

Communicating with farmers in Nitrate Vulnerable Zones

Evaluating the effectiveness of the NVZ
Advice and Support Programme

05 July 2010

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Executive Summary

Executive Summary

Nitrate Vulnerable Zones (NVZs) are areas of land designated as draining into waters at risk from nitrate pollution from agriculture. These areas are governed by regulations which aim to improve water quality. The Environment Agency is responsible for ensuring compliance with NVZ regulations. A large part of their role is therefore to communicate effectively with farmers and so since April 2009 the Environment Agency, with funding from Defra, has managed and delivered a continuing programme of information, advice and support through the NVZ Advice and Support Programme 2009-2010. The overarching aim of this research was to understand how effective Defra and the Environment Agency have been in communicating with farmers about NVZs. The research involved a 15-minute telephone survey among 750 farmers and ten in-depth interviews. The methodology, and the sampling of farmers for the research, is described in detail in the following chapter.

The findings of this research present a mixed picture of farmers' attitudes towards NVZ policy and the extent of their understanding and compliance with the regulations. On the one hand farmers are favourable about the NVZ Advice and Support Programme and claim to be both aware of the new regulations and to be compliant. However, on the other hand there are a substantial minority of farmers who remain unaware of their designation.

The key positive findings of this research are that:

- Farmers are complimentary of the NVZ Advice and Support Programme. The majority agree that:
 - there is a lot of helpful advice available for farmers in NVZs (69%);
 - Defra and the Environment Agency have done a good job of explaining the regulations applying to farms in NVZs (65%);
 - they have a better understanding of the importance of reducing nitrate use (76%);
 - the NVZ Advice and Support Programme is a crucial/important factor influencing them to do things differently on their farm to meet the regulations (64%); and that
 - Defra and/or the Environment Agency are the preferred source of information on NVZs. The role of the Environment Agency as regulator 'has no impact' on whether farmers would consult them for advice on NVZ rules (indeed 39% would be 'more likely' to consult them).

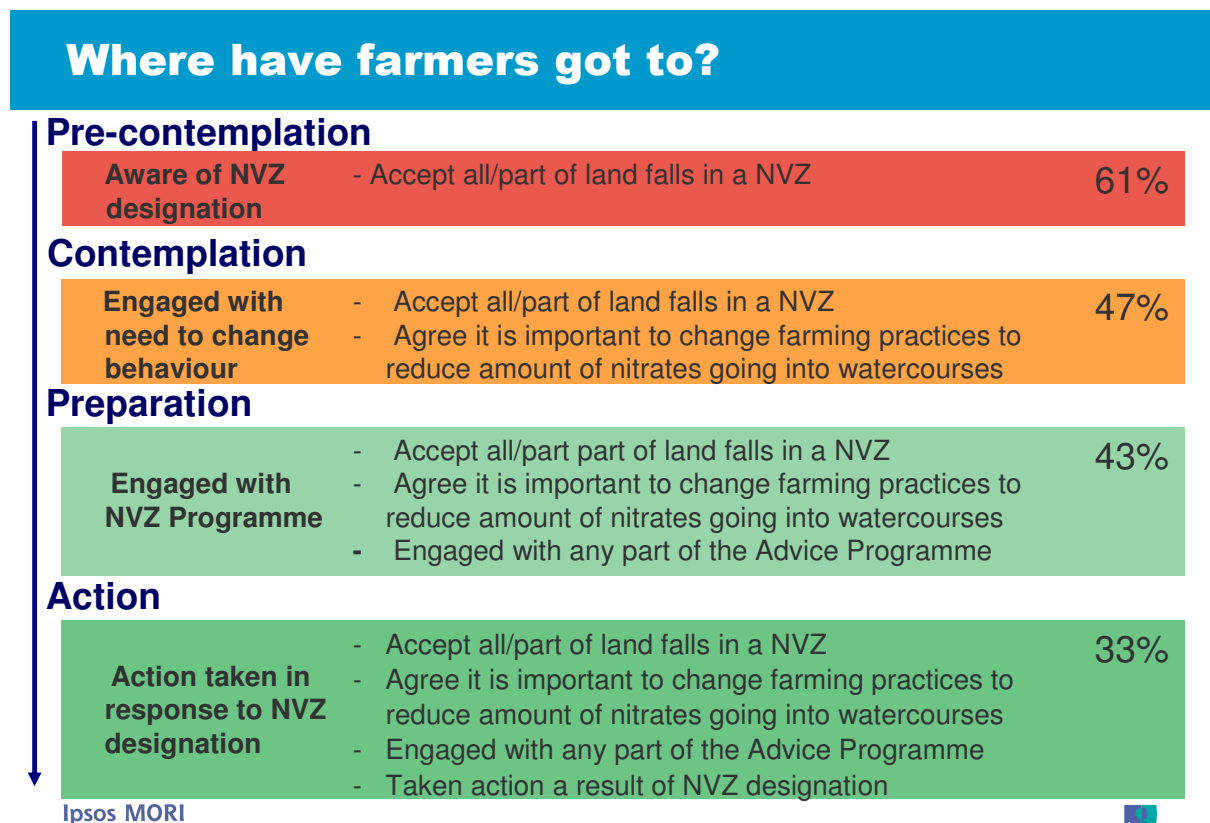
This research does however highlight a number of key challenges for policymakers, communication teams and people working on the ground in NVZs.

- Many farmers remain unaware of their NVZ designation:
 - 25% claim none of their land falls in NVZ, 13% say 'don't know/not sure'; and
 - 39% have no recollection of receiving an initial letter from Defra alerting them to the updated designations.
- There are mixed levels of support for the rationale underlying NVZ designations:

- only 13% consider water pollution to pose a ‘very or fairly serious’ problem in their local area (although the *potential* for it to be a problem is acknowledged more widely);
 - 75% do not think that farmers’ use of fertilisers is contributing to water pollution; and
 - 40% agree with the statement, “too much of the country is included in NVZs”.
- There are limits to the success of the NVZ Advice and Support Programme:
 - the NVZ rules are considered complicated and confusing (59%); and
 - farmers who have engaged with the programme are more likely to be negative about the NVZ policy and regulations.

The farmers involved in this research can be roughly divided into four groups based on the extent of their support for the underlying rationale for NVZs, their engagement with the NVZ Advice and Support Programme and the action they have taken as a result of the designation.

The size of these groups (shown in the table below) provides an indication of the success of the NVZ Advice and Support Programme in achieving its ultimate goal of moving farmers from a state of not knowing about their own designation (pre-contemplation), to taking action to adopt farming practices which meet the NVZ regulations (action). Farmers have been assigned to one of the four stages based on their responses to the telephone survey. As the chart below shows, the proportion of farmers progressing from each stage to the next declines as they move towards the ultimate goal of taking action as a result of the NVZ designation and the associated regulations.



Farmers are motivated to adopt different farming practices to comply with the NVZ regulations for a range of reasons. While farmers consider their environmental values to be an important factor influencing them to do things differently on their farm, the risk to the Single Payment is seen to be crucial. The risk of prosecution is also a powerful motivator for farmers provided they have confidence in the enforcement and policing of the regulations. The cost of complying with the regulations is not considered to be a major barrier to behaviour change by farmers. It may be that expenditure on alternative farming practices is considered necessary to uphold environmental values or avoid prosecution and loss of Single Payments.

Key differences among farmers

There are a number of key differences in the attitudes and behaviours of particular groups of farmers. These are most notable between farms of different sizes and different types. Large and arable farms are more likely, than small and livestock farms, to be aware of the NVZ designations, to have engaged with the NVZ Advice and Support Programme and to have taken action as a result of the designations. This action is likely to have been motivated by the financial risks from not conforming, namely the risk to the Single Payment and the risk of prosecution. However, those with large farms and arable farms are less likely to buy into the rationale for NVZ policy as they do not consider water pollution to be an issue. More specifically, these farmers do not consider it to be an issue caused by nitrate use on farms. On the other hand, those with small farms and livestock farms are more likely to support NVZ policy as they consider it important to change farming practices to reduce water pollution caused by nitrates and do not agree that the designations spread too far. However, when compared with large and arable farms they are less likely to be aware of the designations and less likely to recall receiving the initial letter from Defra alerting them to the updated designation.

There are also differences between farmers of different ages with younger farmers (aged 54 and under) more likely to have engaged with various elements of the NVZ Advice and Support Programme and more likely to have adopted different farming practices than older farmers (aged 55 and over). Younger farmers are, however, less likely to be supportive of NVZ policy and consider the regulations a financial and administrative burden.

Looking at these different groups of farmers, greater engagement with the NVZ Advice and Support Programme does not therefore appear to be leading to more favourable views of NVZ policy. However, importantly, higher levels of engagement with communications about NVZs do appear to be related to taking action to meet the regulations. Farmers who have engaged with the information about NVZs may be less positive, despite ultimately adopting appropriate behaviours, given their greater understanding of the requirements for compliance.

There are relatively few differences in the attitudes of farmers who manage land which has been most recently designated in 2008 and those which manage land previously designated in 2003. There are also very few differences in the attitudes and behaviours of farmers across different regions of the country.

To help untangle the differences between farmers from different sectors and of different ages a segmentation model has been created to group farmers according to distinct sets of attitude. Five segments have been identified ranging from Positive accepters to Hostile deniers. The former agree that it is important to change farming practices to preserve water quality and do not consider the regulations to place an unreasonable burden on farmers. At the other extreme of the model, Hostile deniers dismiss the problem of water pollution and perceive farmers to be financially-challenged by the steps required for compliance. The differences between these groups of farmers are explored in detail in Chapter 5 of this report.

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Background, objectives and methodology

Background, objectives and methodology

Nitrate Vulnerable Zones (NVZs) are areas of land designated as draining into waters at risk from nitrate pollution from agriculture. These areas are governed by regulations which aim to improve water quality and which are necessary to meet the needs of the European Commission Nitrates Directive. Currently, in April 2010, around 68% of the land in England is designated as a NVZ. New regulations came into force in January 2009 for those in existing NVZs, and in January 2010 for those in newly designated NVZs.

Defra's Action Programme of measures to meet the needs of the Nitrates Directive includes the designation of NVZs and the funding of a series of advice programmes. The overall vision for the Action Programme is to improve water quality by reducing the amount of nitrate entering controlled waters from agriculture. It seeks to ensure farmers have access to appropriate, accurate advice and support during the implementation of the new NVZ rules which they must follow.

The Environment Agency on the other hand is responsible for ensuring compliance with NVZ regulations. A large part of their role is therefore to communicate effectively with farmers and so since April 2009 the Environment Agency, with funding from Defra, has managed and delivered a continuing programme of information, advice and support through the NVZ Advice and Support Programme 2009-2010. The aim of the NVZ Advice and Support Programme was to ensure that all farmers in a Nitrate Vulnerable Zone (NVZ) knew that they were in a NVZ and also understood the requirements under the new rules. It also sought to ensure farmers understood how to implement these requirements on their farm and thereby ensured their compliance with the new rules. A key objective of the programme was to instigate attitudinal and behavioural change among farmers to ensure that they meet the requirements under the regulations.

The programme was made up of the following elements: a set of NVZ Guidance Leaflets; an independent and confidential NVZ Technical Helpline; a series of national Advisor Workshops; a series of regional Farmer Workshops; online NVZ maps and a set of NVZ Questions and Answers; and other web-based information. This programme follows a similar programme delivered by Natural England and the Environment Agency in 2008-2009, which aimed to bring farmers up-to-date with the latest revision of the regulations.

Research objectives

The overarching aim of this research was to understand how effective Defra and the Environment Agency have been in communicating with farmers about Nitrate Vulnerable Zones. More specifically this study aimed to:

- Assess awareness, attitudes and behaviours of farmers within NVZs in relation to the regulations and the rationale behind them;
- Understand the impact the NVZ Advice and Support Programme 2009-2010 has had on farmers' levels of awareness, attitudes and behaviours;
- Understand what other factors, external to the NVZ Advice and Support Programme, have impacted on farmers' attitudes and behaviours;
- Explore the ease of conforming with the NVZ regulations; and to
- Recommend changes to the communications strategy that will encourage attitudinal and behavioural change.

Methodology and sample

This research comprised of three stages which together aimed to address the research questions outlined above.

Stage 1: Group discussion with NVZ policy and communications team

A two hour group discussion was held at the Environment Agency offices in Bristol on 29th January 2010. The discussion was attended by four members of the NVZ policy and communications team, including one member who is also a farmer. This group is referred to as the survey working group throughout this report.

A key aim of Stage 1 was to inform the development of the telephone survey for Stage 2. In order to do this the group discussion explored the survey working group's perception of the:

- purpose of each point of contact within the NVZ Advice and Support Programme
 - including the desired changes in attitude and behaviour amongst farmers operating within a NVZ following contact;
- wider drivers and barriers to attitudinal and behavioural change amongst farmers operating within a NVZ; and the
- 'influencers' within the farming network in relation to NVZs.

Stage 2: Primary research with farmers

Telephone survey with farmers

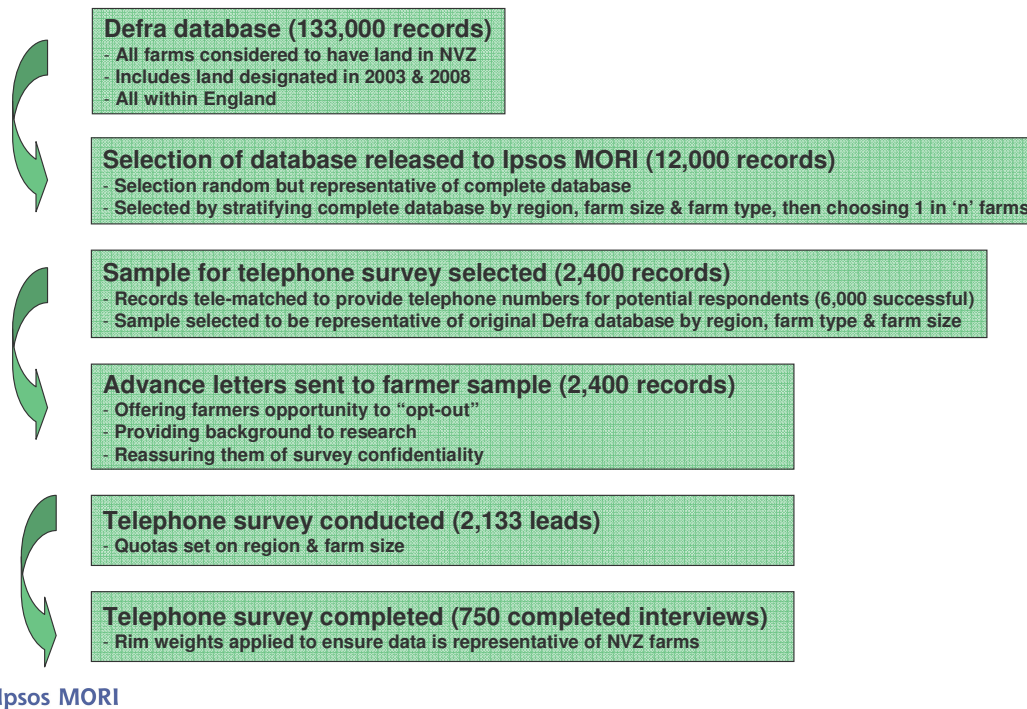
A 15 minute telephone survey was conducted among 750 farmers with land falling within a NVZ. Interviews were conducted using Computer Aided Telephone Interviewing (CATI) by fully trained and monitored Ipsos MORI interviewers. Fieldwork took place between the 1st and 23rd March.

The main aims of the telephone survey among farmers were to establish:

- attitudes towards water pollution and contribution of farming to the problem;
- understanding of the NVZ regulations;
- levels of compliance with the NVZ regulations;
- the factors which motivate farmers to, and de-motivate farmers from, complying with the NVZ regulations;
- levels of engagement with the NVZ Advice and Support Programme and appraisal of its various elements;
- preferred channels and formats for information around NVZs and the appropriateness of the Environment Agency as a source of information and advice.

Farmers were selected for the telephone survey using details contained on Defra's database of NVZ holdings. The stages which took place to ensure the sampling of farmers for the survey was robust and representative are outlined below.

Farmer sample for telephone survey



To maximise the response rate to the survey, all 2,400 farmers selected from the database were sent an advance letter which gave the background to the research and assured them of the confidentiality of the research. The letter provided the leads with an option to opt-out of the telephone survey.

It is worth noting that there is a degree of overlap between the different groups of farmers within the quantitative sample. For example, large farms are far more likely to include cereals and other arable crops than smaller farms. Both large and small farms are equally as likely to include livestock, although large farms are more likely to have dairy herds and beef cattle while small farms are more likely to be described as including 'other livestock'. The survey results also distinguish between those who have attended agricultural college and those who have not. However, it is worth noting that younger farmers (under 54) are more likely to have attended agricultural college than older farmers (over 55). For these reasons it can be difficult to separate out the effects of farm size as opposed to farm type on the attitudes and behaviours of farmers. Similarly, it can be difficult to separate out the effects age as opposed to formal agricultural education.

In-depth interviews with farmers

Ten in-depth interviews, each lasting approximately 35 minutes, were conducted over the telephone between 8th and 29th March 2010 by researchers from Ipsos MORI's Social Research Institute.

The main aim of Stage 3 was to explore the drivers and barriers to behavioural change amongst farmers operating within NVZs. More specifically, the interviews aimed to:

- explore farmers' perceptions of the need for NVZ regulations;
- explore the wider drivers and barriers to behavioural change, including:

- the key motivators / de-motivators to compliance;
- the factors which have enabled / prevented farmers from delivering on the requirements;
- uncover farmers' perceptions of the quality of the Environment Agency's communications and software tools, and the impact of these on their attitudes and behaviours in relation to NVZs; and
- explore the perceived role of the Environment Agency, Defra and intermediary organisations as channels for disseminating information relating to NVZs.

All respondents taking part in the in-depth interviews were farmers and were responsible for managing their farm. All believe that some of their land falls within a NVZ and all remember having received a letter and leaflet in the post from Defra, informing them that their farm may be in a NVZ.

Respondents were also recruited to the following criteria:

- Region: Three respondents farming in the North of England, four in the Midlands and three in the South of England;
- NVZ status: Six respondents operating within existing NVZs (designated before 2008) and four farmers operating within newly designated NVZs (designated in 2008);
- Size of farm: Three respondents farming 1-19 hectares, three respondents farming 20-49 hectares and four respondents farming 50+ hectares;
- Level of understanding of regulations that affect farms within a NVZ: Five respondents answering 'very well' / 'fairly well', five respondents answering 'not very well' / 'not at all'; and
- Type of farm: Mix of respondents farming arable crops ('cereals' / 'other arable crops'), and respondents farming livestock ('dairy herd' / 'beef cattle', 'pigs', 'other livestock').

The sample, consisting of 100 leads, was drawn from the database held by Defra to achieve the ten interviews. To maximise the response rate for the in-depth interviews all 100 farmers were sent an advance letter which gave the background to the research and reassured them of the confidentiality of the research. This letter provided potential respondents with an option to opt-out of the in-depth interviews.

Respondents were recruited by telephone by a specialist recruiter following strict ethical guidelines.

Stage 3: Multivariate analysis

The final stage of this research involved multivariate analysis on the quantitative dataset generated through the telephone survey.

The original aim of this stage of the research was to identify the elements of the NVZ Advice and Support Programme which have the greatest potential to change the attitudes and behaviours of farmers within NVZs. However, the findings generated through the telephone survey and in-depth interviews with farmers made it apparent that although only small numbers of farmers overall have engaged with the various elements of the programme, those who have interacted with it through any of the channels are very satisfied with the advice and support they received. It was therefore decided to be more insightful to use the

multivariate analysis to explore the factors which are external to the NVZ Advice and Support Programme which are also influencing farmers' attitudes and behaviour (for instance, the views of peers, financial costs, the administrative burden and so on).

Stage 3 therefore comprised of a number of separate modelling activities:

- **Factor and cluster analysis**

- Factor analysis was conducted on a series of statement questions included in the telephone survey (Q36 – Q48). This means grouping the statements together into a number of common themes. Please see Appendix 4 for a list of the statement groupings.
- Cluster analysis was then conducted on these factors. This is a statistical technique which checks through the raw data to see whether certain types of farmer (i.e. those similar due to age, farm size, farm type and so on) respond to the statements within each of the factors in a similar way.
- A segmentation model is produced as a result of this analysis. This model shows if there are any 'segments' within the farming community with distinctive attitudes or behaviours in relation to NVZs. Only farmers who know that some of their land falls within a NVZ have been included within these typologies.

- **Correspondence analysis**

- Correspondence analysis is another data reduction technique which has been conducted on the statement questions (Q36-48). This analysis aids the examination of relationships between demographic subgroups, such as farmer age and farm size, and a set of attitudinal variables. The objective of running this analysis was to produce a visually interpretable representation of these relationships. Further technical details of this process are included in Appendix 4.

The outputs from Stage 3 are presented and analysed in Chapter 5.

Reporting the findings

This report presents and analyses the findings from across all three stages of this research. For the purpose of clarity the findings collected through different stages of this research are clearly signposted throughout the report. Data collected through the telephone survey with 750 farmers are referred to as 'quantitative' or 'the telephone survey', whilst findings from the ten in-depth interviews with farmers are referred to as 'qualitative' or 'in-depth interviews'. These terms simply reflect the different types of data collection employed by this research. Whilst the quantitative telephone survey generated data which is representative of the NVZ farming population, the qualitative in-depth element aimed to shed insight on the attitudes and opinions of farmers and to explain the quantitative findings.

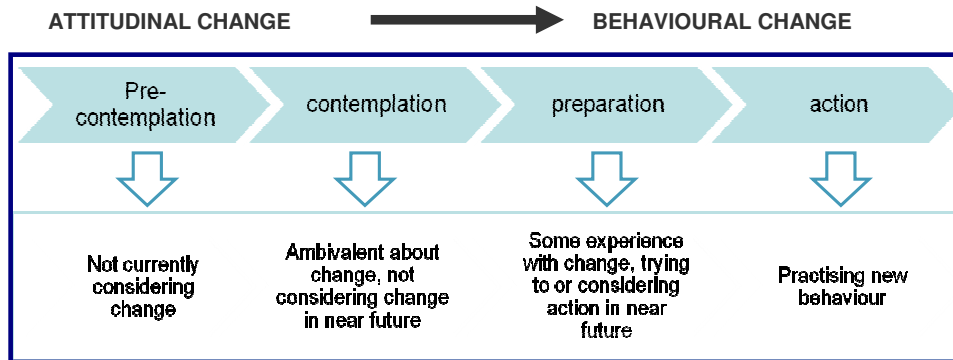
It is important to remember that both the qualitative and quantitative research are dealing with farmers' *perceptions* rather than facts.

It is also important to bear in mind that the farmers involved in this research were sampled and recruited on the premise that they all manage land which falls within a NVZ. However, in reality the Defra database of NVZ holdings cannot be 100% accurate given the challenges of acquiring exact farm boundaries and farming activity. This means that some of the farmers

involved in this research may not actually be farming land which falls in a NVZ and this may therefore affect interpretation of the data.

Report structure

The report is structured in line with the traditional model of attitudinal and behavioural change shown below.



A brief outline of the contents of each chapter of the report is given below:

Chapter 1: Pre-contemplation – awareness of NVZ designations and regulations

Chapter 2: Contemplation – levels of engagement with rationale behind NVZ policy (attitudes towards water pollution and significance of contribution from nitrate use)

Chapter 3: Preparation – levels of engagement, and appraisal, of NVZ Advice and Support Programme

Chapter 4: Action – extent of behaviour change and perceived levels of compliance and motivators for action

Chapter 5: Farmer specific attitudes and behaviours – variations in attitudes and behaviours of farmers of different ages and from different size and types of farms

Chapter 6: Recommendations – recommendations for any future advice and support programme for farmers generally as well as specific groups of farmers

1. Pre-contemplation

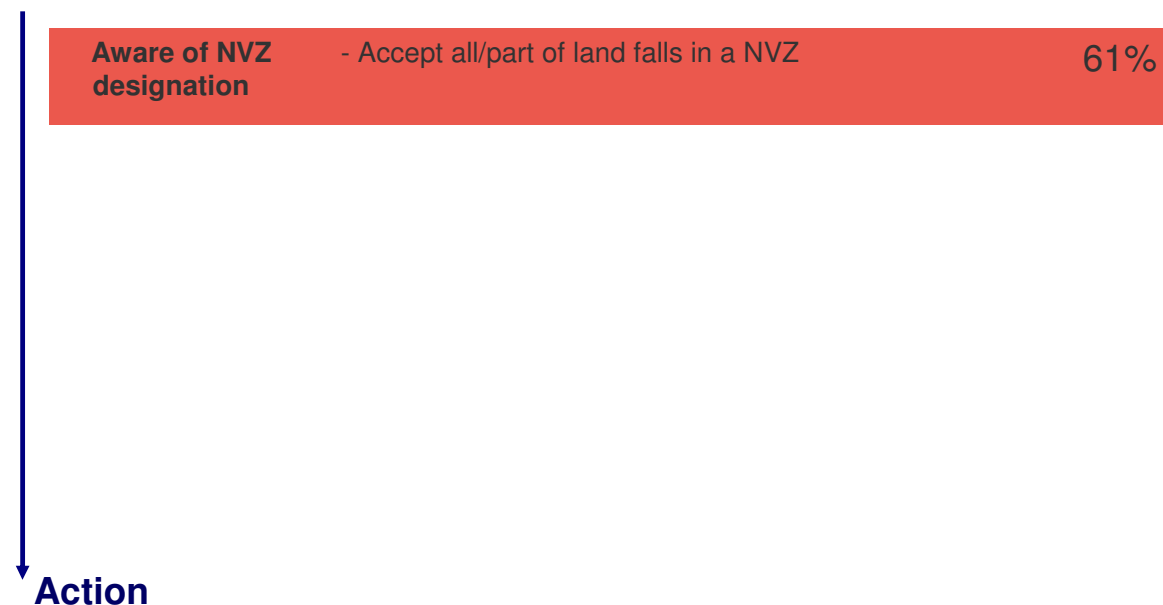
1. Pre-contemplation

1.1 Awareness of NVZ designations

This chapter considers the very initial stage of the attitudinal and behavioural change journey; pre-contemplation. This stage is characterised by farmers who have taken the first step by recognising the status of their NVZ designation. As shown in the chart below, most of the farmers (61%) involved in this research are aware that some of their land falls within a NVZ. However, a substantial minority of respondents are unaware that any of their land has been designated. A quarter (25%) claim that none of their land falls in a NVZ while a further 13% say they ‘don’t know/are not sure’. This is a significant finding as awareness of the NVZ designation of their land will inevitably be an essential foundation to wider engagement with the regulations, the NVZ Advice and Support Programme and ultimately the fundamental objective of behaviour change.

When interpreting this finding it is, however, important to bear in mind that the Defra database from which all farmers involved in this research were sampled, is not 100% accurate in terms of identifying farmers within NVZs. For this reason, a small proportion of farmers interviewed may in fact not have land within a NVZ.

Pre-contemplation

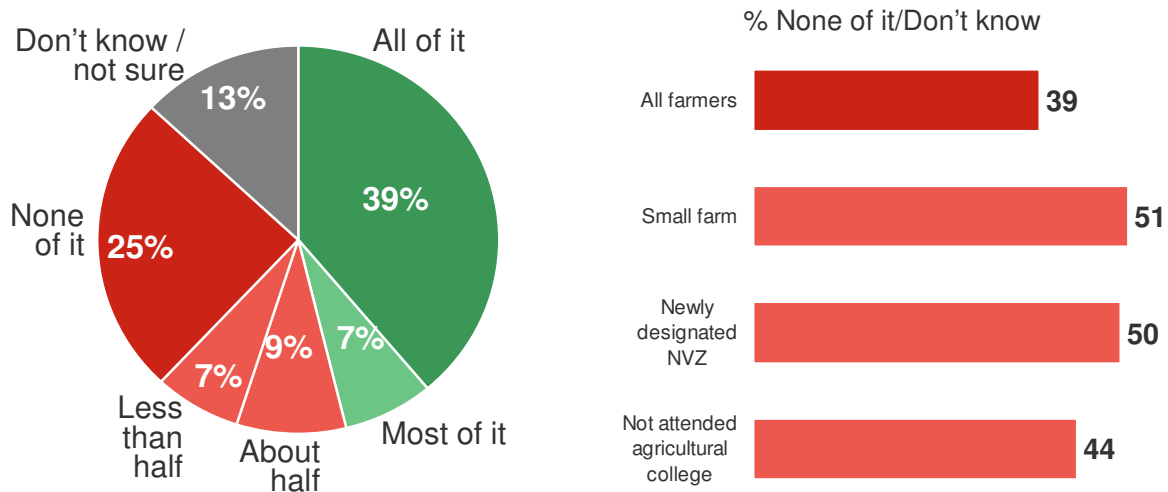


This lack of acknowledgement of the NVZ designation does not appear to result from successful appeals as virtually none of the farmers involved in this research have appealed their designation (98% have never appealed). This suggests that the lack of awareness is not an active denial on the part of farmers but rather due to ignorance of the designations.

When asked to recall how they first found out about their farm falling within a NVZ, 41% of respondents spontaneously mention a ‘letter or leaflet in the post’ and when prompted, this rises to 57%. However, it is worrying that two fifths (39%) have no recollection of any such communication. This is more common with smaller farms and those in newly designated NVZ areas.

These factors could obviously have severe ramifications for the success of the NVZ Advice and Support Programme in terms of whether farmers understand that the literature, and more importantly the regulations, are relevant to them.

Q6. What proportion of the land you farm falls within a Nitrate Vulnerable Zone?



Base: All respondents, farmers with land in a NVZ (750)

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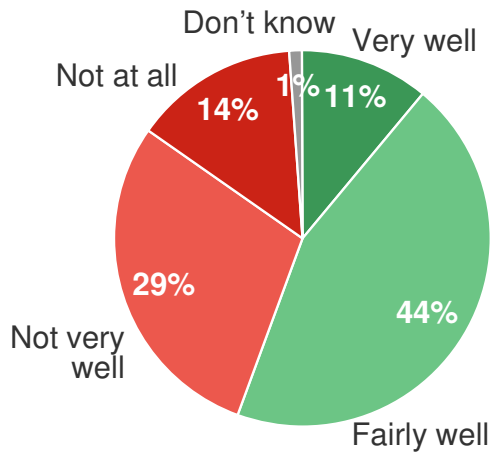
1.2 Understanding of NVZ regulations

Nonetheless, the majority (70%) of farmers say they are aware that new regulations came into force in January 2009 for existing NVZs and in January 2010 for newly designated NVZs. This does, however, leave more than a quarter (28%) who say they are not aware of these revisions.

Understanding of the NVZ regulations varies widely. While more than half (55%) say they understand the regulations that affect farms within a NVZ 'very well or fairly well', more than two in five (43%) say they do not.

Unsurprisingly, those who say they understand the regulations are more likely to be aware of the revisions than farmers who do not understand them (83% aware compared to 63%).

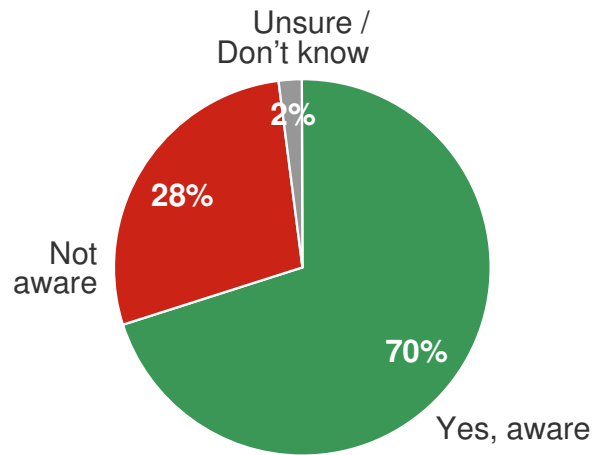
Q8. How well would you say you understand the regulations that affect farms within a Nitrate Vulnerable Zone?



