

Article

Supplementary Materials: River Water Quality: Who Cares, How Much and Why?

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Supplementary material: survey questionnaire and showcards

Survey questionnaire

Suitability questions

[SHOW ID] [POTENTIAL RESPONDENT MUST BE 18 YEARS OF AGE OR OVER]

IF NO

Q1. Hello, is there anyone over the age of eighteen available to speak to?

IF NO – It's no problem, I just wanted to ask them some questions about a survey I'm doing. Thanks, goodbye.

Q2. Hello, my name is xxxxxx. I'm conducting a survey as part of a project looking at local environmental issues. I'm keen to get the views of local people. Would you help by completing a questionnaire? It lasts about 30 minutes at most and is completely anonymous and confidential. I have a letter from my supervisor and several other forms of ID. [OFFER PROOFS]

IF NO – Thanks for your time, goodbye. [COLLATE REFUSALS DATA]

Q3. Are any of the following statements true? [READ STATEMENTS FROM SHOWCARD 1]

IF YES – I'm sorry, but due to its format, you'll be unable to take part in this survey, but thank you for your time.

Introduction

This survey is mainly about water quality in rivers. This does not have any effect on the quality of your tap water; it only affects river plants, animals and fish and the types and quality of recreation that visitors can enjoy. I want to get a balanced picture, and am just as interested in talking to people who don't visit rivers as those who do.

Q4. How long you have lived at this address or an address in the surrounding mile or so? [RECORD RESPONSE]

Q5. Please could you tell me your home postcode? [RECORD RESPONSE]

Questions about actual river use

To start with I'd like to ask you some questions about recreational trips you take which involve a visit to a river. By a 'recreational trip' I mean when you leave your home with the deliberate purpose of visiting such a place rather than, for example, just passing the river on your way somewhere else. So this would include trips where you go out for a walk or bike ride alongside the river, as well as trips to go fishing or canoeing in the river.

Q6. Looking at the categories in [SHOWCARD 2], which best describes how often, over the past 12 months, you have been on trips to rivers or riverside sites? [RECORD RESPONSE]

Q7. Please take a look at the following map of the area [SHOWCARD 3]. Can you point to where your home is? [MARK MAP ON ANSWER SHEET WITH 'x' SYMBOL]. [ALL RESPONDENTS MUST IDENTIFY THEIR HOME EVEN IF THEY DO NOT VISIT RIVERS]

IF RIVER TRIPS [IN Q6] = 0, GO TO 'POLLUTION INFORMATION', OTHERWISE CONTINUE

Q8. You said that you took [READ TOTAL RIVER TRIPS FROM ANSWER SHEET, Q6] trips to rivers each year. How many trips were to sites on this map? [SHOWCARD 3]. [RECORD RESPONSE]

IF RIVER TRIPS IN AREA [IN Q8] = 0, GO TO 'POLLUTION INFORMATION', OTHERWISE CONTINUE

Q9. Can you point to the place you have visited most often on a river in this area? [SHOW SHOWCARD 3, RECORD RESPONSE AS 'o' ON MAP]

Q10. From these categories [SHOWCARD 4] can you tell me the main purpose of your visit(s) to that location? [RECORD RESPONSE]

Q11a. What other things have you done on visits to any of the rivers in the area? [SHOWCARD 4] [RECORD RESPONSES]

Q11b. [ASK IF ANSWERS TO Q10 AND Q11A DO NOT INCLUDE SWIMMING, BOATING OR CANOEING, OTHERWISE CONTINUE TO 'POLLUTION INFORMATION'] Do you ever do any riverside activity in the area which involves contact with the river water? This would include things like swimming, paddling, boating or canoeing. [RECORD RESPONSE]

Pollution Information

I now want to show you some information about pollution problems in rivers. As this card shows [SHOW SHOWCARD 5], there are two main type of pollution that affect UK rivers. Ecological pollution [INDICATE] from washing detergents and farm fertilisers cause algae to grow in rivers. This reduces the oxygen available for fish and water plants, etc. However, this does not pose major risks for human health. Biological pollution, such as sewage, [INDICATE] comes mainly from households and farm animals and makes rivers unsuitable for recreation such as paddling, swimming or boating. However, most water plants and most fish can tolerate a fair amount of biological pollution. Biological pollution can be harmful to human health, as I will shortly explain.

