

Memorandum

To	Blair Devlin
Copy	Tony Gordon, Richard Hilliard
From	Amy Prestidge
Office	Christchurch Environmental Office
Date	22 March 2019
File	6-XQ074.04/005
Subject	Flint's Park 3 Waters Summary Review of EOI and Addendum

This modified memorandum was prepared following receipt of the Addendum to Flint's Park SHA document that had not been received at the time of writing the original memorandum. The body of the memorandum remains unchanged; additional comments have been made at the end of the original content.

Flint's Park development is located within the Ladies Mile HIF development (in Area 1.1, refer Figure 1), and therefore the basis of the design for the 3 waters has used the Ladies Mile HIF report produced by WSP Opus in June 2018. The reviewed documents are the Flint's Park EOI and its Appendix B – Flint's Park Infrastructure and Servicing Report.

The basis of the HIF report was that new wastewater, stormwater and water supply reticulation would need to be provided by QLDC as there is either no reticulation or no capacity remaining in the existing reticulation. The assumptions made in the Flint's Park EOI are that all trunk reticulation (not within the development site) will be provided by QLDC and sufficiently sized to allow service at the level required.

There has been very little design information provided to allow a comprehensive review of what is proposed relative to the QLDC's Code of Practice (CoP).

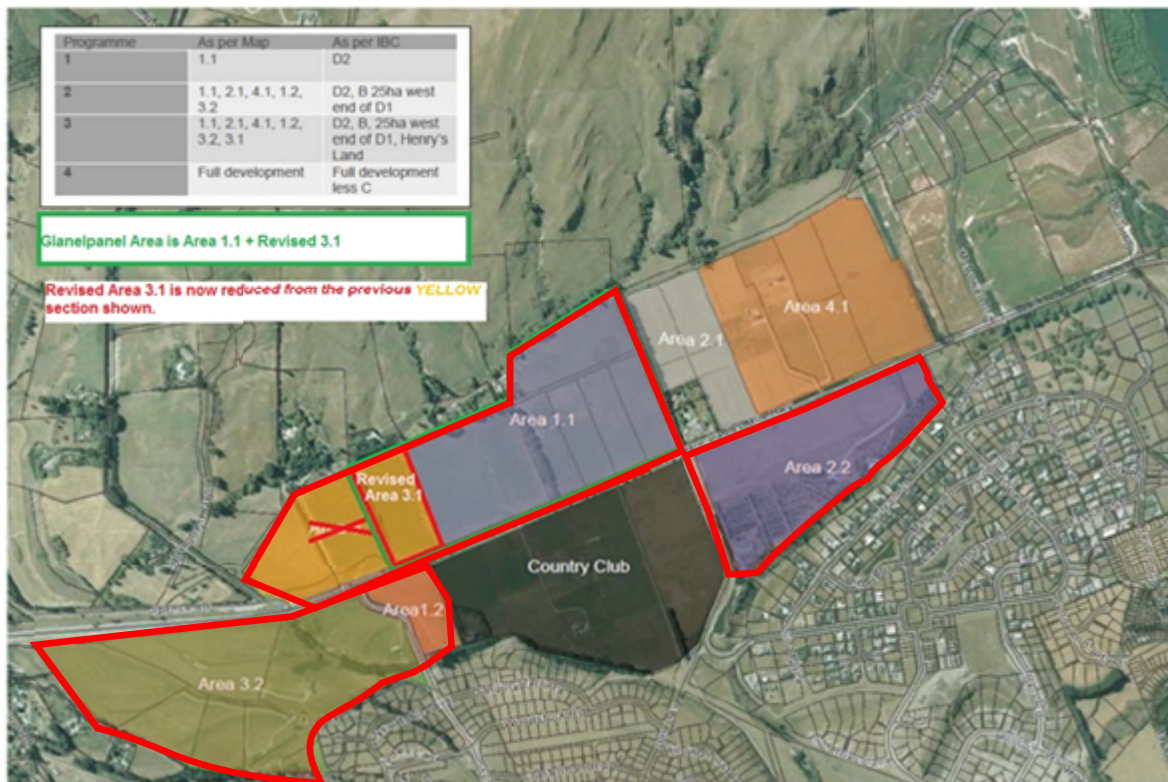


Figure 1 – Development areas included in the QLDC Ladies Mile HIF submission



Figure 2 – Flint's Park development area

Stormwater

Section 6 of Appendix B covers the stormwater assessment undertaken. Generally the proposal is in accordance with the requirements of the QLDC CoP. The intention of the design is also in keeping with the HIF assessment, which indicated that the pre-development runoff from the 1% ARI rainfall event could be discharged to the Howards Drive stormwater pipe.