Base: All respondents, farmers with land in a NVZ (750)

Ipsos MORI

Q9. Were you aware that new regulations came into force in January 2009 for existing NVZs and in January 2010 for newly designated NVZs?



Source: Ipsos MORI



As would be expected, farmers who say that their land does not fall within a NVZ are less likely to be aware of the regulation change. This again suggests that the lack of acknowledgement of the NVZ designation may reflect a lack of awareness rather than an active denial of the designation.

These findings seem slightly contradictory. Given a significant proportion of farmers are unaware of the designations (39%) but a majority say they are aware of the new regulations (70%), it is worth considering the possibility of farmers over-reporting their level of awareness and understanding. However, the most significant finding is the substantial number of farmers who, regardless of their perceived level of understanding of the regulations, do not consider the regulations to apply to their own farms.

2. Contemplation

2. Contemplation

This chapter considers the second stage of the attitudinal and behavioural change model; contemplation. This stage is characterised by farmers who accept that part of their land falls within a NVZ and who have begun the journey of attitudinal change by understanding the rationale behind NVZ designations. Nearly half (47%) of farmers fall within this second stage as they acknowledge their designation and agree with the statement, 'it is important to change the way we farm to reduce the amount of nitrates going into watercourses'.

Pre-contemplation

Aware of NVZ designation	- Accept all/part of land falls in a NVZ	61%
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Contemplation

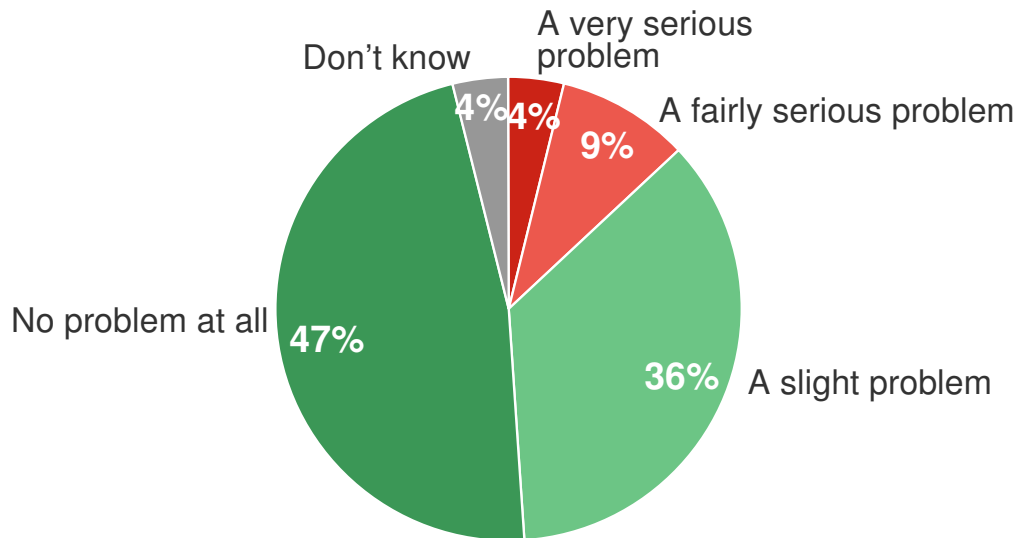
Engaged with need to change behaviour	- Accept all/part of land falls in a NVZ - Agree it is important to change farming practices to reduce amount of nitrates going into watercourses	47%
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Action

2.1 Attitudes towards water pollution

The underlying rationale for Defra's Action Programme of measures to meet the needs of the Nitrates Directive is the improvement of water quality. Although the chart above shows that nearly half (47%) of farmers have reached the contemplation stage, there are still significant numbers of farmers who do not accept that water pollution is currently an issue or something which is caused by nitrate use on farms. Nearly half (47%) of respondents believe there to be no problem at all with pollution of watercourses or groundwater in their local water catchment area. Only 13% farmers consider water pollution to be a 'very' or 'fairly' serious problem.

Q3. How serious a problem do you think the pollution of watercourses or groundwater is in your local water catchment area?



Base: All respondents, farmers with land in a NVZ (750)

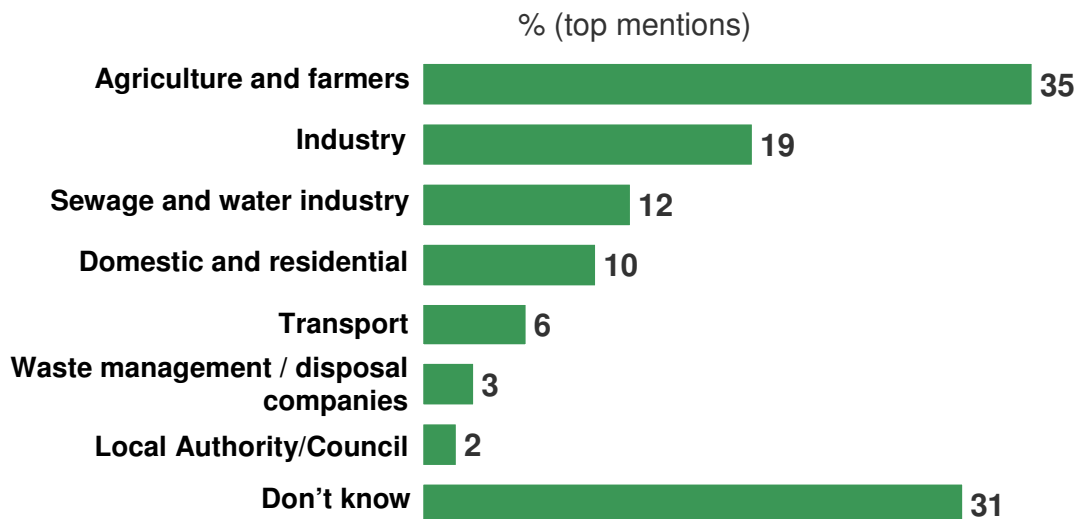
Source: Ipsos MORI

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Despite farmers believing that water pollution is not currently a problem, they do recognise that agriculture and farming could be a large contributor. More than a third (35%) mention agriculture and farming as contributing most to water pollution in the local water catchment area. Industry is also considered a key contributor followed by the sewage and water industry and domestic and residential sources (mentioned by 19%, 12% and 10% respectively).

Q4. Which type of organisations do you think contribute most to water pollution in your local water catchment area?



Base: All respondents, farmers with land in a NVZ (750)

Source: Ipsos MORI

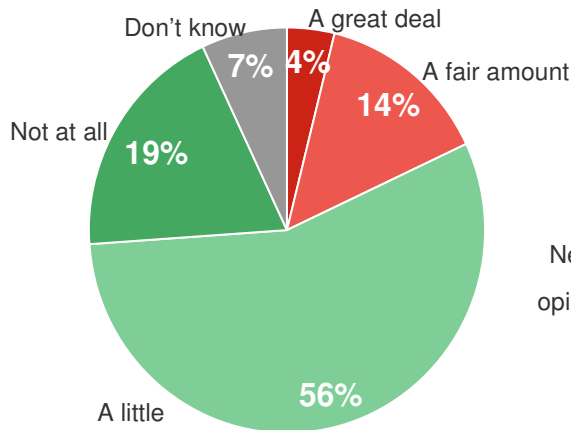
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The NVZ regulations link the problem of water pollution to the use of nitrogen-containing fertilisers, both artificial and organic, by farmers. However, fewer than one in five farmers (17%) believe that the use of artificial or organic fertilisers contributes to water pollution in their local water catchment area. Three quarters (75%) instead believe that these activities

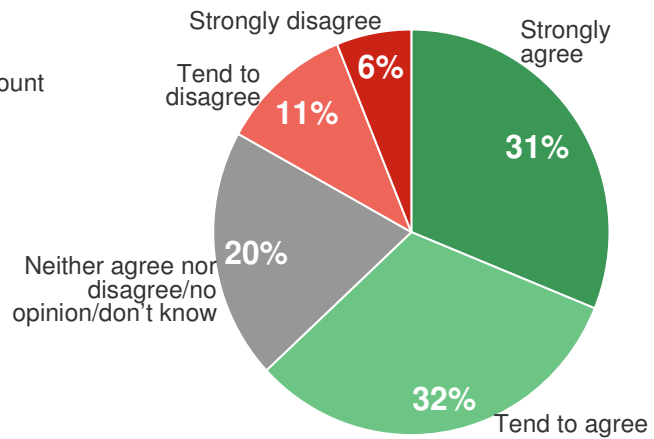
contribute 'little or not at all' to water pollution. Indeed more than three in five (63%) farmers agree that 'nitrate use on farms is only a minor cause of water pollution in this area' with almost a third (31%) strongly agreeing with this proposition.

Q5. To what extent do you think the use of *artificial* or *organic* fertilisers by farmers contributes to water pollution in your local water catchment area?



Base: All respondents, farmers with land in a NVZ (750)
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Q40. To what extent would you agree or disagree that: Nitrate use on farms is only a minor cause of water pollution in this area



Source: Ipsos MORI



The majority of farmers taking part in in-depth interviews also do not believe that water pollution is a serious problem in their local catchment area, either in general terms, or in relation to farming practices and the use of nitrates in farming more specifically.

This qualitative research indicates that farmers base their appraisal of whether or not water pollution is a serious problem in their local area on a number of factors, considered either alone or in combination. Whilst a minority are persuaded one way or the other by the results of scientific tests carried out in their local watercourses, most appear to rely on less reliable forms of evidence, with some acknowledging that their assessment is uncertain and based on guess-work.

Most commonly, farmers link water pollution back to farming, and the use and production of nitrates specifically, and make a judgement on the seriousness of the problem based on their knowledge and appraisal of local land usage and the farming practices of local farmers. In terms of land usage, the presence of local land farmed for cereals, and land used for woodland or country parks are all cited as areas requiring no nitrates or relatively small amounts of nitrate. In comparison, land used to support livestock, particularly the intensive farming of livestock is recognised to generate large quantities of nitrates and land used for the production of vegetables is also acknowledged to need nitrates. The farmers in the in-depth interviews who base their appraisal of water pollution on local land usage tend to farm in the former low-nitrate areas, and this contributes to their belief that water pollution cannot be a serious problem.

In terms of local farming practices, several believe that farmers in their area have reduced the volume of artificial nitrates they use over the last couple of decades, mainly due to the expense, and that, as a result, water pollution is unlikely to be a serious problem. Evidence of other good farming practices locally in relation to nitrates, such as the construction of slurry storage facilities, reassures farmers that water pollution is not a problem.

“Nobody just slings nitrogen around for the sake of it at what it costs. You tend to be careful with it. I know that 20, 25 years ago we probably did tend to start to put nitrogen on the wheat crops a little too early but it has been pointed out to us that that isn’t necessary and it doesn’t aid crop yield. So it’s a no-brainer, nobody does it. No point slinging money away.”

(Large farm, cereals and other arable crops, existing NVZ)

Conversely, a small minority of respondents in the in-depth interviews believe that neighbouring farmers still use a high volume of artificial fertilizers to increase crop yields, or apply fertilizers at the wrong times of year. This leads them to conclude that water pollution could be a serious problem in their area.

In addition, some farmers are guided by visible evidence, with clear water and the presence of fish cited as indicators of healthy watercourses.

“There’s still some trout in the river outside my kitchen window so it can’t be that bad.”

(Small farm, other livestock, existing NVZ)

A minority mention that there is very little local discourse around the problem of water pollution, and so assume that it cannot be a problem in their area.

However, none of the farmers taking part in the in-depth interviews believe that they themselves are contributing to the problem of water pollution. Many feel they are adopting best practice in relation to the use of nitrates, for example, by spreading fertilizers at the appropriate times of year, by not spreading fertilizers near to watercourses and by bedding livestock in straw to prevent seepage.

“I think we are farming in the old-fashioned way, which does not pollute. We don’t want our nitrogen to go into the watercourses and feed the rivers. We want our nitrogen to grow our grass and so we do our best to conserve that nitrogen by keeping it in piles to just the instant that the grass can use it.”

(Small farm, beef cattle, existing NVZ)

“We make sure we don’t spread manure too close to the ditches.”

(Medium-sized farm, dairy herd, beef cattle and other livestock, new NVZ)

Furthermore, some livestock and arable farmers believe that their farm does not require the application of significant levels of fertilizer anyway. Similarly, many livestock farmers believe that their farms do not produce high levels of organic nitrate, as they only farm livestock at low intensities and do not produce slurry. In addition, some farmers make a distinction between organic versus artificial fertilizers and not using, or using limited quantities of both one or the other can be viewed positively.

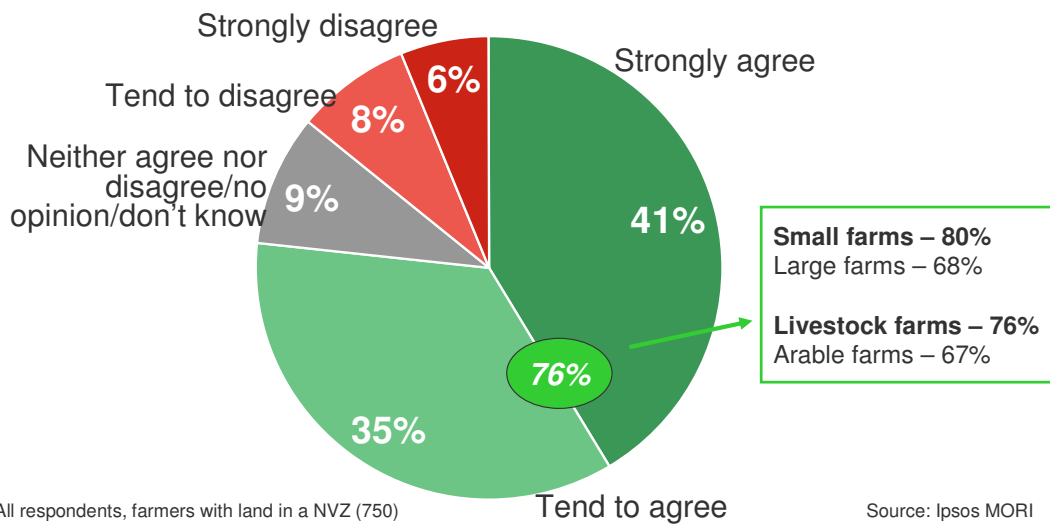
“Well farmyard manure, yeah, it contains nitrogen and presumably that can run off as well. But it contains much less nitrogen [than artificial fertilizer].”

(Small farm, other livestock, existing NVZ)

Although both the quantitative and qualitative research indicate that on the whole there is a lack of belief that water pollution caused by the use of fertilizers is a serious problem in the farmers’ local catchment areas, the potential for agriculture to cause such problems is acknowledged in the quantitative research. Three quarters (76%) of respondents agree ‘it is important that we change the way we farm to reduce the amount of nitrates going into water courses’. Two in five (41%) respondents strongly agree with this and only 15% disagree.

Q39. To what extent would you agree or disagree that:

It is important that we change the way we farm to reduce the amount of nitrates going into water courses



Base: All respondents, farmers with land in a NVZ (750)

Source: Ipsos MORI

Ipsos MORI



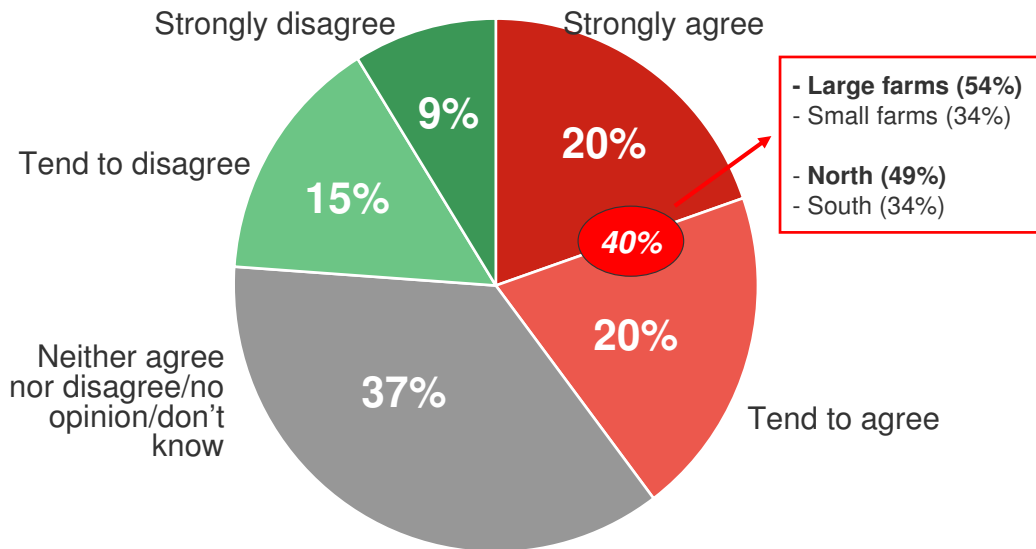
The vast majority of farmers taking part in the in-depth interviews are aware of nitrates as a cause of water pollution and recognise that there is always the potential for water pollution from nitrates to be a problem *in the future*, should farmers change their methods. In addition, those who already believe that water pollution is a problem in their area express concern about this, both in terms of the impacts on their own land, as well as on the wider area.

“I’ve actually got an SSSI on my land, which has very rare orchids and invertebrates and obviously I wouldn’t like to see them being affected.”
 (Medium-sized farm, cereals and other arable crops, existing NVZ)

2.1.1 Necessity of NVZ regulations to improve water quality

There does seem, therefore, to be a strong level of support for changes to farming practices in order to protect and preserve water quality. However, the extent to which the NVZ regulations are considered necessary to facilitate this change in behaviour is less clear cut. Two in five (40%) respondents believe that ‘too much of the country is now included in NVZs’. However, a substantial minority (23%) do disagree and a further 37% do not give an opinion.

Q41. To what extent would you agree or disagree that:
Too much of the country is now included in NVZs



Base: All respondents, farmers with land in a NVZ (750)

Source: Ipsos MORI

Ipsos MORI



Most farmers taking part in the qualitative research accept the need for regulations in relation to farmers' use of nitrates, and so support the rationale behind NVZs. The common perception is that regulations are likely to encourage farmers who would not change their practice with guidance alone, to comply.

"Well, I'm sure there's unfortunately one or two farmers who don't completely comply with the guidance and then probably that does require regulation."
 (Medium-sized farm, cereals and other arable crops, existing NVZ)

A minority of farmers who are particularly concerned about the environmental impacts of nitrate use, also acknowledge the benefits of regulation for farmers, equating regulation with guidance on best practice on nitrate use.

"You need some regulations... sometimes you need a bit more guidance... I think it's probably very sensible to have regulations to decipher what nitrogens are actually being applied to the land. And now we've had some guidance... the farms can go by, that's certainly got to be of help."
 (Medium-sized farm, cereals and other arable crops, existing NVZ)

A small minority believe that regulations on farmers' use of nitrates are unnecessary. One reason for this, as noted earlier, is that some believe that farmers have significantly reduced their use of nitrates over the last couple of decades already, due to the expense of artificial fertilizers. One farmer acknowledged, however, that if the price of fertilizer were to drop, regulation might then be necessary to ensure compliance amongst farmers mainly influenced by cost.

"If these regulations had not been brought in this would have happened for economics anyhow. Most people can't afford the waste [of fertilizers]... People have cut back dramatically."
 (Large farm, cereals and dairy herd, new NVZ)

Another view is that farmers are able to judge for themselves if action needs to be taken on their farms in relation to the use of nitrates, and that regulation is therefore superfluous.

One farmer believes that the regulations adopt a blanket approach to nitrate use, but that each farm has its own set of circumstances that need to be considered.

“Every farm and its land is so different, they cannot stipulate when it’s right to spread manure on one farm and soil type compared to another one. Some land can cope with it better and water run-off will always be different.”

(Medium-sized farm, dairy herd, beef cattle and other livestock, new NVZ)

Although the majority of farmers support regulation, there is some feeling that regulations can only be effective if farmers are properly policed. Farmers, for whom this is an issue, either seem to be unaware of the extent to which farmers are being policed, or object to the fact that inspections are taking place but with no apparent repercussions for farmers they believe are breaking the rules.

“You can have any regulations that you want, but what’s important is how it’s policed, isn’t it?”

(Small farm, other livestock, existing NVZ)

In spite of the reservations of some farmers, almost all farmers involved in the qualitative research accept the inclusion of their farm within a NVZ. Some farmers acknowledge, however, that they may have taken a more negative attitude had compliance been more problematic, for example if they had had to switch to the production of different crops. There is a call amongst some farmers in new NVZs for more information on how zones are determined, and why the zones have been extended, especially at a time when nitrate use amongst farmers is perceived to be lower than in the past. If this was done it might go some way to placating farmers who are resistant to the NVZ designation of their land.

Some of the survey working group involved in this research suggest that one barrier to support for the NVZ programme could be the limited extent to which farmers can see a positive impact on water quality as a consequence of more appropriate farming practices.

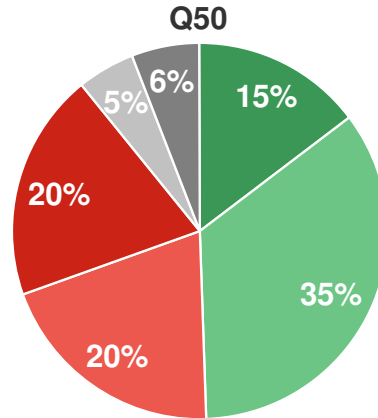
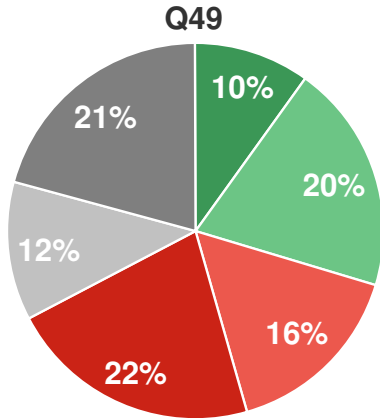
Indeed, perceptions of an improvement in water quality to date are mixed. Nearly two in five farmers (38%) feel that there has been no improvement in water quality in their local area since the introduction of NVZs. Conversely, three in ten (29%) do believe there has been an improvement. The difficulty in finding evidence for an improvement, as noted in the qualitative research, may be reflected in the high proportion of respondents not giving a response (33%).

There are signs of optimism, however, that the NVZ programme will have a positive impact on water pollution. Half (50%) of respondents expect water quality in their local area to improve ‘a lot’ or ‘a little’ over the next five years as a direct result of the NVZ regulations. There does remain a significant minority, however, (39%) who do not expect any future improvement.

Q49. To what extent, if at all, do you think there has been an improvement in water quality in your local area since the introduction of the Nitrate Vulnerable Zones?

Q50. To what extent, if at all, do you expect water quality in your local area to improve over the next five years as a direct result of the NVZ regulations?

■ A lot ■ A little ■ Not very much ■ Not at all ■ Don't know ■ No opinion



Base: All respondents, farmers with land in a NVZ (750)

Source: Ipsos MORI

Ipsos MORI

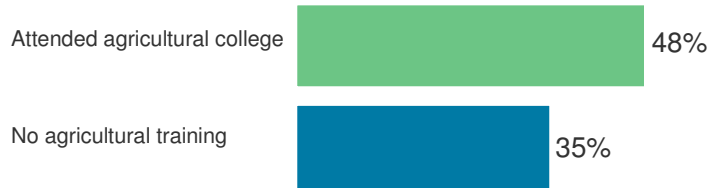


2.1.2 Differences in attitudes towards water pollution and the role of NVZs

Education appears to be an important factor impacting on farmers' perceptions of water quality and the contribution made to water pollution by the farming community. Farmers who have personally attended agricultural college are more likely to believe that agriculture and farmers are a significant contributor to water pollution in their area. However, the views of this group are not clear cut as farms where someone has attended agricultural college are *more* likely to believe the NVZ regulations cover too much of the country and are also more likely to agree that nitrate use on farms is only a minor cause of water pollution, as shown in the chart below. This may reflect the fact that managers of large and arable farms are the most likely to have attended agricultural college and these respondents are more likely to be sceptical of the rationale underlying the NVZ programme. These are also attitudinal differences likely to be related to age as farmers aged 44 and under are the most likely to have attended agricultural college.

Q. To what extent do you agree or disagree that...

Nitrate use on farms is only a minor cause of water pollution in this area



Too much of the country is now included in NVZs



Base: Farmers with land in a NVZ, 343 managers of farms where someone has attended agricultural college, 404 managers of farms where no-one has attended agricultural college

Ipsos MORI

Source: Ipsos MORI



3. Preparation

3. Preparation

This chapter considers the third stage of the attitudinal and behavioural journey model; preparation. This stage is characterised by farmers who have both accepted their designation and the rationale for it (as in the second contemplation stage) and have also taken steps to prepare themselves to meet the regulations. Just over two in five (43%) farmers involved in the telephone survey have reached this stage which has been defined as farmers who have engaged with any part of the NVZ Advice and Support Programme¹.

Pre-contemplation

Aware of NVZ designation	- Accept all/part of land falls in a NVZ	61%
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Contemplation

Engaged with need to change behaviour	- Accept all/part of land falls in a NVZ - Agree it is important to change farming practices to reduce amount of nitrates going into watercourses	47%
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Preparation

Engaged with NVZ Programme	- Accept all/part part of land falls in a NVZ - Agree it is important to change farming practices to reduce amount of nitrates going into watercourses - Engaged with any part of the Advice Programme	43%
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Action

3.1 Aims for NVZ Advice and Support Programme

According to survey working group, the NVZ Advice and Support Programme, had two key aims:

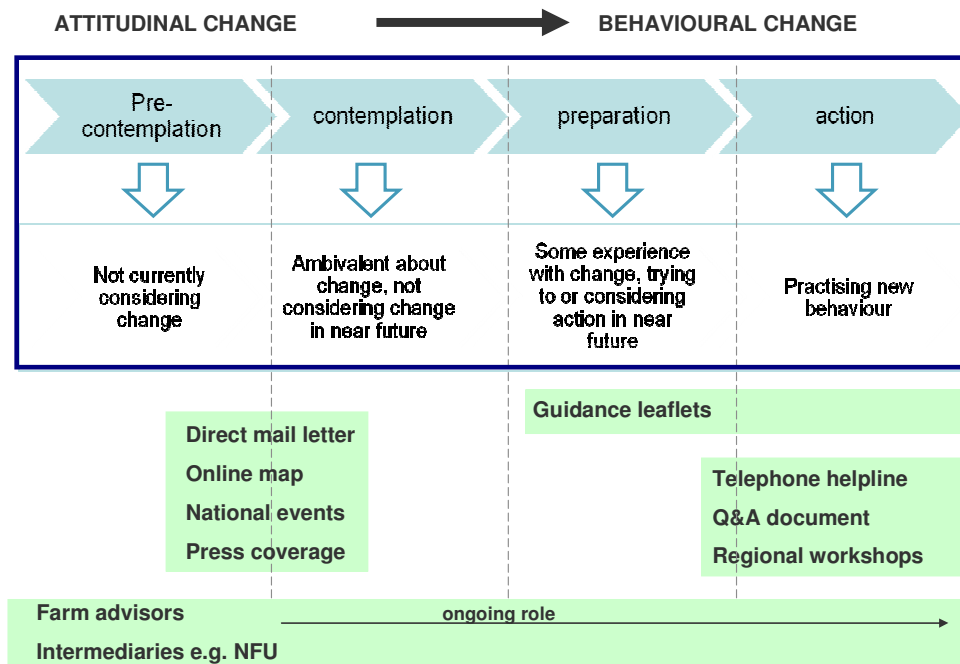
- to change farmers' *attitudes* towards the issue of water pollution, the contribution of farming to this problem and the need to use nitrates responsibly; and
- to alter the *behaviour* of farmers within NVZs in terms of nitrate use on their land.

The programme involved the provision of information, support and advice to farmers. This promoted the commercial and environmental benefits of changing farming practices and focused on the message that the NVZ regulations established best practice techniques and can save money.

The survey working group plotted the various elements which made up the programme along a customer journey map below to illustrate their aims for the different roles each communication activity would have in terms of moving farmers from a state of pre-

¹ Please note, this includes the use of the nutrient management tools PLANET and Tried and Tested which, although not part of the Defra-funded NVZ Advice and Support Programme, aid farmers in making the calculations necessary to comply with the NVZ regulations.

contemplation, where they are not aware of the existence of NVZs, to a state of action, where they are practising new behaviour in line with the NVZ regulations.

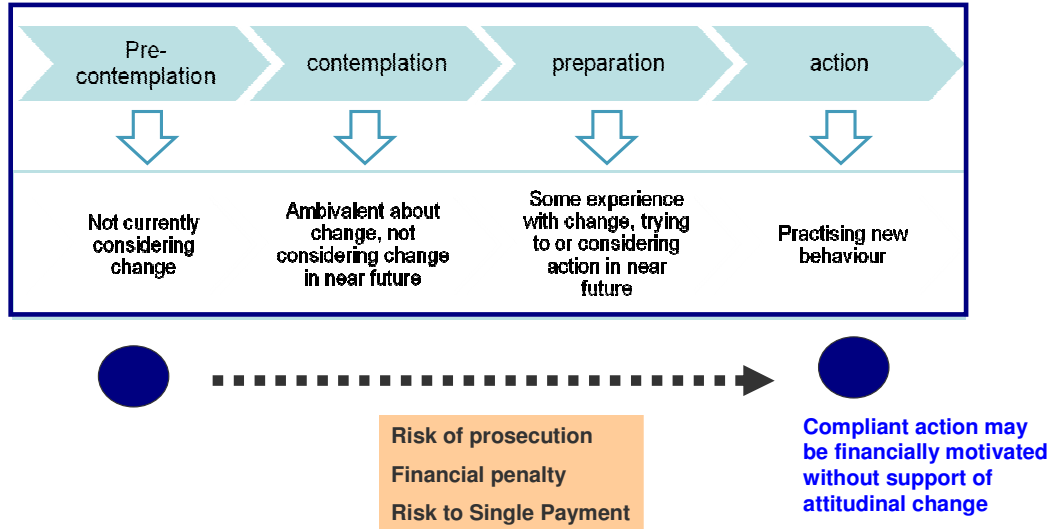


The NVZ Advice and Support Programme 2009-2010 follows a similar programme delivered by Natural England and the Environment Agency in 2008-2009. The range of activities shown in the graphic above cover both of these programmes, as for instance the direct mail letter, guidance leaflets and helpline appeared in October 2008. In terms of events, national and regional events were held in 2008-2009 and then only regional events in 2009-2010.

The survey working group recognise that the engagement activities within the programmes complement each other to change both farmers' attitudes and farmers' behaviours. For instance, the direct mail letter and online map were intended to raise awareness of the NVZ designations and regulations. The guidance documents, telephone helpline and Q&A document were most likely to assist farmers who had already engaged with some other form of communication, to adopt new behaviours in line with NVZ regulations. Farm advisors and intermediary organisations were considered to play an ongoing role which supported farmers at all stages of this journey. This was encouraged through the funding of advisor workshops throughout 2008 to 2010.