[SHOW ECOLOGICAL QUALITY LADDER - SHOWCARD 6a]

This picture marked with a blue circle shows a river of the highest ecological quality [INDICATE PICTURE]. This symbol [POINT TO GAME FISH SYMBOL] shows that rivers like this are suitable for pollution sensitive game fish such as salmon and trout. This symbol [POINT TO COARSE FISH SYMBOL] shows it's suitable for coarse fish, such as carp and chub while this one [POINT TO BIRD SYMBOL] shows it's suitable for all bird species. As you can see, there is a wide variety of plants in and around the river which has very clear water.

This green circle [INDICATE] indicates the presence of some ecological pollution with far fewer game fish [POINT TO GAME FISH SYMBOL]. But there is no reduction in coarse fish or birds [POINT TO SYMBOLS]. The variety of plants in and around the river is slightly lower but the water is still fairly clear.

The yellow circle [INDICATE] shows still higher levels of ecological pollution, with virtually no game fish [POINT TO GAME FISH SYMBOL] and significantly less coarse fish [POINT TO COARSE FISH SYMBOL]. The variety of plants is lower and algae has substantially reduced the water clarity although there will still be a number of birds.

The red circle [INDICATE] shows the highest level of ecological pollution with virtually no fish, few birds or water plants and very cloudy water.

Is there anything you want to ask about ecological pollution in rivers or these pictures? [ANSWER ANY QUESTIONS]

[PUT ECOLOGICAL LADDER ASIDE]

[SHOW RECREATIONAL QUALITY LADDER - SHOWCARD 6b]

I am going to use these images to show the presence of biological pollution in rivers and the effect it has on recreation. Biological pollution can cause a variety of illnesses ranging from nausea and diarrhoea to, very occasionally, more serious illnesses. The more contact a person has with biologically polluted water, the more likely it is that they will get ill. Someone in the water swimming has a higher risk of illness than a person in a canoe who only gets splashed with the water. A person on the river bank, who has no contact with the water, has no increased risk of getting ill. As the amount of biological pollution increases, the risk of illness to recreational river users increases. This affects the types and quality of recreation that users can enjoy.

We'll use these images [INDICATE RECREATIONAL QUALITY LADDER – SHOWCARD 6b] to show different recreational qualities. As you can see the pictures are arranged from higher to lower quality. [INDICATE]

These blue images, [INDICATE 1st ROW], show a river of the highest recreational quality. The risk of illness is low. These symbols [INDICATE SYMBOLS] show that a river of this quality is suitable for swimming and boating.

The next type of river [INDICATE 2nd ROW] has a higher risk of illness. This type of river is suitable for boating but is no longer suitable for swimming. [POINT TO SYMBOLS]

These red images show a river of the lowest recreational quality [INDICATE 3rd ROW]. This river has the highest risk of illness and isn't suitable for swimming or boating. [POINT TO SYMBOLS]

Is there anything you want to ask about biological pollution in rivers or these pictures? [ANSWER ANY QUESTIONS]

[PLACE SHOWCARD 6a NEXT TO SHOWCARD 6b – ENSURE RESPONDENT CAN SEE BOTH]

I am going to use pictures from these cards to illustrate the different combinations of ecological pollution and biological pollution sewage in the survey river.

An important fact is that ecological pollution and sewage in rivers can happen independently from each other. For example, a river of high ecological quality [INDICATE BLUE ECOLOGICAL PICTURE] might look inviting but may have levels of biological pollution which makes it unsafe for either swimming or boating [INDICATE RED RECREATION ICONS]. On the other hand the water in an ecologically polluted river [INDICATE RED ECOLOGICAL PICTURE] may have no biological pollution and be perfectly safe for people to swim in. [INDICATE BLUE RECREATION ICONS] We'll be using these pictures throughout the interview so please take your time to get used to them. [PAUSE]

IF RIVER TRIPS IN AREA [IN Q8] = 0, GO TO 'INTRODUCING THE SURVEY_STRETCH', OTHERWISE CONTINUE

Now, please think again about the river site [INDICATE THE SITE GIVEN IN THE ANSWER TO Q9, On SHOWCARD 3] that you visited most often.

Q12, Looking at the ecological quality pictures [SHOWCARD 6a] which colour best describes the ecological quality of the river at your most visited site? [RECORD RESPONSE]

Q13, Looking at the recreational quality pictures [SHOWCARD 6b] which colour best describes the recreational quality of the river at your most visited site? [RECORD RESPONSE]

Introducing the survey stretch

I'd now like you to think about the river along this stretch, highlighted in purple [INDICATE PURPLE STRETCH ON SHOWCARD 7]. As you can see, this stretch of the river flows from here [INDICATE], through the city centre, to here [INDICATE] just to the south-east of Norwich.

