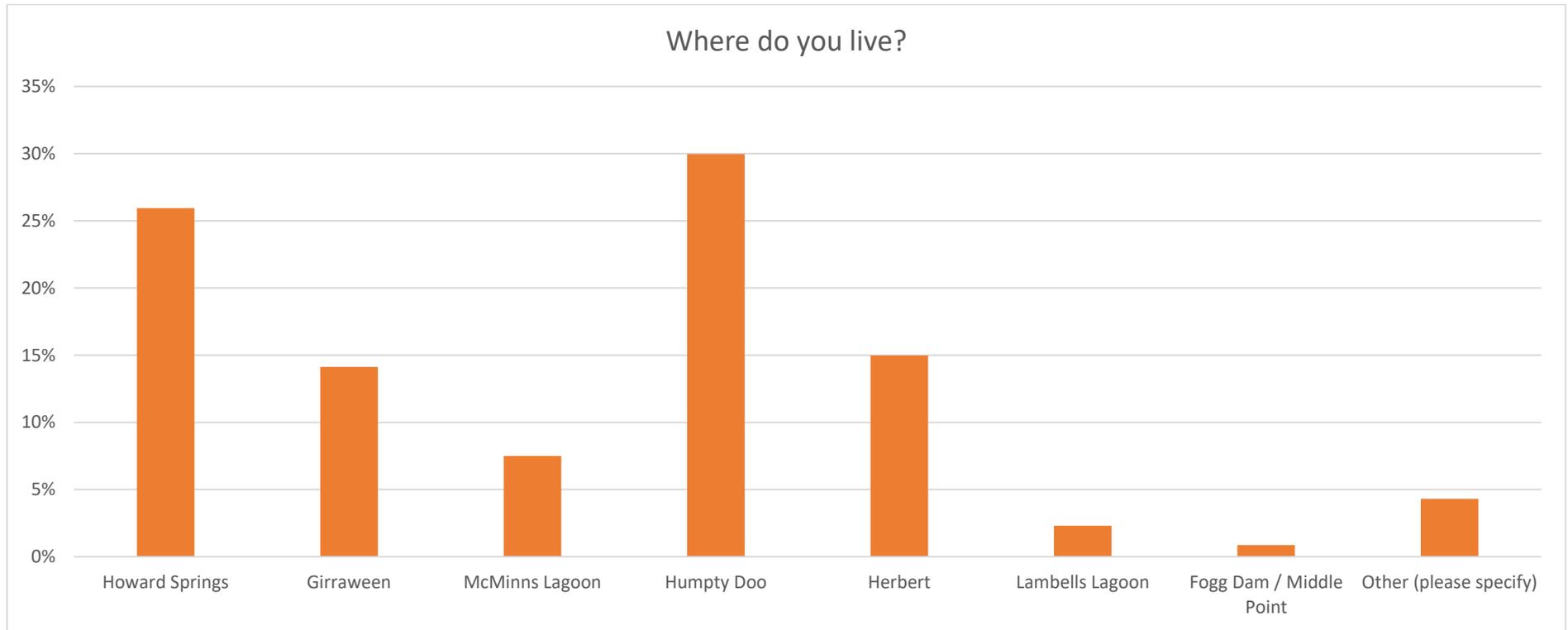


### **Survey Methodology and Analysis**

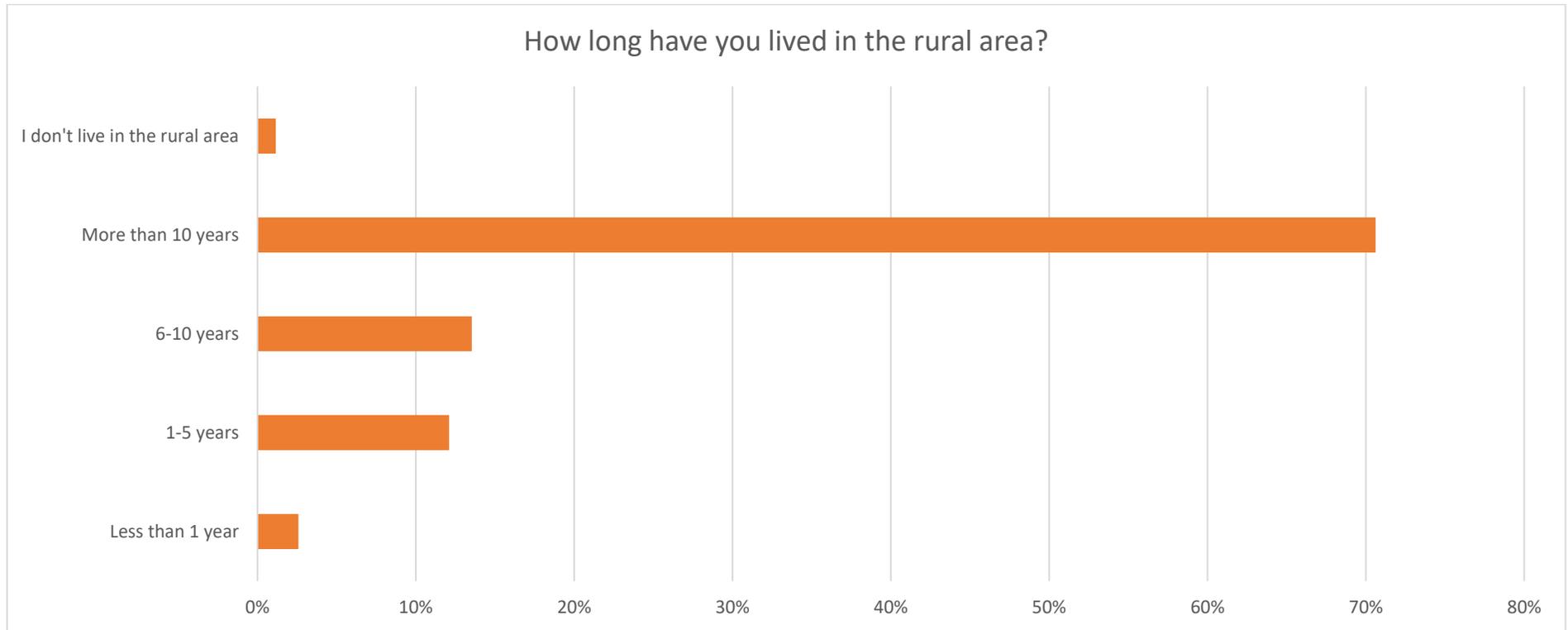
The survey was a simple community feedback survey. Effort was made to make it as neutral and easy to complete as possible to ensure a good response rate from diverse interests. The survey was distributed in hardcopy, with 4,876 copies delivered to people's properties throughout the Howard River region. The survey was also distributed electronically via email, e-newsletters, and social media. A total of 347 surveys were returned.