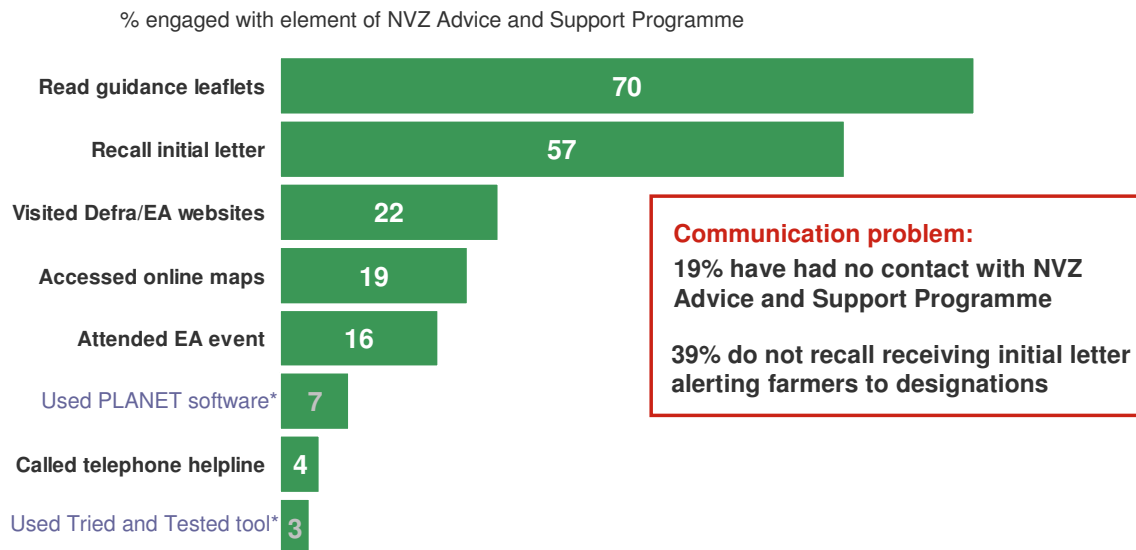
The survey working group recognise that there were two types of NVZ events for farmers with very different aims and objectives. The first round of national presentations aimed to raise awareness of the NVZ programme and encourage farmers to seek further information about how the regulations affected them personally. The 2008-2009 programme also delivered a series of regional events, which were continued in the 2009-2010 programme. The autonomous regional-running of these events allowed a far more tailored approach with local issues taking the fore and far more practical advice being disseminated. For instance, these events incorporated workshops tutoring on nutrient planning. In the view of the survey working group, these workshops fulfilled the intended aim of enabling farmers to carry out their obligations under the regulations.

The survey working group recognise that this ‘ideal’ journey through attitudinal change to behaviour change would not be followed by all farmers. Instead, there are some who make changes to their farming practices in order to comply with the NVZ regulations through fear of prosecution and financial penalties and the risk to their Single Payment. These farmers may be complying with the regulations even though they do not support the rationale behind the NVZ programme or accept the role of farming in water pollution.



3.2 Engagement with NVZ Advice and Support Programme

Four in five (81%) of the farmers involved in the quantitative survey have had contact with some part of the NVZ Advice and Support Programme². Levels of engagement with each element of the programme, and farmers’ appraisal of them, are explored below in section 3.4.



Base: All respondents, farmers with land in a NVZ (750)

Ipsos MORI

* PLANET and Tried and Tested do not form part of the formal NVZ Advice and Support Programme

Source: Ipsos MORI



² This includes contact via any of the following channels; Defra and Environment Agency websites, online mapping tool, guidance leaflets produced by Defra and Environment Agency, independent telephone advice line, and events managed by the Environment Agency.

3.2.1 Differing levels of engagement across farmers

There are differing levels of engagement with the NVZ Advice and Support Programme linked to farmers’ attitudes as well as their demographics, farm size and farm type.

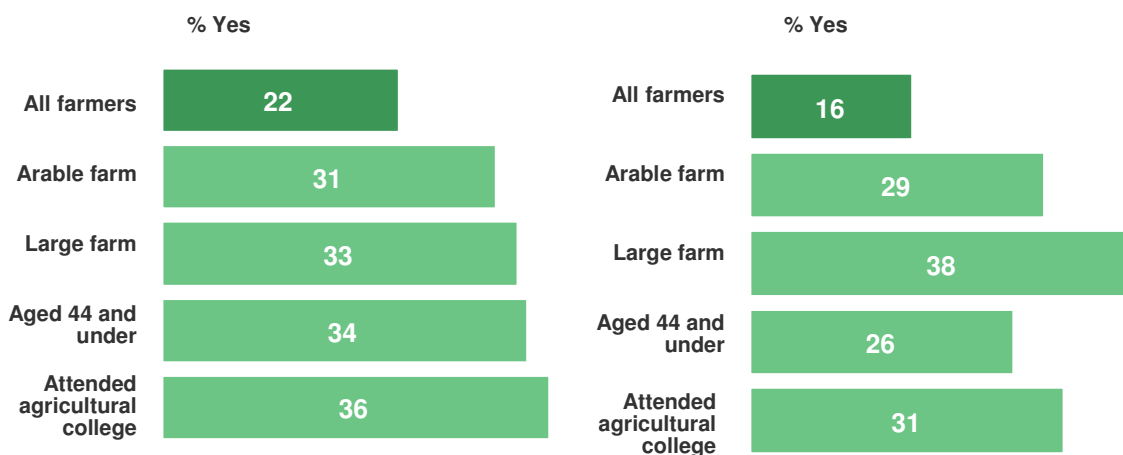
Farmers who consider water pollution to be a serious problem caused by agriculture are more likely to have engaged with parts of the programme. For instance, 40% have visited the Defra and Environment Agency websites compared to 22% of farmers overall.

In terms of different groups of farmers, those most likely to have engaged with multiple points of the NVZ Advice and Support Programme are younger farmers, managers of arable and large farms and those who have attended agricultural college (for examples see chart below).

Managers of small and livestock farms are less likely to have engaged with the programme. For instance, 19% of those running small farms have visited the Defra or Environment Agency websites to find out more about NVZs compared to 33% of those from large farms. Similarly, 82% of large farm managers claim to have read the guidance leaflets compared to 62% from small farms. Attendance of events managed by the Environment Agency is also vastly different among farmers from different size farms. While 38% of large farm managers have attended an event, just 8% of those from small farms have.

Q14. Have you ever **visited the Defra or Environment Agency websites** to find out more about NVZs and the regulations that apply to farms in these areas?

Q25. Have you ever **attended an event, such as a workshop or clinic, run by Defra or the Environment Agency** about Nitrate Vulnerable Zones?



Base: All respondents, farmers with land in a NVZ (750)
Ipsos MORI

Source: Ipsos MORI



Farmers in existing NVZs (those designated in 2002) are no more likely than farmers in newly-designated NVZs (designated in 2008) to have engaged with any part of the NVZ Advice and Support Programme.

The qualitative research suggests that there are a number of barriers preventing farmers from fully engaging with various elements of the programme.

A lack of awareness of the existence of different elements of the programme seems to be a barrier for some farmers, and cited in the case of the helpline, the events and the guidance leaflets. It should be noted however that awareness was not tested quantitatively in this research study so it is not possible to conclude whether or not this is a key issue.

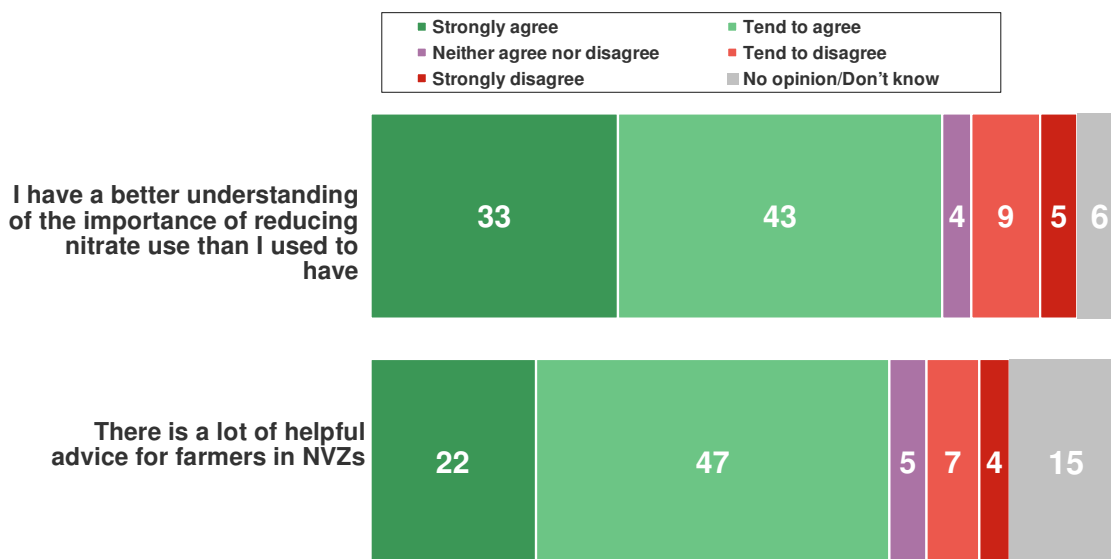
In addition, the qualitative research shows that engagement with the web elements of the programme is dependent firstly on whether or not farmers have web access at all, and secondly on the quality of their Internet connection. Farmers with a dial-up connection seem to be less likely to access information via the web, than those with broadband access.

It also seems that some farmers are happy to rely on the advice from their advisors (mainly agronomists), rather than engage personally with the programme. For example, one farmer mentions that he did not attend a Environment Agency-run event, as he was aware that his agronomist had already done so, and would pass on the relevant information to him.

3.3 Farmers' appraisal of NVZ Advice and Support Programme

Most farmers agree that 'there is a lot of helpful advice available for farmers in NVZs' (69% agree compared to 11% who disagree). It should be noted, however, that this 'advice' could include advice from Defra and the Environment Agency but also advice from other sources, such as the farming press or fellow farmers. There is also a high level of agreement with the statement, 'I have a better understanding of the importance of reducing nitrate use than I used to have' (76% agree compared to 14% disagree). Of course this could reflect both recognition of the environmental importance of reducing nitrate use as well as a need to do so to avoid prosecution or the loss of Single Payment.

Q44/46. To what extent do you agree or disagree that...



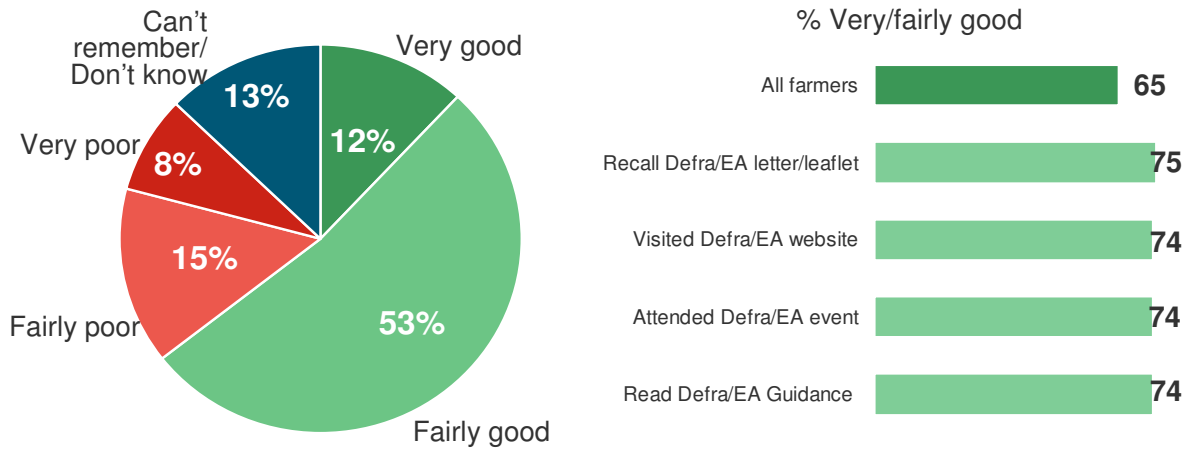
Base: All respondents, farmers with land in a NVZ (750)
Ipsos MORI

Source: Ipsos MORI
Ipsos

A majority (65%) of farmers believe that Defra and the Environment Agency have done a good job of explaining the regulations applying to farms in NVZs. However, 22% believe they have done a poor job.

Farmers who have engaged with elements of the NVZ Advice and Support Programme are more likely than farmers overall to have favourable attitudes towards the communication from Defra and the Environment Agency about the NVZ regulations. They are also more likely to agree that 'there is a lot of helpful advice for farmers in NVZs'.

Q28. How good or poor a job do you think Defra and the Environment Agency have done in terms of explaining the regulations applying to farms in Nitrate Vulnerable Zones to farmers?



Base: All respondents, farmers with land in a NVZ (750)

Ipsos MORI



It is clear that the NVZ Advice and Support Programme is considered by farmers themselves to have been important in influencing their attitudes and behaviours. Nearly two thirds (64%) consider ‘the advice and help provided by Defra and the Environment Agency’ as a ‘crucial’ or ‘important’ factor influencing them to do things differently on their farm to meet the NVZ regulations.

The majority (61%) of respondents are unable to provide suggestions of what Defra or the Environment Agency could have done better to help farmers understand the regulations. Of the few suggestions made, the most common (10%) was to make the information clearer, easier to understand with less jargon. A very few (4%) suggested more face-to-face contact between the policy makers and advisors and farmers, for instance through more workshops, seminars or meetings.

3.4 Engagement with, and appraisal of, each element of the NVZ Advice and Support Programme

3.4.1 Defra and Environment Agency guidance leaflets

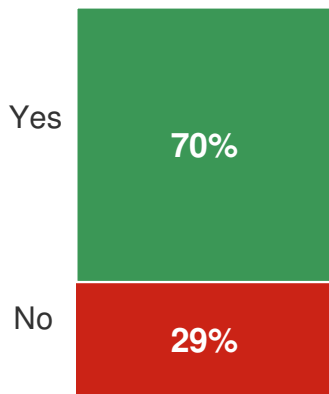
A substantial majority (70%) of farmers say they have read at least one of the guidance leaflets produced by Defra and the Environment Agency for farmers within NVZs.

This level of engagement does, however, seem a little inflated given recall of the initial letter is 57%. This suggests that farmers may be confusing other pieces of communication they have received with the guidance leaflets specifically related to NVZs. This certainly seems a possibility given the wealth of communications farmers in the in-depth interviews recall receiving relating to farming practices and regulation, such as the Single Payment Scheme³.

³ The Single Payment Scheme (SPS) is the principal agricultural subsidy scheme in the European Union. Under the scheme farmers have greater freedom to farm to the demands of the market as subsidies are no longer linked to production. However, full payment depends on complying with other

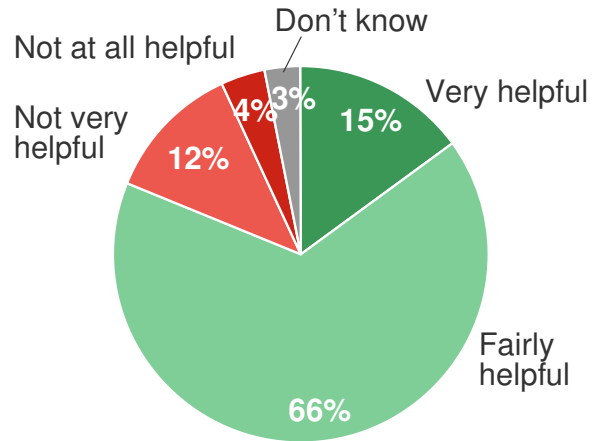
Nonetheless, farmers who believe they have read a guidance leaflet found them helpful (81% say they were helpful).

Q17. Have you read any of the guidance leaflets produced by Defra and the Environment Agency for farmers whose lands falls within a NVZ?



Base: All respondents, farmers with land in a NVZ (750)

Q18. How did you find the information in these guidance leaflets?



Base: all who have read guidance leaflets (551)

Source: Ipsos MORI

Ipsos MORI



A couple of farmers taking part in the in-depth interviews sent off for or downloaded the guidance leaflets. Their motivation was to get more detail about their obligations under the NVZ regulations.

Both these farmers found the leaflets useful in terms of enabling them to understand their obligations, with one specifically stating that all his knowledge of the NVZ regulations comes from these leaflets, and that this has been adequate.

“Ultimately this has been enough, I feel I know what the regulations are and what I have to do.”

(Small farm, beef cattle, existing NVZ)

Opinions are mixed, however, on of the level of detail provided in the leaflets. One farmer believes this is appropriate and acknowledges the benefits of having separate leaflets for different circumstances in terms of enabling farmers to quickly access the information that is relevant to them.

“It was very detailed in those leaflets, so exactly what you should do and shouldn't do... Because if you have one big thick booklet... that's much more difficult to find the information you need... rather than have all separate ones with different subject matter in.”

(Medium-sized farm, cereals and other arable crops, existing NVZ)

The other is critical and calls for more concise information, limited to outlining farmers' obligations under the regulations, as well as the penalties of non-compliance. He feels this approach is necessary as farmers are already over-burdened with literature covering other areas of regulation within the industry.

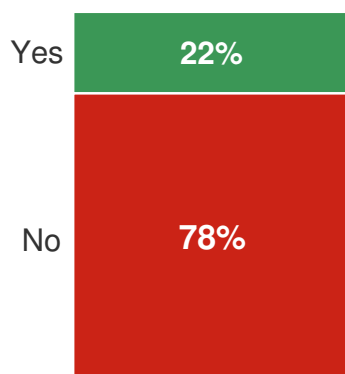
legislation on animal welfare and environment protection, including NVZ rules. This is called Cross Compliance.

*“I think there is far too much detail coming through, along with other things... The amount of stuff that comes through. The nitrates people they have got to realise that they ain't just got an audience for nitrates, they've got an audience which is struggling with all these other rules and regulations as well... They could have done it in three bullet points... You will not spread more than 170 kilograms per hectare per year. You will not spread your sh**t between the fifteenth of October and the fifteen of January. Full stop. And a little note underneath. If you don't understand this information, contact us... And the next one is 'If you don't abide by the above, the first thing you're going to do is lose your Single Payment and the second thing is that the Environment Agency will have you in the courts.’”*
 (Small farm, beef cattle, existing NVZ)

3.4.2 Web-based support

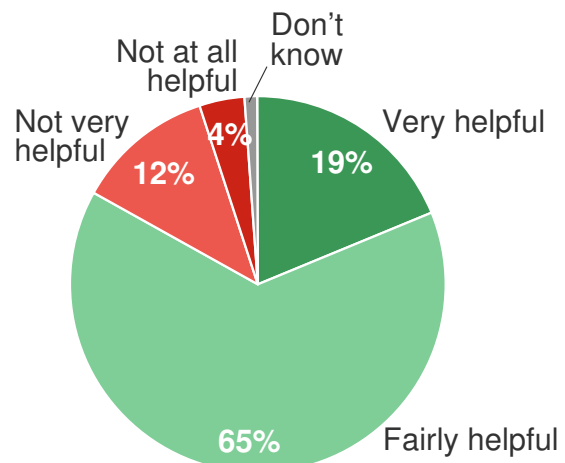
Just over a fifth of farmers (22%) have visited the Defra or Environment Agency websites to find out more about NVZs. Of those who have used the Defra or Environment Agency websites the vast majority (83%) found them helpful.

Q14. Have you ever visited the Defra or Environment Agency websites to find out more about NVZs and the regulations that apply to farms in these areas?



Base: All respondents, farmers with land in a NVZ (750)

Q15. How did you find the information about NVZs on these websites?



Base: all who have visited the Defra or Environment Agency websites (177)

Source: Ipsos MORI

Ipsos MORI



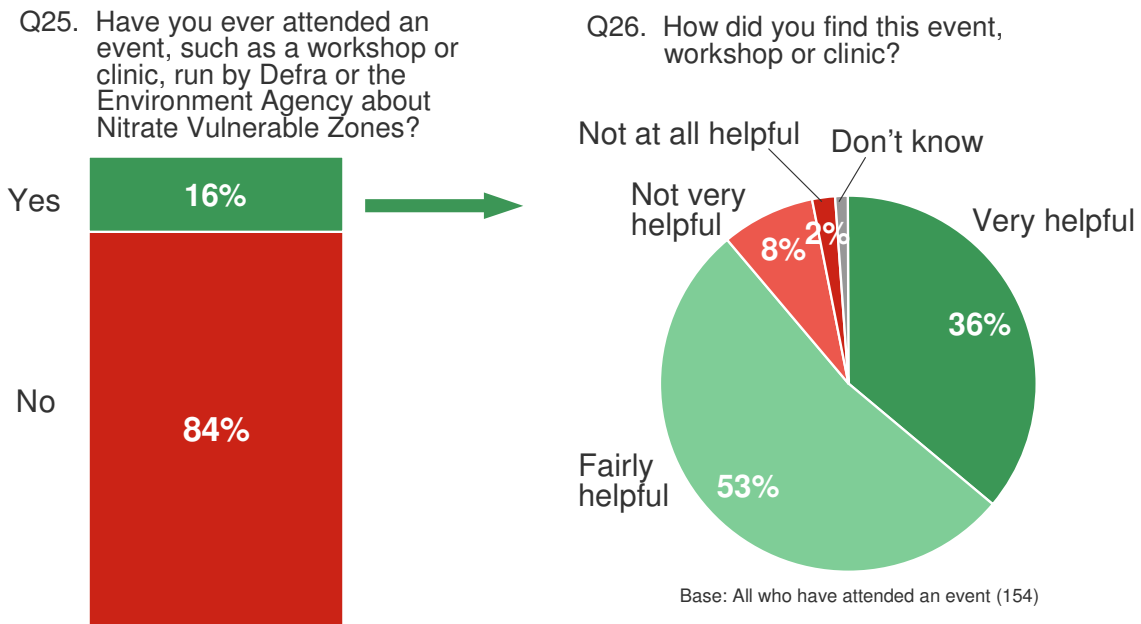
A similar proportion (19%) have looked at the online maps of their area that show which fields fall within a NVZ.

A small number of farmers taking part in the in-depth interviews accessed the online maps, with the purpose of confirming which areas of their farms are within a NVZ. All state that they found it easy to navigate their way to the maps on the website. One farmer did, however, have problems downloading the maps though he resolved this issue by contacting the technical helpline; this informed him that pop-ups on his computer needed to be switched on to download successfully. All those who accessed the on-line maps believe that the maps clearly indicate which areas of their farms fall within a NVZ and, beyond the pop-up issue, cannot think of any improvements that need to be made to the system.

“All my farm had been ring-fenced and all cross-hatched so at a glance you could see it was in the zone.”
 (Small farm, beef cattle, existing NVZ)

3.4.3 Defra and Environment Agency events

A minority (16%) of farmers have attended an event, such as a workshop or clinic, run by the Environment Agency. As with all the elements of the advice programme, the events were well received by those who did attend them (89% found the events helpful compared to 10% who said they were not helpful). A similar proportion (18%) of farmers have also attended an event run by some other organisation.



Base: All respondents, farmers with land in a NVZ (750)

Source: Ipsos MORI

Ipsos MORI



Two farmers involved in the qualitative research had attended Environment Agency-run workshops, one had been to a couple of general workshops, the other to a practical workshop designed specifically to help farmers make the calculations on nitrate production. The farmer who attended the latter had previously been unable to understand how to make the calculations on nitrogen production, and so attended the workshop to gain a better understanding.

Both were positive about the workshops, and found them comprehensive, clear and ultimately useful. However, whilst the farmer attending the practical workshop left the workshop feeling very clear about how to make the necessary calculations, the farmer attending the more general workshop believed the workshops he attended were only the starting point and that he needed further input when back his farm to understand how to meet his obligations, specifically in terms of making the calculations.

“These [the Environment Agency workshops] were good... It's only while you're there that you appreciate them though. It's when you get back home you sit down at the table and you have to work things out on your own, there's no one to ask.”
 (Large farm, cereals and dairy herd, new NVZ)

Both farmers welcomed the opportunity for questions that the workshops provided and one reported how expertly Defra / the Environment Agency⁴ answered the questions put to them.

“The questions were answered very well indeed, they knew everything.”
(Large farm, cereals and dairy herd, new NVZ)

One farmer did, however, criticise Defra / the Environment Agency for failing to address the critical question of why they had designated certain areas as NVZs.

“They [Defra / the Environment Agency] made some sort of poor excuse... we just didn't know why they had extended the NVZs as we thought they should have been contracted.”
(Large farm, cereals and dairy herd, new NVZ)

Both farmers valued the opportunity for interaction with other farmers that the workshops provided, both in terms of understanding some of the queries other farmers may have as well as learning from their experiences of operating within a NVZ. This had been particularly useful for the farmer operating within a new NVZ.

“Well, just other farmers asking questions as well. Because everybody tends to have different questions to ask so that was interesting, yeah.”
(Large farm, cereals, other arable, other livestock, existing NVZ)

3.4.4 Independent telephone helpline

The survey working group recognise that uptake of the telephone helpline has been lower than anticipated. The quantitative survey provides some evidence for this and the vast majority (96%) of farmers had not called the telephone helpline. Indeed, the survey working group report that advisors were more likely to call the helpline than farmers.

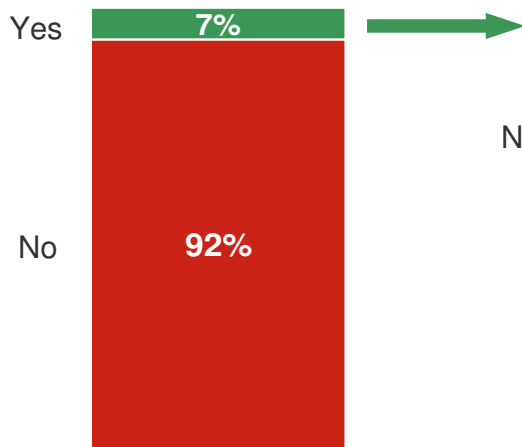
One farmer taking part in the qualitative research accessed the technical helpline. He did this to find out why he was unable to download the on-line maps, and whilst on the phone found out how to access the guidance leaflets. Overall, his experience of the helpline was positive – he found the staff knowledgeable and able to answer his questions. His only criticism is that there are too many options to choose from at the beginning of the phone call.

3.4.5 Nutrient management tools

There are a number of other tools available to farmers, which although not part of the Defra-funded NVZ advice programme, can assist farmers to comply with the NVZ regulations. These are a web-based tool, PLANET, and a pen-and-paper tool, “Tried and Tested”, which aim to assist farmers in making calculations on nitrogen production and use and manure usage and storage. There has been low take-up of both PLANET and “Tried and Tested” (7% and 3% have used them respectively). However, among those who have used these tools, the feedback was positive with the majority saying they were helpful.

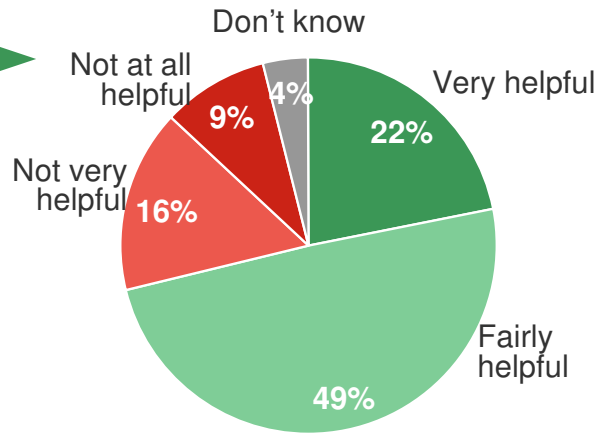
⁴ Please note it was the respondent's perception that the workshop was Defra-run, with staff from both the Defra and the Environment Agency perceived to be present.

Q21. Have you used the PLANET computer software tool designed to help you with the calculations you need to make under the NVZ regulations?



Base: All respondents, farmers with land in a NVZ (750)

Q22. How did you find the PLANET tool?



Base: all who have used PLANET (73)

Source: Ipsos MORI

Ipsos MORI



Farmers who have used PLANET or “Tried and Tested” were more likely to find ‘completing risk maps for the fields’ easy (90% compared to 80% of farmers overall).

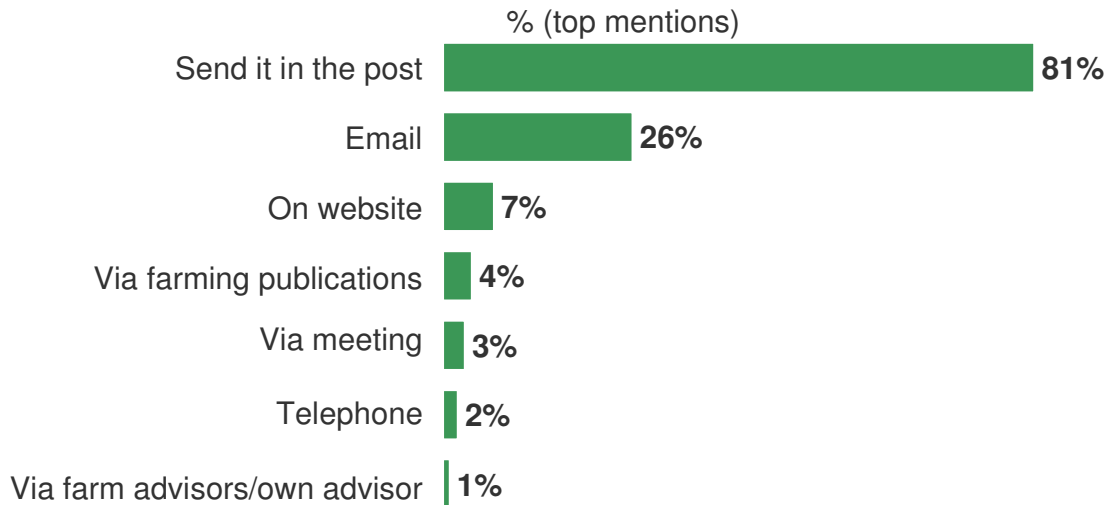
Two farmers taking part in the in-depth interviews used the PLANET software tool to help them make calculations around nitrate production. Although both farmers found the tool useful, opinions are mixed in terms of how easy it is to use. Whilst one farmer praised it for being straightforward, the other has reservations, first due to the information and level of record-keeping it requires, and second because he is not so proficient with computers and had struggled with the technology.

3.5 Preferences for receiving information

3.5.1 Preferences for information channels

The majority (81%) of farmers would like to receive further information or advice through the post. Direct delivery of information by email is also popular (26%). Farmers are less keen on methods which require them to actively look for information, for instance by looking on a website (7%) or by looking through farming publications (4%).

Q29. How would you like to receive further information or advice on the rules applying in Nitrate Vulnerable Zones?



Base: All respondents, farmers with land in a NVZ (750)

Source: Ipsos MORI

Ipsos MORI



As in the quantitative survey, the in-depth interviews indicate that most farmers would like to receive information or advice on the requirements under NVZ regulations through the post, either in the form of a leaflet or, for a minority, as a letter. This is the preferred channel not only because it enables farmers to read the information at a time that is convenient to them, but also allows them to re-read the information if further clarification is required. Information via leaflets/letters is also valued for being immediately available, as and when farmers need it. Some farmers contrast this with the Internet which may be slow to download information if running on a dial-up connection or fallible in terms of connecting to particular sites.

“And you can obviously look at it once and then read it again to make sure you know where you stick to the rules. A booklet is good because you can keep it.”
(Medium-sized farm, beef cattle, other arable crops, existing NVZ)

“It’s better than having to keep going online say, because you can just pull it [a leaflet] out of your folder or whatever and if you need any quick information you just pick the correct leaflet regarding the query you’re thinking of and then that’s quite comprehensively detailed, and should give you all the information which you need.”
(Medium-sized farm, cereals and other arable crops, existing NVZ)

Although information through the post appears to be the preferred option amongst farmers, it should be noted that some farmers involved in the qualitative research speak of already being overloaded with information through the post relating to farming issues. This suggests that the post may simply be the most obvious channel for farmers to receive information about NVZs, or perhaps the most practical, but not necessarily the most effective.

As in the quantitative survey, there does appear to be some desire for information via other channels amongst farmers taking part in the in-depth interviews. The qualitative research suggests that these other channels are seen to supplement, rather than replace literature received through the post. Indeed, one farmer views emails as an effective channel for initial headline information around the regulations, as long as more detailed information is signposted within the email. Another farmer would value the one-to-one interaction afforded by a face-to-face meeting to resolve any specific queries or problems he may have, having

digested the literature. Another mentions the telephone as an effective channel in this respect.

“It’s even better if you can sit with someone and say, “This is my problem, how do I solve it?”

(Large farm, cereals and dairy herd, new NVZ)

Another farmer believes that a combination of channels is likely to be most effective, especially in terms of retaining information. For this reason he suggests that information in leaflet form is supplemented with a DVD.