IF RIVER TRIPS IN AREA [IN Q8] = 0, GO TO 'INTRODUCTION TO CHOICE EXPERIMENT', OTHERWISE CONTINUE

Q14. How many of your river trips in the area were to sites along the purple stretch? [SHOWCARD 7] [RECORD RESPONSE]

IF RIVER TRIPS ALONG PURPLE STRIP = 0, GO TO 'INTRODUCTION TO CHOICE EXPERIMENT', OTHERWISE CONTINUE

Q15. From these categories [SHOWCARD 4] what was the main purpose of that/those visit(s)? [RECORD RESPONSE]

Q16. What other things did you do on that/those visit(s)? [SHOWCARD 4] [RECORD RESPONSES]

Q17a. Looking at the ecological quality ladder [SHOWCARD 6a] which colour do you think best describes the actual ecological quality of the river along this stretch? [RECORD RESPONSE]

Q17b. Looking at the recreational quality ladder [SHOWCARD 6b] which colour do you think best describes the recreational quality of the river along this stretch? [RECORD RESPONSE]

Choice experiment section

Introduction

The next few questions are among the most important of this interview. In 2004 the UK government agreed new laws to improve the quality of certain rivers. One of these rivers is the river along this purple stretch. [INDICATE PURPLE STRETCH ON SHOWCARD 7] Other rivers in the area are not highlighted [INDICATE] as we will not be considering the quality of these rivers.

[IF ASKED, SAY THAT THE ACTUAL WATER QUALITY OF THE RIVERS IS UNKNOWN, ONLY THAT WATER QUALITY CHANGES ARE BEING CONSIDERED]

Choice experiment

The following questions ask you to choose between two future options for the water quality of this stretch of river. [INDICATE PURPLE STRETCH, SHOWCARD 9] The options are labelled A and B. [INDICATE OPTIONS ON SHOWCARD 8.1] Each option shows the ecological [INDICATE] and recreational [INDICATE] qualities of the river stretch, and the level of your annual water bill. [INDICATE] In all cases this bill will either be unchanged or increase. This is because improving river

water quality requires investments which would have to be paid for by higher water bills. All water users would have to pay, including industry and farmers, but also households, because they also contribute to water pollution. Any increase in bills would start in early 2014 and the improvements to water quality would be finished by 2015. For each question simply choose the situation you would prefer for the purple river stretch. In comparing A and B please consider the location of the river, [INDICATE PURPLE STRETCH, SHOWCARD 7] how close it is to your home, [INDICATE RESPONDENTS HOME (ANSWER TO Q7)] and whether you would benefit from them. Please remember that any increases in water bills would mean you have less money to spend on other things.

Q18a. Let's look at the first question [SHOWCARD 8.1]. Here you can see that under option A the ecological quality is [STATE COLOUR], the recreational quality is [STATE COLOUR] and the increase to your annual water bill is [STATE AMOUNT]. Under option B the ecological quality is [STATE COLOUR], the recreational quality is [STATE COLOUR] and the annual water bill increase is [STATE AMOUNT]. Take your time to consider these two options and then let me know which one you would prefer for the purple stretch [RECORD RESPONSE].

Q18b-l. The next few questions have the same format. Here is the next question, [SHOWCARD 8.2] where option A is like this [INDICATE] and option B is like this [INDICATE]. Again, which one would you prefer for the purple stretch? [RECORD RESPONSE]

[WORK THROUGH EACH QUESTION WITH THE RESPONDENT, RECORDING RESPONSES]

[AFTER SHOWCARD 8.9, STATE 'THERE ARE 3 MORE TO GO', AFTER SHOWCARD 8.10, STATE 'THERE ARE 2 MORE TO GO', AFTER SHOWCARD 8.11 STATE 'THIS IS THE FINAL QUESTION ON THIS']

Questions on respondents' future river use

I'm interested in your how your use of this river might change in the future.

