

Memo

To:	Karen Page
From:	John McCartney
Date:	Tuesday, 20 April 2010
cc:	Denis Mander
Subject:	Plan Change 39 – Arrowtown South

Further to recent discussions and my further information request of 4th March 2010, I report as follows on the feasibility of servicing the proposed Arrowtown South plan change area with water supply and wastewater and storm water drainage reticulation.

1. General

We have reviewed the information provided with the application for the Arrowtown South Private Plan Change. On 4th March 2010 we requested further information from the applicant with respect to the water supply, wastewater and storm water drainage. To date, we have not received any further information and we now report on an interim basis pending receipt of a response to our further information request.

The proposed plan change will allow for a significant residential development adjacent to Arrowtown. From the application document and further submissions from the applicant, the plan change will result in up to 230 dwellings. In order to adequately service this level of development considerable investment in infrastructure is required and this brief report outlines the anticipated upgrades required to service the development with water supply and wastewater and storm water drainage.

The main basis of the evaluation of the infrastructure feasibility is contained in the MWH report that accompanied the application. The report has been prepared on the basis of 200 dwellings. This is considerably less than the maximum number of dwellings proposed for the site and as a result we consider that the report does not adequately address the probable impacts that the development will have on the existing service networks. We have requested that the report be updated to reflect the actual maximum level of development likely to result from the plan change.

2. Water Supply

The applicant has proposed to connect to the existing Arrowtown water supply reticulation. The connection points proposed are on Centennial Avenue and McDonnell Road.

Our review of the information provided by the applicant has raised the following concerns:

- a) The report is based upon modelling carried out by Tonkin Taylor using the QLDC water model. The water modelling undertaken includes allowance for growth in Arrowtown itself, but no mention is made of allowance for growth within Millbrook. Millbrook has recently completed a large subdivision and has further zoned land for development. The water supply for Millbrook is from the Arrowtown water supply scheme and the already approved growth in Millbrook may create a shortage of water for the proposed development and/or lead to negative impacts on the level of service for existing water supply users.
- b) QLDC has deferred upgrades of the Arrowtown Borefield. This is the source of the water for the town supply. From work recently undertaken for Council, it appears that the borefield is currently at or near capacity and it is highly likely that the Arrowtown South development would necessitate an upgrade of the borefield to ensure the appropriate level of service for Arrowtown is maintained. The included Tonkin Taylor report does not detail any borefield

capacity issues and may be using out of date information. It would be good to understand what has been allowed for in the Tonkin Taylor model for existing borefield capacity.

- c) The water storage capacity check makes allowance for further growth within Arrowtown itself. It does not mention the approved future growth within Millbrook and how this effects the water storage requirements. This needs to be addressed in the report and any storage upgrade requirements detailed.

As already stated above, the reporting provided with the application has only assessed the addition of 200 dwellings and the likely development of 230 dwellings will result in further negative impacts in relation to the three points raised above and may cause other concerns to arise such as treatment upgrades and further reticulation upgrades being required.

A number of submissions have raised concerns with respect to the capacity for the existing water supply system to meet the expanded demand arising from the proposed plan change. Due to the lack of information provided with the application, currently I agree with these submissions.

As currently proposed, the plan change has not provided sufficient information to allow connection to the Arrowtown Water Supply. We believe that there is likely to be insufficient capacity in both water source, water storage, water treatment and possibly water reticulation elements to allow connection until upgrading of all these elements has been completed. The cost of these upgrades may be considerable and a large proportion (if not all) of these costs should be funded by the plan change originator rather than the existing Arrowtown community.

3. Wastewater

The applicant has proposed to connect to the existing wastewater reticulation in Centennial Avenue and McDonnell Road.