The survey results were as follows:



QUESTION 1

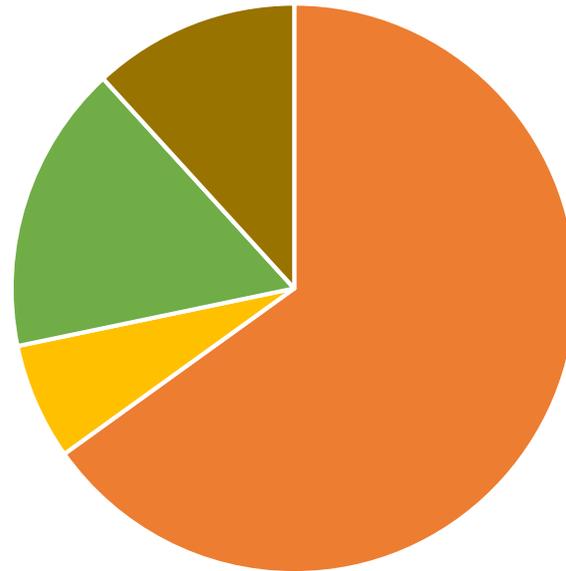
Over 95% of respondents were residents of the Howard River region. At least some of the 15 non-resident respondents are likely to also be dependent on the Howard aquifer as this resource is used to supplement the reticulated water supply.



QUESTION 2

Over 98% of respondents identified as living in the rural area. Interestingly over 70% of respondents have lived in the rural area for more than 10 years. The Howard River region is only a part of the Litchfield LGA, nevertheless population trends for Litchfield act as a guide to understanding trends within the Howard River region. The population of Litchfield grew from 16,451 in 2006 to 25,355 in 2016. Given this rate of growth, in addition to population turnover, it is clear that the data above does not reflect the fact that the majority of residents of the Howard River region have lived there for a long time. Instead we can conclude that people who have lived in the region for a long time were much more inclined to fill in the survey. I believe this reflects a heightened concern for the groundwater resource amongst those residents who have witnessed the rate of development in the region.

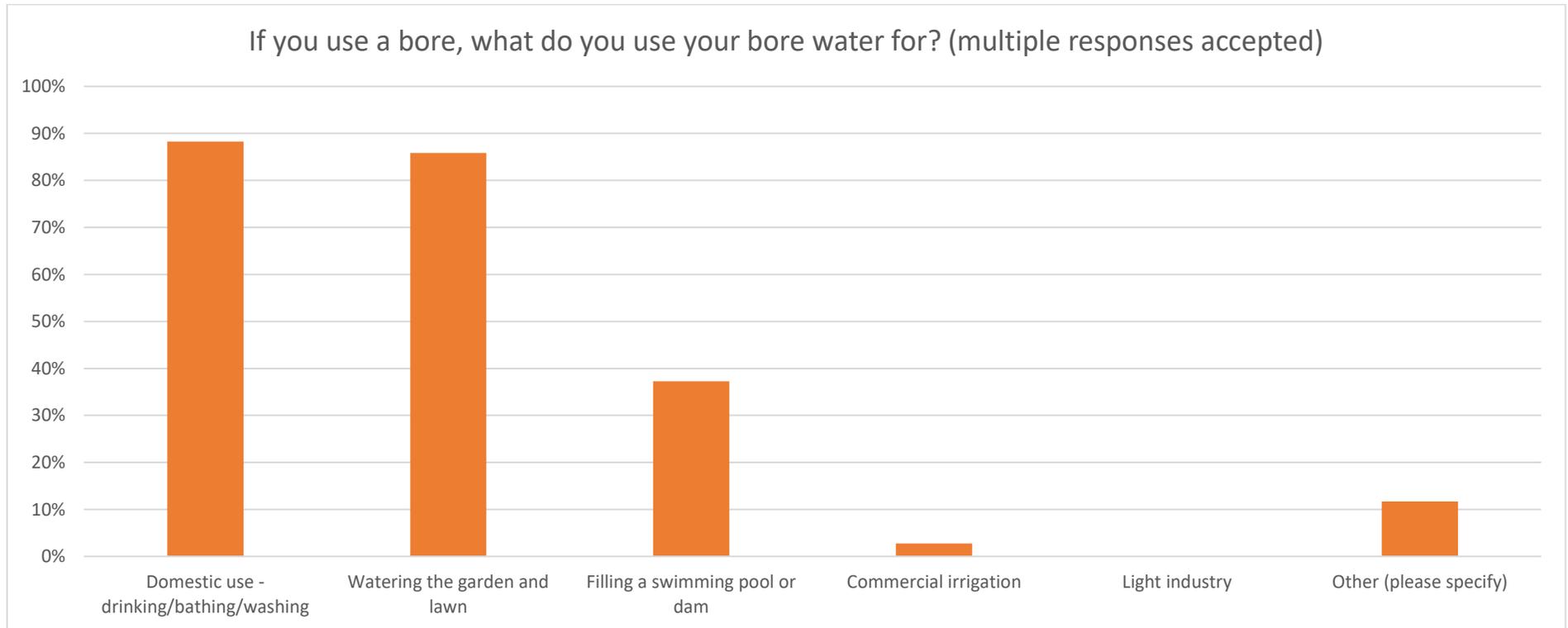
### Where does your water supply come from?