Q19a. If you haven't already, would you visit or use this river stretch [INDICATE PURPLE STRETCH ON SHOWCARD 7] if improvements were made so that the water quality was guaranteed to be like this? [SHOWCARD 9] [RECORD RESPONSE]. [IF YES GO TO 19b, IF NO GO TO Q20]

Q19b. If yes, how many days do you think you would visit the river over the next year? [RECORD RESPONSE]

Q19c. From these categories [SHOWCARD 4] what might be the main purpose of that/those visit(s)? [RECORD RESPONSE]

Q19d. What other things might you do on that/those visit(s)? [SHOWCARD 4] [RECORD RESPONSES]

Q20. How likely do you feel it is that the river quality proposed in the last question [SHOWCARD 9] would be provided as described? [SHOWCARD 10] [RECORD RESPONSE]

Choice experiment control questions

Q21. Overall, how easy or difficult did you find it to answer the questions involving changes in water quality and water bills? [SHOWCARD 11] [RECORD RESPONSE]

I'd like to know, from these categories, [SHOWCARD 12] how important each of the following issues were in determining your answers to the choice questions.

Q22a. The distance from where you live to where the improvement would happen? [RECORD RESPONSE]

Q22b. The size of the water bill increases? [RECORD RESPONSE]

Q22c. The size of the ecological quality improvements? [RECORD RESPONSE]

Q22d. The size of the recreational quality improvements? [RECORD RESPONSE]

Q22e. Any other? [RECORD RESPONSES]

Q22f. How important was this other issue? [RECORD RESPONSES]

Please tell me, from these categories [SHOWCARD 13], who you think should pay for water quality improvements.

Q23a. The government or council? [RECORD RESPONSE]

Q23b. Water companies? [RECORD RESPONSE]

Q23c. Domestic water and sewerage customers? [RECORD RESPONSE]

Q23d. The agricultural sector? [RECORD RESPONSE]

Q23e. The polluter? [RECORD RESPONSE]

Q23f. The recreational user? [RECORD RESPONSE]

Q23g. Any other? [RECORD RESPONSE]

Thank you for your help with that.

Survey control questions

To finish off, I just have a few more questions about you and your household. These will only be used for statistical purposes to see if we have interviewed a fair range of people and please remember that all of these answers are completely confidential.

Q26a. What is your age? [RECORD RESPONSE]

Q26b. What is your ethnic background? [SHOWCARD 14] [RECORD RESPONSE]

Q26c. What is your religion? [SHOWCARD 15] [RECORD RESPONSE]

Q26d. From this list what is your highest educational qualification? [SHOWCARD 16] [RECORD RESPONSE]

Q27. How many people including yourself are in your household, by which I mean you your partner and any members of your family that you currently live with? [RECORD RESPONSE]

Q28. How many of them are younger than 18? [RECORD RESPONSE]

Q29. Looking at these categories [SHOWCARD 17] could you tell me which best approximates your total household income before tax? [SELECT ONE ONLY] [IF NECESSARY, REASSURE RESPONDENT THAT ALL INFORMATION IS COMPLETELY CONFIDENTIAL AND THIS IS THE BEST INDICATOR OF WHETHER I HAVE INTERVIEWED A REPRESENTATIVE RANGE OF PEOPLE]

Q30a. Looking at this list of organisations [SHOWCARD 18] please tell me which, if any, you are a member of. You can select more than one. [RECORD RESPONSES] [IF SPORTS CLUB OR OTHER, RECORD TYPE]

Q30b. Which organisations are any others in your household a member of? [RECORD RESPONSES] [IF SPORTS CLUB OR OTHER, RECORD TYPE]

Q31. Which of these statements [SHOWCARD 19] best describes your current employment status? [SELECT ONE ONLY] [RECORD RESPONSE]

Q32a. Do you go fishing? [RECORD RESPONSE] [If NO, GO TO Q34]

Q32b. Do you hold a fishing licence? [RECORD RESPONSE] [If NO, GO TO Q33a]

Q32c. How much does the licence cost per year? [RECORD RESPONSE]

Q33a. Do you belong to a fishing club? [RECORD RESPONSE][If NO, GO TO Q34]

Q33b. How much does membership cost per year? [RECORD RESPONSE]

Q34. Do you own any of the following craft? [SHOWCARD 20] [RECORD RESPONSE]

Q35a. Do you belong to a rowing, canoeing, or any other river based recreation club? [RECORD RESPONSE] [IF NO, GO TO 'LEAD OUT']

Q35b. What Type? [RECORD TYPE] [IF NO, GO TO 'LEAD OUT']

Q35c. What is the membership cost per year? [RECORD RESPONSE]

Lead out

That was the last of my questions. This survey will continue for several weeks. At the end of that time there is a possibility that my supervisor might have some follow up questions - this would be for quality control purposes only and not to ask any further questions about rivers. Could you please give me a telephone number where you can be contacted and your first name? This data will be kept strictly confidential. [RECORD RESPONSE]

That's the end of the interview. Thank you very much for your time and help, it is very much appreciated.