Our review of the information provided by the applicant has raised the following concerns:

- a) The modelling undertaken by Rationale has been used as part of the basis for the report. Whilst the Rationale report does take into account projected growth, it is not clear if the anticipated growth in Millbrook has been accounted for in the model. Growth in the Millbrook will impact on the projected flows at the Bendemeer pump station.
- b) In respect to the McDonnell Road pump station, the pump station will likely require an upgrade with respect of the pumps. It is likely that the amount of emergency storage will also require upgrading. There should be discussion of the feasibility of the storage upgrade in the report (i.e. Is there room on site? Will it be covered by the existing designation? Etc...).
- c) In respect to the McDonnell Road pump station rising main, the report uses a pipe diameter of 150mm, this is based on information in the QLDC GIS. From a recent site inspection, a substantial part of this rising main is 100mm diameter (outside diameter). This will dramatically alter the calculated capacity of the pipeline used in the report and may lead to an upgrade being required. The need and possibly the feasibility of the rising main upgrade should be discussed in the report.
- d) In respect to the Norfolk Street pump station, this pump station's preferred configuration is duty/standby but can run in a duty/assist mode if required. At present, the pump station uses storage during peak inflow events. In order to cater for the expected additional flows from the development an upgrade will be required to ensure that the pump station operates in a suitable manner. This upgrade will involve increasing the pump capacity or the storage capacity or both. The feasibility of these upgrades should be discussed in the report.
- e) In respect to the Bendemeer Pump Station, it appears that the increase in flows to this pump station will require more frequent and greater use of the storage chamber. It may also result in the duty/assist arrangement operating too frequently and a standby pump may be required. This may result in the need to upgrade the storage chamber to increase capacity or to

increase the pumping capacity. The feasibility of these upgrades should be discussed in the report.

- f) The Rationale report was on the basis of 90 additional residential allotments. The development proposal is currently proposing 200 lots. The conclusions drawn in the report stating that no upgrades of the gravity network are necessary due to the Rationale report showing that there is sufficient capacity is not substantiated and should be confirmed by running the model for the current 200 dwelling proposal.

As already stated above, the reporting provided with the application has only assessed the addition of 200 dwellings and the likely development of 230 dwellings will result in further negative impacts in relation to the six points raised above.

A number of submissions have raised concerns with respect to the capacity for the existing wastewater drainage reticulation network to meet the expanded demand arising from the proposed plan change. Due to the lack of information provided with the application, currently I agree with these submissions.

As currently proposed, the plan change does not provide sufficient information to allow connection to the Arrowtown wastewater reticulation. We believe that there is likely to be insufficient capacity within existing pump stations (including emergency storage), rising main capacity and possibly gravity reticulation elements to allow connection until upgrading of all these elements has been completed. The cost of these upgrades may be considerable and a large proportion (if not all) of these costs should be funded by the plan change originator rather than the existing Arrowtown community.

4. Storm Water

The applicant has proposed to drain the site to the unnamed tributary of the Arrow River running through the subject land. It is unclear in the report if stormwater is going to be managed to be hydrologically neutral or not.

Our review of the information provided by the applicant has raised the following concerns:

- a) The storm water drainage concept relies on draining the entire site to the water course through the property. The report states: "the existing water course can be shaped to pass this increased flow". No discussion on the impacts of the storm water flows on land downstream of the site has been included in the report. The applicant needs to demonstrate that they have the necessary agreements to allow channel shaping on downstream land.
- b) The development and storm water solution will result in changes to the runoff characteristics of the site. This will result in concentration of flows onto downstream land. Council needs to be sure that this has been catered for by agreement with the downstream property owners and appropriate easements should be in place to protect future landowners. The requirement for these easements and the feasibility for getting the easements should be discussed in the report.
- c) The applicant has briefly discussed in the report the possibility of mitigating peak runoff flows by "use of surface drainage swales, landscaping, and storm water ponds, and in channel controls". It is unclear to what extent the current concept master plan has taken this into account. If this option is going to be used on site, it should be addressed in much more detail now as it may have a material impact on the layout of the site and the width of the road reserves.
- d) The report briefly discusses a flood risk to land near the stream. Council needs to better understand the degree of the risk and the area at risk. More detail on what levels will be required to be achieved to ensure compliance with the Building Code. A full flood risk analysis should be undertaken that addresses the post development runoff flows, the watercourse capacity (both on site and further downstream) and any necessary works arising from the analysis and how that is to be incorporated into the site layout.

