

Erewhon Water Supply Scheme Overview

June 2023



Why a review?

- Knowledge about Scheme not collated or well understood
- Age of Scheme means some pipe materials failing
- Water reform issues
- Need to understand risks to scheme

Current information

- Good asset data - location and material information
- Very good records of operations and maintenance
- Operations data sufficient to run scheme
- Brief overview of scheme in RDC 3 Waters AMP – useful but more content required for Scheme Committee



Site visit

- This was very useful in terms of getting a feel for the scheme
- Scheme is long and has significant variations in height
- Renewals, repairs, and new tee boxes all constructed to a high standard, and Scheme can take confidence that these will last a long time
- As the scour valve at the bridge was operating direct proof that weir and intake can deliver consented flows. This is in excess of current demand.

Hydraulic model

- A spreadsheet model was developed to assess the performance of the scheme
- No issues with delivering current demand
- Certain pipes will need to be upgraded if full consented demand used. Where and when will depend upon which farms are willing to pay for more water.

Observations and conclusions

- Risks with consent and pipe bridge need to be thought about
- Consent is not time critical now but have time to begin to manage this actively
- Pipe bridge looks in good condition but a formal inspection would be useful
- Maintaining the Scheme is not easy due to the location. Current maintenance is reliant on dedicated individuals. The high quality of workmanship shown is critical.

Observations and conclusions (2)

- Pipe renewals plan proposed is robust and will sustain the scheme well into the future.
- HDPE is a good material choice for pipe renewals. The American Water Works Association research suggests that HDPE can '*withstand sustained periods of high frequency surging (ranging from 1 to 50 cycles per hour) at magnitudes of up to 200 percent of the pipe's static pressure rating with no indication of fatigue and no reduction in long-term serviceability when properly installed.*'
- This means a PN16 HDPE pipe can withstand head changes of 320m reliably



More observations

- There was comment about the rubber rings shifting in the Maric restrictors. This is probably due to the high cyclic pressures shifting the rings. These should be swapped out when this is observed
- There was also comment about some connections not getting their minimum flow. This can be fixed by putting in larger Maric valves and controlling demand with the amount of on-farm storage
- Some thought could be given to more scour points but with the renewals planned leaks and breakages should drop markedly so need is less

More observations (2)

- Renewals will drop reactive maintenance however budget should be re-allocated to more inspections and operational maintenance activities to keep the scheme running well
- Note for rural schemes the new Drinking Water regulations will require point of use treatment for human consumption. There are 'off the shelf' systems available for this.