Survey showcards

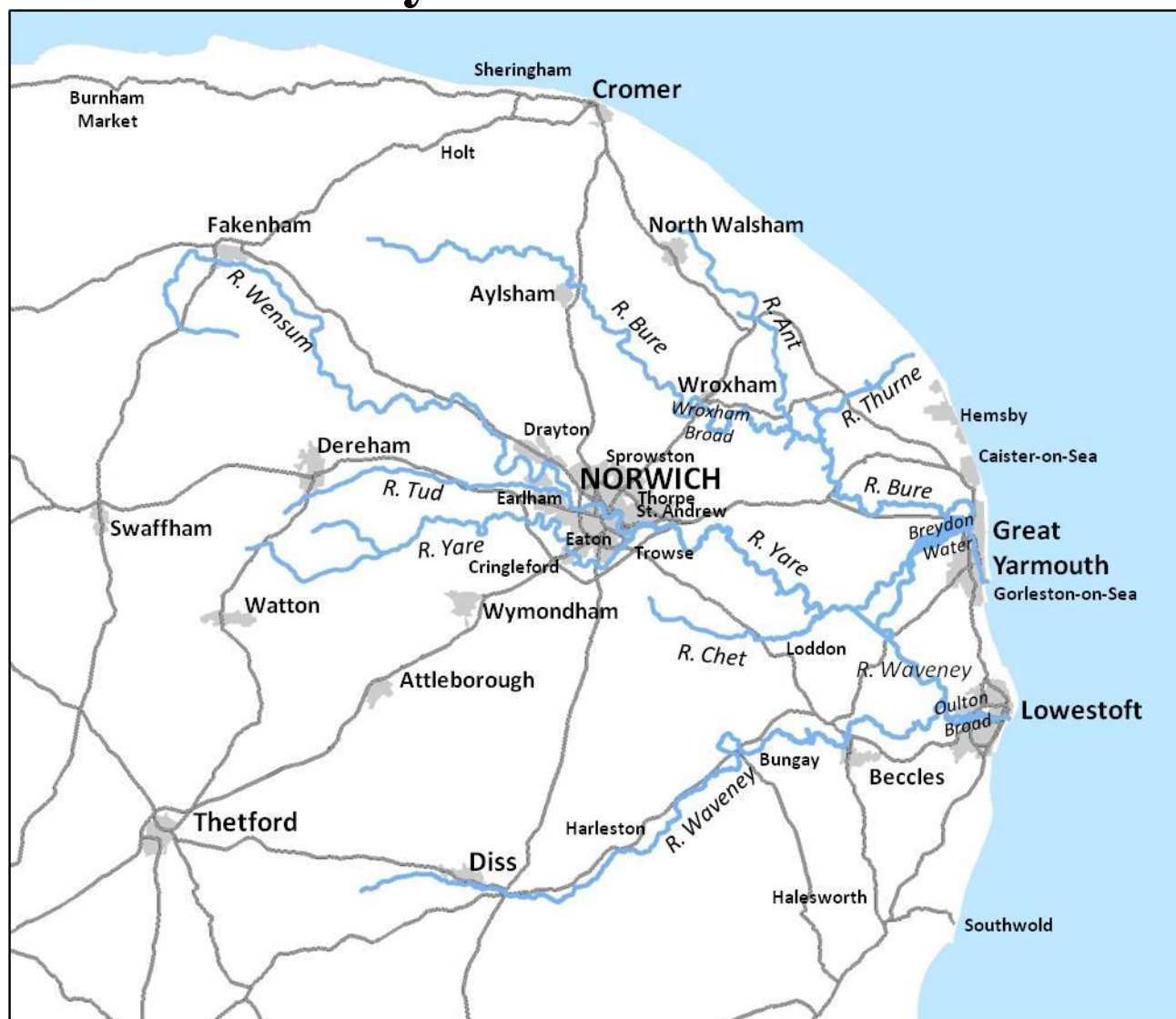
SHOWCARD 1 – Participation Statements

Statement	True	False
I am colour blind		
Myself or my partner are NOT responsible for the water bill		
I have lived at this address, or within the surrounding mile for less than a year		

SHOWCARD 2 – Number of trips

Code	Trip frequency	Trips per year
A	Did not go	No trips
B	Once in the last year	1 trip
C	Twice in the last year	2 trips
D	Once every three months	4 trips
E	Once every month	12 trips
F	Once a fortnight	26 trips
G	Once a week	52 trips
H	Twice a week	104 trips
I	More than twice a week	208 trips
J	Every day	365 trips