“If someone’s delivering information just to read it you retain a percentage. If you can read it and hear it at the same time you retain a bit more. If you can read it, hear it and see it all at the same time... You need to use as many senses as you can to get this information home.”

(Small farm, beef cattle, existing NVZ)

3.5.2 Sources of information about NVZs

The qualitative research shows that Defra and the Environment Agency are the main sources of information, advice and support on NVZs for farmers actively seeking this, though there does appear to be some confusion about whether the information, advice and support have come from Defra or from Defra *and* the Environment Agency. In addition, several farmers have received advice and support regarding NVZs from their farm advisors / agronomists - one farmer having taken part in a workshop with a local agronomist. A minority of farmers, including some of those who have not actively sought information from Defra or the Environment Agency, mention having been informed by the farming press, for example ‘Farmers Weekly’ and ‘Farmers Guardian’.

The in-depth interviews indicate that farmers are confident in Defra’s level of expertise on NVZs and the vast majority believe that Defra is a trustworthy source of information about NVZ management. This confidence in Defra is attributed to its “official” status as a central government department, and to the research it is assumed to have conducted in relation to NVZs.

“Because they’re the ministry they should be [trustworthy].”

(Large farm, cereals, other arable, other livestock, existing NVZ)

The qualitative research shows that farmers make little differentiation between the Environment Agency and Defra in terms of how expert and trustworthy they are in relation to NVZs. Like Defra, the Environment Agency is considered an official body, and one which has carried out research in relation to NVZs.

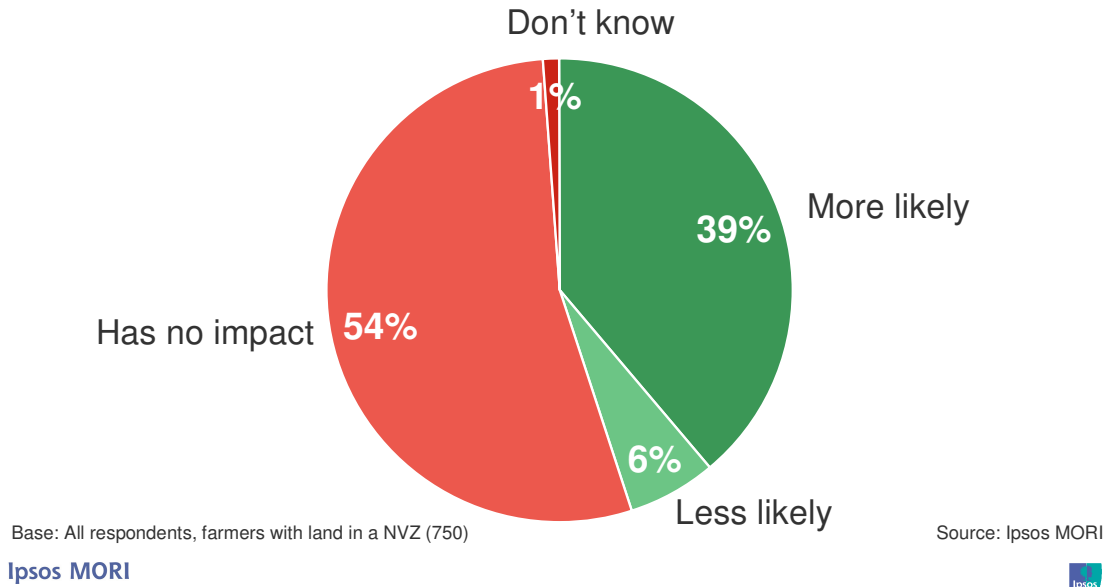
“They’ve got the scientific evidence to monitor and they do monitor what the pollution levels are so I think they are pretty good about knowing where a problem is and that sort of thing.”

(Medium-sized farm, beef cattle, other arable crops, existing NVZ)

The survey working group are interested to explore whether a tension exists, in the eye of the farmer, between the dual role of the Environment Agency in relation to NVZs as an advisory body on the one hand and as the regulator on the other. This research finds that for more than half (54%) of farmers, the fact that the Environment Agency is responsible for environmental regulation ‘has no impact’ on whether they would consult them for advice on NVZ rules. Indeed, for two in five (39%) farmers it makes them ‘more likely’ to consult the

Environment Agency for advice. It certainly does not discourage them from contacting the Environment Agency.

Q58. The Environment Agency is responsible for environmental regulations. Does this fact make you more likely to consult them for advice on NVZ rules, less likely to do so, or does it make no difference?



The in-depth interviews reveal that farmers are not all aware that the Environment Agency is the regulator for NVZs, with some believing that Defra is the regulator. For some, this status seems to increase rather than decrease the level of trust they have in the information they have received or may receive from either source. The perception is that the body regulating NVZs is likely to provide appropriate information and support to enable farmers to meet their obligations.

3.5.3 Role of intermediary organisations

The survey working group recognise that farmers obtain information related to NVZs through a number of other channels and sources apart from the official NVZ Advice and Support Programme. One of the most common ways farmers receive such information, in the views of the survey working group, is via word-of-mouth from their own peers.

There were also thought to be a number of intermediary sources through which farmers would hear about NVZs, for instance through the National Farmers Union (NFU), through independent farm advisors, and through farming publications such as Farmers Weekly.

The survey working group consider intermediary organisations as a key channel for disseminating information relating to NVZs. Given the challenges faced by government organisations in relation to trust as well as simply getting their message heard, piggy-backing on initiatives being run by other organisations can be very helpful.

There can be tensions, however, between the interests of the intermediary organisations and the objectives of Defra and the Environment Agency. For instance, the NFU represent the views of farmers which can lead to tensions with the government bodies regarding legislation and regulation.

Farmers in the qualitative research who have been provided with advice and support about NVZs from their agronomist believe that these farm advisors have an appropriate level of

expertise and are trustworthy. One farmer relates how his agronomist adds value by applying general information around NVZs, provided by Defra / the Environment Agency, to the specific circumstances of his farm. There is however an acknowledgement that farm advisors are unlikely to be as knowledgeable as Defra in relation to NVZs.

“It’s all very easy to understand these leaflets, but he’s always good to refer to... in your own situation, if you know what I mean... Because... some of the leaflets can be very generalised but your agronomist knows your own farm and he can interpret what they mean in the booklets to your own particular query.”

(Medium-sized farm, cereals and other arable crops, existing NVZ)

For the (few) farmers taking part in the qualitative research who have received information via the farming press, these publications are useful sources of information, alerting them of the headlines around NVZs, as well as outlining other farmers’ experiences of adapting to the regulations. Farmers believe that such articles are well-researched, that the publications are trustworthy and that information is written in a more accessible way than in the Defra / Environment Agency publications.

“They [Farmers Weekly] put it in layman’s terms because some of it can be a little bit technical and it’s nice to view what other farmers are doing in that regards to the Nitrate Vulnerable Zones and how they’re getting on with it.”

(Medium-sized farm, cereals and other arable crops, existing NVZ)

3.5.4 Ideal sources of information

The vast majority of farmers taking part in the qualitative research cite Defra and/or the Environment Agency as their preferred source of information on NVZs.

Many farmers want information from the regulator and name Defra or the Environment Agency as their preferred source, depending on which body they believe is the regulator. As noted above, their belief is that the body regulating NVZs has a detailed understanding of the regulations and is likely to provide appropriate information and support to enable farmers to meet their obligations. There is a view that farmers cannot go wrong if they follow the guidance provided by the regulator.

“They [the Environment Agency] are the official regulators. The regulator I expect, because they’re the regulating body aren’t they, should know what guidance, if anyone, to give you really.”

(Medium-sized farm, cereals and other arable crops, existing NVZ)

There are some indications that some farmers prefer to receive advice from Defra rather than the Environment Agency, because Defra already distributes a lot of information to farmers and is thought to have more responsibility for farming practices. Some farmers believe that it would be more motivating if Defra distributed information about NVZs at the same time as information about the Single Payment Scheme (SPS), and, indeed, a couple of farmers mention having received information on NVZs along with communications about cross-compliance.

“Your ears prick up when you hear Single Payment.”

(Small farm, beef cattle, existing NVZ)

Nonetheless, some farmers would like information to come from both Defra and the Environment Agency, perceiving each to have an important and complementary role in relation to NVZs - with Defra responsible for good farming practice and the Environment Agency for the protection of the environment generally and watercourses more specifically.

“They’re [Defra] there to improve and support and make farming a better occupation and a kinder occupation to the planet. The Environment Agency again have been entrusted to look after our watercourses and the environment. We need Defra to explain good practice and educate us and tell us what will happen if we persist in not having a balanced approach and then at the end of the day we need someone from the Environment Agency saying if you choose to exploit at other people’s and at the planet’s expense this is the consequence.”

(Small farm, beef cattle, existing NVZ)

Only one farmer involved in the qualitative research would prefer to receive information from a source other than Defra or the Environment Agency. This farmer has a deep mistrust of government from its handling of farming issues in the past and would prefer instead to receive information from an independent, but expert, body. He cited the National Farmers Union (NFU) as a potential source.

4. Action

4. Action

This chapter considers the final stage of the attitudinal and behavioural change model; action. A third of farmers (33%) involved in the telephone survey have reached this final stage as they claim to have taken action as a result of the NVZ designation. It is worth considering that the proportion of farmers who are farming in line with the NVZ regulations could actually be higher than this if they were already farming appropriately and did not need to undergo behavioural *change*.

Pre-contemplation

Aware of NVZ designation	- Accept all/part of land falls in a NVZ	61%
Engaged with need to change behaviour	- Accept all/part of land falls in a NVZ - Agree it is important to change farming practices to reduce amount of nitrates going into watercourses	47%
Engaged with NVZ Programme	- Accept all/part part of land falls in a NVZ - Agree it is important to change farming practices to reduce amount of nitrates going into watercourses - Engaged with any part of the Advice Programme	43%
Action taken in response to NVZ designation	- Accept all/part of land falls in a NVZ - Agree it is important to change farming practices to reduce amount of nitrates going into watercourses - Engaged with any part of the Advice Programme - Taken action a result of NVZ designation	33%

Action

4.1 Conformity to NVZ regulations

The vast majority of farmers believe that their own farming practices conform to the latest NVZ regulations. More than half (54%) believe that they conform ‘completely’. Only 6% of farmers admit that their own farming practices do not conform at all to the latest NVZ regulations.

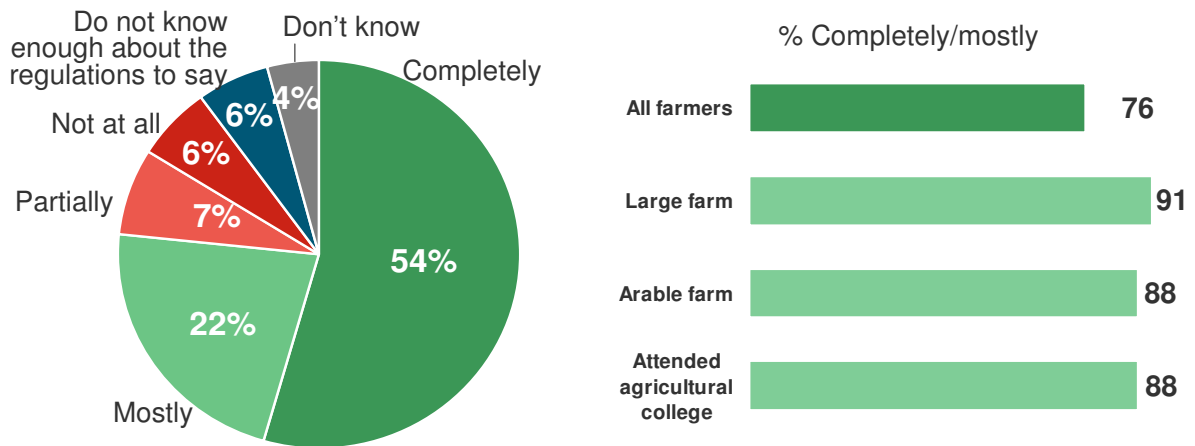
It is important to remember, however, that more than two in five (43%) farmers do not understand the regulations that affect farms within a NVZ. This calls into question whether these farmers can know if their current practices conform to the regulations.

Some farmers have not changed their farming practices to conform with the NVZ regulations and this may be because these are practices they are already employing. The qualitative research suggests that some farmers have not, or are not, intending to make changes, not because they are unwilling or unable to introduce changes, but simply because they believe that they are already meeting their obligations under the regulations.

“A, I know that I don’t have the quantity of nitrogen for the acreage I’ve got and B, I know I don’t need to, or have the desire to spread fertilizer in the closed season anyway.”

(Small farm, beef cattle, existing NVZ)

Q10. To what extent would you say your own farming practices conform to the latest NVZ regulations?



Base: All respondents, farmers with land in a NVZ (750)

Ipsos MORI



4.2 Behaviour change as a result of NVZ designation

There is evidence that some farmers have introduced changes as a result of being included within a NVZ. The most common actions (by farmers who believe they are subject to each of the regulations) is reducing the quantity of fertiliser used (61%) followed by producing a nitrate plan to control the use of fertilisers (53%). However, in both cases, there are still large numbers of farmers who have neither introduced the change nor are in the process of introducing it (35% and 40% 'neither' for each action respectively).

Q31-35. As a result of your farm being included within a Nitrate Vulnerable Zone, which of the following changes have you already introduced on your farm and which are you in the process of introducing?



Base: All respondents except those where changes do not apply (base sizes shown above)

Source: Ipsos MORI

Ipsos MORI



Farmers taking part in the in-depth interviews describe further changes they have made following the introduction of the NVZ regulations. These include the introduction of clover laying to ‘fix’ the nitrogen into the soil naturally, widening buffer zones to prevent fertilizer from running into watercourses and regularly analysing soil for nitrates and other nutrients to calculate the volume of fertilizer required.

“I always make sure my soil is regularly analysed because that can vary quite considerably from field to field, so that’s a very important point I’ve introduced...[nitrates] and all other nutrients, so you know exactly what fertiliser you require.”

(Medium farm, cereals and arable crops, existing NVZ)

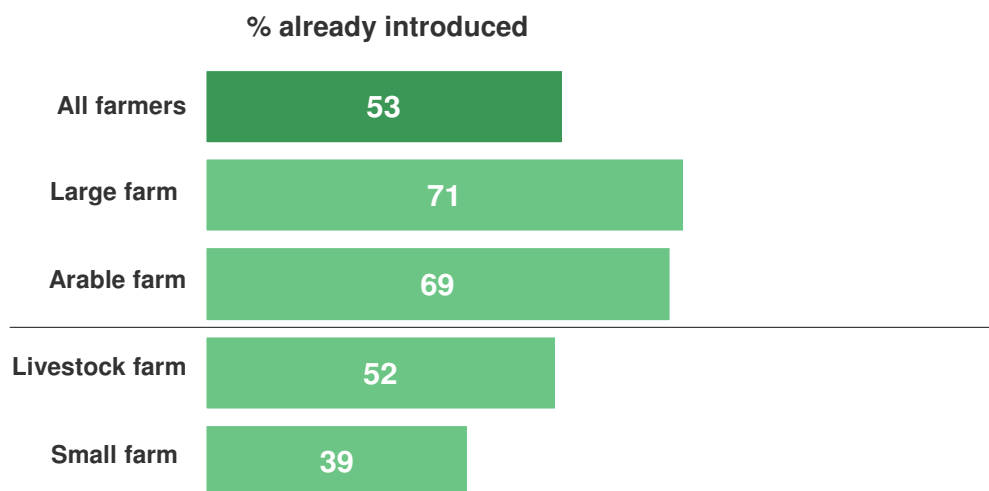
“We tend to rotate with clover, so we’re not quite so reliant on nitrogen.”

(Large farm, beef and arable, new NVZ)

Interestingly, several farmers, for whom only part of their land falls within a NVZ, extend the approach they use within the zone to rest of their farm. The main reason for this appears to be that it is easier to maintain records for the whole farm rather than adopting different approaches for different areas of land.

The quantitative survey shows that managers of large farms and arable farmers are more likely than small and livestock farmers to have produced nutrient management plans⁵ to control their use of fertilisers (as shown in the chart below) and to have changed the methods they use to spread fertiliser. As would be expected given the close relationship between farm type and farm size, managers of small farms are, however, more likely to have already reduced the number of livestock they keep than managers of large farms (37% compared to 24%).

Produced a nutrient management plan to control use of fertilisers



Base: All respondents except those where changes do not apply
Ipsos MORI

Source: Ipsos MORI



The survey working group made it clear that nutrient management plans are an extremely useful, and important, prerequisite to fully conforming with the regulations. More

⁵ Please note that nutrient management plans were referred to as nitrate plans within the telephone survey.

knowledgeable farmers appear to be aware of this; for example, those who claim to have a better understanding of the regulations are also more likely to have produced nitrate plans, most probably due to a recognition of the vital role they play in allowing farmers to make the calculations which are a formal requirement for NVZs. Of those who say they understand the NVZ regulations 'very or fairly well', 70% have already introduced a nitrate plan to control their use of fertiliser (compared to 35% of those who understand them 'not very well or not at all').

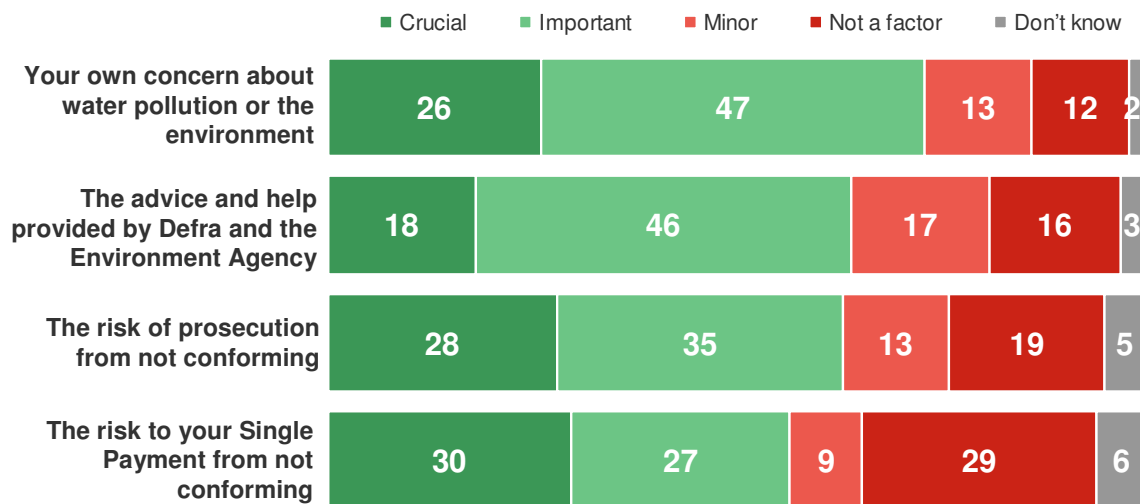
There are no differences in the extent to which farmers have changed their behaviour between existing or newly designated NVZs.

4.3 Relative importance of factors affecting attitudes and behaviours

4.3.1 Concern for the environment

Although, as discussed earlier, some farmers are not convinced that water pollution threatens their local water courses, there is widespread acceptance that water quality is an issue which should be taken seriously. Indeed, as shown in the chart below, the factor which farmers involved in the quantitative survey claim is the most important in influencing them to do things differently on their farm to meet the NVZ regulations is their 'own concern about water pollution or the environment'. A quarter (26%) of farmers describe this as a 'crucial' factor in their decision-making in relation to nitrate usage and a further 47% describe it as an 'important' factor.

Q51-57. I am going to read out a number of factors that might influence you to do things differently on your farm to meet the NVZ regulations. For each could you tell me whether this is a crucial factor, a minor factor or nor a factor at all?



Base: All respondents, farmers with land in a NVZ (750)
Ipsos MORI

Source: Ipsos MORI



Similar findings emerge from the qualitative research. Environmental concerns about the use of nitrates are cited by many farmers either as the key driver to changing their farming practice, or as an important consideration, but less decisive than the risk of deductions to Single Payments and/or the risk of prosecution.

In either case, it is important to note that those farmers who cite environmental concerns as a motivator for changing their behaviour to meet the NVZ regulations believe that they already

farm in an environmentally-sensitive way or have farmed in accordance with the NVZ regulations prior to their introduction. The qualitative research shows that these attitudes can either encourage farmers to engage with the NVZ programme or, conversely, can be a key factor in discouraging engagement. On the one hand there are farmers who are keen to make changes and so are open to information and advice on NVZs, whether or not they feel they may already be complying with the regulations. On the other hand, there are those who do not believe that change is necessary and who do not engage with the information and advice that is available as they are confident that they are already compliant.

“We certainly would not want to be prosecuted but I believe as we stand at the moment we are not doing anything that would remotely get us prosecuted.”
 (Medium-sized farm, dairy herd, beef cattle and other livestock, new NVZ)

4.3.2 Risk to Single Payment

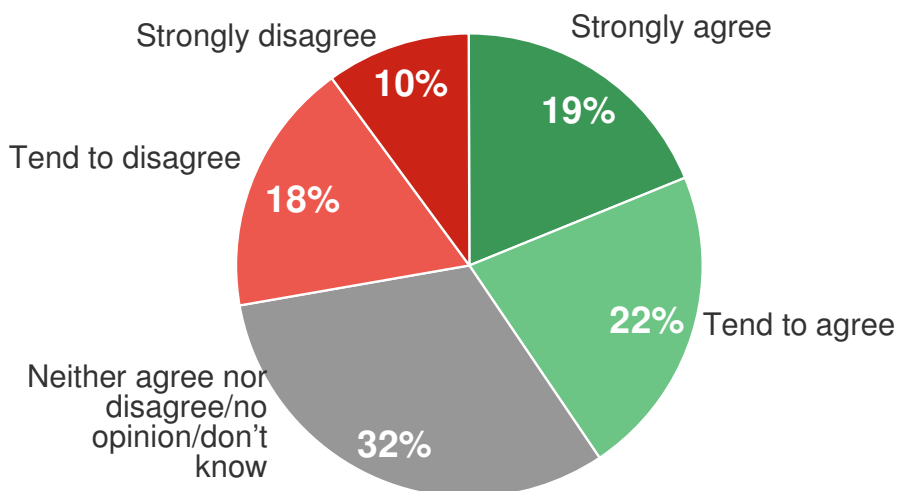
While environmental values are the most widely mentioned factor influencing behaviour change to meet the NVZ regulations (as illustrated in the chart above) the factor most likely to be considered ‘crucial’ is ‘the risk to the Single Payment’. Approaching a third (30%) of respondents describe this as ‘crucial’.

The qualitative research also indicates that the risk to the Single Payment can be important or decisive for many farmers in their approach to the NVZ programme. Indeed, it is often cited as the key motivator, even for those who are also engaged with the programme for other reasons, such as their concern for water quality and their recognition of the benefits of using nitrates more efficiently.

Cross-compliance between the NVZ regulations and the Single Payment Scheme (SPS) is clearly, therefore, a key concern of farmers. Two in five (41%) farmers involved in this research agree with the statement, ‘it is wrong that our Single Payment is linked to performance under the NVZ rules’. Attitudes towards cross compliance are not completely clear cut, however, as 28% of farmers believe that this linkage is appropriate.

Q45. To what extent would you agree or disagree that:

It is wrong that our Single Payment is linked to performance under the NVZ rules



Source: Ipsos MORI

Ipsos MORI
 Base: All respondents, farmers with land in a NVZ (750)



Similarly, in the qualitative research the majority of farmers believe that it is appropriate to link compliance to the SPS, even if this inevitably poses a risk for them. For many farmers this attitude is driven by the belief that cross-compliance is likely to encourage other farmers, who are otherwise unlikely to comply, to meet their obligations. There is a certain sense that if they themselves take measures to meet their obligations, other farmers should tow the line as well.

“Well it’s got to be [linked] really. If it’s generally deemed that something is harmful and someone persists in doing it to the detriment of all then yes, they’ve got to have it drawn to their attention, surely?”

(Large farm, cereals and other arable crops, existing NVZ)

4.3.3 Risk of prosecution

In addition to financial penalties, farmers could face legal proceedings if they fail to comply with the NVZ regulations. Approaching two thirds (63%) of respondents consider this to be a key factor influencing their behaviour with 28% describing ‘the risk of prosecution’ as ‘crucial’ and a further 35% describing it as an ‘important’ factor.

The risk of prosecution also emerged as an important factor in the qualitative research and was often decisive in ensuring farmers’ engagement with the NVZ programme. Again, it was often cited as the key motivator, even for those who are engaged with the programme for other reasons, such as their concern for water quality and their recognition of the benefits of using nitrates more efficiently.

The in-depth interviews revealed that farmers interpret the risk of prosecution in different ways. Many establish a link to the financial penalties that they could incur as a result of prosecution and are motivated for that reason.

“I’m very motivated because if you do pollute a watercourse it’s a serious matter and it can be a big problem... if you do have materials like silage effluent or something like that, if it gets into a watercourse it’s a serious matter and it can end in a serious sum of money.”

(Medium-sized farm, beef cattle, other arable crops, existing NVZ)

Others view the risk of prosecution in much more abstract terms, simply accepting it as the law, which they need to abide by.

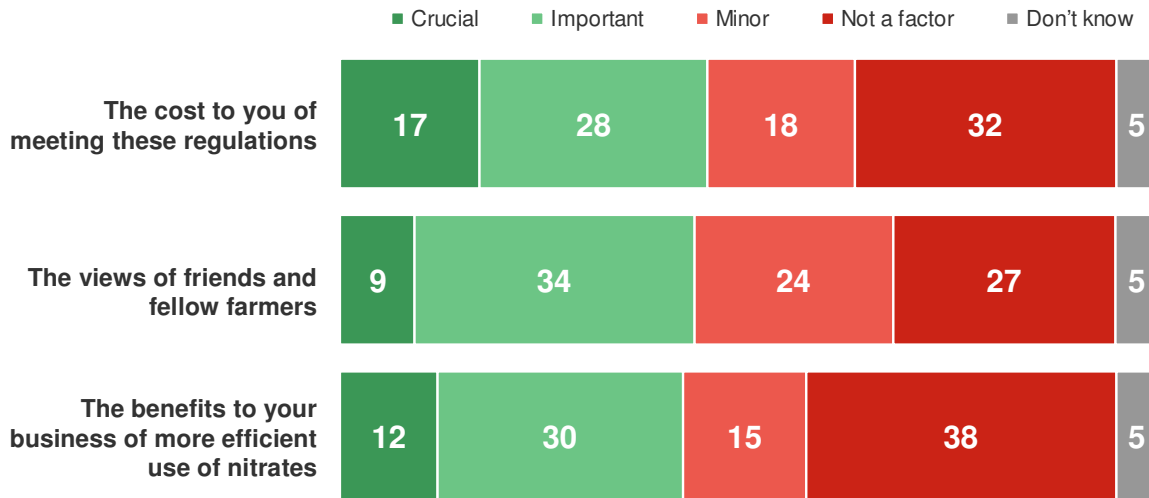
“If regulations are there you have got to do it, it’s not a matter of motivation, it’s a matter of compliance.”

(Large farm, cereals and dairy herd, new NVZ)

Interestingly, the in-depth interviews show that the risk of prosecution can be demotivating to some farmers if they see no evidence of farming practices being properly policed and no prosecutions taking place. This is particularly true where they recognise that the practices of neighbouring farms are not in line with the NVZ regulations, but that the regulator has taken no action.

Factors which are considered less important in influencing farming practices in NVZs are ‘the cost of meeting these regulations’, ‘the views of friends and fellow farmers’ and ‘the benefits to your business of more efficient use of nitrates’. For each of these, more respondents describe them as a ‘minor’ factor or ‘not a factor’ than ‘crucial’ or ‘important’.

Q51-57. I am going to read out a number of factors that might influence you to do things differently on your farm to meet the NVZ regulations. For each could you tell me whether this is a crucial factor, a minor factor or nor a factor at all?



Base: All respondents, farmers with land in a NVZ (750)

Source: Ipsos MORI

Ipsos MORI



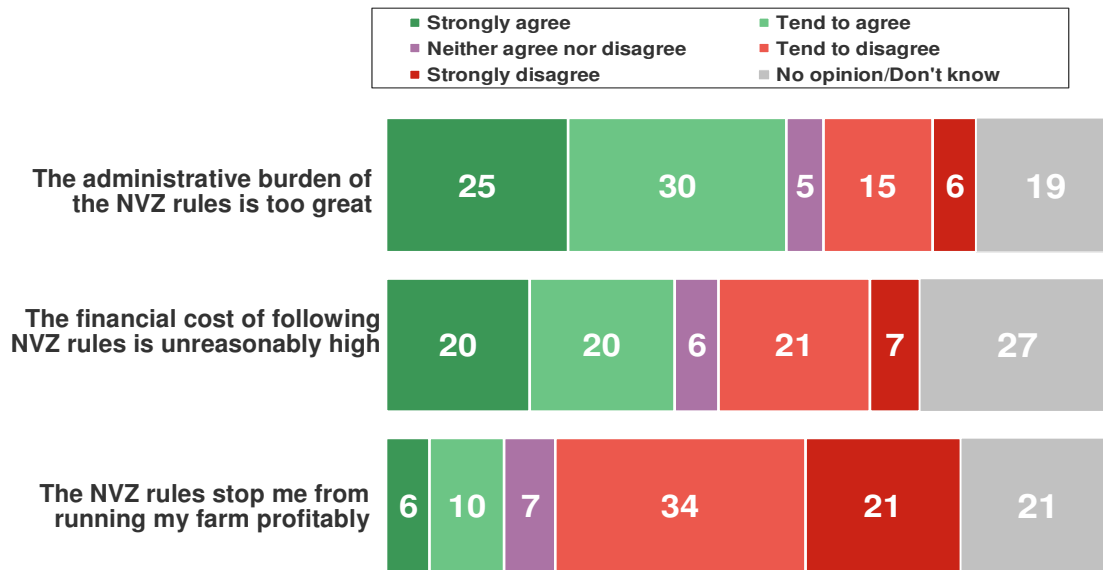
4.3.4 Cost of complying

The survey working group are interested to explore the extent to which the financial costs of conforming with the NVZ regulations act as a barrier to the adoption of appropriate behaviours. The quantitative survey suggests that while there are financial pressures associated with the regulations, most notably due to the administrative burden, the cost of complying is not a major barrier to action. Rather the cost of complying may be considered a necessary expenditure to uphold environmental values or avoid prosecution and the loss of Single Payments. Indeed, a third (32%) of farmers do not consider the cost of meeting these regulations to be a factor in determining their farming practices. Overall, more farmers consider the cost unimportant in influencing their behaviours than consider it important (50% compared to 45%).

So while two in five (39%) farmers involved in this research do agree that ‘the financial cost of following the NVZ rules is unreasonably high’, only 16% agree that ‘the NVZ rules stop me from running my farm profitably’. A substantial proportion (28%) also disagree that the cost of complying is unreasonable.

The time pressures involved in complying with the NVZ regulations are, however, apparent. More than half (54%) of farmers agree that ‘the administrative burden of the NVZ rules is too great’ with a quarter (25%) ‘strongly agreeing’. The administrative burden especially affects larger farms (62% agree).

Q37/38/42. To what extent do you agree or disagree that...



Base: All respondents, farmers with land in a NVZ (750)

Source: Ipsos MORI

Ipsos MORI



Attitudes towards the administrative burden are mixed amongst farmers taking part in the in-depth interviews. Either farmers do not feel that there is an administrative burden involved, or they recognise that there is a burden but acknowledge that their efforts, specifically in terms of record-keeping, can feed into paperwork for other initiatives. Alternatively they feel that there is a substantial administrative burden but do not consider this de-motivating when weighed against their motivations for engaging with the programme.

“[The administrative burden] is quite heavy, going to meetings about this and actually getting your head around it takes quite a lot of doing... it’s a lot of paperwork... it’s quite daunting.”