■ Bore only   ■ Bore and public water supply   ■ Public water supply only   ■ I don't know   ■ Other (please specify)

#### QUESTION 3

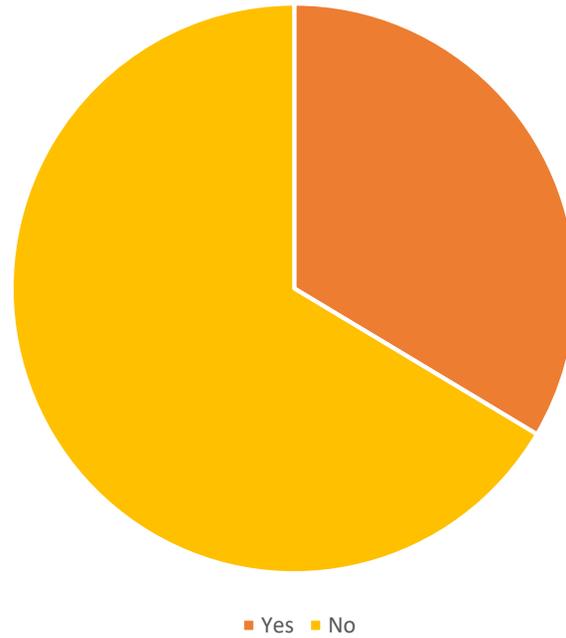
Over 65% of respondents depend on bore water only. Another 16% depend on either bore and public water supply or bore and rainwater. Approximately 80% of respondents would therefore be relying solely on groundwater at the end of the dry season when rainwater storage has been depleted and when the groundwater table is at its lowest. It is worthy of note, however, that at least 2% of respondents are successfully using rainwater storage as their only source of water.



QUESTION 4

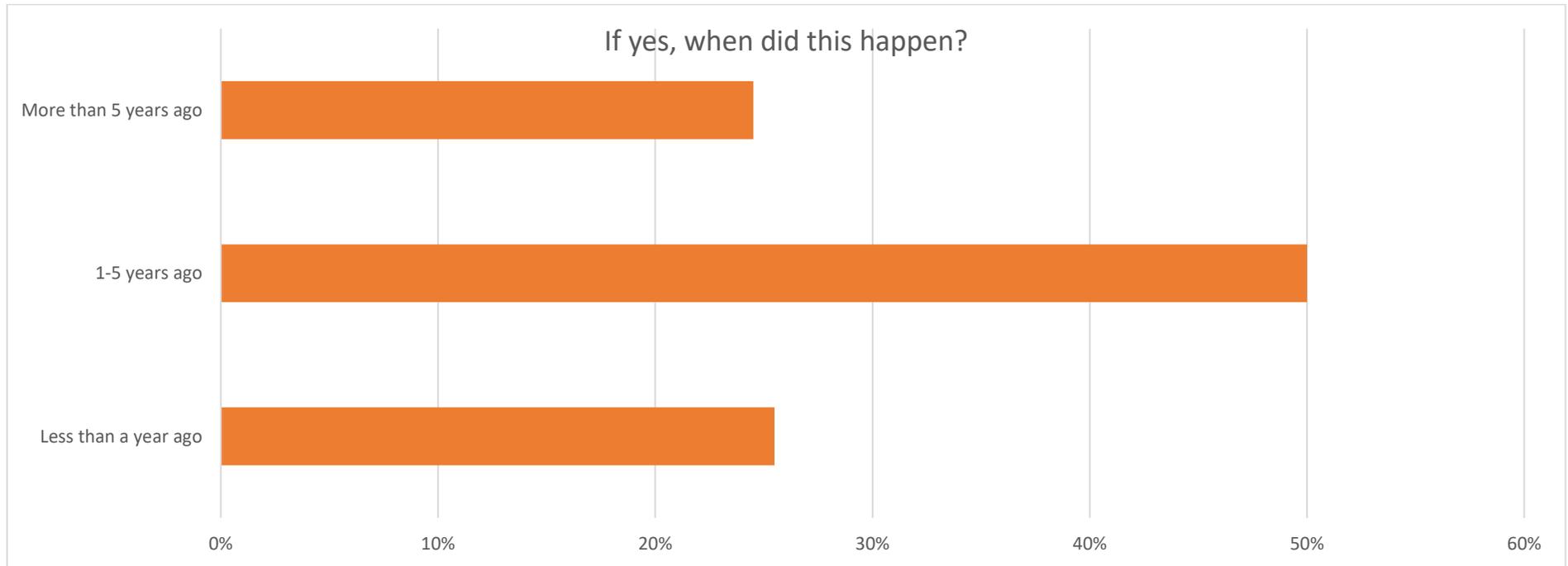
Unsurprisingly most respondents are using their bore water for domestic use and watering the garden and lawn. Approximately 10% of respondents use public water supply or rainwater for domestic use and the bore water solely for either garden or commercial irrigation, poor water quality is sometimes the driver for this. Less than 3% of respondents identified as using bore water for commercial irrigation, it is important to note that this relatively low number of users use a relatively high volume of groundwater. The most common “other” use for water was for animals, including irrigating pasture.

If you use a bore, have you ever experienced a problem with the water supply from your bore?



QUESTION 5

One third of all bore water users have experienced a problem with their bore.



QUESTION 6

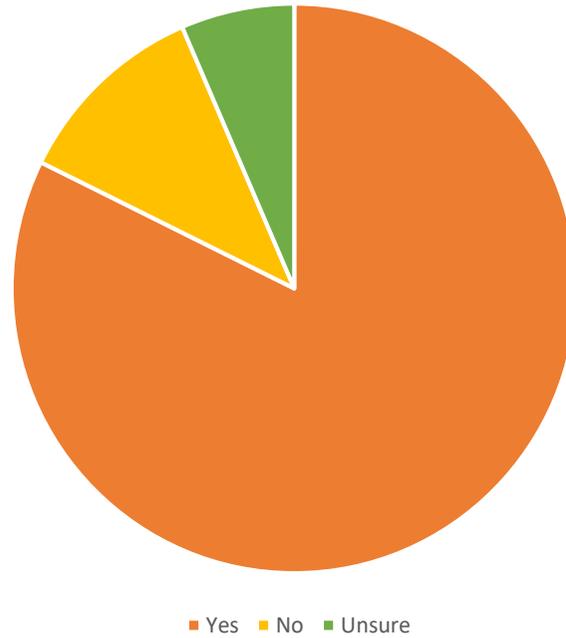
Of this third, 75% experienced a problem within the past 5 years.

