12 Councillors or less: FPP or STV ?

Council has decided we will have 12 councillors elected by FPP in 2019 and at those elections we will be asked for our opinion for the future. STV is a mystery to many.   Here is an explanation.
STV or Single Transferable Vote is the voting method used for electing members of District Health Boards. It is also an option for Local Body Elections. Some councils In New Zealand use the method but so far, not the Whanganui District Council. By now we have had sufficient experience of our DHB elections to know that, as voters, we are required to rank the candidates, 1,2,3,4 etc .down as far as we want to, even right down to cover all the candidates.
But how are our votes counted?   There is one vital point to remember. **We only have one vote** (**Single** Transferable Vote).   So how is that vote used? Here are three voting papers as examples. These are based on the 2016 Whanganui DHB election.   The candidates actually elected after all the counting are shown with *

VOTER A	VOTER B	VOTER C
1 **MAIN***	1 **DUNCAN***	1 **STEVENS**
2 **VINSEN**	2 **MAIN***	2 **MACDONALD***
3 **HYLTON***	3 **ELLWOOD**	3 **FIRMIN**
4 **ADAMS***	4 **BAKER-HOGAN***	4 **MAIN***
5 **BAKER-HOGAN***	5 **OSBORNE**	5 **HYLTON***
6 **OSBORNE**	6 **ANDERSON***	6 **ADAMS***
7 **WILLS**	7 **VINSEN**	7 **VINSEN**
8 **ANDERSON***	8 **MACDONALD***	8 **STANBROOK**
9 **DUNCAN***	9 **FIRMIN**	9 **BAKER-HOGAN***
10 **MACDONALD***	10 **STANBROOK**	10 **VINSEN**
11 **ELLWOOD**	11 **TEKI**	11 **WILLS**
12 **FIRMIN**	12 **WILLS**	12 **TEKI**
13 **TEKI**	13 **ADAMS***	13 **ANDERSON***
14 **STEVENS**	14 **HYLTON***	14 **OSBORNE**
15 **STANBROOK**	15 **STEVENS**	15 **ELLWOOD**

For this voting paper the single vote split up like this	For this voting paper the single vote split up like this	For this voting paper the single vote split up like this
MAIN 38% HYLTON 62 % And nothing for the others.	DUNCAN 73% MAIN 10.4% BAKER-H 8% ANDERSON 4.5% ADAMS 1% HYLTON 0.1% And nothing for the others.	STEVENS 100% And nothing for the others. Stevens was not elected so voter C didn't get to vote for any elected candidate . (There were 833 voters who voted STEVENS 1st)

How do we know these percentages? The Act of Parliament which defines STV has a formula to determine these percentages from the published results of the election.

But some sort of explanation is warranted. Take Voter A. MAIN was very popular and only needed 38% of A's vote to get in. Now VINSEN didn't have enough support to get in so no point in 'wasting' A's vote there. HYLTON was borderline and needed all he could get so all the rest of A's vote stayed with him.

For Voter B, DUNCAN was only moderately popular so she needed 73% of B's vote, not leaving much left. Popular MAIN only needed 10.4%., ELLWOOD was not going to get in so no good giving any to her or any of the other unelected candidates on the list. So BAKER-HOGAN and the rest of the candidates got what little there was left.

VOTER C was interesting as this is the only example where an unelected candidate received any votes. This is because STEVENS was borderline. Throughout the counting process it looked like he could get in so he kept any vote he was given. Right at the end he didn't make it and it was too late to give his votes to anyone else.

The STV Counting Process

It is obvious that the percentages above can't be used in the actual counting process. How can candidate's popularity or whether they were going to be elected or not, be known before the counting begins.?

For this reason the counting process takes place over and over again until these facts emerge. For the 2016 Whanganui DHB elections the votes were recounted 25 times until the final result could be determined.

Before the counting begins it has to be determined just how many votes a candidate needs to be elected. This figure is called "the quota" and it depends on how many voting papers there are and how many positions up for election. In the 2016 elections there were 20606 votes and 7 positions to be filled' The quota is worked out like this:

Quota = number of voters divided by number of positions plus 1. That is $20606 \div 8 = $ **2575.75**

At first all the voters' first preferences were counted. This resulted in MAIN getting 4235 votes; far more than the 2575.75 needed. So all those that voted MAIN first had their votes reduced by a percentage, so she just had the 2575 and the percentages left over were given to their 2nd preference (for Voter A the part vote would have gone to VINSEN) By the end of counting those first votes for MAIN were down to 38% of a vote with the rest being given to later preferences.

The same sort of thing happened to BAKER-HOGAN and ANDERSON as they had more than 2575.75 first preferences. Of course some of BAKER-HOGAN'S second preferences went to MAIN and she didn't need them so the 3rd preferences benefitted. And so on.

Now the candidate with the least number of first preferences was considered. That was ELLWOOD. She had 327 first preferences. All those voting papers were taken off her and given to the second preference on each paper. Some of those might have gone to MAIN, BAKER-HOGAN or ANDERSON. So there had to be some more redistribution from them as they didn't need any more votes.

Then the next lowest candidate, WILLS, had his 485 first preferences redistributed to the 2nd

preferences and so on and so on until: eventually after 16 counts, MACDONALD got over the quota and she was elected. In the 17th round, VINSEN had the lowest number of votes so he was excluded and his votes went to their next preference. (This is where Voter A had his part vote changed from VINSEN to HYLTON) The process continued until there were seven elected. which occurred on the 25th count..

Needless to say this whole process is handled by a computer program. It would take months to do all this manually.

So why the bother with all this complexity?
And not only that, some voters could feel hard done by when often the 2nd and later preferences they had so carefully thought about had been ignored in the counting process.. (Look at Voter A and voter C above)
It's the quota ! It means that a candidate who has a significant amount of support but not a majority can be represented. Popular candidates will always get in but people in the community who may not be in the majority still deserve to have their point of view considered.

Here is an example. There is no specific representative of old people on the DHB even though the elderly are significant users of hospital services. Now we could have decided that Grey Power president of the time, Graham Adams should be our representative. If we all gave him our first preference he would reach the quota and get elected. (As it happens he did get elected but not until the 20th count of the 25).

Of course voters have to understand how the system works.. no good saying "Oh well I will put Adams among the first seven on my list".. It has to be **first**, otherwise he might be ignored as in VOTER C's paper.

NOTE: **Some simplifications have been made above, such as what happens to those who vote for less than the full 15 and the actual calculations for transferred votes but the general principles are sound.**

It is interesting that there are 4 appointed positions on the DHB. In theory the STV process should ensure there is representation from Maori but as STV is not well understood the appointment process makes sure.