However, the modelling data provided was lacking in the detail needed to confirm the calculations. Part of the QLDC CoP requirements are that all underlying assumptions are to be

clearly stated so that a manual check of the calculations is possible. This will be necessary in the detailed design submission to allow a full check.

The items raised in review include:

1. The calculations for the pre-development flows are not provided. It was not therefore possible to confirm the stated allowable outflow of 300 l/s for the 20% ARI storm event. It appears the area now extends beyond the original land area used for the HIF design and it is not clear if this increases the outflows beyond that of the original area. This may require additional attenuation, as the Howards Drive pipe has a maximum capacity that needs to be shared amongst the other developments.
2. The modelling results have not explained how the results have been obtained. This should be defined in greater detail for the detailed design submission.

The intention of the EOI design to attenuate the stormwater runoff to achieve the pre-development flows, and to treat the stormwater with swales and rain gardens follows the CoP and is acceptable. However, further review of detail when it is available will be necessary to ensure the sizes of the proposed infrastructure are sufficient to accommodate all post-development flows and volumes.

Wastewater

Section 7 of Appendix B covers the wastewater assessment undertaken. Generally the proposal is in accordance with the requirements of the QLDC CoP. The intention of the design is also in keeping with the HIF assessment, which indicated a pump station would be necessary to service the area.

The pump station solution is proposed as shared infrastructure with the adjoining development areas, which is in keeping with the intention of the QLDC HIF design (which recommended providing a pressure main from the privately-developed pump station through to the Shotover River bridge to the west).

There were very few calculations provided, but reference was made to preliminary modelling of an internal reticulation network.

The items raised in review include:

1. The pump station in the HIF design was intended to have 12 hours storage either on site or in the reticulation. The proposal in the EOI is only for 8 hours storage. This does not comply with the QLDC Code of Practice which specifies 9 hours storage (Appendix G of the CoP). Although the CoP does allow that where the pump station is considered "large" and has a standby generator and spare pump supplied (additional to duty / standby pumps) – with the agreement with Council, emergency storage may be reduced. There is no mention of this in the EOI.
2. No design parameters or model have been provided. The proposal that the local network will be 150 mm diameter is in accordance with the CoP and normal practice and appears acceptable. It is not clear if the pump station is to be located in Flint's Park or Glenpanel. The EOI states that the development will work with the adjacent landowner to the east to design and construct an appropriate pump station to service both areas.

The intention of the design to collect wastewater by gravity and discharge to a new pump station is generally sound. The information necessary to confirm there are no issues can be provided at detailed design stage, but currently there are no major issues with the proposal.

Water Supply

Section 8 of Appendix B covered the water supply assessment undertaken. The design for the area is heavily influenced by the QLDC reservoir and falling main design. The initial Flint's Park

assessment has been based on the statement that the QLDC reservoir will be situated at RL 423 m, and will be providing pressures of between 400 kPa and 600 kPa. This elevation has been changed to RL 407 m due to the reservoir's proposed location and further design work by others.

If the QLDC CoP and firefighting standards are met in design, there should not be any supply issues.

However, it would be beneficial for the developer to review their design, especially in regard to any proposed multi-story buildings to ensure that any requirement for booster pumps (which are not mentioned in the report) are not necessary with the changes to the reservoir elevation. QLDC should confirm to the Flint's Park developer what the maximum pressure available in the falling main will be to facilitate the review.

Detailed design will provide the information necessary to confirm there are no issues, but currently there are no major issues with the proposals.

Conclusion

The level of information provided is not sufficient to complete a full review of the design relative to the QLDC CoP. However, the design parameters stated are generally acceptable.

Response to the items raised will assist both with the design and the design review, so addressing these is recommended.