If yes, can you explain what happened with your groundwater supply?

QUESTION 7

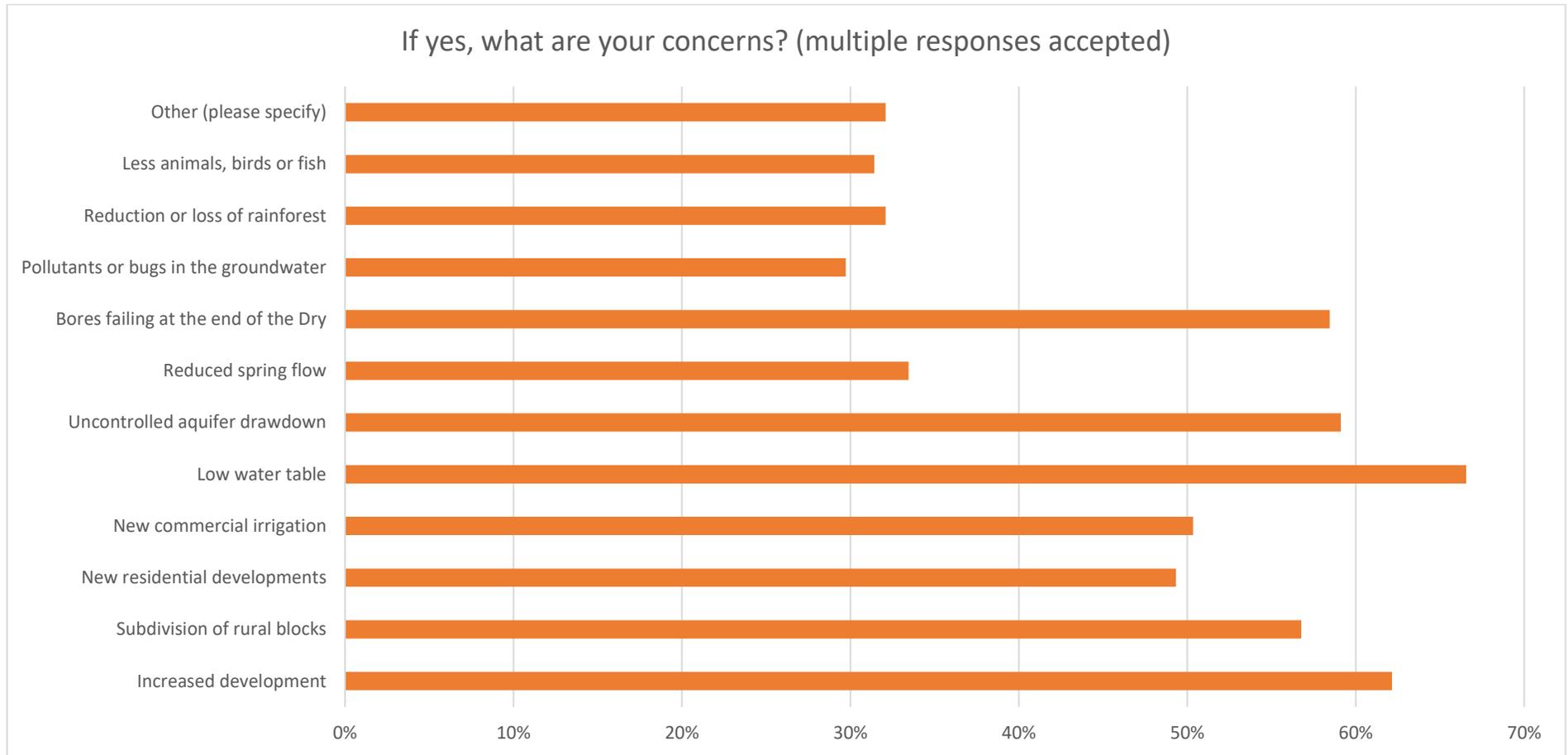
Over 40% of respondents attributed their bore problems to issues related directly to the reduced availability of groundwater, particularly towards the end of the dry season. The remaining respondents described water quality issues and/or the need for infrastructure maintenance or upgrades that may have been the result of changes to the aquifer or may have been the result of damaged or ageing infrastructure.

Are you concerned about groundwater use and supply in your area?