(Large farm, cereals and dairy herd, new NVZ)

4.3.5 Financial benefits of complying

There seems to be a lack of consensus on the business benefits of more efficient nitrate usage and its influence on farming practices. While two in five (42%) consider this to be a 'crucial or important' factor, more than half (54%) do not think it is important (54% describe it as a 'minor' factor or 'not a factor' at all).

The qualitative research indicates that the financial benefits of complying are certainly a motivator for some farmers. It should be noted, however, that several farmers feel that many farmers had already reduced the quantity of fertilizers they use due to their cost, before the NVZ regulations were put in place. This could explain why the financial benefits of compliance seem to be of limited importance.

4.3.6 Farming networks

The role of farming networks in influencing farmers' attitudes and behaviours does not appear to be clear cut. On the one hand, the views of peers are unlikely to be the driving force behind a farmer's attitude or behaviour in relation to NVZs. For example, 'the views of friends and fellow farmers' is the factor least likely to be rated 'crucial' in influencing decisions around farming practices. On the other hand, a third (34%) of farmers do consider it 'important' and approaching half (46%) of farmers agree with the statement 'if I was seen to be breaking the NVZ rules, my neighbours would be critical of me'.

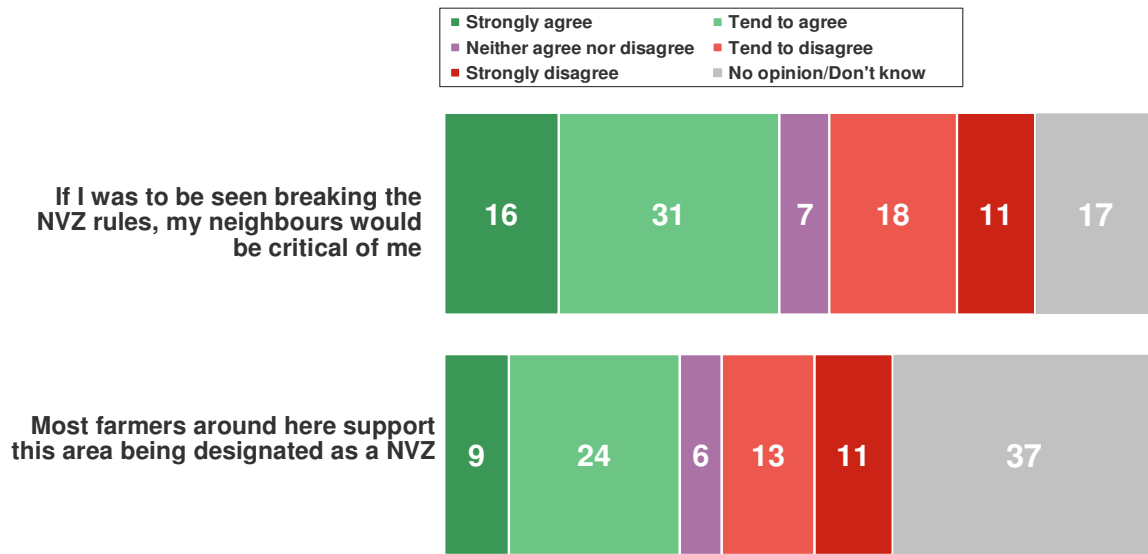
The qualitative research appears to back up the first proposition, with the views of friends and fellow farmers appearing to be a secondary motivator rather than a key driver of engagement with the NVZ programme. It does seem, however, that many farmers have discussed issues around NVZs with their peers and that this interaction can be powerful in terms of raising awareness of the regulations, the penalties of non-compliance and possible routes to compliance. More generally, the in-depth interviews also suggest that knowledge of actions that other farmers are taking also appears to influence some farmers in shaping their own farming practices.

"Well I think what we read in the farming press, what our farmers are doing... everybody else seems to be going into the Stewardship Scheme and... the environmental schemes. I think everybody really has to go with the general trend really."

(Medium-sized farm, beef cattle and other arable crops, existing NVZ)

The quantitative survey also shows that there is no consensus on the extent of support for NVZs among the farming community. While a third (33%) agree with the statement, 'most farmers around here support this area being designated as a NVZ', a quarter (24%) disagree. This may of course reflect uncertainty about the views of other farmers.

Q36/43. To what extent do you agree or disagree that...



Base: All respondents, farmers with land in a NVZ (750)

Source: Ipsos MORI

Ipsos MORI



The extent to which farming networks have an influence on attitudes and behaviours around NVZs appears to differ across different groups of farmers.

Those on small farms seem to be more concerned by the views of their peers than managers of large farms. Half (50%) of respondents from small farms agree that their neighbours would be critical of them if they were seen to be breaking NVZ regulations compared to two in five (40%) of those from large farms.

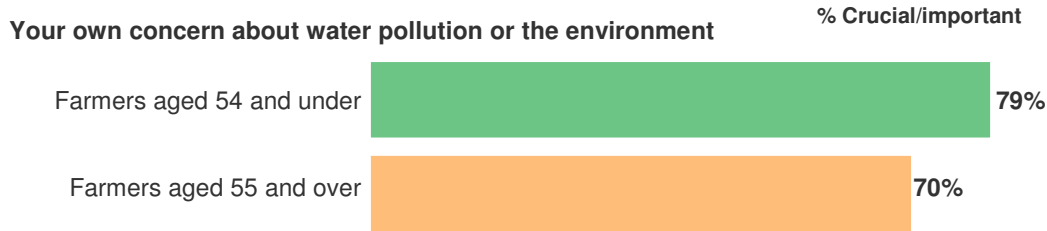
4.4 Differences in drivers and barriers for farmer groups

It is evident that some of the factors motivating behaviour change among farmers resonate more with some groups than others. For instance, environmental concerns are most likely to be key motivators for younger farmers (aged 54 and under), who are also most likely to have attended agricultural college. On the other hand, financial issues are more likely to factor into decisions around farming practices taken by large and arable farms.

4.4.1 Age of farmer

Younger farmers are more likely than older farmers to feel motivated to make changes on their farm to comply with the NVZ regulations due to a whole range of factors, related both to their environmental values and financial concerns.

Q51-57. I am going to read out a number of factors that might influence you to do things differently on your farm to meet the NVZ regulations. For each could you tell me whether this is a crucial factor, a minor factor or nor a factor at all?



The risk to your Single Payment from not conforming



Base: All respondents, farmers with land in a NVZ (750)
Ipsos MORI

Source: Ipsos MORI

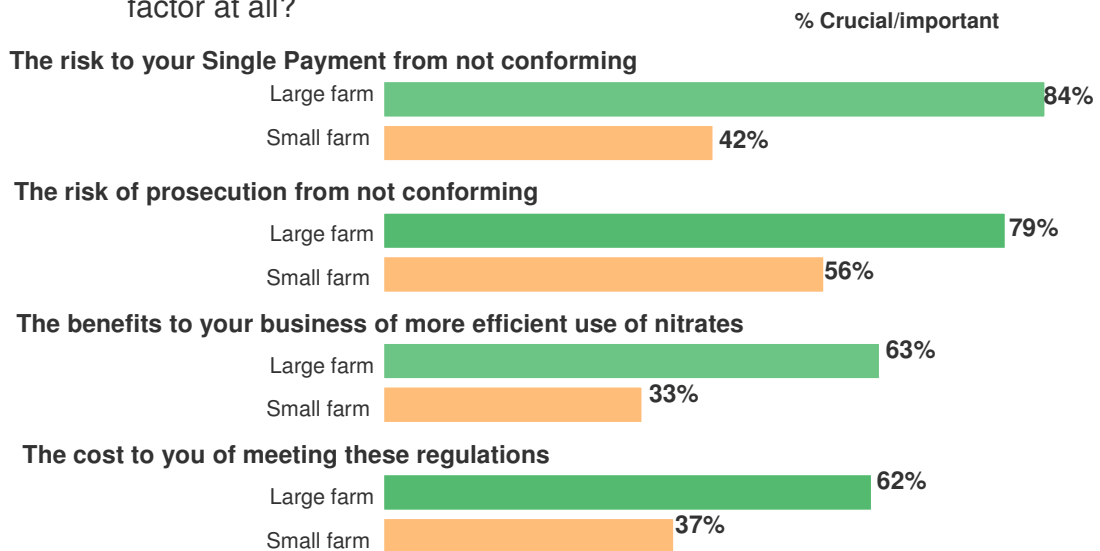


Farmers who have personally attended agricultural college are also more likely to say their own environmental concerns are ‘crucial’ or ‘important’ in changing their behaviour, which is likely to be related to the age of these farmers (they tend to be younger).

4.4.2 Size of farm

Financial issues associated with the NVZ regulations are of particular concern to the managers of large farms. It is clear from the chart below that across all the financially-based motivations large farms are significantly more likely to believe these are crucial or important in influencing them to do things differently compared to small farms.

Q51-57. I am going to read out a number of factors that might influence you to do things differently on your farm to meet the NVZ regulations. For each could you tell me whether this is a crucial factor, a minor factor or nor a factor at all?



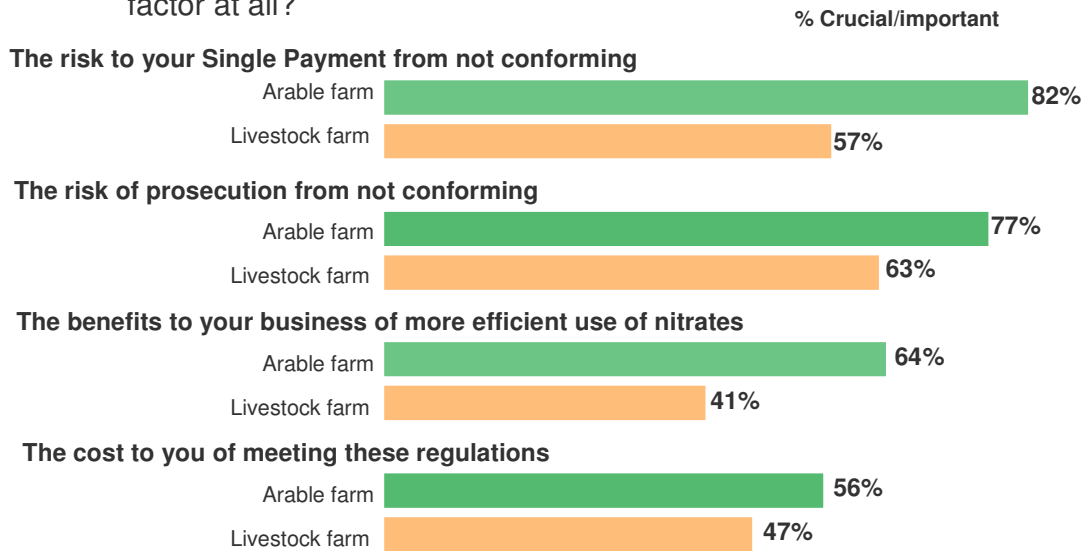
Base: All respondents, farmers with land in a NVZ (750)
Ipsos MORI

Source: Ipsos MORI



Managers of arable farms are also more likely to be motivated by financial factors when they are compared with the attitudes of managers of livestock farms. This difference is likely to be related with the propensity for arable farms included within this survey to also be large farms. The financial motivations for large and arable farms may reflect their likelihood to be commercial businesses.

Q51-57. I am going to read out a number of factors that might influence you to do things differently on your farm to meet the NVZ regulations. For each could you tell me whether this is a crucial factor, a minor factor or nor a factor at all?



Base: All respondents, farmers with land in a NVZ (750)
Ipsos MORI

Source: Ipsos MORI



4.5 Ease of conforming to NVZ regulations

In addition to these largely attitudinal motivators and demotivators, the extent to which the regulations are considered easy or difficult to comply with is another important issue which impacts on farmers' behaviour and so on the level of compliance achieved.

A common complaint across farmers in the quantitative survey is the difficulty of understanding the regulations. Three in five (59%) agree that the 'NVZ rules are complicated and confusing' with a quarter (25%) of respondents saying they 'strongly agree'.

The complicated nature of the regulations could be preventing farmers from being able to completely conform with them. Farmers who believe they are *mostly* complying with the NVZ regulations are more likely than those who claim they are complying *completely* to agree that 'the NVZ rules are complicated and confusing' (70% compared to 53%). A lack of understanding of the obligations, or how to meet them, may therefore be preventing complete compliance, rather than a defiance of some of the regulations.

The qualitative research shows the key role played by information, advice and support in building farmers' understanding of the regulations. Unsurprisingly, it tends to be the farmers who have actively sought out information and support regarding the NVZ regulations and who have experienced a variety of 'touch-points', either from Defra/Environment Agency or from their agronomists and the farming press, who have the best understanding of the regulations.

"Well all the information [has helped me make the changes] I suppose. It's just all at hand. It's a combination of all the information from the guides, my agronomist and the

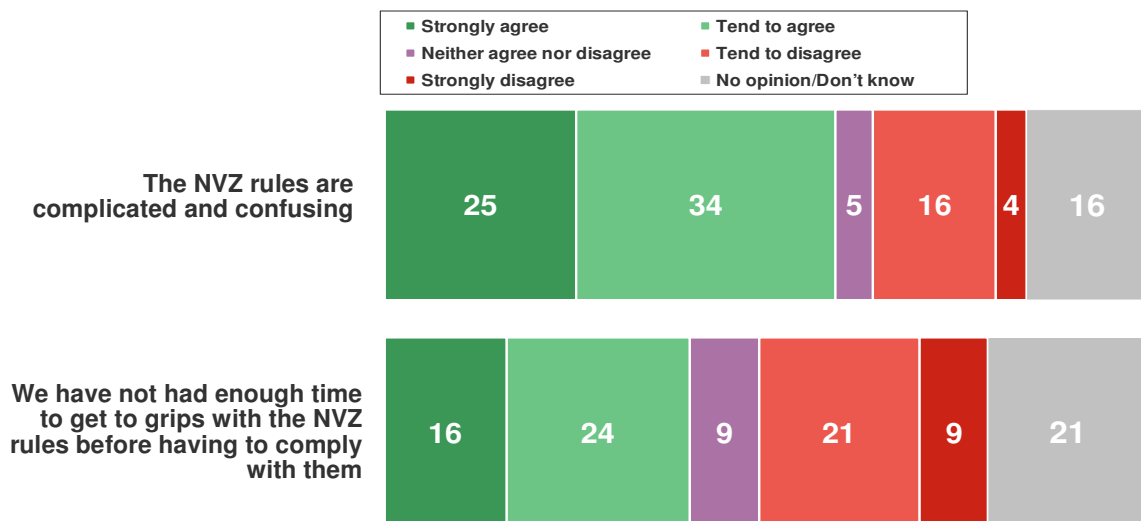
‘Farmers Weekly’ and... any other leaflets. So I just combined them altogether and got all the information I require.
 (Medium-sized farm, cereals and other arable crops, existing NVZ)

On the other hand farmers feel they have a poor understanding of the regulations, either because they have accessed very little information, because the information and advice they have accessed have not fully met their needs, or because they believe the volume of information they receive is too great.

“There is so much literature, it has been dripped in over so long a period. At the end of the day anyone who is farming if they had wanted to be a cleric or a book-keeper they would have gone to work in an office. Most farmers are happier with a fork or shovel tending their cattle and working outside. Paperwork keeps coming through the post... and to sit down and read them and digest them is a hell of a chore. It tends to get left to late in the day when you’ve finished everything else at which time you’re tired and not receptive anyway.”
 (Small farm, beef cattle, existing NVZ)

There is also a view that farmers were not being given sufficient time to fully understand the regulations before being asked to comply with them. Two in five (41%) agree with the statement, ‘we have not had enough time to get to grips with the NVZ rules before having to comply with them’. Saying that, a substantial proportion (30%) of farmers involved in this research do believe they were given enough time.

Q47/48. To what extent do you agree or disagree that...



Base: All respondents, farmers with land in a NVZ (750)
 Ipsos MORI

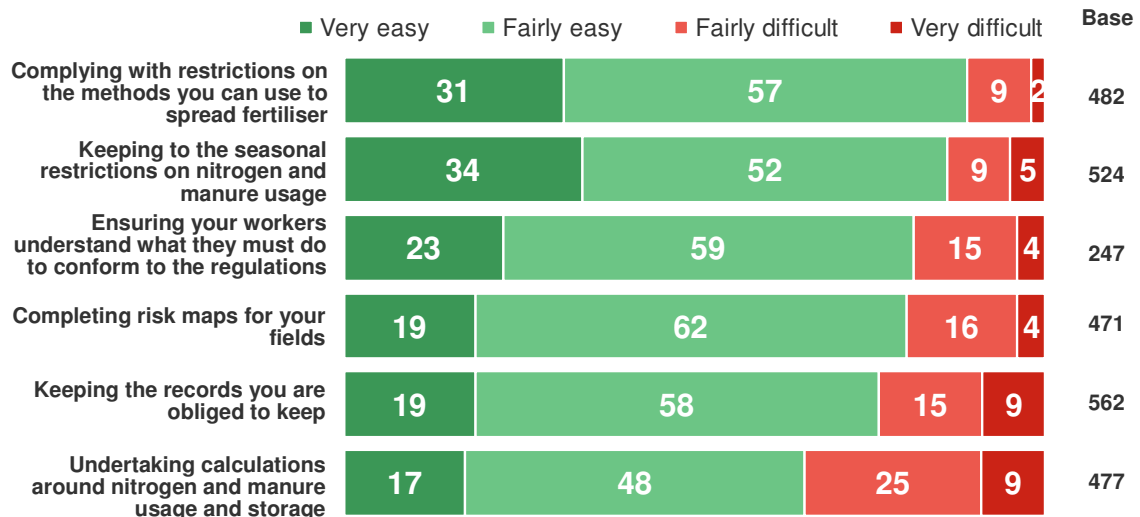
Source: Ipsos MORI

4.5.1 Ease of conforming to specific regulations

Through the quantitative survey we questioned farmers on a small number of the regulations to get an idea of how easy or difficult each of these is considered to be. Naturally, some of the regulations are applicable only to certain types of farming and so the results here are based on all those who believe that each regulation applies to them.

Despite the concerns described above about the confusing and complicated nature of the regulations, most farmers do consider these regulations to be easy to carry out.

Q11. I am going to read out some of the regulations that apply in Nitrate Vulnerable Zones and would like you to tell me how easy or difficult you find each of these.



Base: All respondents except those where regulations do not apply (base sizes shown above)

Source: Ipsos MORI

Ipsos MORI



The element of the regulations considered most difficult by farmers was ‘undertaking calculations around nitrogen and manure usage and storage’. More than a third (35%) describe this as difficult, although two thirds (65%) describe it as ‘very’ or ‘fairly easy’.

The elements of the regulations which appear to have caused the least difficulties were ‘complying with restrictions on the methods you can use to spread fertiliser’ and ‘keeping to the seasonal restrictions on nitrogen and manure usage’ (89% and 86% respectively describe these as easy).

The qualitative research suggests that one reason for the difficulty in making the calculations for some farmers is that they are unaware of the step-by-step process of achieving this, even having actively sought out information from the Defra/EA advice programme.

A significant proportion (25%) of farmers also find ‘keeping the records you are obliged to keep’ difficult. Again, however, this is not a majority opinion as three quarters (76%) say this is easy.

5. Farmer specific attitudes and behaviours

5. Farmer specific attitudes and behaviours

The farming population encompasses a wide range of people and activities, from small hobby farms to large monoculture commercial enterprises, and from young business men to families with a long history of farming. It is inevitable, therefore, that different farmers will be at different stages of the journey from pre-contemplation, where they are unaware of the NVZ designations, to action, where they are making changes to their farming practices to meet the regulations.

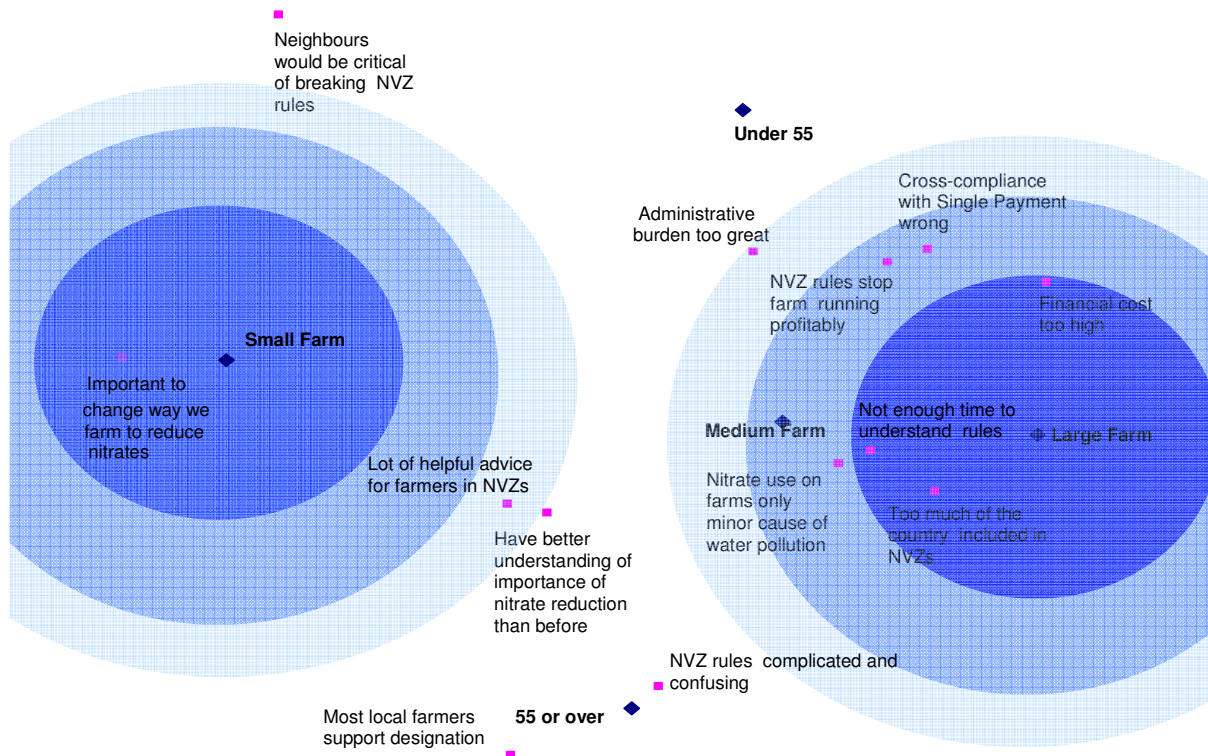
In the previous chapters of this report, a story already appears to be emerging about some of these differences in attitudes and behaviours. The purpose of this chapter is to bring this all together to assist policymakers, communicators and people supporting farmers on the ground to effectively target messages at different groups of farmers to maximise their engagement with the policy and regulations.

To assist with this the views of different farmers towards NVZs have been depicted visually using a statistical technique called correspondence analysis (see Appendix 4 for further technical detail). Correspondence analysis produces a map showing the relationship between a demographic variable (such as farm size) and an attitude, or between two demographic variables (such as farm size and farm type). The proximity of these variables to one another on the map provides an indication of how closely associated they are.

5.1 Differences in attitudes according to farm size

It is evident from the findings discussed so far in this report that the most notable differences in attitudes and behaviours exist between **farms of different sizes and different types**.

The chart below highlights the relationship between certain attitudinal statements and farms of different sizes. Coloured circles have been centred on the points for managers of large farms and managers of small farms to help show the distances between these and the attitudinal variables. Farm type is not plotted on the maps below as it is very closely related to farm size and so, as has been shown throughout this report, the views of arable farmers are very closely aligned with those of managers of large farms.



It is evident from the map above that managers of large farms are aligned with negative attitudes towards NVZs and this reinforces trends seen throughout the data collected by the telephone survey. In particular, large farms are closely associated with concerns about the financial burden of meeting the regulations and the lack of time given to farmers to get to grips with them before having to comply. Managers of large farms are also closely associated with agreement to the statements, 'too much of the country is included in NVZs' and 'nitrate use on farms is only a minor cause of water pollution'.

It is evident from the pattern of attitudes on the plot above that managers of medium-sized farms are more likely to share similar views to those from large farms than they are to managers of small farms.

In line with findings across the telephone survey data, the map above shows small farm holders to be closely associated with positive attitudes about the need for NVZs. In particular, managers of small farms are closely associated with agreement that, 'it is important to change the way we farm to reduce the amount of nitrates going into water courses'. These farmers are also more likely than large farm holders to be closely aligned with agreement that, 'there is a lot of helpful advice for farmers in NVZs' and that, 'I have a better understanding of the importance of nitrate reduction than before'.

A summary of the differences across farm size and farm type highlighted by the survey data and correspondence analysis is presented below.

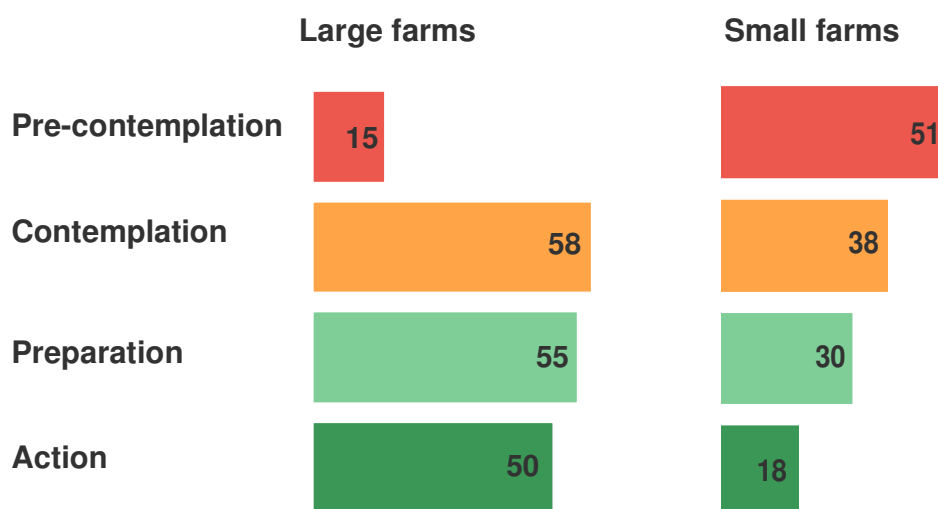
Managers of large and arable farms are:

- more likely to be aware of NVZ designations;
- more likely to have engaged with the NVZ Advice and Support Programme;
- more likely to claim to have taken action as a result of the designations;
- more likely to consider the regulations to be a financial and administrative burden;
- more likely to be financially motivated to take action to meet the regulations (for instance due to the risk to the Single Payment and the risk of prosecution); and
- less likely to buy into the rationale for NVZ policy (they do not consider water pollution to be an issue, and more specifically do not consider it to be an issue caused by nitrate use on farms and believe too much of the country is designated as NVZ).

On the other hand, managers of **small and livestock farmers** are:

- more likely to support NVZ policy (they consider it important to change farming practices to reduce water pollution caused by nitrates and are less likely to agree that the designations spread too far);
- more likely to believe there is helpful advice available to farmers within NVZs and that they have a better understanding of the importance of reducing nitrate use;
- less likely to be aware of the designations;
- less likely to have engaged with the NVZ Advice and Support Programme; and
- less likely to have taken action as a result of the regulations.

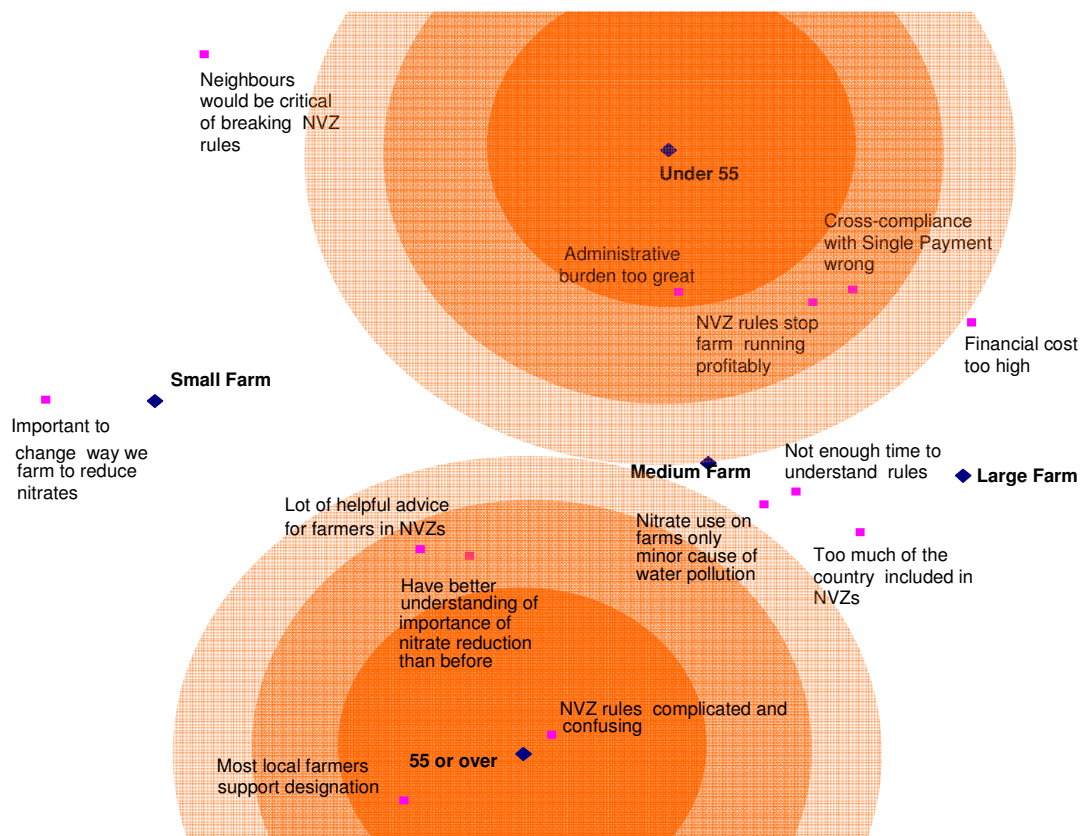
These differences can be neatly summed up by looking at the progress farmers from different size farms have made along the attitude and behaviour change journey. It is evident from the chart below that small farms, despite their more favourable views, are far less likely to have reached the final stage of taking action as a result of the NVZ designations.



The same distribution of farmers across the attitude and behaviour change journey is true when comparing livestock and arable farmers. For instance, livestock farmers are more likely to be in the initial pre-contemplation stage than arable farmers (38% compared to 18% of arable farms) while arable farmers are far more likely to have taken action (45% compared to 28% of livestock farms),

5.2 Differences between farmers of different ages

The second map below is the same as the first but this time the coloured circles are centred on farmers of different ages to highlight the proximity of these to different attitudes. Farmers within the survey have been split at age 55 as this is about the median age of farmers within the sample.



Again reinforcing trends already documented, the map shows that younger farmers (under 55 years of age) are likely to be closely aligned with negative views of the NVZ regulations. They are more likely to be closely associated with agreement that, ‘the administrative burden of the NVZ rules is too great’ and that the ‘NVZ rules stop me from running my farm profitably’.

The older group are closely associated with a more mixed set of views towards NVZs and are closely aligned to statements about the role of information. Farmers aged 55 and over are more likely to be closely associated with agreement that, ‘there is a lot of helpful advice for farmers in NVZs’ and that ‘I have a better understanding of the importance of reducing nitrate use than I used to have’. However, older farmers are also closely associated with agreement that, ‘the NVZ rules are complicated and confusing’.

Punitive peer pressure, demonstrated through agreement with the statement, ‘if I was seen to be breaking the NVZ rules, my neighbours would be critical of me’, does not seem to be aligned to any specific group. Its position to the top left corner of the map does, however, suggest that young farmers on small farms are more likely to feel this way.

A summary of the differences across farmers of different ages highlighted by the survey data and correspondence analysis is presented below.

