The proposed road scheme under the FLN NDA Remaining Phase project covering the FLBP(W) was gazetted under the Road (Works, Use and Compensation) Ordinance in September 2022 with the target of obtaining authorization by the Chief Executive in Council by end November 2023 and completing the project by end 2031. While the possibility of at-source noise mitigation was raised when the proposed amendments to the OZP were considered by the Rural and New Town Planning Committee on 31.3.2023, CEDD considered that the provision of additional noise barriers along FLBP(W) would incur significant additional construction cost, estimated to be about $90 million (at September 2021 price). It would also require major design changes to the relevant sections of the viaduct, including re-design of the entire bridge decks, columns and foundation to cater for the additional loadings. On the other hand, the adoption of at-

[1] As one of the major infrastructure developments in the FLN NDA, the FLBP connects between the FLN NDA and Fanling Highway (Tai Po Section) and links up with Sha Tau Kok Road and Man Kam To Road. Not only can it meet the external traffic demand of the development of the FLN NDA and mitigate the impact on the existing transport network of the Fanling/Sheung Shui area, it can also enhance the accessibility of the local residents of Fanling/Sheung Shui New Town, which helps to alleviate the traffic load on the existing road network in the area.

receiver noise mitigation measures within the PHD, in the form of fixed glazing windows/acoustic windows, would be far less costly, estimated to cost about $6.7 million (at September 2021 price). Considering the additional costs and noise mitigation impact of the two options, at-receiver noise mitigation measures, while being financially more favourable and technically feasible, were recommended to be adopted.

3.3 Noting Members' views and strong request as summarized in paragraph 2.1 above, CEDD has critically reviewed the matter in consultation with HD and Planning Department (PlanD). The review result reveals that the construction of two separate sections of noise barriers on the FLBP(W) on both ends of the PHD frontage involving a total length of about 120m (**Plan 1**) can achieve satisfactory noise mitigation effect while keeping the additional costs at a more manageable level of about $40 million (at September 2023 price).

3.4 While to proposed provision of the additional noise barriers in paragraph 3.3 above would necessitate design changes of the FLBP(W) and incur additional costs to the NDA project, it is agreed among CEDD, HD and PlanD that it would bring an opportunity for enhancing the BH, design and layout of the PHD concerned for a better living environment to the future residents, as strongly requested by the Board.

3.5 Construction works under the FLN NDA Remaining Phase project including the FLBP(W) are scheduled for commencement in early 2025 for completion in 2031. CEDD would fast track and re-schedule relevant activities of design finalization and tender preparation to minimize programming impact, such that construction works for the FLBP(W) could commence in early 2025 as scheduled[2].

4. Enhanced Notional Scheme for the PHD

4.1 With the incorporation of noise barriers along the FLBP(W) as proposed above, HD has reviewed the layout and design of the proposed PHD with due regard to the views as expressed by Members. An enhanced notional

[2] According to the Environmental Permit on the FLBP(W) granted under the Environmental Impact Assessment Ordinance, noise barriers along the FLBP(W) could be implemented by way of submission of a traffic noise mitigation plan for approval of the Environmental Protection Department. Re-gazetting under the Road (Works, Use and Compensation) Ordinance is likely not required.

scheme (**Plans 1 and 2**) has been prepared to illustrate a possible enhanced layout and design, with improvement over the original scheme as detailed below:

(a) in the original scheme, a PTT block of 50mPD (with absolute BH of 40m) comprising a PTT and a 4-level carpark was required due to the need to mitigate the traffic noise from FLBP(W) (**Plans 1 and 2**). Under the enhanced scheme, the height of the PTT block, comprising a PTT with one welfare storey atop, can be reduced to 35mPD (or absolute BH of 25m)[3] with a smaller building mass and carparking spaces relocated to the lower part of the residential blocks (**Plans 1 and 2**). In addition, the proposed welfare storey (of 6m) will be set back by about 2m to smoothen the edge and provide visual relief (**Plan 2**). This could help reduce the visual impact from the view at the FLN NDA and riverside areas of Ng Tung River to the south, and improve the view of the residential blocks behind (**Plan 3**);

(b) with the noise of the FLBP(W) mitigated at source, the adoption of fixed glazing windows/acoustic windows is no longer required, subject to detailed design and noise impact assessment, and there is greater flexibility in the layout and orientation of building blocks and units; and

(c) taking into account the opportunities mentioned in (a) and (b) as well as various considerations such as site configuration, breezeways, flat production target, prescribed window requirements, PTT and emergency vehicular access, etc, better massing could be achieved by adopting smaller domestic block footprints in the enhanced scheme, creating a central plaza with a podium garden atop (with an area of about 1,300m^2) to create a more open layout, and enhanced building separation with more gaps. The enhanced scheme would achieve a more rational stepped BH for the residential blocks from north to south, ranging from 162mPD

[3] As advised by HD, the proposed absolute BH of 25m of the PTT block is based on an assumed floor to soffit of the PTT of 11m; a transfer structure of 3m; welfare floor of 6m; 0.5m allowance for ground slab gradient, petrol interceptor and drainage; and 4 to 5m buffer to cater for allowance of maintenance and other technical requirements. The PTT block will be maintained at the same location as it is strategically located near the entrance of the PHD for easy access of the residents and the general public.

in the north, 160mPD in the middle and 142mPD in the south fronting the riverside of Ng Tung River, with maximum BH reduced (162mPD as compared to 167mPD under the original scheme) (**Plan 1**).

4.2 According to HD, the enhanced scheme has achieved better layout and design with reasonable massing and greater openness, wider building separation, and more rational stepped BH. Compared with the original scheme, the visual impact of the PHD has been further alleviated in the enhanced scheme[4] (**Plan 3**).

5. Way Forward

Subject to Members' further views, CEDD and HD will conduct more detailed investigation/assessments on the noise barriers along FLBP(W) and will enhance the layout and design of the PHD respectively at detailed design stage, and will strive to optimize the scheme for further improvement to the proposed PHD. Relevant requirements will be incorporated into the Planning Brief of the PHD as prepared by HD to guide the design and implementation of the PHD.

6. Attachments

Annex I	Extracts of Minutes of TPB Meeting on 3.11.2023
Plan 1	Comparison of the Layout of the Original and Enhanced Notional Schemes of the PHD
Plan 2	Comparison of the Sections of the Original and Enhanced Notional Schemes
Plan 3	Comparison of the Photomontages of the Original and Enhanced Notional Schemes

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
HOUSING DEPARTMENT
PLANNING DEPARTMENT

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[4] Photomontages at VP9 (i.e. proposed footbridge across Ng Tung River) are compared as it was the vantage point with the greatest concern during the previous consideration by the Board.