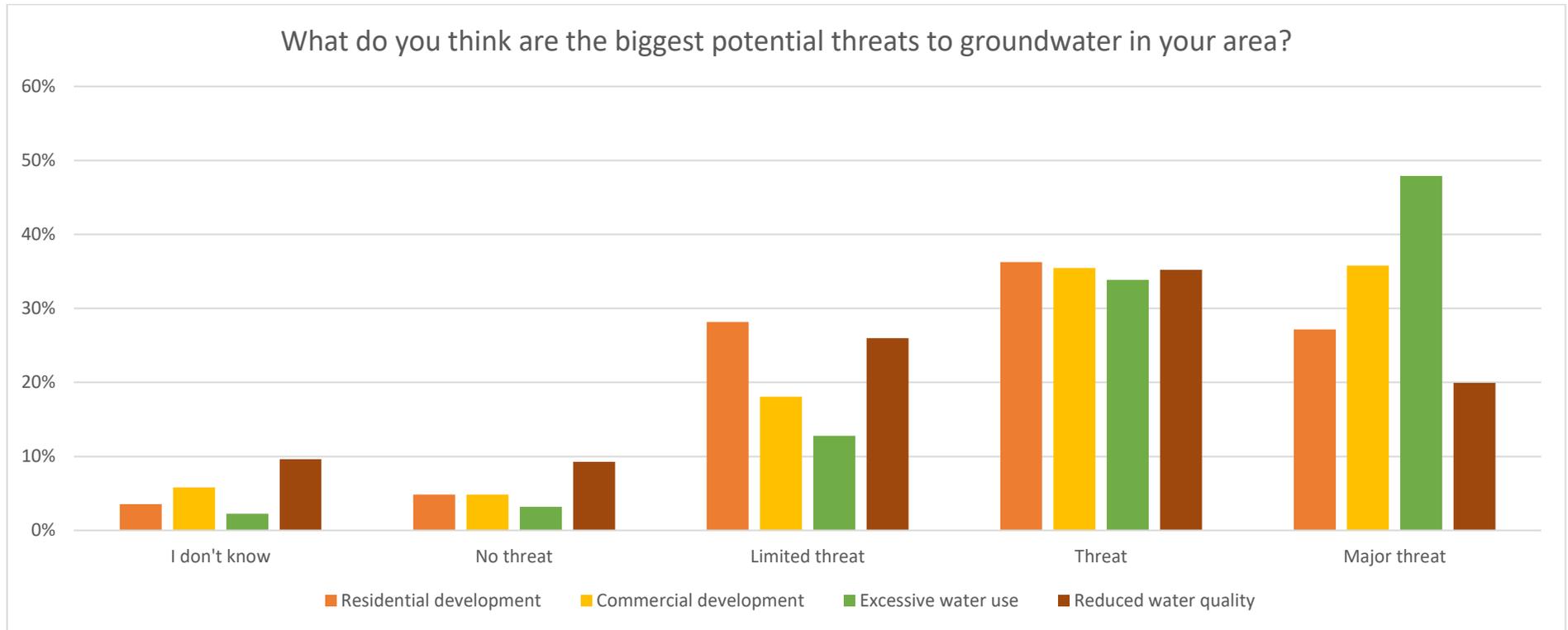
QUESTION 8

Over 80% of respondents were concerned about groundwater use and supply. Less than 12% were not concerned.



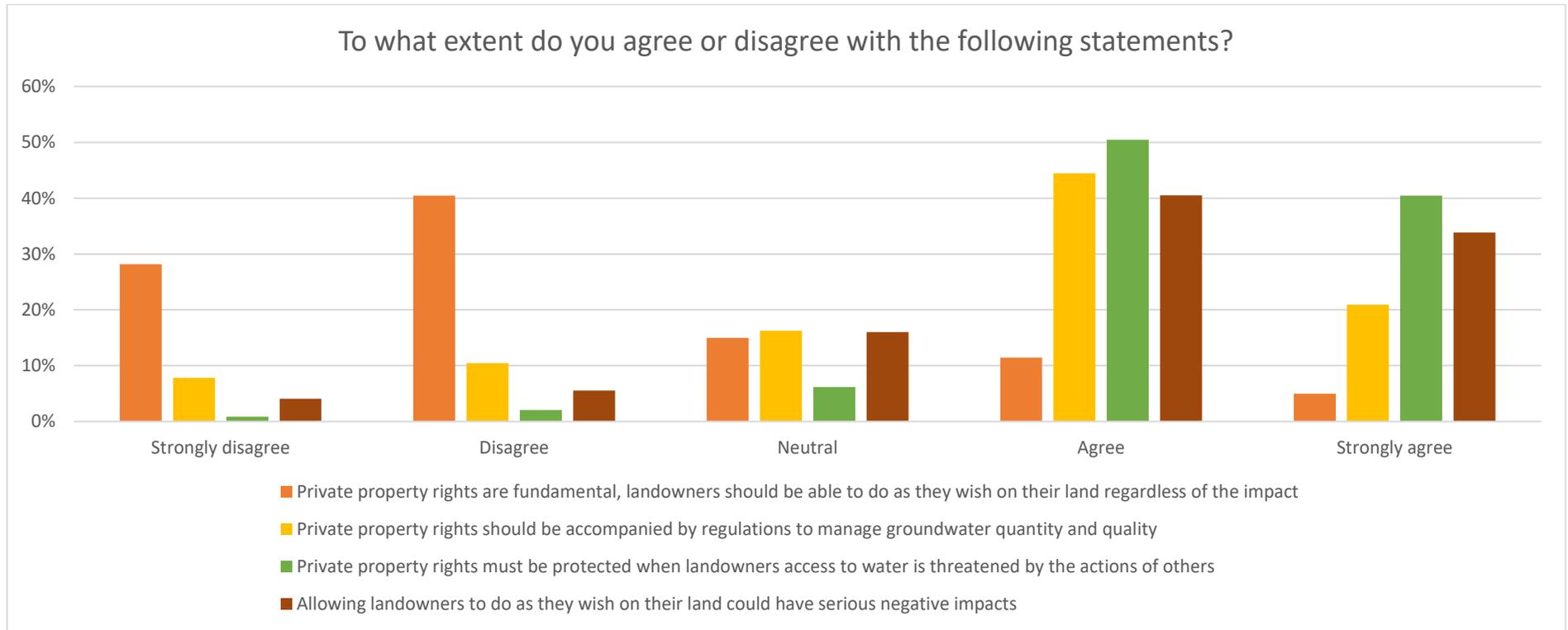
QUESTION 9

This table shows quite an even spread of concerns. Low water table was the highest concern, this supports results from Q7 suggesting that many bore users feel that increasing demand on the resource has impacted their bore. Pollutants or bugs in the groundwater was the lowest concern. The comments provided make the widespread concern about Power and Water’s groundwater use very clear. The other strong theme is concern about overuse or uncontrolled use of the resource, coupled with concern about effective development planning and knowledge of the aquifer and issues relating to recharge. Other concerns include commercial use and fracking, climate variability, and Government charging for groundwater.