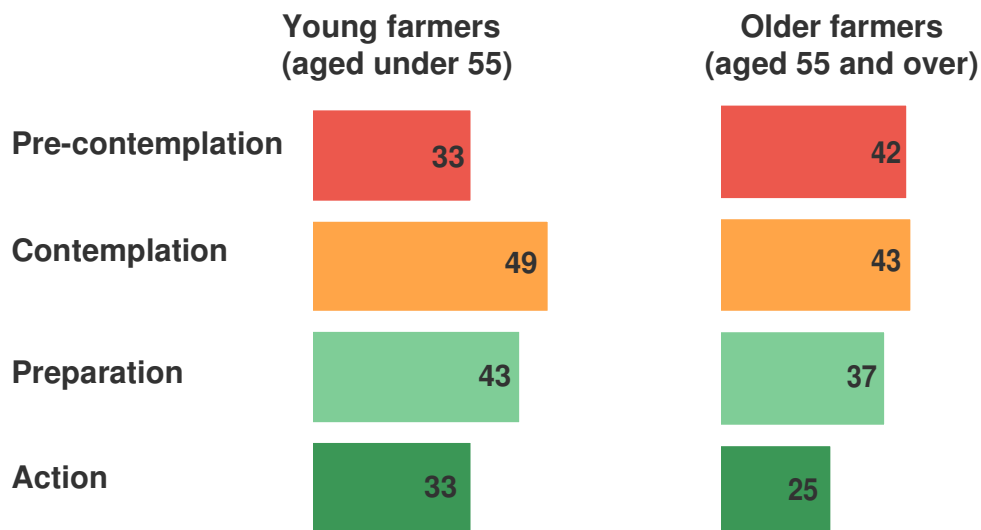
Younger farmers are:

- more likely to have engaged with the NVZ Advice and Support Programme;
- more likely to consider NVZ regulations a financial and administrative burden; and
- more likely to have taken action as a result of the regulations.

Older farmers are:

- more likely to believe there is helpful advice available to farmers within NVZs and that they have a better understanding of the importance of reducing nitrate use;
- more likely to find the NVZ rules complicated and confusing; and
- less likely to have taken action as a result of the regulations.

Looking at the progress of these farmers through the attitude and behaviour change journey, younger farmers (aged 54 and under) are more likely to have reached the final action stage (33% compared with 25% of farmers aged 55 and over).



The correlation between age and agricultural training, with younger farmers more likely to have attended agricultural college, means levels of formal agricultural training also appear to affect progress through the attitudinal and behavioural change journey. Farms where no-one has attended agricultural college are more likely to be in the initial pre-contemplation stage (44% compared to 30% of farms where someone has attended agricultural college). The latter group are more likely to have undertaken behavioural change as a result of the NVZ regulations (37% compared to 23% of farms where no-one has attended agricultural college).

Looking at the differences across farm size, farm type, age of farmer and extent of agricultural training, greater engagement with the NVZ Advice and Support Programme does not appear to be leading to more favourable views of NVZ policy. However, importantly, higher levels of engagement with communications about NVZs do appear to be related to taking action to meet the regulations. Less obvious signs of *attitudinal* change as a result of engagement with information about NVZs may, in fact, not be altogether surprising as it is

those farmers who have engaged with the literature, namely large and arable farms, who understand the true extent of the regulations and the behaviour change they require.

5.3 Other differences in attitude

Farm size and farmer age were chosen as the demographic variables to plot above as they consistently emerge as important factors in determining views towards NVZs. Across the data collected through the telephone survey, there have been few notable differences between **farmers situated in different regions of England**. However, a breakdown of the attitude and behaviour change model shows that farmers in Southern Region are more likely to be in the initial pre-contemplation stage (45% compared to 39% of farmers overall). This is likely to reflect the fact that farmers in the South are less likely to recall receiving the initial letter from Defra alerting them to the updated designations.

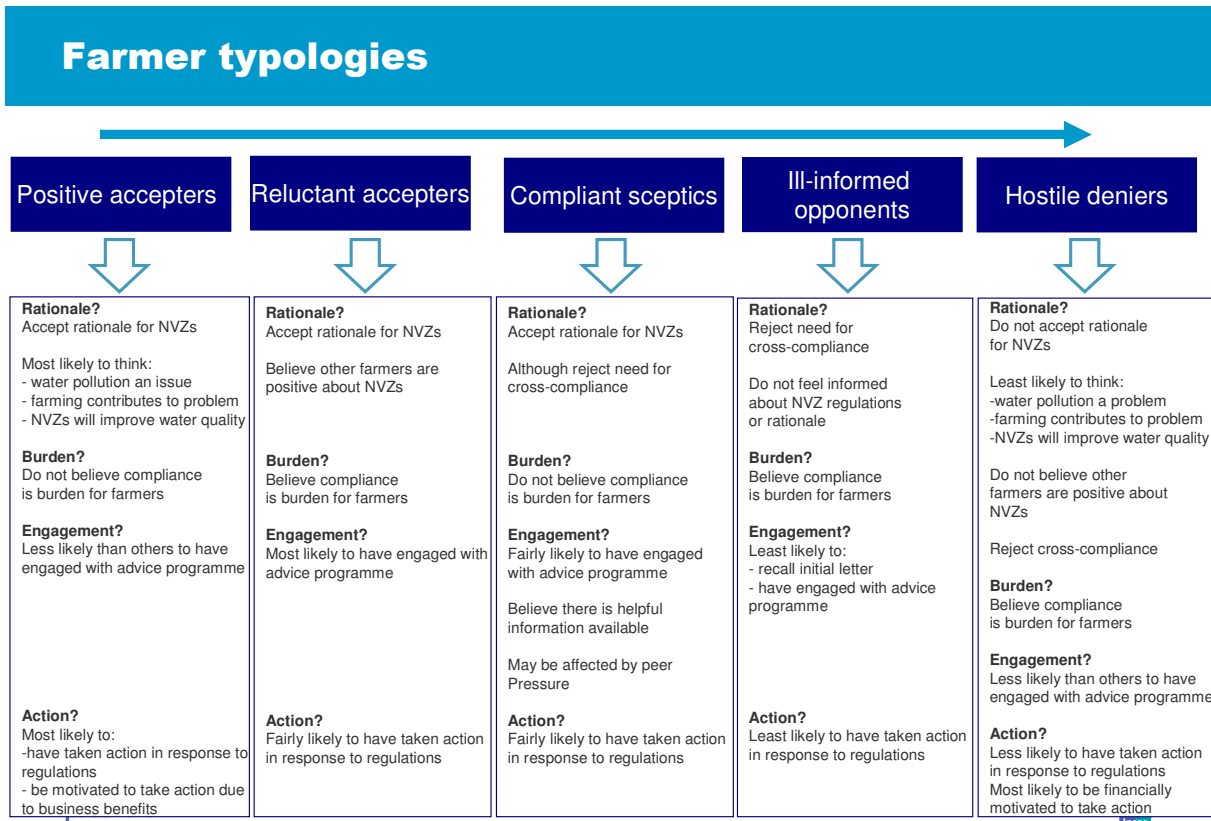
There are also few differences according to the **date of designation**. Farmers managing land falling within newly designated NVZs (with their status assigned in 2008) are more likely to be in the initial pre-contemplation stage (50% compared to 35% of existing NVZs designated in 2002). This is likely to reflect the fact that farmers in newly-designated farms are more likely to say they 'don't know' whether any of their land falls within a NVZ.

5.4 Farmer segmentation model

In addition to looking at the survey results according to farmers' demographics it is also interesting to group farmers by their attitudes. A segmentation model has been created using factor and cluster analysis (see Appendix 4 for further technical detail) to identify groups of farmers sharing distinct sets of attitudes towards NVZs.

The final model contains five segments ranging from Positive accepters to Hostile deniers. It is useful to group farmers in this way to understand the range of messages which need to be communicated through any advice and support programme to engage farmers with the rationale for NVZs and the regulations which govern them.

The diagram below provides a summary of the viewpoints of each of the five segments. A detailed breakdown of the attitudes which define each group is provided in Appendix 4.

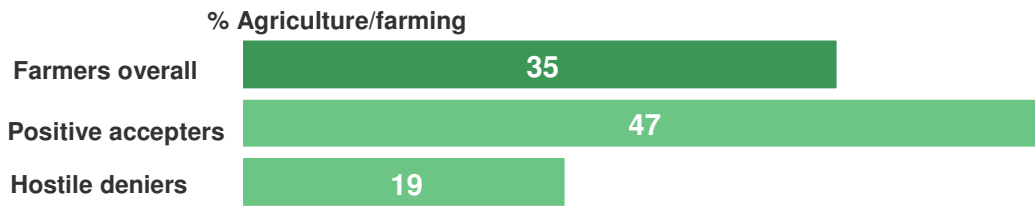


5.4.1 Attitudinal differences between farmer segments

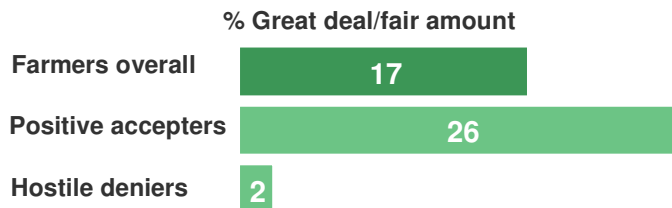
There are some clear attitudinal differences between the farmers included within each of the five segments. Looking at the responses of each of these groups to other questions included within the telephone survey reinforces the divergence of their views.

For instance, acceptance of the role played by agriculture in contributing to water pollution differs significantly for Positive accepters and Hostile deniers. While half of Positive accepters (47%) mention agriculture/farming as the sector most likely to be contributing to water pollution in the local area, it is mentioned by only one in five Hostile deniers (19%). Indeed, just 2% of Hostile deniers think that the use of artificial or organic fertilisers by farms is contributing to water pollution. This compares to 26% of Positive accepters and 17% of farmers overall saying that fertiliser use on farms contributes ‘a great deal or a fair amount’ to water pollution of local watercourses.

Q4. Which type of organisations do you think contribute most to water pollution in your local water catchment area?



Q5. To what extent do you think the use of artificial or organic fertilisers by farmers contributes to water pollution in your local catchment area?



Base: Farmers with land in a NVZ, Farmers overall (750), Positive accepters (97), Hostile deniers (104)

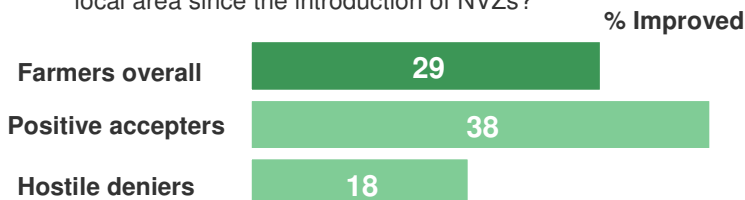
Ipsos MORI

Source: Ipsos MORI

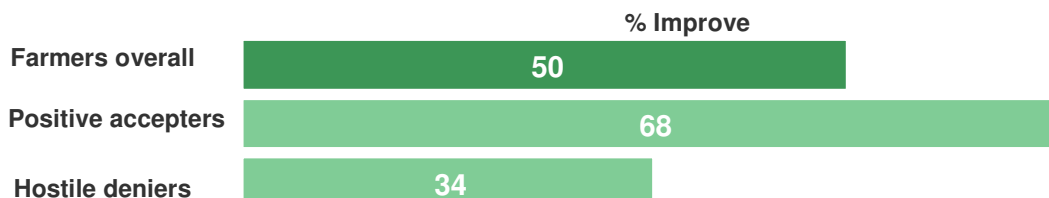


Hostile deniers are also less likely as a group to believe that the NVZ designations will have a positive impact on the problem of water pollution. Less than one in five Hostile deniers (18%) think there has been an improvement in water quality in their local area since the introduction of NVZs and a third (34%) expect there to be an improvement over the next five years. This compares to nearly two in five Positive accepters (38%) believing water quality has already improved as a result of NVZ designations and more than two thirds (68%) expecting it to improve looking forwards.

Q49. To what extent, if at all, do you think there has been an improvement in water quality in your local area since the introduction of NVZs?



Q49. To what extent, if at all, do you expect water quality in your local area to improve over the next five years as a direct result of the NVZ regulations?



Base: Farmers with land in a NVZ, Farmers overall (750), Positive accepters (97), Hostile deniers (104)

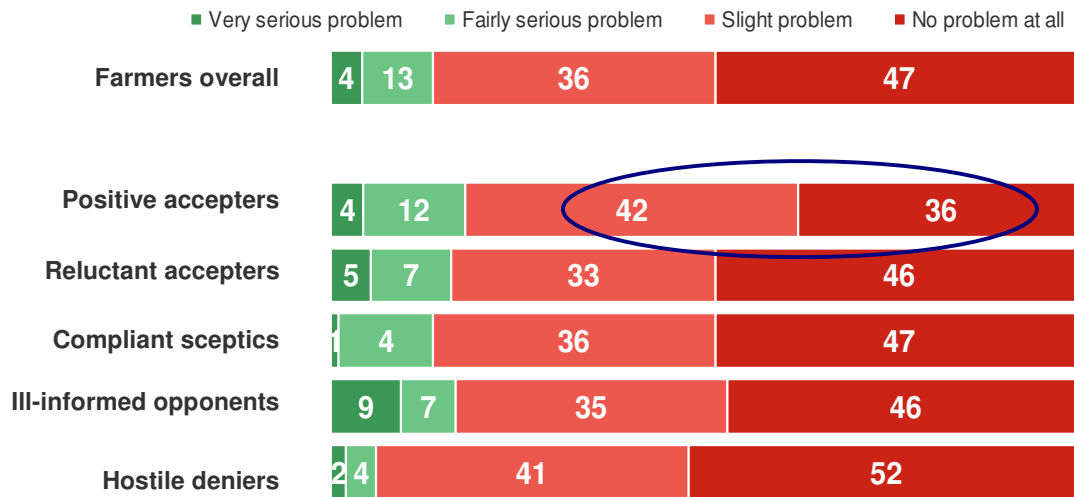
Ipsos MORI

Source: Ipsos MORI



However, even those farmers who hold the most favourable views towards NVZ policy and regulations, the Positive accepters, are unconvinced by the premise that water quality is a problem which needs to be addressed. Two in five (42%) Positive accepters believe that the pollution of watercourses or groundwater in their local water catchment area is only a 'slight problem' and a further 36% believe it is 'no problem at all'.

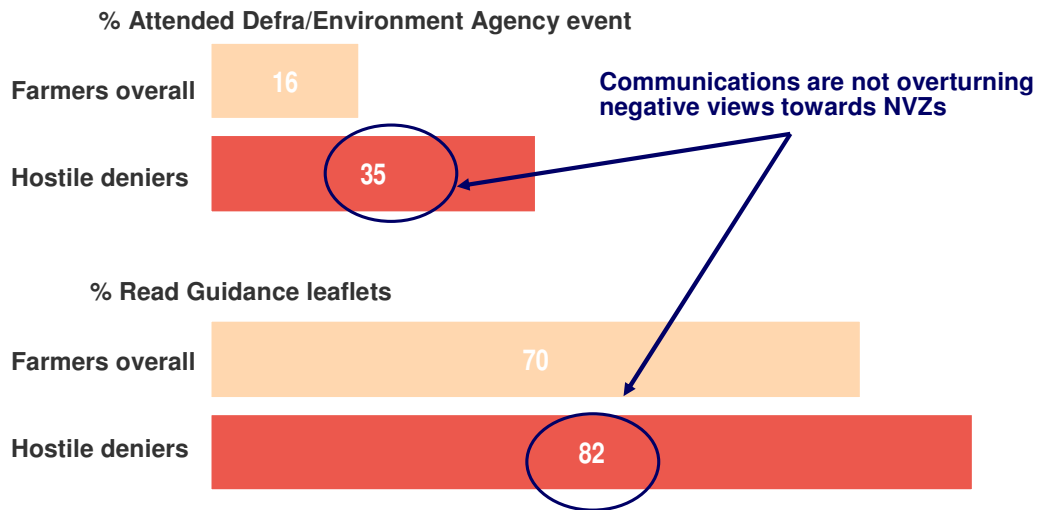
Q3. How serious a problem do you think the pollution of watercourses or groundwater is in your local water catchment area?



5.4.2 Engagement with the NVZ Advice and Support Programme

The five segments are also characterised by different levels of engagement with the NVZ Advice and Support Programme. Reluctant accepters are the most likely to have engaged with any part of the programme whereas Ill-informed opponents are the least likely. In addition to contact with the programme’s communications, receipt of the initial letter from Defra alerting farmers to the updated designations is clearly pivotal to engaging farmers in the need to adopt different farming practices to meet the regulations. It is important to note, therefore, that 53% of Ill-informed sceptics do not recall receiving this initial mailing.

However, as has already been discussed, this is not to say that higher levels of engagement with the NVZ Advice and Support Programme necessarily lead to more favourable attitudes towards NVZ policy. For instance, it is interesting that Positive accepters, who have the most favourable outlook on NVZs, are less likely than some of the other segments to have had contact with the programme. In addition, more than a third (35%) of Hostile deniers, the most negative group towards NVZ policy, have attended an Environment Agency-run event compared to just 16% overall and more than four in five Hostile deniers (82%) claim to have read the guidance leaflets compared to 70% overall. Higher levels of engagement with the communications about NVZs may instead mean that these farmers are better informed about the extent of behaviour change which is necessary to meet the regulations, and, having understood the full extent of this, may feel negatively towards a perceived financial and administrative burden for farmers.



Base: Farmers with land in a NVZ, Farmers overall (750), Hostile deniers (104)

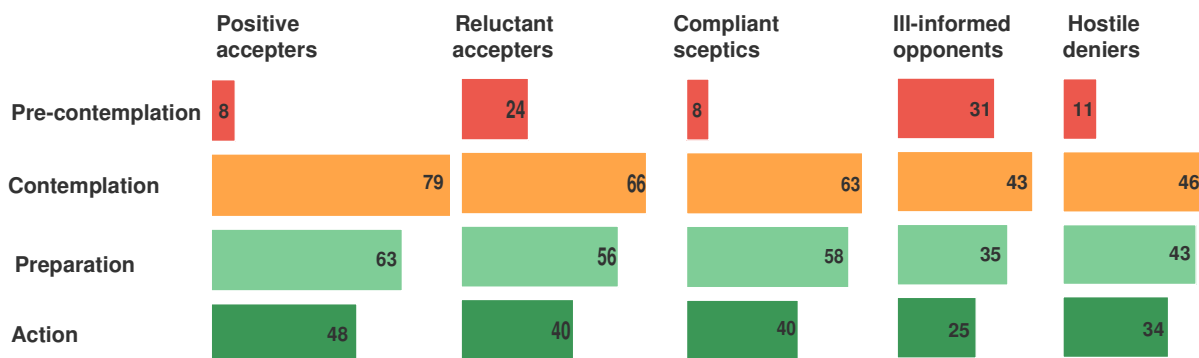
Ipsos MORI

Source: Ipsos MORI



5.4.3 Behaviour change across farmer segments

The farmer segments are progressing at different rates through the attitudinal and behavioural change journey, as the chart below shows.



As would be expected given the distribution of farmers overall across this model the majority of farmers within each of the segments are at the second, contemplation, stage.

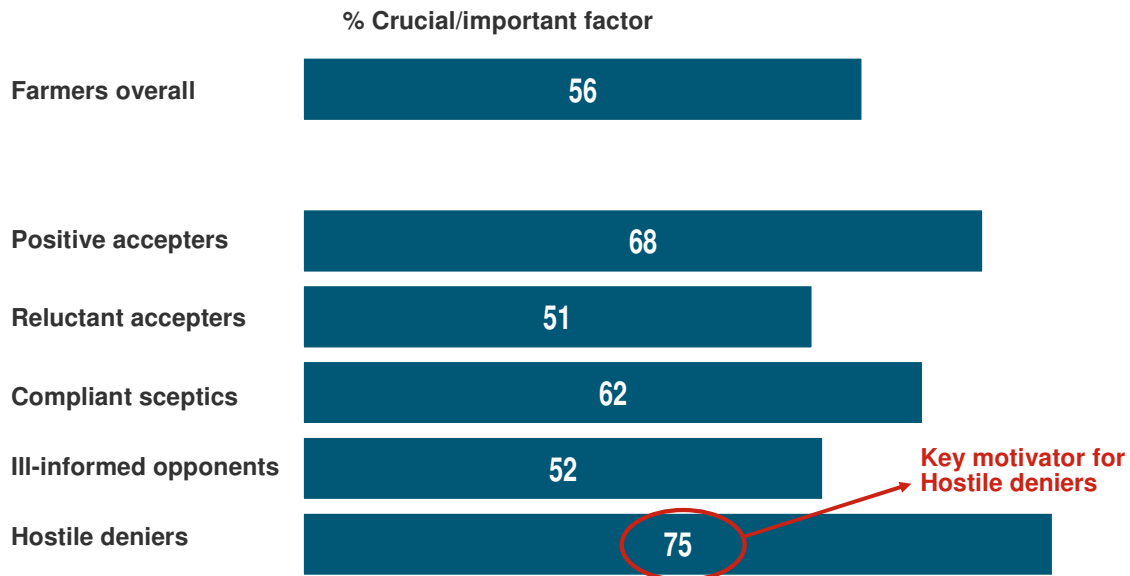
However, there are differences in the proportion of farmers at each of the other stages. For instance, Ill-informed opponents are the most likely to be in the initial stage of pre-contemplation. This is likely to reflect the high proportion of these farmers who do not recall receiving the initial letter alerting them to their possible designation. The Ill-informed opponents are also the segment with the lowest proportion of farmers to have reached the action phase. Despite there not appearing to be a strong connection between engagement with information about NVZs and attitudinal change, the low numbers of Ill-informed opponents taking action does highlight the importance of engaging with the programme in order to adopt new behaviours.

Positive accepters are shown to be the 'ideal' set of farmers as, in addition to the favourable attitudes which characterise this group, they are also the segment with the largest proportion of farmers reaching the final action stage.

5.4.4 Motivations for behavioural change

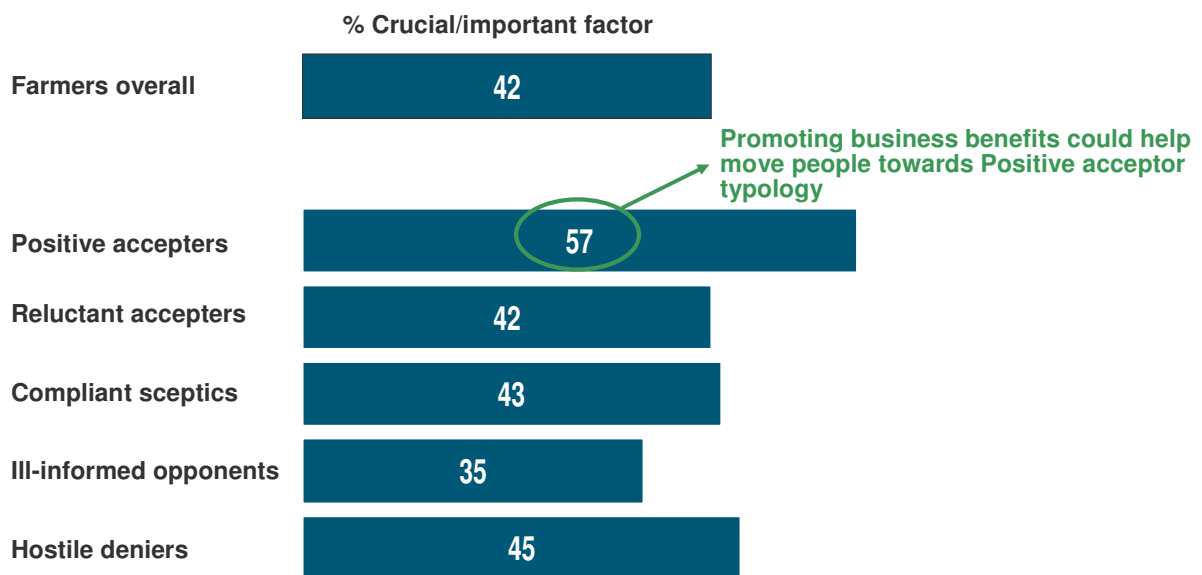
Each of these groups of farmers will be motivated to change their farming practices for different reasons. For instance, Hostile deniers are likely to be financially motivated, namely through the risk to their Single Payment, to change their farming practices to fall in line with NVZ regulations.

Factors influencing behaviour: the risk to your Single Payment from not conforming



Positive accepters, while holding environmental values, are also likely to be motivated by financial risks (as highlighted in the chart above). However, they are also likely to be motivated to change their behaviour due to financial benefits, such as from more efficient nitrate use. The results from the telephone survey suggested that this is not identified by farmers overall as a key factor influencing their behaviour (see section 4.3.3), however, this analysis shows that it is key in encouraging Positive accepters to take action.

Factors influencing behaviour: benefits to business of efficient nitrate use

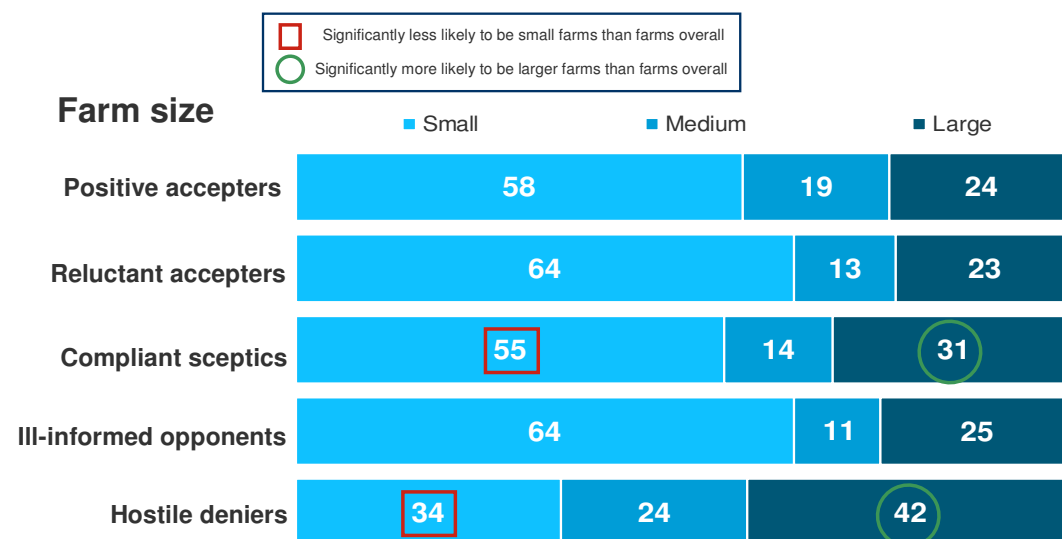


Ideally, communications with these different groups of farmers should be targeted to focus on the key motivational factors in each case, or these should at least make up the range of messages distributed across farmers in NVZs if a targeted communications approach is not possible. Recommendations for targeting these segments are explored further in the following chapter.

5.4.5 Identifying farmer segments within the population

The value of these segments is of course dependent on the ability of the policymakers and communications team to identify these sets of farmers within the wider farming population. Farm size and farm type are two demographic variables collected by Defra and held on the NVZ holdings database. Therefore, the five segments have been analysed by these demographics to help identify which farms are most likely to be associated with each set of attitudes. Although farmer age is less likely to be known by Defra this has also been included as a point of interest.

The segments are defined according to attitudes rather than by demographics, and so there is inevitably a mix of size and type of farm within each of the five segments. However, it is worth noting, as shown in the chart below, that Hostile deniers are significantly more likely to be managers of large farms when compared with farmers overall. Compliant sceptics are also significantly more likely to be managers of large farms.



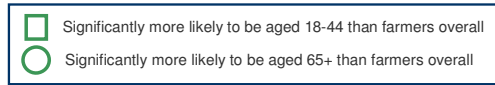
Base: All respondents, farmers with land in a NVZ (750)
 Ipsos MORI

Source: Ipsos MORI

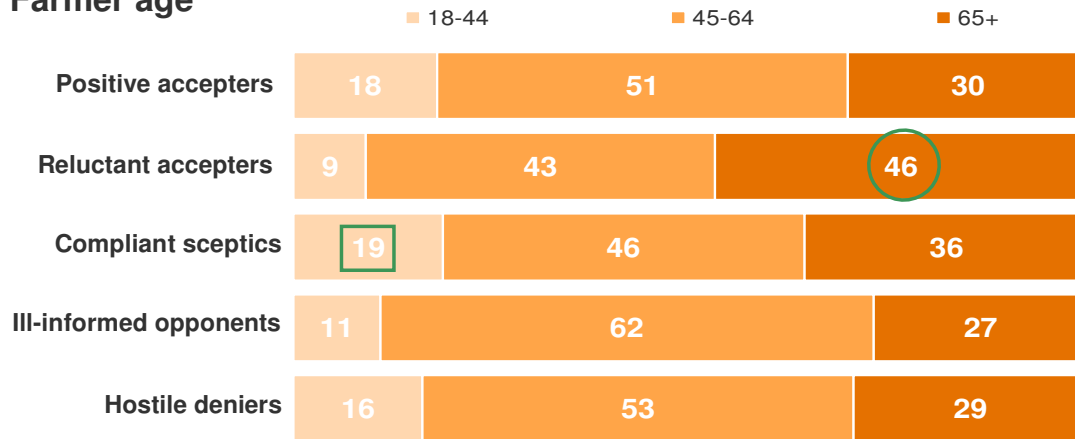


The same pattern emerges when the segments are analysed by farm type. Hostile deniers and Compliant sceptics are significantly more likely to be arable farms when compared with farmers overall. Interestingly, Positive accepters are also more likely to be arable farmers suggesting that the arable sector does not consist of a homogenous group of farmers in terms of their attitudes towards NVZs.

Looking at the attitudinal segments by farmer age there is again a mix across the different groupings. However, Reluctant accepters are more likely to be older farmers, aged 65+, while Compliant sceptics are more likely to be younger farmers, aged 18 to 44.



Farmer age



Base: All respondents, farmers with land in a NVZ (750)
 Ipsos MORI

Source: Ipsos MORI



Recommendations for engaging farmers in the need to change farming practices, across NVZs generally, as well as these targeted groups, are presented in more detail in the following chapter.

6. Recommendations

6. Recommendations

This chapter presents recommendations for future communications with farmers about the NVZ policy and regulations. In some cases these recommendations touch on aspects of the existing NVZ Advice and Support Programme and serve to highlight those elements which should be continued. This chapter presents recommendations which would be beneficial for farmers generally in NVZs as well as making suggestions for each of the farmer segments identified in the previous chapter.

6.1 General recommendations for delivering advice and support

One of the key findings of this research is the significant proportion of farmers who remain unaware of their NVZ designation (39% either say that none of their land falls within in a NVZ or say they don't know whether they are subject to a designation). The content of the initial letter sent to NVZ farmers is vital to overcome this major barrier to attitudinal and behavioural change. The initial mailing would benefit from having the dual purpose of both raising awareness of the designation and generating buy-in from farmers to take action themselves. There is, however, a tension here between overloading farmers with information and engaging them fully with the need to take steps to comply with the regulations. Ideally, the **key pieces of information which need to be included within the initial mailing** are:

- **the status of the designation** - ideally farmers would be told definitively that their land falls within a NVZ, rather than that it “may be in a NVZ” as detailed in the current letters. The extent to which this can be achieved is limited however by the completeness of farm records held by Defra. An alternative approach could be for Defra to alert farmers that their land will be assumed to fall within a NVZ unless evidence to the contrary is provided
- **the financial risks facing farmers who do not conform** due to the risk to their Single Payment and the risk of prosecution - although this would be a more negative message than the tone of the current NVZ Advice and Support Programme, the findings from this research suggest that these risks will be the most effective motivator for farmers to take action to comply with the regulations
- **details of how compliance will be policed** – farmers involved in the in-depth interviews suggested that the risk of prosecution can only be an effective motivator for action if farmers believe that the threat will be enforced
- **the benefits of compliance**, including the financial benefits from efficient use of nitrates and the benefits of cross-compliance - although these benefits are not identified by all farmers as key motivators they are influential for the Positive accepters and could be effective for others if clearly laid out
- **a clear rationale for extending NVZs** - cynicism about the extent to which water pollution poses a threat could be dispelled by including information about how water quality levels are monitored and evidence, where possible, of water pollution within the local area (or downstream of the local area)
- **‘myth-busting’ facts** - for instance information about the nitrate content of organic manure and the relevance of NVZ designations to small-landowners as well as large arable farms.