SHOWCARD 3 – Survey area



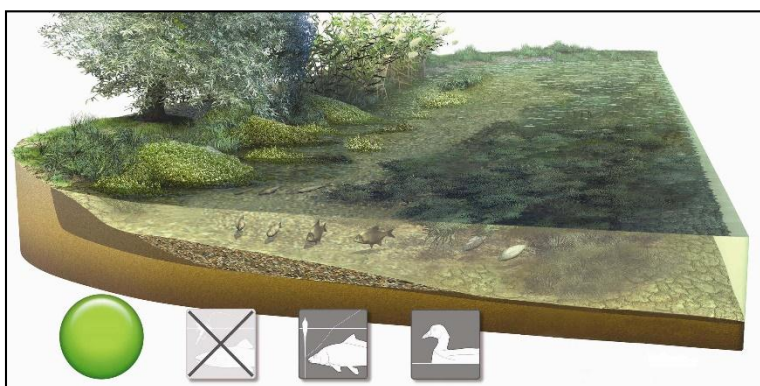
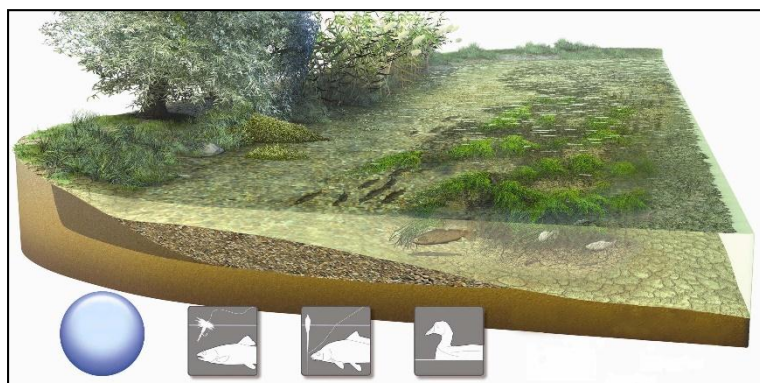
SHOWCARD 4 – Purpose of visit

Code	Activity
A	Walking / Rambling
B	Dog walking
C	Running
D	Picnic
E	Feeding birds
F	Wildlife watching
G	Cycling
H	Motorised Boating
I	Canoeing / Rowing (or other non-motorised water recreation)
J	Swimming / paddling
K	Fishing / Angling
L	Other (please state)

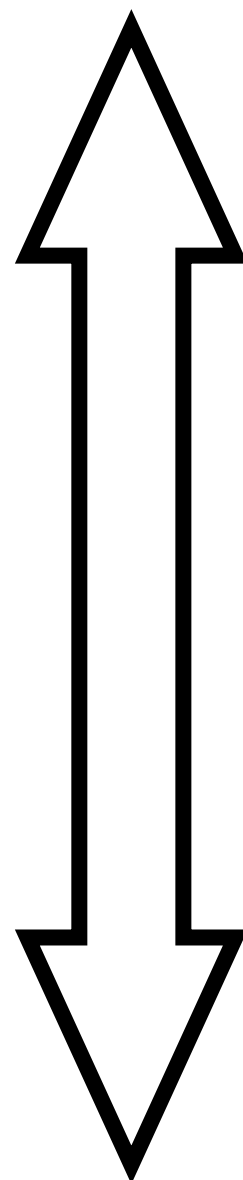
SHOWCARD 5 – UK river pollution problems

Pollution type	Main sources	Main effects
Ecological	<ul style="list-style-type: none">• Washing Machines, detergents, etc.• Farm fertilizers, etc.	<ul style="list-style-type: none">• Causes algae to grow• Reduces oxygen in rivers• Harms fish, river plants, etc.
Biological	<ul style="list-style-type: none">• Households, e.g. sewage• Farm animals	<ul style="list-style-type: none">• Makes rivers unsuitable for recreation