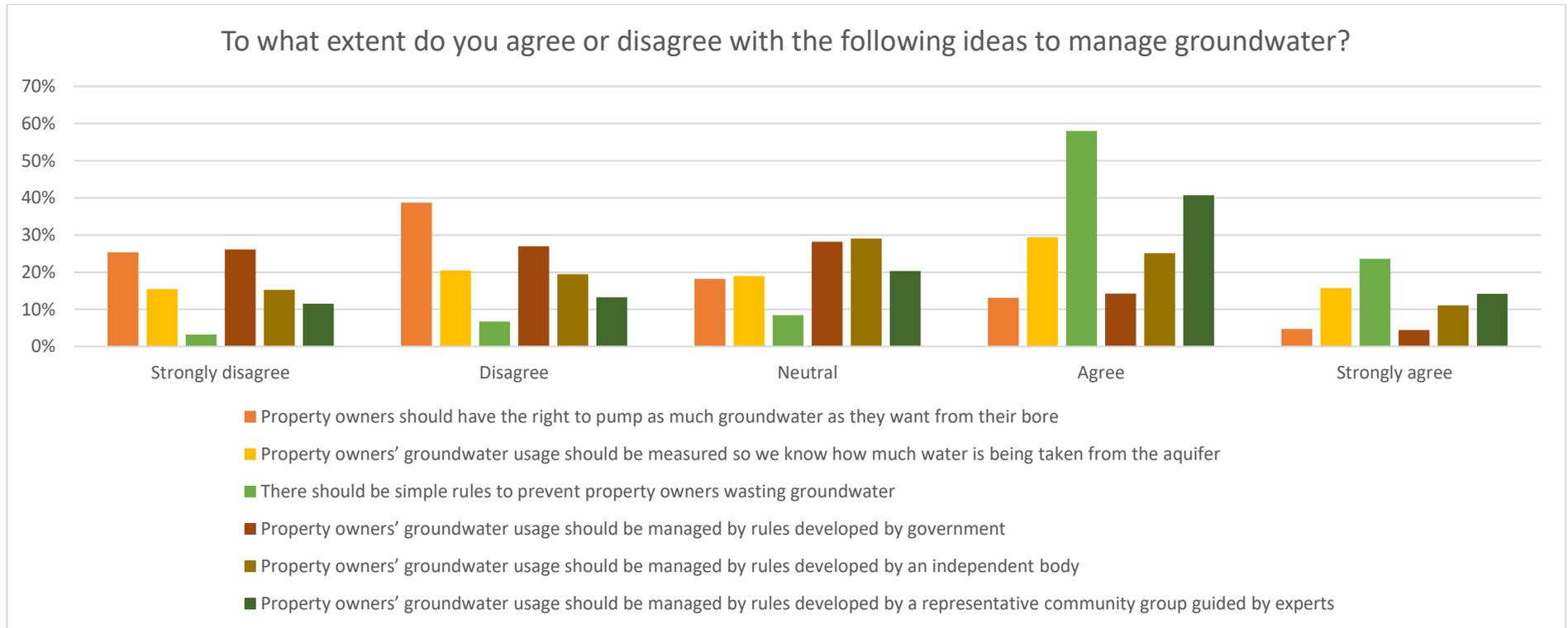
QUESTION 10

All four potential threats to groundwater rated highly. Excessive water use was considered the highest threat, with almost 48% of respondents identifying it as a major threat. Commercial development was considered a somewhat greater threat than residential development, over 28% of respondents felt residential development was a limited threat. Reduced water quality was considered the lowest threat but not insignificant. The comments reflect widespread community concern about use of groundwater for the public water supply. A range of other concerns were raised relating to commercial factors such as fracking and Inpex; rural residential use and rural development; and climate variability. However, based on the comments, it appears that the high concern about commercial development relates to the Power and Water extraction licence rather than irrigation extraction licences.



QUESTION 11

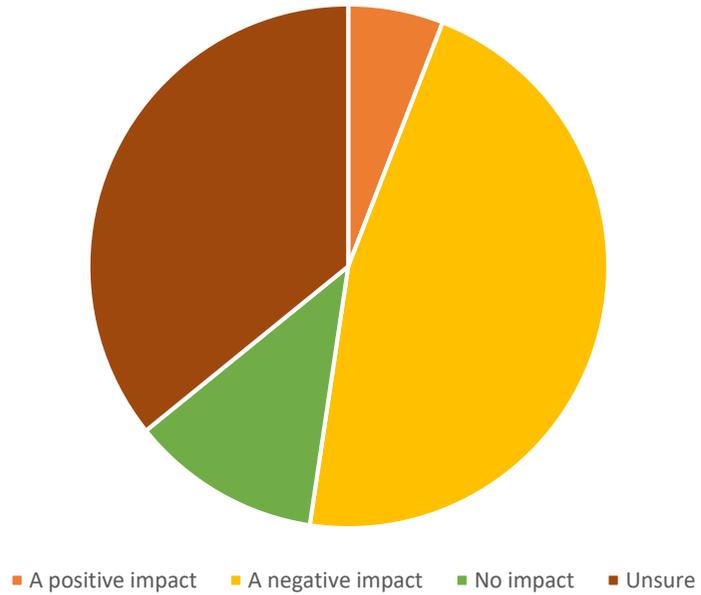
Over 68% of respondents either disagreed or strongly disagreed that private property rights are fundamental, and landowners should be able to do as they wish on their land regardless of the impact. Over 65% of respondents either agreed or strongly agreed that private property rights should be accompanied by regulations to manage groundwater quantity and quality. Over 90% of respondents either agreed or strongly agreed that private property rights must be protected when landowners access to water is threatened by the actions of others. Over 74% of respondents either agreed or strongly agreed that allowing landowners to do as they wish on their land could have serious negative impacts. The fact that people recognise that their water rights must be protected, but they are less comfortable with water rights being regulated, is a key message for Government as the custodian of our water resource.



QUESTION 12

Almost 64% of respondents disagreed or strongly disagreed that property owners should have the right to pump as much groundwater as they want from their bore. The question of whether property owners' groundwater usage should be measured so we know how much water is going taken from the aquifer attracts very mixed responses with over 29% agreeing and almost 16% strongly agreeing, but almost 21% disagreeing and over 15% strongly disagreeing. Almost 82% of respondents agree or strongly agree that there should be simple rules to prevent property owners wasting groundwater. Over 53% of respondents disagree or strongly disagree that property owners' groundwater usage should be managed by rules developed by Government. There were mixed responses to the option of property owners' groundwater usage being managed by rules developed by an independent body with over 36% agreeing or strongly agreeing, but almost 35% disagreeing or strongly disagreeing. The preferred option was for property owners' groundwater usage to be managed by rules developed by a representative community group being guided by experts, with almost 55% of respondents agreeing or strongly agreeing.