Repeat mailings of the initial letter are essential to ensure farmers within NVZs are given multiple opportunities to engage with the policy. The timing of the letter can be pivotal to whether farmers engage with their designation and the requirement to comply with the regulations. Ideally, to prevent information-overload, reminder mailings would be targeted at those farmers who have not engaged with any aspect of the programme (for instance, by excluding any event attendees, helpline callers or farmers who have requested guidance leaflets).

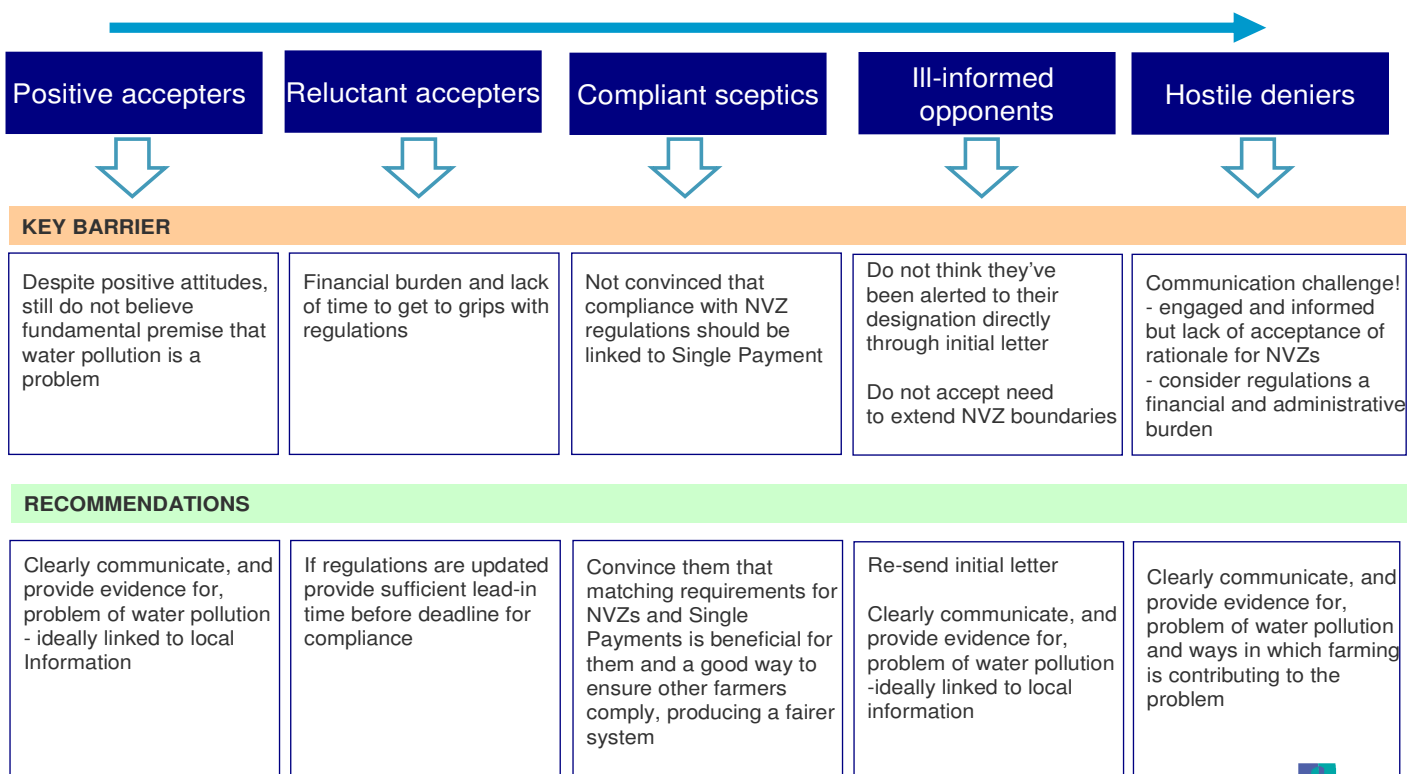
In addition to the initial letter, the guidance leaflets must also be a key focus of any new programme of advice and support for farmers in NVZs. This research indicates that the guidance leaflets are the element of the current programme which farmers are most likely to have engaged with and the delivery of information by post is popular. To maximise the chances of farmers moving from a stage of contemplation to actually taking action, the guidance leaflets need to be a one-stop shop for information. Ideally, the guidance leaflets would provide farmers not just with details of the obligations and the deadlines for compliance, but also with practical advice about *how* to comply with them.

Farmers who have engaged with other elements of the existing NVZ Advice and Support Programme are complementary about the information available. However, there are lower levels of engagement with information points such as the events and the telephone helpline. A major barrier has been farmers' lack of awareness about the different elements of the programme. It is vital that farmers understand the next level of support available for them as otherwise they may drop out of the journey towards adopting appropriate behaviours. The various information channels available to farmers in NVZs must therefore be repeatedly advertised at every point of contact.

6.2 Farmer-specific recommendations

There are a range of communication challenges across the farmer segments. There are some clear recommendations which could help move each farmer segment further along the attitudinal and behavioural change journey from pre-contemplation to action.

For instance, in the case of ill-informed opponents, engagement is the key issue as the majority of these farmers have had no contact with any part of the NVZ Advice and Support Programme. However, for Hostile deniers the message, and not the level of engagement, is the issue as these farmers have interacted with the communications but do not accept the premise for NVZs. The key barrier preventing further attitudinal and behavioural change for

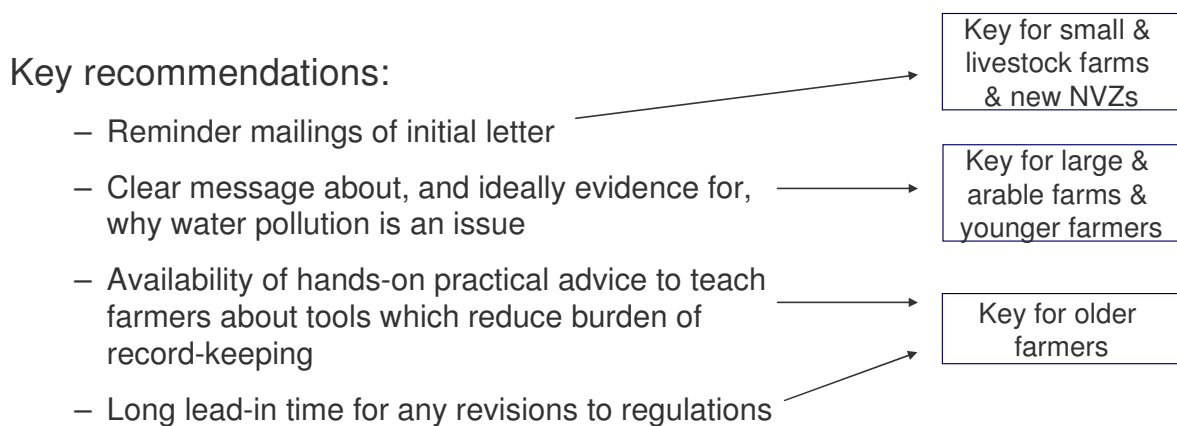


each segment, and a recommendation for overcoming this, is summarised in the chart below.

The value of segmentation lies in the ability of communicators to target appropriate messages at the correct people. This could be possible across farmers in NVZs given the demographic differences which exist between some of the segments (see section 5.4.5). For instance, both Hostile deniers and Compliant sceptics are more likely to be managers of large farms when compared with farmers overall. Communications focusing on the evidence for water pollution, and ideally the link to current farming practices, and the value of cross-compliance should therefore be targeted at larger holdings. If a targeted approach such as this is not possible then this is a message which should be contained within the range of information being distributed to all farmers within NVZs.

If particular geographical areas, or farming sectors, are characterised by a certain age of farmer, then communications could also be targeted to fit the messages appropriate to this. For instance, Reluctant accepters are more likely to be older farmers (aged 65+) while Compliant sceptics are more likely to be younger farmers (aged 18 to 44). The benefits for farmers from cross-compliance between the NVZ regulations and the Single Payment Scheme are therefore most important to communicate to younger farmers. Older farmers, however, would benefit from re-assurance that assistance is available to reduce the burden placed on them by the regulations. This could include, for example, targeted advertising of small-scale practical workshops to assist with the calculations and record-keeping.

The key recommendations for farmers of different ages and from differing farming sectors are summarised below.



Appendices

Appendix 1

Stage 1: Survey working group discussion guide

Nitrate Vulnerable Zones (10-000059-01)

Discussion guide_FINAL, 26.1.2010

Key Objectives

Overall, to establish criteria for modelling the customer journey of awareness, attitude and behaviour.

Specifically to:

- Uncover the drivers and barriers to behavioural change amongst farmers operating within a NVZ and identify the most influential;
- Identify the purpose of each point of contact within the programme – what are the desired changes in attitude and behaviour amongst farmers operating within a NVZ, following contact;
- Establish whether the 4E's approach to behaviour change (i.e. Enable, Engage, Exemplify, Encourage), or the customer journey model, are considered useful tools for programme development, and whether they have had any influence to date;
- Establish the 'influencers' within the farming network in relation to Nitrate Vulnerable Zones.

Timing

- The group discussion will last for 2 hours.

Overview

Discussion sections	Notes	Approx timing
1. Introductions	This section orientates the participants and prepares them to take part in the group discussion. It also warms the respondent up and provides contextual information.	5 mins
2. Development of NVZ Advice and Support Campaign	Initial conversation around history of NVZ designations and regulations to warm up respondents and also to set the scene for the development of a suitable campaign. Explore the main objectives of the NVZ Advice and Support Campaign so as to understand the key aim of the communications with farmers and measures of that success. After talking generally about the campaign moving the discussion on to look at the specific objectives of each different element of the campaign, and their relative successes.	35 mins
3. Key influencers within the farming network	Explore the merits of using intermediary organisations to disseminate information and understand who the key intermediaries are.	10 mins
4. Influences on campaign development	Exploring whether models for behaviour change have impacted on the campaign development and whether these are useful approaches to take	20 mins
5. Expectations for NVZ Advice and Support Campaign	This section explores the realistic expectations respondents have for the campaign as a whole and how these expectations differ for farmers in varying circumstances	10 mins
5. Wider drivers and barriers to behavioural change	This section uncovers the key motivators and demotivators in terms of changing behaviour in relation to NVZs.	30 mins
6. Future campaigns and summing-up	This section draws out the key messages, looks to the future of campaign work in this area and brings group discussion to a close.	10 mins

Total: 2 hours

Discussion area	Notes	Time (mins)
<p>1. Introductions</p> <p>Moderator introduction</p> <ul style="list-style-type: none"> ▪ Moderator introduce self, Ipsos MORI (including role – independent research agency), and client, Environment Agency. ▪ Explain main aims of the discussion – to identify desired changes in attitudes and behaviour in relation to farmers operating within an NVZ and to explore the effectiveness of different elements of the campaign in achieving this. This modelling exercise will inform the survey taking place in the second stage of the research programme, by setting criteria for Ipsos to measure against. ▪ Other issues we will be discussing include the wider drivers and barriers to behavioural change amongst farmers operating within NVZs and who you perceive the key ‘influencers’ within the farming network to be in relation to NVZs. ▪ The discussion will last for approximately 2 hours. ▪ Stress there are no right or wrong answers. ▪ Gain permission to record the group discussion (start audio recording). <p>Participant introduction – warm-up and context</p> <ul style="list-style-type: none"> ▪ First name, general role (within Environment Agency / farming) and role in relation to Nitrate Vulnerable Zones specifically. 	<p>This section orientates the participants and prepares them to take part in the group discussion.</p> <p>Warms the respondent up and provides contextual information.</p>	5 mins
<p>2. Development of NVZ Advice and Support Campaigns</p> <p>Firstly, I’d like to talk to you about the history of NVZs and how policy around them has developed....</p> <ul style="list-style-type: none"> ▪ How have NVZ designations changed over the last few years? ▪ How have the regulations governing NVZs changed over the last few years? <ul style="list-style-type: none"> ○ What was driving these changes? ▪ How have these changes informed the communication approach which has been taken with farmers? ▪ What do you consider to be the main objectives of the NVZ Advice and Support Campaign? <ul style="list-style-type: none"> ○ Can you give some examples of the ideal outcomes of the campaign? ○ On what timescale would these outcomes ideally be 	<p>Initial conversation around history of NVZ designations and regulations to warm up respondents and also to set the scene for the development of a suitable campaign.</p> <p>Explore the main objectives of the NVZ Advice and Support Campaign so as to understand the key aim of the communications with farmers and measures of that success. After</p>	35 mins

<p> <ul style="list-style-type: none"> ▪ What was the justification for choosing these channels for the campaign? ▪ To what extent do the different channels vary in their objectives? Why is this? <p>PROBE ON: similar objectives but trying to maximise exposure of farmers in many different ways <u>or</u> channels targeted towards achieving different objectives</p> <ul style="list-style-type: none"> ▪ How do the different channels vary in terms of funding? <ul style="list-style-type: none"> ○ Do you think this is appropriate? Why/Why not? ▪ What other channels would you have liked to have used in the campaign but didn't? Why these? Why were they not used? <p>PROBE ON: budget restrictions, lack of evidence about effectiveness</p> <p>3. Key influencers within the farming network</p> <ul style="list-style-type: none"> ▪ To what extent do you think intermediary organisations are important to delivering the campaign? Why? ▪ Who do you see as the key intermediaries for this type of campaign? Why? ▪ Which intermediaries did you use to communicate about NVZs, if any? Which? What for? <p>Taking each intermediary in turn...</p> <ul style="list-style-type: none"> ▪ Why did you use this intermediary? How effective was it? Why do you say this? What could have been improved? ▪ Were there any intermediaries within the farming network that you wanted to use, but were unable to? Which? Why? ▪ Were there any intermediaries that you considered but decided to reject? Which? Why? ▪ If the campaigns were repeated in the future which intermediaries do you think you might use? Why these? What specifically would you use them for? ▪ Are there any other public bodies which you feel need to be involved? <p>4. Influences on campaign development</p> <ul style="list-style-type: none"> ▪ Did the design of the campaign take influence from any other similar activities, either conducted by yourselves or others? Which? In what ways? Why? <p>PROBE ON: examples of campaigns which acted as guide to either</p> </p>	<p>disseminate</p> <p>information and understand who the key intermediaries are.</p> <p>Exploring whether models for behaviour change have impacted on the campaign development and whether these are useful approaches to take</p>	<p>20 mins</p>
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<p>a good or poor approach to take in relation to NVZs</p> <p>4Es approach to behaviour change</p> <p>INTRODUCE PARTICIPANTS TO THE 4Es APPROACH TO BEHAVIOUR CHANGE – ENABLE, ENGAGE, EXEMPLIFY AND ENCOURAGE, USING THE FIGURE AND DEFINITIONS PROVIDED IN RESEARCH BRIEF. PROVIDE PARTICIPANTS WITH A HAND-OUT OF THIS TO REFER BACK TO.</p> <ul style="list-style-type: none"> ▪ How familiar are you with this model, if at all? <ul style="list-style-type: none"> ○ Where/why have you heard about it? ▪ To what extent did it inform the campaign development for the NVZ Advice and Support Campaign? Why / Why not? ▪ To what extent do you think this is a useful model for considering behaviour change? Why do you say this? ▪ Which elements of the campaign do you think fall into these four different categories? ▪ Are there any aspects of this model which you do not feel are covered by the campaign? <ul style="list-style-type: none"> ○ Why do you think these aspects of the model have not been covered? ○ Do you think they should be covered by the campaign? ▪ What else do you think could have been done as part of these campaigns under each of these headings? <p>Customer journey map</p> <p>INTRODUCE PARTICIPANTS TO THE CUSTOMER JOURNEY MAP APPROACH TO BEHAVIOUR CHANGE – PRE-CONTEMPLATION, CONTEMPLATION, PREPARATION, ACTION - USING THE FIGURE AND DEFINITIONS PROVIDED IN RESEARCH BRIEF. PROVIDE PARTICIPANTS WITH A HAND-OUT OF THIS TO REFER BACK TO.</p> <ul style="list-style-type: none"> ▪ How familiar are you with this model, if at all? <ul style="list-style-type: none"> ○ Where/why have you heard about it? ▪ To what extent did it inform the campaign development for the NVZ Advice and Support Campaign? Why / Why not? ▪ To what extent do you think this is a useful model for considering how farmers arrive at the ultimate aim of the NVZ Advice and Support programme? Why do you say this? ▪ To what extent do you feel that farmers will move along a journey similar to this one? Why/Why not? ▪ Which elements of the campaign do you think aid farmers in moving along this journey? <ul style="list-style-type: none"> ○ At which stage in the journey? How successfully? ▪ Are there any aspects of this model which you do not feel have 		
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<p>been addressed by the campaign?</p> <ul style="list-style-type: none"> ○ Why do you think these aspects of the model have not been covered? ○ Do you think they should be covered by the campaign? <ul style="list-style-type: none"> ▪ What else do you think could have been done as part of the campaign to achieve this customer journey? 		
<p>5. Expectations for NVZ Advice and Support campaign</p> <ul style="list-style-type: none"> ▪ What are your realistic expectations about what the campaign as a whole can achieve? <p>PROBE ON attitudinal change vs. behavioural change</p> <ul style="list-style-type: none"> ○ On what scale do you think these changes are likely to happen? ○ What are your expectations around the timescale on which these changes are likely to happen? <p>PROBE ON timescales for both attitudinal change and adopting new behaviours</p> <ul style="list-style-type: none"> ▪ How do your expectations differ for various groups of farmer? In terms of both the outcome of the campaign, and the timescale on which it will be achieved? PROBE ON: <ul style="list-style-type: none"> ○ Farm size ○ Farm type ○ Farmer age ○ Existing vs. newly designated NVZ ○ Anything else you think alters your expectations? <p>Why do your expectations differ in this way? How do the specific circumstances of farmers influence their attitudes and behaviours in relation to NVZs?</p>	<p>This section explores the realistic expectations respondents have for the campaign as a whole and how these expectations differ for farmers in varying circumstances</p>	<p>10 mins</p>
<p>6. Wider drivers and barriers to behavioural change</p> <ul style="list-style-type: none"> ▪ What else beyond the NVZ advice and support campaigns has motivated farmers to change their behaviours in these ways? SPONTANEOUS FIRST, THEN PROBE ON: <ul style="list-style-type: none"> ○ Financial stick – single-payment withholding ○ Improved performance ○ Funding opportunities – which? 	<p>This section uncovers the key motivators and demotivators in terms of changing behaviour in relation to NVZs.</p>	<p>30 mins</p>

<ul style="list-style-type: none"> ○ Efficiency/cost savings (reduced use of fertiliser) ○ Peer pressure ○ Other sources of advice / support around NVZs – which sources and as part of which agricultural schemes or initiatives (e.g. England Catchment sensitive farming delivery initiative)? ○ Overall views on the environment e.g. moral obligation / emotional attachment to the land ○ Acceptance of role and responsibility in relation to NVZs ○ Level of understanding of obligations under NVZs ▪ In what ways are each of these motivating, if at all? ▪ Which of these do you think are most influential? Why do you say this? Which are least influential? Why? ▪ What has demotivated farmers from changing their behaviours? SPONTANEOUS FIRST, THEN PROBE ON: <ul style="list-style-type: none"> ○ Financial penalties of disregarding regulations ○ Financial cost of implementation ○ Administrative time involved ○ Complicated nature of regulations – understanding where they apply and how to comply with them PROBE ON: which aspects of the regulations in particular? <ul style="list-style-type: none"> ○ Limitations on type of farming that they feel able to do ○ Peer pressure ○ Other sources of advice / support around NVZs – which sources and as part of which agricultural schemes or initiatives (e.g. England Catchment sensitive farming delivery initiative)? ○ Overall views on the environment e.g. lack of moral obligation / emotional attachment to the land ○ Acceptance of role and responsibility in relation to NVZs ○ Level of understanding of obligations under NVZs ○ Conflicts and confusion with other legislation and campaigns e.g Waste directives, English Catchment Sensitive farming initiative ▪ In what ways are each of these demotivating, if at all? ▪ Which of these do you think are most influential? Why do you say this? Which are least influential? Why? ▪ Do you think the carrot or the stick approach is most effective i.e. regulations and penalties versus incentives? Why do you say this? Or is a combination most appropriate – what and why? ▪ Do you believe the campaign can change attitudes or do you think that the main driver of behavioural change will be financial 		
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<p>penalties? Why do you say this?</p> <ul style="list-style-type: none"> ▪ What do you think makes someone an advocate of NVZs rather than simply someone who complies with the regulations? 		
<p>7. Future campaigns and summing up</p> <ul style="list-style-type: none"> ▪ In what ways do you think NVZ advice and support campaigns should be improved in the future? Why do you say this? ▪ What impact would this have on farmers? ▪ What ideas do you have for future campaign work around NVZs? ▪ What do you need to know in order to help you develop these ideas? ▪ Finally, just to bring together everything we have been discussing today what do you think your reaction to these regulations would be if you were a farmer? <p>Any questions? Thank and close</p>	<p>This section draws out the key messages, looks to the future of campaign work in this area and brings group discussion to a close.</p>	<p>10 mins</p>

Appendix 2

Stage 2: Telephone survey findings

This topline shows final results for a telephone survey conducted among farmers by Ipsos MORI between 1st March and 23rd March 2010. In total, 750 farmers were interviewed. All farmers involved in this research were assumed to farm within a Nitrate Vulnerable Zone based on Defra's database of NVZ holdings.

This topline document also shows the findings for those farmers who themselves acknowledge the NVZ designation (506 farmers).

The data has been weighted by farm size and Government Office Region so that the results are representative of these factors across all the farms in England.

Where results do not sum to 100, this is due to multiple responses or computer rounding.

Results are based on all respondents unless otherwise stated.

An asterisk (*) represents a value of less than one half of one percent, but not zero.

Q1 and 2 were screening questions.

Q3 How serious a problem do you think the pollution of watercourses or groundwater is in your local water catchment area? Would you say it is...?

	All Farmers %	Farmers aware of NVZ designation %
A very serious problem	4	3
A fairly serious problem	9	11
A slight problem	36	40
Or no problem at all	47	43
Don't know	4	3
Very/fairly serious problem	13	14
Slight/no problem	83	82

Q4 Which type of organisations do you think contribute most to water pollution in your local water catchment area? PROBE And which others? DO NOT PROMPT

	All Farmers		Farmers aware of NVZ designation	
	First Mention %	All Mentions %	First Mention %	All Mentions %
Agriculture and farmers	29	35	29	36
Industry	13	19	13	21
Sewage and water industry	10	12	10	13
Domestic and residential	7	10	7	10
Transport	5	6	5	8
Waste management / disposal companies	2	3	2	3
Local Authority/Council	1	2	2	3
Tourism	-	*	0	*
Horticulture	*	*	0	0
Quarries	*	*	*	*
Roads	*	*	*	*
Environment Agency	*	*	*	*
Airport	*	*	*	*
Animals	*	*	*	*
Other	1	2	*	1
Don't know	31	31	30	30

Q5 To what extent do you think the use of *artificial or organic fertilisers* by farmers contributes to water pollution in your local water catchment area? Would you say...?

	All Farmers	Farmers aware of NVZ designation
	%	%
A great deal	4	4
A fair amount	14	14
A little	56	62
Not at all	19	14
Don't know	7	6
Great deal/fair amount	17	18
A little/not at all	75	76

Q6 What proportion of the land you farm falls within a Nitrate Vulnerable Zone? Would you say...?

	All Farmers	Farmers aware of NVZ designation
	%	%
All of it	39	63
Most of	7	11
About half	9	14
Less than half	7	12
None of it	25	0
Don't know / not sure	13	0
Any of it	61	100

Q7 Have you ever appealed against the inclusion of any part of your farm in a Nitrate Vulnerable Zone? IF YES What was the result of that appeal?

	All Farmers	Farmers aware of NVZ designation
	%	%
Never appealed	98	98
Appealed and appeal was successful	1	*
Appealed and appeal was rejected	1	1
Appealed and waiting to hear	*	1
Can't remember / Don't know	*	*

Q8 How well would you say you understand the regulations that affect farms within a Nitrate Vulnerable Zone? Would you say ...

	All Farmers	Farmers aware of NVZ designation
	%	%
Very well	11	15
Fairly well	44	52
Not very well	29	28
Not at all	14	5
Don't know	1	1
Very/fairly well	55	67
Not very/not at all well	43	33

Q9 **Were you aware that new regulations came into force in January 2009 for existing Nitrate Vulnerable Zones and in January 2010 for newly designated Nitrate Vulnerable Zones?**

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes, aware	70	77
Not aware	28	21
Unsure/Don't know	2	3

Q10 **To what extent would you say your own farming practices conform to the latest NVZ regulations? Would you say they conform to these regulations?**

	All Farmers	Farmers aware of NVZ designation
	%	%
Completely	54	57
Mostly	22	26
Partially	7	8
Or not at all	6	5
Do not know enough about the regulations to say	6	2
Don't know	4	2

Q10a **To what extent would you say your own farming practices conform to the latest NVZ regulations? Would you say they conform to these regulations?**

	All Farmers (685)	Farmers aware of NVZ designation (490)
	%	%
Completely	61	59
Mostly	25	27
Partially	8	8
Or not at all	6	5

Base: All respondents who know about NVZ regulations

Q11 I am going to read out some of the regulations that apply in a Nitrate Vulnerable Zones and would like you to tell me how easy or difficult you find each of these. If you think these do not apply to you please say so.

First of all do you find **READ OUT EACH BELOW** very easy, fairly easy, fairly difficult, or very difficult?

	Very easy %	Fairly easy %	Fairly difficult %	Very difficult %	Don't know %	Doesn't apply %	Easy %	Difficult %
Keeping to the seasonal restrictions on nitrogen and manure usage								
All Farmers	22	33	6	3	1	35	55	9
Farmers aware of NVZ designation	25	40	8	4	1	21	65	12
Keeping the records you are obliged to keep								
All Farmers	13	40	10	6	3	28	53	16
Farmers aware of NVZ designation	15	49	14	6	2	14	64	20
Complying with restrictions on the methods you can use to spread fertiliser								
All Farmers	18	33	5	1	2	40	51	7
Farmers aware of NVZ designation	22	41	7	1	2	26	63	9
Completing risk maps for your fields								
All Farmers	10	34	9	2	3	41	45	11
Farmers aware of NVZ designation	13	45	10	2	2	27	58	13
Undertaking calculations around nitrogen and manure usage and storage								
All Farmers	10	28	15	5	2	41	37	20
Farmers aware of NVZ designation	11	35	19	6	1	28	47	24
Ensuring your workers understand what they must do to conform to the regulations								
All Farmers	7	17	4	1	1	70	24	5
Farmers aware of NVZ designation	8	21	6	1	1	63	29	8

Q11a I am going to read out some of the regulations that apply in a Nitrate Vulnerable Zones and would like you to tell me how easy or difficult you find each of these. If you think these do not apply to you please say so.

First of all do you find **READ OUT EACH BELOW** very easy, fairly easy, fairly difficult, or very difficult?

		Very easy	Fairly easy	Fairly difficult	Very difficult	Easy	Difficult
		%	%	%	%	%	%
Base: all respondents except those where regulations do not apply	Base s:						
Complying with restrictions on the methods you can use to spread fertiliser							
All Farmers	(482)	31	57	9	2	89	11
Farmers aware of NVZ designation	(390)	31	57	10	2	88	12
Keeping to the seasonal restrictions on nitrogen and manure usage							
All Farmers	(524)	34	52	9	5	86	14
Farmers aware of NVZ designation	(413)	33	52	11	5	84	16
Ensuring your workers understand what they must do to conform to the regulations							
All Farmers	(247)	23	59	15	4	81	19
Farmers aware of NVZ designation	(205)	21	58	18	3	79	21
Completing risk maps for your fields							
All Farmers	(471)	19	62	16	4	80	20
Farmers aware of NVZ designation	(386)	19	63	15	3	82	18
Keeping the records you are obliged to keep							
All Farmers	(562)	19	58	15	9	76	24
Farmers aware of NVZ designation	(447)	18	58	17	7	76	24
Undertaking calculations around nitrogen and manure usage and storage							
All Farmers	(477)	17	48	25	9	65	35
Farmers aware of NVZ designation	(386)	16	50	26	8	66	34

Q12 How did you first find out that your farm was within a Nitrate Vulnerable Zone?
DO NOT PROMPT

	All Farmers	Farmers aware of NVZ designation
	%	%
Letter or leaflet in the post	41	53
From my farm advisor / my own advisor	5	7
By checking online maps	4	5
Farming press/media	3	3
From neighbours/other farmers	3	4
Farmers meeting or workshop	2	2
Via NFU or other farmers assoc	2	2
Media/press (unspecified)	2	2
Defra publications/literature	1	1
Internet (unspecified)	1	1
Through the Single Payment Scheme	*	*
Other	2	2
Can't remember / Don't know	14	15
Haven't been told anything	*	*
Do not believe farm is within an NVZ	22	2

Q13 Do you remember receiving a letter and leaflet in the post from Defra telling you that your farm may be in a Nitrate Vulnerable Zone and the implications for your farm?

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes recall receiving	57	68
No, not recalled	39	28
Can't remember	4	4

Q14 Have you ever visited the Defra or Environment Agency websites to find out more about Nitrate Vulnerable Zones and the regulations that apply to farms in these areas?

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes	22	28
No	78	72

Q15 Did you find the information about Nitrate Vulnerable Zones on these websites very helpful, fairly helpful, not very helpful or not at all helpful?

Base: All who have visited Defra or Environment Agency websites

	All Farmers (177)	Farmers aware of NVZ designation (146)
	%	%
Very helpful	19	18
Fairly helpful	65	65
Not very helpful	12	14
Not at all helpful	4	3
Don't know	*	-
Helpful	83	83
Not helpful	16	17

Q16 Have you ever visited a website to look at online maps for your area that show which fields fall within a Nitrate Vulnerable Zone?

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes looked at online maps	19	22
No, have not looked at online maps	81	77
Can't remember / Don't know	*	*

Q17 Have you read any of the Guidance leaflets produced by Defra and the Environment Agency for farmers whose land falls within a Nitrate Vulnerable Zone?

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes read leaflets	70	80
No, have not read leaflets	29	18
Can't remember / Don't know	2	2

Q18 Did you find the information in these guidance leaflets very helpful, fairly helpful, not very helpful or not at all helpful?

Base: All who read guidance leaflets	All Farmers (551)	Farmers aware of NVZ designation (421)
	%	%
Very helpful	15	15
Fairly helpful	66	69
Not very helpful	12	11
Not at all helpful	4	4
Don't know	3	1
Helpful	81	84
Not helpful	16	15

Q19 Have you ever called the telephone helpline provided for farmers with queries about Nitrate Vulnerable Zones?

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes called helpline	4	5
No, haven't	96	95
Can't remember/ Don't know	*	*

Q20 Did you find the information provided through that telephone helpline very helpful, fairly helpful, not very helpful or not at all helpful?

Base: all who have called helpline *data are presented as weighted numbers rather than percentages given small base size	All Farmers (31)	Farmers aware of NVZ designation (28)
	N	N
Very helpful	5	5
Fairly helpful	12	10
Not very helpful	7	7
Not at all helpful	2	2
Don't know	1	1
Helpful	16	14
Not helpful	9	9

Q21 Have you ever used the PLANET computer software tool designed to help you with the calculations you need to make under the NVZ regulations?

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes	7	11
No	92	89
Can't remember / Don't know	*	*

Q22 Did you find the PLANET tool very helpful, fairly helpful, not very helpful or not at all helpful?