Addendum

The Addendum to Flint's Park SHA EOI document along with its appendices were received on 21 March 2019. The Addendum covers a new area to the east of the proposed Glenpanel development, referred to as the Flint's Park Mixed-Use Precinct, resulting in the Flint's Park development flanking the Glenpanel development on each side (refer Figure 3)

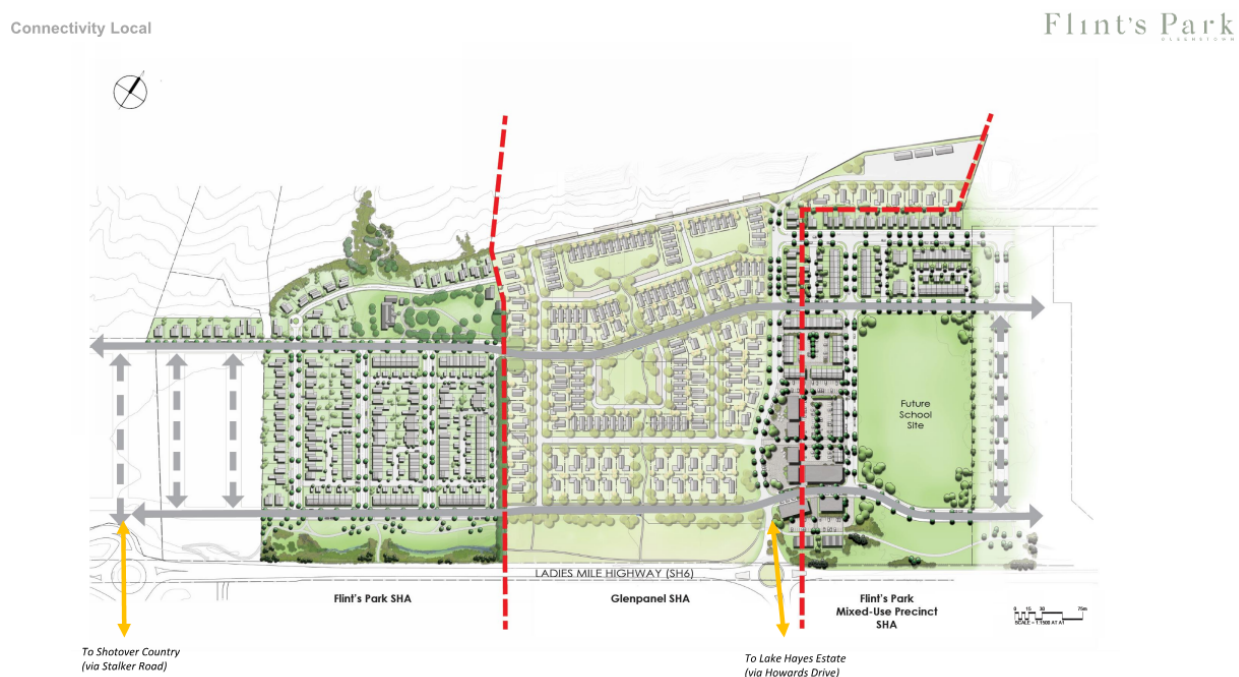


Figure 3 – Flint's Park Mixed Use Precinct (with Flint's Park SHA and Glenpanel SHA also shown)

The submission regarding the 3 waters is generally in accordance with both the QLDC CoP and the original Flint's Park SHA submission. As such, there are no major issues with the proposal.

Comments:

- It is acknowledged that this area is outside that originally included in the stormwater area assumed for the design of the Howards Drive stormwater pipe. The proposal to attenuate both areas to reduce outflows to match that of the Flint's Park SHA area, and so match the assumed contributing area for the Howards Drive stormwater pipe, is acceptable.
- Where the boundary is between the Flint's Park Mixed Use Precinct and the Glenpanel SHA is unclear. The roadway appears in both proposals. The rising and falling mains to and from the proposed QLDC Ladies Mile reservoir may follow the road. It is important that this is not missed by whoever carries out the designs for the proposals.
- Whilst there are unlikely to be any water supply issues, water supply design needs to take into account the changes that have occurred since the HIF report was prepared.