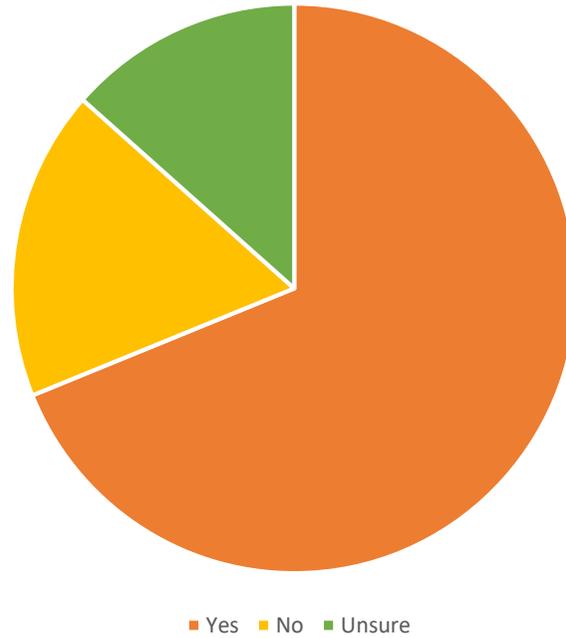
What sort of impact do you believe the use of groundwater may have had on rivers, creeks, springs and waterholes in the rural area?



QUESTION 13

Over 46% of respondents felt that the use of groundwater may have had a negative impact on rivers, creeks springs and waterholes in the rural area. However, almost 36% were unsure what impact there may have been.

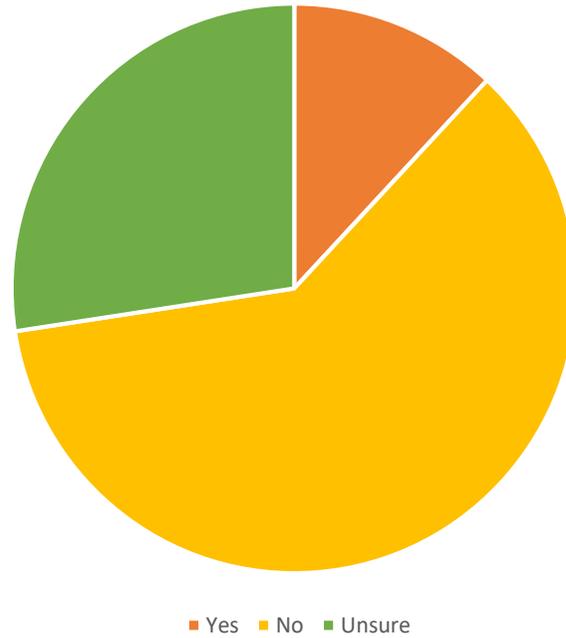
Do you believe groundwater requires management in the Darwin rural area?



QUESTION 14

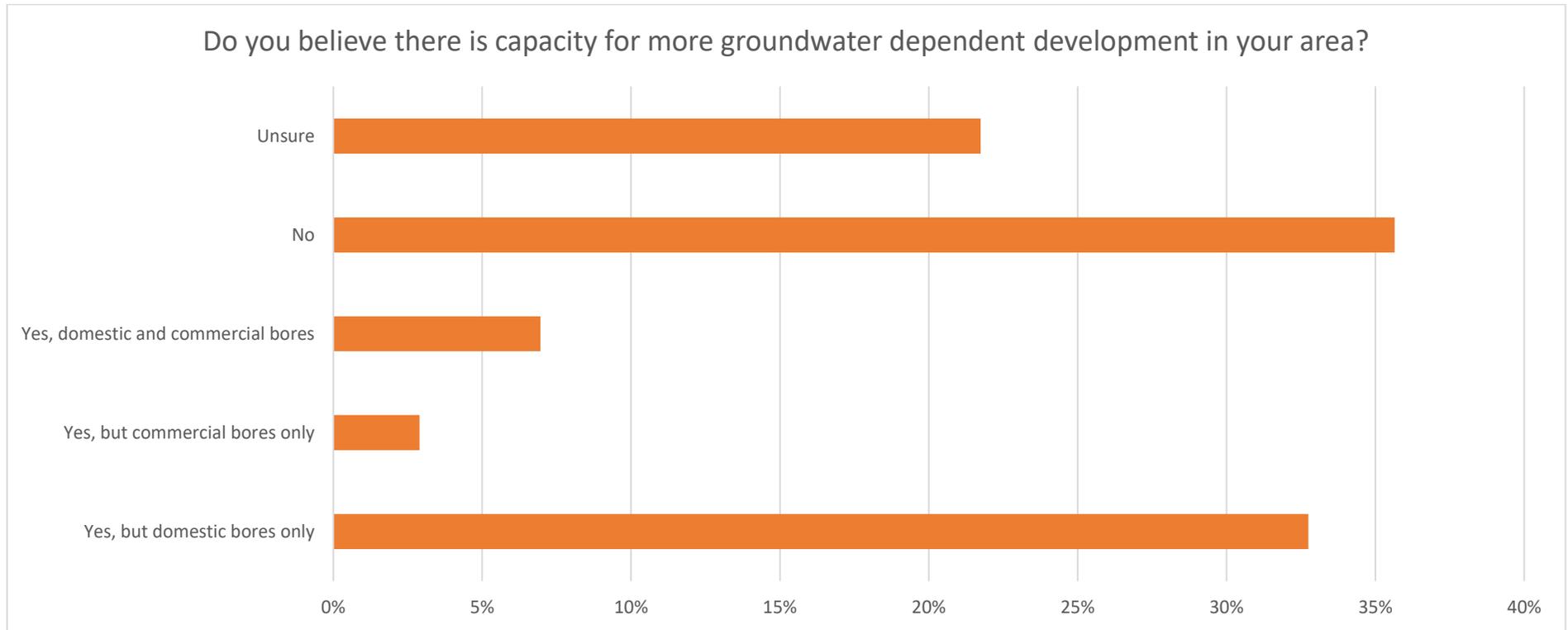
Almost 69% of respondents believe that groundwater requires management in the Darwin Rural Area.