	All Farmers (73)	Farmers aware of NVZ designation (68)
	%	%
Base: all who have used PLANET		
Very helpful	22	24
Fairly helpful	49	48
Not very helpful	16	18
Not at all helpful	9	5
Don't know	4	4
Helpful	71	73
Not helpful	25	23

Q23 Have you ever used the tool called "Tried and Tested" to help you with the calculations you need to make under the NVZ regulations?

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes	3	3
No	97	96
Can't remember / Don't know	1	1

Q24 Did you find the Tried and Tested tool very helpful, fairly helpful, not very helpful or not at all helpful?

	All Farmers (24)	Farmers aware of NVZ designation (18)
	N	N
Base: all who have used Tried and Tested *data are presented as weighted numbers rather than percentages given small base size		
Very helpful	3	2
Fairly helpful	14	9
Not very helpful	1	1
Not at all helpful	1	1
Helpful	18	11
Not helpful	2	2

Q25 Have you ever attended an event, such as a workshop or clinic, run by Defra or the Environment Agency about Nitrate Vulnerable Zones?

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes attended	16	22
No	84	78
Can't remember / Don't know	*	0

Q26 Did you find this event, workshop or clinic very helpful, fairly helpful, not very helpful or not at all helpful?

	All Farmers (154)	Farmers aware of NVZ designation (134)
	%	%
Base: All who have attended event		
Very helpful	36	35
Fairly helpful	53	55
Not very helpful	8	7
Not at all helpful	2	1
Don't know	1	1
Helpful	89	90
Not helpful	10	9

Q27 Have you, or anyone else on your farm ever attended an event, such as a workshop or clinic, run by someone other than Defra or the Environment Agency which discussed approaches to nutrient management?

	All Farmers	Farmers aware of NVZ designation
	%	%
Yes	18	24
No	81	76
Can't remember / Don't know	1	1

Q28 How good or poor a job do you think Defra and the Environment Agency have done in terms of explaining the regulations applying to farms in Nitrate Vulnerable Zones to farmers? Would you say they have done a very good job, fairly good job, fairly poor job or a very poor job?

	All Farmers	Farmers aware of NVZ designation
	%	%
Very good	12	12
Fairly good	53	62
Fairly poor	15	14
Very poor	8	7
Can't remember / Don't know	13	5
Good	65	74
Poor	22	21

Q29 **How would you like to receive further information or advice on the rules applying in Nitrate Vulnerable Zones? PROBE In what other ways would you like to receive this information? DO NOT PROMPT.**

	All Farmers		Farmers aware of NVZ designation	
	1 st mention	All mentions	1 st mention	All mentions
	%	%	%	%
Send it in the post	73	81	77	85
Email	10	26	9	26
On website	2	7	2	7
Via farming publications	1	4	1	5
Via meeting	1	3	1	4
Telephone	0	2		1
Via farm advisors/ my own advisor	*	1	-	1
TV or radio	*	*	*	1
Via farming associations	*	*	-	*
Through workshops	-	*	-	1
At farming shows or markets	-	*	-	1
By text message	-	*	-	*
Other	1	1	1	1
Don't know/none mentioned	11	10	8	6

Q30 **What could Defra and the Environment Agency have done better to help farmers understand the regulations applying in Nitrate Vulnerable Zones? DO NOT PROMPT.**

	All Farmers %	Farmers aware of NVZ designation %
Make the information clear/easier to understand/use less jargon	10	10
More workshops/seminars/training/meetings/discussions	4	5
Better policing/enforcement of regulations/carry out more checks on farms/harsher penalties for non-compliance	2	3
Keep farmers more informed/up-to-date	2	2
Make the regulations/rules simpler/clearer	2	2
More advice/guidance/explanation of NVZ rules/regulations	2	2
More promotion/publicity/public awareness	2	2
Personal visits to farms	2	3
Too much information/paperwork/ make the information more concise/brief	2	2
Told me if I was in a Nitrate Vulnerable Zone	2	1
Be more supportive/less threatening	1	1
Explain more about what NVZs are	1	1
Lack of communication/more practical input/information i.e. their objectives/aims/nitrate issues	1	2
Make the calculations easier	1	1
More flexibility/time with the dates	1	1
Not to bother at all/ let us get on with farming	1	1
Provide maps/show where NVZs are	1	1
Provide information in writing	1	1
Reduce bureaucracy	1	1
Send information through post	1	1
Understand the regulations themselves/ better understanding of their own policies	1	1
Apply the regulations to livestock farmers/other commercial land users	*	*
Listen to farmers	*	*
More help (unspecified)	*	*
Nothing – happy with what’s been provided	1	1
Other	3	3
Don't know	61	58

Q31- Q35 **As a result of your farm being included within a Nitrate Vulnerable Zone, which of the following changes have you already introduced on your farm and which are you in the process of introducing? If you think any of these do not apply to you please say so.**

		Already introduced %	In process of introducing %	Neither %	Don't know %	Doesn't apply %
Q32	Reduced the quantity of fertilisers you use					
	All Farmers	33	2	19	1	45
	Farmers aware of NVZ designation	41	3	23	1	32
Q31	Produced a nitrate plan to control your use of fertilisers					
	All Farmers	28	4	21	1	46
	Farmers aware of NVZ designation	40	5	20	1	33
Q35	Reduced the number of livestock you keep					
	All Farmers	20	1	39	*	39
	Farmers aware of NVZ designation	22	2	42	-	34
Q33	Changed the way you store manure					
	All Farmers	16	3	36	*	45
	Farmers aware of NVZ designation	22	3	39	*	36
Q34	Changed the methods you use to spread fertiliser					
	All Farmers	11	1	42	1	46
	Farmers aware of NVZ designation	14	1	52	1	32

Q31a - Q35a **As a result of your farm being included within a Nitrate Vulnerable Zone, which of the following changes have you already introduced on your farm and which are you in the process of introducing? If you think any of these do not apply to you please say so.**

Base: all respondents except those where changes do not apply

		Already introduced %	In process of introducing %	Neither %
Q32a	Reduced the quantity of fertilisers you use			
	All Farmers	(463)	61	4
	Farmers aware of NVZ designation	(373)	61	5
Q31a	Produced a nitrate plan to control your use of fertilisers			
	All Farmers	(453)	53	7
	Farmers aware of NVZ designation	(368)	61	8
Q35a	Reduced the number of livestock you keep			
	All Farmers	(468)	33	2
	Farmers aware of NVZ designation	(335)	34	3
Q33a	Changed the way you store manure			
	All Farmers	(448)	30	5
	Farmers aware of NVZ designation	(340)	34	5
Q34a	Changed the methods you use to spread fertiliser			
	All Farmers	(460)	20	1
	Farmers aware of NVZ designation	(373)	21	1

Q36- Q48 **I am going to read out a few statements about Nitrate Vulnerable Zones and for each please tell me whether this is something you would agree with strongly, tend to agree with, tend to disagree with or disagree with strongly.**

Firstly, to what extent would you agree or disagree that....

		Strongly agree %	Tend to agree %	Neither agree nor disagree %	Tend to disagree %	Strongly disagree %	No opinion / Don't know %	Agree %	Disagree %
Q39	It is important that we change the way we farm to reduce the amount of nitrates going into water courses								
	All Farmers	41	35	4	8	6	5	76	15
	Farmers aware of NVZ designation	39	34	5	10	7	4	74	17
Q44	I have a better understanding of the importance of reducing nitrate use than I used to have								
	All Farmers	33	43	4	9	5	6	76	14
	Farmers aware of NVZ designation	37	43	4	9	4	3	80	13
Q46	There is a lot of helpful advice available for farmers in NVZs								
	All Farmers	22	47	5	7	4	15	69	11
	Farmers aware of NVZ designation	25	51	5	8	4	7	76	12
Q40	Nitrate use on farms is only a minor cause of water pollution in this area								
	All Farmers	31	32	4	11	6	16	63	16
	Farmers aware of NVZ designation	35	34	5	10	6	11	69	15
Q47	The NVZ rules are complicated and confusing								
	All Farmers	25	34	5	16	4	16	59	21
	Farmers aware of NVZ designation	26	35	6	21	5	7	61	26
Q38	The administrative burden of the NVZ rules is too great								
	All Farmers	25	30	5	15	6	19	54	21
	Farmers aware of NVZ designation	28	31	6	17	7	11	59	24
Q43	If I was seen to be breaking the NVZ rules, my neighbours would be critical of me								
	All Farmers	16	31	7	18	11	17	46	29
	Farmers aware of NVZ designation	15	31	7	21	11	15	46	33
Q45	It is wrong that our Single Payment is linked to performance under the NVZ rules								
	All Farmers	19	22	7	18	10	25	41	28
	Farmers aware of NVZ designation	23	23	6	21	10	17	46	31

Q48	We have not had enough time to get to grips with the NVZ rules before having to comply with them								
	All Farmers	16	24	9	21	9	21	41	30
	Farmers aware of NVZ designation	18	26	10	25	11	10	45	36

Q36-Q48 Con'td

		Strongly agree %	Tend to agree %	Neither agree nor disagree %	Tend to disagree %	Strongly disagree %	No opinion / Don't know %	Agree %	Disagree %
Q41	Too much of the country is now included in NVZs								
	All Farmers	20	20	8	15	9	29	40	23
	Farmers aware of NVZ designation	23	24	8	16	9	21	46	25
Q37	The financial cost of following the NVZ rules is unreasonably high								
	All Farmers	20	20	6	21	7	27	39	28
	Farmers aware of NVZ designation	20	23	6	27	7	17	42	35
Q36	Most farmers around here support this area being designated as a Nitrate Vulnerable Zone								
	All Farmers	9	24	6	13	11	37	33	24
	Farmers aware of NVZ designation	12	27	5	15	12	29	39	28
Q42	The NVZ rules stop me from running my farm profitably								
	All Farmers	6	10	7	34	21	21	16	55
	Farmers aware of NVZ designation	7	12	8	39	20	14	19	60

Q49 **To what extent, if at all, do you think there has been an improvement in water quality in your local area since the introduction of Nitrate Vulnerable Zones? Do you think water quality has improved....**

	All Farmers %	Farmers aware of NVZ designation %
A lot	10	11
A little	20	21
Not very much	16	17
Not at all	22	21
Don't know	12	20
No opinion	21	10
Improved	29	32
Not improved	38	38

Farmers aware of NVZ designation	14	33	20	31	3	47	51
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Q58 **The Environment Agency is responsible for environmental regulation. Does this fact make you more likely, to consult them for advice on NVZ rules, less likely to do so, or does it make no difference?**

	All Farmers %	Farmers aware of NVZ designation %
More likely	39	38
Less likely	6	8
Has no impact	54	53
Don't know	1	1

DEMOGRAPHIC SECTION

Q59 **On your farm do you produce or rear any of the following...?**

	All Farmers %	Farmers aware of NVZ designation %
Cereals	28	39
Other arable crops	24	33
Dairy herd	8	11
Beef cattle	36	41
Pigs	7	8
Other livestock	55	52
Arable	32	43
Livestock	76	76

Q60 **Have you, or anyone else on your farm attended agricultural college? IF YES And was that yourself or someone else on your farm or both?**

	All Farmers %	Farmers aware of NVZ designation %
Myself	29	33
Someone else	19	23
None of these	59	54
Don't know	*	*
Anyone	40	46

Q61 **Do you have regular access to the internet? IF YES, Is that at work at home, or both?**

	All Farmers %	Farmers aware of NVZ designation %
At home	28	28
At work	2	1
Both	41	42
No access	29	29
Any access	71	71

Q62 Please could you tell me your age at your last birthday?

	All Farmers %	Farmers aware of NVZ designation %
18-24	*	*
25-34	2	3
35-44	11	12
45-54	24	25
55-64	27	25
65-74	23	21
75+	12	12
Unwilling to say	1	1

Q64 Gender of respondent

	All Farmers %	Farmers aware of NVZ designation %
Male	77	82
Female	23	18

Appendix 3

Stage 2: In-depth interview guide

Nitrate Vulnerable Zones (10-000059-01)

Discussion guide for in-depth telephone interviews_FINAL, 4.3.10

Key Objectives

Overall, to explore the drivers and barriers to behavioural change amongst farmers operating within a NVZ.

Specifically to:

- Explore farmers' perceptions of the need for NVZ regulations.
- Explore wider drivers and barriers to behavioural change:
 - What are the key motivators / demotivators to compliance
 - What has enabled / prevented them from delivering on the requirements
- Uncover farmers' perceptions of the quality of the Environment Agency's campaign communications and software tools and the impact of these on their attitudes and behaviours in relation to NVZs.
- Explore the perceived role of the EA, Defra and intermediary organisations as channels for disseminating information relating to NVZs.

Timing

- The depth interviews will last 35 minutes each.

Overview

Discussion sections	Notes	Approx timing
1. Introductions	This section orientates the participants and prepares them to take part in the interview. It also warms the respondent up and provides contextual information.	3 mins
2. Understanding of problem of water pollution and need for regulation	This section explores whether or not farmers believe that water pollution is a problem in their catchment area and whether nitrate pollution regulations are necessary to address this.	5 mins
3. Drivers and barriers to behaviour change in relation to NVZs	This section uncovers the key motivators / de-motivators and enablers / preventative factors to behaviour change in relation to NVZs.	15 mins
4. NVZ Advice and Support campaign	This section uncovers farmers' perceptions of the quality of the Environment Agency's campaign communications and software tools and the impact of these on their attitudes and behaviours in relation to NVZs.	5 mins
5. Sources of information relating to NVZs	This section uncovers the perceived role of the Environment Agency, Defra and intermediary organisations as channels for disseminating information relating to NVZs.	5 mins
6. Summing up	This section draws out the key messages and brings the discussion to an end.	2 mins

Total: 35 mins

Discussion area	Notes	Time (mins)
<p>1. Introductions</p> <p>Interviewer introduction</p> <ul style="list-style-type: none"> ▪ Moderator introduce self, Ipsos MORI (including role – independent research agency), and client, Environment Agency. ▪ Explain main aims of the discussion – to understand your attitudes towards water quality and the need for regulation in relation to farmers’ use of nitrates. Also to uncover what has motivated or enabled you, or conversely, de-motivated or prevented you from changing your farming practices to meet the new regulations for farmers operating in Nitrate Vulnerable Zones. ▪ The discussion will last for approximately 35 minutes. ▪ Reassure respondents of confidentiality and anonymity – information will not be personally attributed. ▪ Gain permission to record for transcription purposes (start audio recording). <p>Participant introduction – warm-up and context</p> <ul style="list-style-type: none"> ▪ First name, brief description of farm (type, size, proportion of land within a Nitrate Vulnerable Zone) and work role in relation to farm (e.g. owner and manager, just manager). 	<p>This section orientates the participants and prepares them to take part in the interview.</p> <p>Warms the respondent up and provides contextual information.</p>	3 mins
<p>2. Understanding of problem of water pollution and need for regulation</p> <p>Firstly, I’d like to talk to you about your attitude towards water pollution</p> <ul style="list-style-type: none"> ▪ How serious a problem do you think the pollution of watercourses or groundwater is in your local catchment area? Why do you say this? Probe on role of information. ▪ To what extent do you feel that farmers in your local catchment area contribute to this problem? In what ways? Probe on role of farmers’ use of nitrates (i.e. artificial and organic fertilizers). <ul style="list-style-type: none"> ○ How do you feel your own farm might contribute to the problem of water pollution? In what ways? Probe on role of own use of nitrates. ▪ To what extent do you think it is important farmers in the area change the way they farm to reduce the amount of nitrates going into water courses? Why? <ul style="list-style-type: none"> ○ To what extent do you feel it is important that you do this? Why? ▪ To what extent do you feel that it is necessary to have regulations in relation to farmers’ use of nitrates? Why do you 	<p>This section explores whether or not farmers believe that water pollution is a problem in their catchment area and whether nitrate pollution regulations are necessary to address this.</p>	5 mins

<p>say this?</p> <ul style="list-style-type: none"> ▪ How do you feel about the need for these regulations in relation to your own farm i.e. how do you feel about the inclusion of parts of your farm within a Nitrate Vulnerable Zone? Why? 		
<p>3. Drivers and barriers to behaviour change in relation to NVZs</p> <ul style="list-style-type: none"> ▪ Thinking about the regulations for farmers operating within Nitrate Vulnerable Zones what changes have you introduced / are in the process of introducing in order to conform with these? ▪ [For existing NVZs only, explore throughout – in response to spontaneous responses and where marked with * - whether the situation has changed since the introduction of the new regulations] ▪ How motivated have you felt to meet the requirements of the NVZ regulations? Why is this? <ul style="list-style-type: none"> ▪ What has motivated you to make the changes you have introduced / are in the process of introducing? ▪ What has de-motivated you from making further changes / delivering on the requirements under the regulations? ▪ [For existing NVZs only] Have your levels of motivation changed since the introduction of the new regulations? Why? <p>SPONTANEOUS FIRST THEN, PROBE ON THE FOLLOWING:</p> <ul style="list-style-type: none"> ○ Concern about water pollution and the environment [INTERVIEWER: cover only in relation to most influential / least influential question below, already covered in more detail in section2] ○ Acceptance of role and responsibility in relation to NVZs [INTERVIEWER: cover only in relation to most influential / least influential question below, already covered in more detail in section2] <p>Motivators:</p> <ul style="list-style-type: none"> ○ Risk of prosecution from not conforming ○ Financial stick i.e. risk to their Single Payment from not conforming. Is it right to link compliance to the Single Payment scheme – why / why not? ○ Funding opportunities – which? ○ Benefits to business of more efficient use of nitrates – which? ○ Farming networks <p>De-motivators:</p> <ul style="list-style-type: none"> ○ *Limitations on type of farming that they feel able to do ○ *Financial cost of implementation 	<p>This section uncovers the key motivators / de-motivators and enablers / preventative factors to behaviour change in relation to NVZs.</p> <p><i>Note to interviewer: If respondent appears motivated overall, cover motivating factors first. If respondent appears demotivated overall, cover de-motivating factors first.</i></p>	<p>15 mins</p>

<ul style="list-style-type: none"> ○ *Administrative time involved ○ Negative association with government <p>Either motivators/de-motivators:</p> <ul style="list-style-type: none"> ○ *Level of information, advice and support i.e. adequate information, advice and support vs. lack of information, advice and support. ○ *Sources of information, advice and support. Probe on: <ul style="list-style-type: none"> ▪ Defra and the Environment Agency [briefly at this stage] ▪ Other sources – which sources and as part of which agricultural schemes or initiatives (e.g. England Catchment sensitive farming delivery initiative) ○ *Views of friends and fellow farmers – which views have most impact, why? <ul style="list-style-type: none"> ▪ Which of these do you think have been the most influential in terms of motivating you / de-motivating you from delivering on the requirements under the regulations? Why do you say this? Which have been the least influential? Why? ▪ Do you think the carrot or the stick approach is most effective i.e. regulations and penalties versus incentives? Why do you say this? Or is a combination most appropriate – what and why? ▪ How easy has it been to meet the requirements of the NVZ regulations? Why is this? <ul style="list-style-type: none"> ▪ What has enabled or helped you to make the changes you have introduced / are in the process of introducing? ▪ What issues or problems have you encountered which have made it difficult for you to make further changes / deliver on the requirements? ▪ [For existing NVZs only] Have you encountered more or fewer problems since the introduction of the new regulations? Why? <p>SPONTANEOUS FIRST THEN, PROBE ON THE FOLLOWING:</p> <p>Either enablers or issues / problems:</p> <ul style="list-style-type: none"> ○ *Level of understanding of: <ul style="list-style-type: none"> ▪ Obligations under the regulations ▪ How to carry out these obligations ▪ Which obligations have been particularly straightforward? Which problematic/difficult? Why? ○ *Level of information, advice and support i.e. adequate information, advice and support vs. lack of information, advice and support. 	<p><i>Note to interviewer: If respondent thinks the process has been easy overall, cover enablers first. If respondent thinks the process has been difficult overall, cover issues/problems first.</i></p> <p><i>Note to interviewer: Understanding the regulations in terms of farmers' obligations and how to implement these are likely to be key issues for farmers. Make sure that you allow enough time here for farmers to discuss how well they feel they understand the regulations.</i></p>	
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<ul style="list-style-type: none"> ○ *Sources of information, advice and support. Probe on: <ul style="list-style-type: none"> ▪ Defra and the Environment Agency [briefly at this stage] ▪ Other sources – which sources and as part of which agricultural schemes or initiatives (e.g. England Catchment Sensitive Farming Delivery Initiative - ECSFDI -, aka ‘Catchment Sensitive Farming’) <p>Enablers:</p> <ul style="list-style-type: none"> ○ Funding opportunities – which? ○ Benefits to business of more efficient use of nitrates – which? <p>Issues / problems:</p> <ul style="list-style-type: none"> ○ *Financial cost of implementation ○ *Administrative time involved ○ *Conflicts and confusion with other legislation and campaigns e.g. Waste directives, English Catchment Sensitive farming initiative <ul style="list-style-type: none"> ▪ Which of these do you think have been the most influential in terms of enabling you / making it difficult for you to deliver on the requirements? Why do you say this? Which have been the least influential? Why? 		
<p>4. NVZ Advice and Support campaign</p> <ul style="list-style-type: none"> ▪ What channels of information and advice have you used to understand the rules applying to Nitrate Vulnerable Zones? SPONTANEOUS FIRST THEN PROBE ON: <ul style="list-style-type: none"> ▪ Defra / Environment Agency website ▪ On-line maps for your area to show which fields fall within a Nitrate Vulnerable Zone ▪ Defra / Environment Agency guidance leaflets ▪ Independent and confidential technical helpline run by Momenta <ul style="list-style-type: none"> ▪ Written query via online form ▪ Defra / Environment Agency event e.g. workshop, clinic ▪ PLANET computer software tool (designed to help with calculations you need to make under the NVZ regulations) ▪ ‘Tried and Tested’ tool (designed to help with calculations you need to make under the NVZ regulations) <p>FOR EACH CHANNEL USED:</p> <ul style="list-style-type: none"> ▪ What prompted you to use this channel of information / advice? What were you hoping to find out? Why? 	<p>This section uncovers farmers’ perceptions of the quality of the Environment Agency’s campaign communications and software tools and the impact of these on their attitudes and behaviours in relation to NVZs.</p>	<p>5 mins</p>

<ul style="list-style-type: none"> ▪ To what extent was this channel of information / advice useful? Why? Why not? Which aspects were particularly useful / not at all useful? Why? Probe on: Channel of communication, level of detail provided, clarity of information. ▪ What impact did this channel of information / advice have on your willingness to meet your obligations? Why? ▪ What impact did this channel of information / advice have on you ability to meet your obligations? Why? ▪ What improvements would you suggest Defra / Environment Agency should make to this channel of information / advice? Why? ▪ Thinking more generally, what improvements would you suggest Defra / Environment Agency should make to its information, advice and support campaign to help farmers understand the rules applying to Nitrate Vulnerable Zones? 		
<p>5. Sources of information relating to NVZs</p> <ul style="list-style-type: none"> ▪ Which organisations / who did you receive information and advice from in relation to the regulations applying to Nitrate Vulnerable Zones, beyond Defra and the Environment Agency? Probe on: <ul style="list-style-type: none"> ▪ Farm Advisor ▪ National Farmers' Union (NFU) ▪ What did you think of these – i.e. Defra / Environment Agency / others mentioned - as sources of information and advice in relation to Nitrate Vulnerable Zones? Why? Probe on perceptions of: <ul style="list-style-type: none"> ▪ Expertise ▪ Trustworthiness (what difference does it make, if any, that EA is the regulator in relation NVZs?) ▪ Ability to present information in a clear way ▪ Ideally, which organisation / who would you like to receive information and advice from in relation to the regulations applying to Nitrate Vulnerable Zones? Why? Probe on: <ul style="list-style-type: none"> ▪ Environment Agency ▪ Defra ▪ Farm Advisor ▪ National Farmers' Union (NFU) ▪ What could the Environment Agency do to support this? ▪ Ideally, how would you like to receive information or advice on the requirements under the NVZ regulations? Why? If time probe on in post, website, tv or radio, email, text message, farming shows / markets, farming publications. 	<p>This section uncovers the perceived role of the Environment Agency, Defra and intermediary organisations as channels for disseminating information relating to NVZs.</p>	<p>5 mins</p>

<ul style="list-style-type: none"> ▪ Ideally 		
<p>6. Summing up</p> <ul style="list-style-type: none"> ▪ Thinking about everything we've spoken about today, what are the two key things that have encouraged or enabled you to change your farming practices in relation to the new NVZ regulations? What are the two key things that have discouraged or prevented you from changing your farming practices? ▪ What can Defra / Environment Agency do to help you meet your obligations in relation to the NVZ regulations in the future? <p>THANK AND CLOSE</p>	<p>This section draws out the key messages and brings the discussion to an end.</p>	<p>2 mins</p>

Appendix 4

Technical survey and analysis details

Weighting data

Rim weighting is a weighting technique to adjust the demographic profile of a sample so that it resembles the demographic profile of the population. The nature of the rim weighting is determined by choosing the demographic variables to which the weighting will be applied. Age, gender, socioeconomic status and region are common variables that are used. It is also possible to use interlocking rims, for example 'age by gender'.

To perform rim weighting, it is necessary to have the population profiles on all the weighting variables, as well as having these variables contained in the raw data (i.e. respondent-level data). The population profile can be seen as the target proportions to which rim weighting tries to emulate in the sample. The rim weighting process uses an iterative algorithm (usually Iterative Proportional Fitting) which assigns an initial weight to each respondent and refines this weight over a number of iterations until the weighted counts (by age, gender etc.) match the population profile. At Ipsos MORI, rim weighting is usually conducted by the data processing department using the Quantum package.

Factor and cluster analysis

Factor analysis was conducted on a series of statement questions included in the telephone survey (Q36 – Q48). This means grouping the statements together into a number of common themes which then become the basis of the segmentation analysis. These groupings (factors) are detailed below. Please note that Q39 has been re-worded from the original statement included within the survey to create a negative, rather than positive, statement. This is because for the purposes of this analysis all the attitudinal statements within each factor need to be rated by respondents in the same direction. In the case of the 'Resistance to NVZ policy' factor, all the other statements are negative.

Factor name	Questions
Compliance burden	Q37 The financial cost of following the NVZ rules is unreasonably high
	Q48 We have not had enough time to get to grips with the NVZ rules before having to comply with them
	Q47 The NVZ rules are complicated and confusing
	Q38 The administrative burden of the NVZ rules is too great
Resistance to NVZ policy	Q42 The NVZ rules stop me from running my farm profitably
	Q45 It is wrong that our Single Payment is linked to performance under the NVZ rules
	Q39 It is important that we don't change the way we farm to reduce the amount of nitrates going into water courses
	Q41 Too much of the country is now included in NVZs
Peer pressure	Q40 Nitrate use on farms is only a minor cause of water pollution in this area
	Q43 If I was seen to be breaking the NVZ rules, my neighbours would be critical of me
Role of information	Q36 Most farmers around here support this area being designated as a Nitrate Vulnerable Zone
	Q44 I have a better understanding of the importance of reducing nitrate use than I used to have
	Q46 There is a lot of helpful advice available for farmers in NVZs

A detailed breakdown of the attitudinal statements which define each of the five final segments is provided below.

POSITIVE ACCEPTERS

Accept rationale for NVZs

More likely than average to disagree that:
 Too much of the country is now included in NVZs
 Nitrate use on farms is only a minor cause of water pollution in this area

Do not believe compliance is burden for farmers

More likely than average to disagree that:
 The financial cost of following the NVZ rules is unreasonably high
 The administrative burden of the NVZ rules is too great
 The NVZ rules stop me from running my farm profitably
 It is wrong that our Single Payment is linked to performance under the NVZ rules

We have not had enough time to get to grips with the NVZ rules before having to comply with them
 The NVZ rules are complicated and confusing

RELUCTANT ACCEPTERS

Accept rationale for NVZs

More likely than average to agree that:
 It is important that we change the way we farm to reduce the amount of nitrates going into watercourses

Believe other farmers are positive about NVZs

More likely than average to agree that:
 If I was seen to be breaking the NVZ rules, my neighbours would be critical of me
 Most farmers around here support this area being designated as a NVZ

Believe compliance is burden for farmers

More likely than average to agree that:
 The financial cost of following the NVZ rules is unreasonably high
 We have not had enough time to get to grips with the NVZ rules before having to comply with them

COMPLIANT SCEPTICS

Reject cross-compliance

More likely than average to agree that:
 It is wrong that our Single Payment is linked to performance under the NVZ rules

Do not believe compliance is burden for farmers

More likely than average to disagree that:
 The financial cost of following the NVZ rules is unreasonably high
 We have not had enough time to get to grips with the NVZ rules before having to comply with them
 The NVZ rules are complicated and confusing

Believe there is helpful information available

More likely than average agree that:
 There is a lot of helpful advice available for farmers in NVZs

May be affected by peer pressure

More likely than average to agree that:
 If I was seen to be breaking the NVZ rules, my neighbours would be critical of me

ILL-INFORMED OPPONENTS**Do not feel informed about NVZ regulations or rationale**

More likely than average to disagree that:

There is a lot of helpful advice available for farmers in NVZs
I have a better understanding of the importance of reducing nitrate use than I used to have

More likely than average to agree that:

Too much of the country is now included in NVZs

Believe compliance is burden for farmers

More likely than average to agree that:

The financial cost of following the NVZ rules is unreasonably high
The NVZ rules are complicated and confusing

Reject cross-compliance

More likely than average to agree that:

It is wrong that our Single Payment is linked to performance under the NVZ rules

HOSTILE DENIERS**Do not accept rationale for NVZs**

More likely than average to disagree that:

It is important that we change the way we farm to reduce the amount of nitrates going into watercourses

More likely than average to agree that:

Too much of the country is now included in NVZs
Nitrate use on farms is only a minor cause of water pollution in this area

Do not believe other farmers are positive about NVZs

More likely than average to disagree that:

If I was seen to be breaking the NVZ rules, my neighbours would be critical of me
Most farmers around here support this area being designated as a NVZ

Believe compliance is burden for farmers

More likely than average to agree that:

The financial cost of following the NVZ rules is unreasonably high
We have not had enough time to get to grips with the NVZ rules before having to comply with them
The administrative burden of the NVZ rules is too great
The NVZ rules stop me from running my farm profitably

Reject cross-compliance

More likely than average to agree that:

It is wrong that our Single Payment is linked to performance under the NVZ rules

Correspondence analysis – detailed methodology

The purpose of correspondence analysis is to reveal the structure of a complex data matrix by replacing the raw data with a more simple matrix without losing essential information. In other words, correspondence analysis can be seen as a data reduction technique akin to factor analysis. Correspondence analysis is useful in the context of this study as we are examining the relationship between categorical subgroups defined on age and farm size, and a set of attitudinal variables. The objective of running this analysis is to produce a visually interpretable representation of these relationships. In terms of process, the following was done:

- 1) Attitudinal variables were recoded as binary variables, with the top two boxes (agree and strongly agree) coded one and the rest coded zero.

- 2) The weighted sum of binary responses on each attitudinal variable for each categorical subgroup was calculated. This resulted in a cross-tabulation of (weighted) positive responses to each attitude for each age and farm size group.
- 3) Each cell in the cross-tabulation is divided by the sum of the cells in the containing row, creating the 'row profiles'.
- 4) Each cell in the cross-tabulation is divided by the sum of the cells in the containing column, creating the 'column profiles'.
- 5) Distances are calculated between each pair of attitudes and each pair of subgroups.
- 6) The distances are mapped onto two (arbitrary) dimensions, and the points are rotated so that the maximum amount of variation is accounted for.
- 7) Dimensions scores are calculated for each attitudinal variable and each subgroup.
- 8) These dimensions are plotted onto a 2-dimensional scatterplot (perceptual map).

The physical proximity of two points (whether they be two subgroups, two attitudes or an subgroup and an attitude) in the perceptual map shows closeness of association. We use this to spot underlying patterns of responses, judge the similarity or dissimilarity of two subgroups, and most importantly to discover which attitudes are most associated with which subgroups.