Some submissions have raised concerns about the negative impacts that the proposed development may have on the water course running through the subject land. With the level of detail provided in the application, it is difficult to determine if any negative impacts will arise. There is the opportunity that the development may improve the water course quality due to the removal of stock access to the water course. Until definitive development proposals that detail the proposed storm water disposal techniques and associated stream works are evaluated, we are unable to comment on the positive or negative impacts that the development may have on the water course.

As currently proposed, the applicant has failed to provide sufficient information to confirm feasibility of the proposed method of storm water drainage from the subject land.

5. Summary

The information provided with the application is of insufficient scope and detail for Council to be satisfied that the plan change area can be serviced as proposed with water supply, wastewater and storm water drainage services.

It is our recommendation that until further information is provided; the plan change should be placed on hold or rejected in its entirety.

Should you require any further information, please contact the undersigned.

Memo

To:	Karen Page
From:	John McCartney
Date:	Tuesday, 20 April 2010
cc:	Denis Mander
Subject:	Plan Change 39 – Arrowtown South

I have gone through the LTCCP project list for Arrowtown. Below is my summary of the relevant projects. This is based on the feasibility report that I have reviewed from the applicant. As previously discussed, we are awaiting further information from the applicant that should give more certainty over the extent of any upgrades required.

1. Wastewater

There are three projects listed in the LTCCP for Arrowtown that will be directly affected by the proposed Arrowtown South Plan Change. These are as follows:

- a) Bendemeer Upgrades Stage 2
Estimate: \$1,768,906
Programmed Completion: 2017/18

This involves the upgrade of the Bendemeer Pump Station and Rising Main required due to the projected increase in flows.

If the Arrowtown South Plan Change proceeds, the scale and timing of this upgrade will need to be amended.

- b) Norfolk Street Pump Station Upgrade
Estimate: \$135,939
Programmed Completion: 2017/18

This involves the upgrade of the Norfolk Street Pump Station required due to the projected increase in flows.

If the Arrowtown South Plan Change proceeds, the scale and timing of this upgrade will need to be amended.

- c) McDonnell Road Pump Station Upgrade
Estimate: \$168,885
Programmed Completion: 2010/11

About to be upgraded due to growth and projected increases in flows.

This upgrade will occur prior to the proposed Arrowtown South plan change progressing through all approval stages. Further upgrades will be required if the Arrowtown South plan change proceeds.

There are further upgrades of the Arrowtown wastewater reticulation system that may need to occur to allow the connection of the Arrowtown South Plan Change area. These include the McDonnell Road Pump Station Rising Main Upgrade and various gravity upgrades. Neither of these projects are allowed for in the LTCCP.

2. Water Supply

There are two projects listed in the LTCCP for Arrowtown that will be directly affected by the proposed Arrowtown South Plan Change. These are as follows:

- a) Arrowtown Bore Field Upgrade
Estimate: \$1,141,460
Programmed Completion: 2013/14

The involves the upgrade of the raw water extraction bores for the town water supply to cater for projected growth and consequential demand increase.

If the Arrowtown South Plan Change proceeds, the scale of this upgrade will need to be increased and the timing may need to be amended.

- b) Arrowtown water supply treatment upgrade
Estimate: \$422,261
Programmed Completion: 2013/14

Due to the growth in Arrowtown and the projected water usage increases, the treatment plant will need to be upgraded.

If the Arrowtown South Plan Change proceeds, the scale of this upgrade will need to be increased and the timing may need to be amended.

Further upgrades of the Arrowtown Water supply system may need to be undertaken in order to cater for the demand from the Arrowtown South Plan Change area. These include Water Supply Reservoir Storage upgrades and gravity reticulation upgrades. Neither of these projects are allowed for in the LTCCP.

3. Storm Water

There are no projects in the LTCCP that directly affect the proposed Arrowtown South Plan Change area.

4. Summary

There are several projects in the current LTCCP where there is scope for the Arrowtown South developers to work with the Council to ensure that future upgrades meet the projected demands of an expanded Arrowtown. It would be appropriate that any additional cost arising from shifting projects and/or increasing the scope of projects is carried by the Arrowtown South developers. None of the relevant projects listed in the LTCCP are at a stage where this cost share arrangement could be formulated and the estimates given are very preliminary rough order cost status only. Further liaison between Council and developers would be required should the plan change proceed.

Please contact me if you require any further information.