Do you believe there is good groundwater management in the Darwin rural area at the moment?



QUESTION 15

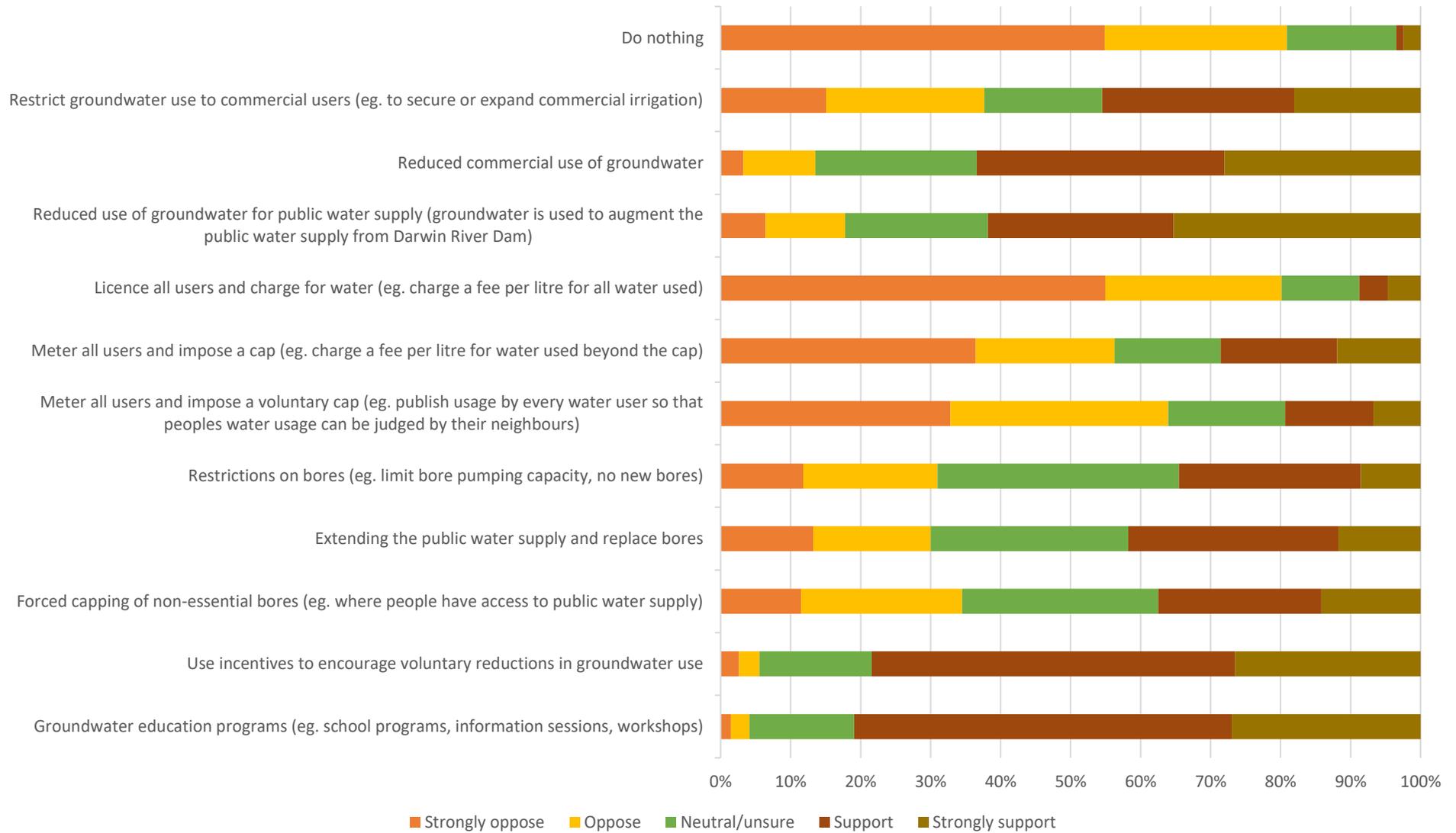
Almost 61% of respondents believe the groundwater management in the Darwin Rural Area at the moment is inadequate. However, over 27% are unsure.



#### QUESTION 16

There were mixed views about the capacity for more groundwater dependent development. Almost 36% of respondents believe there is no capacity for development, but almost 33% believe there is capacity for development so long as it is restricted to domestic bores. Respondents do not believe there is capacity for commercial development. However, based on responses to earlier questions, it is possible that this feedback relates more to widespread concern about Power and Water use of the resource than concern about commercial irrigation. Almost 22% of respondents were unsure.

To what extent do you support the following management methods for when more water is being taken from an aquifer than is being replaced by rainfall over a number of years?



#### QUESTION 17

When asked about management methods for when more water is being taken from an aquifer than is being replaced by rainfall over a number of years, respondents strongly supported groundwater education programs (eg. school programs, information sessions, workshops) and the use of incentives to encourage voluntary reductions in groundwater use. They supported reduced use of groundwater for public water supply (groundwater is used to augment the public water supply from Darwin River Dam) and reduced commercial use of groundwater. There were very mixed views on forced capping of non-essential bores (eg. where people have access to public water supply), extending the public water supply and replacing bores, restrictions on bores (eg. limit bore pumping capacity, no new bores), and restricting groundwater use to commercial users (eg. secure or expand commercial irrigation). Although over 55% of respondents either opposed or strongly opposed metering all users and imposing a cap (eg. charge a fee per litre for water used beyond the cap), it is noteworthy that almost 29% either supported or strongly supported this option. Respondents did not support metering all users and imposing a voluntary cap (eg. publish usage by every water user so that peoples water usage can be judged by their neighbours), licencing all users and charging for water (eg. charge a fee per litre for all water used), or doing nothing.