SHOWCARD 6a – Ecological quality ladder

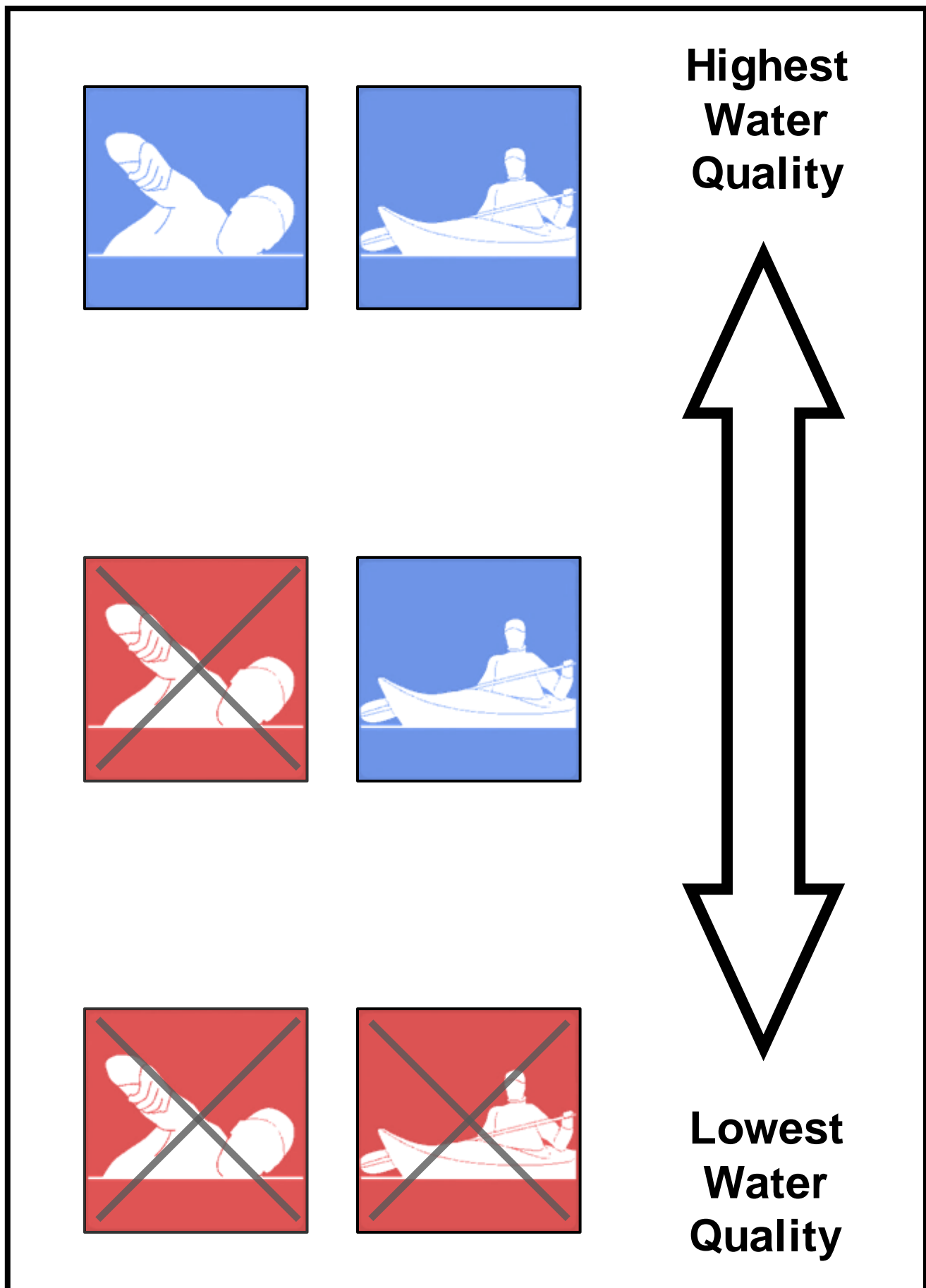


**Highest
Water
Quality**

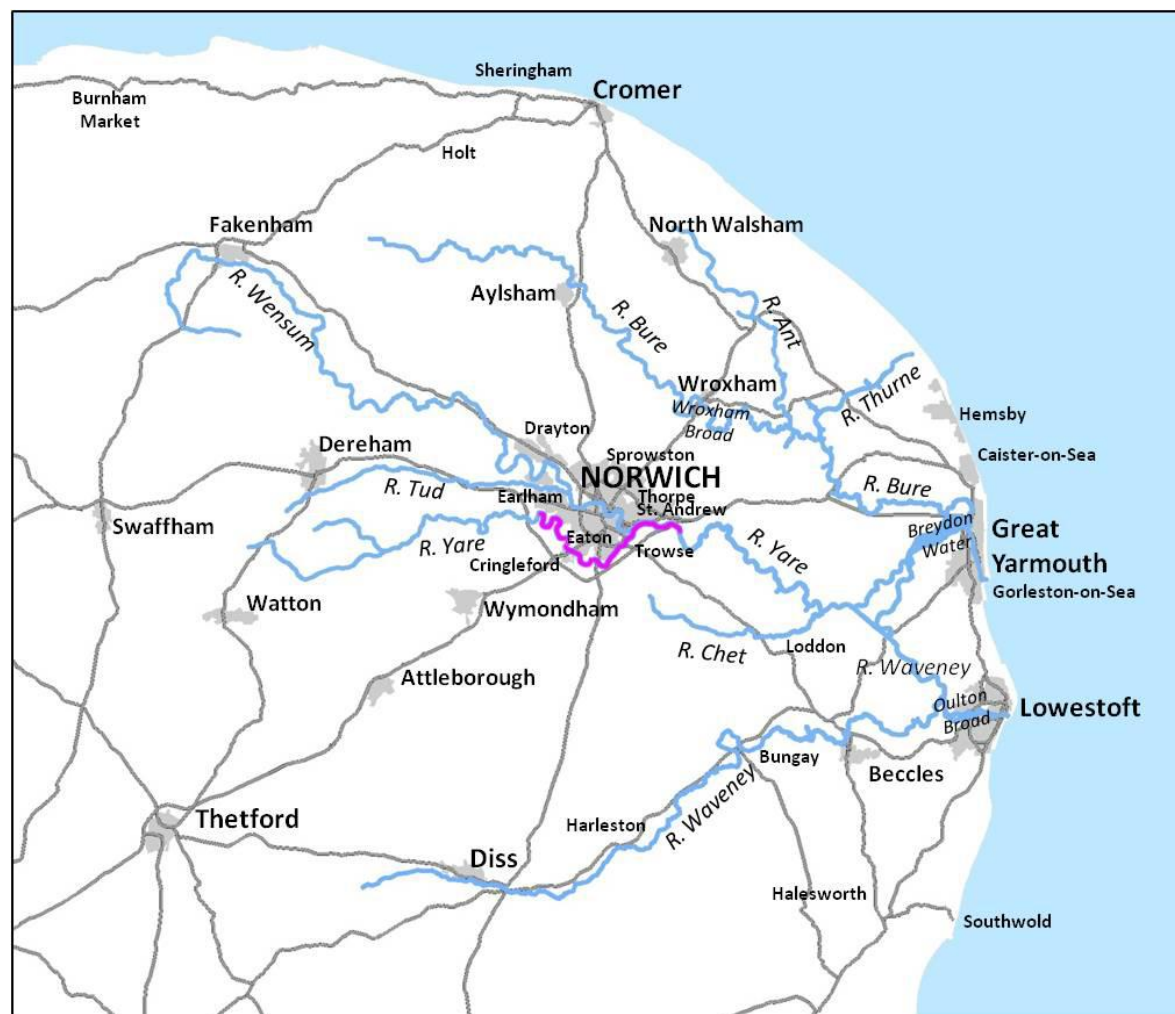


**Lowest
Water
Quality**

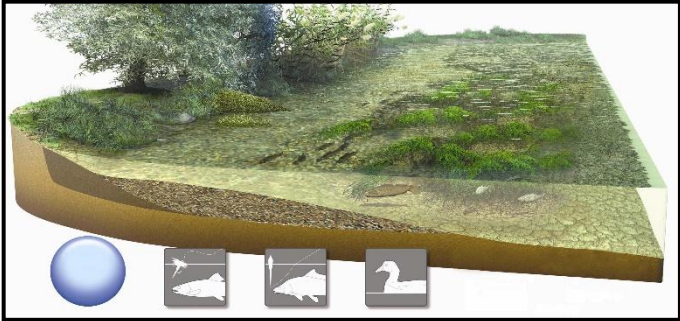
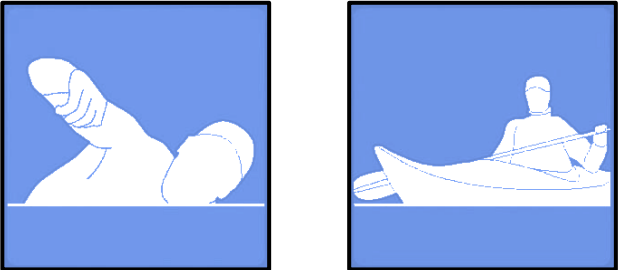
SHOWCARD 6b – Recreational quality ladder



SHOWCARD 7 – Survey river stretch



SHOWCARD 9 – Future visits

ECOLOGICAL QUALITY	RECREATIONAL QUALITY
	

SHOWCARD 10 – Future river improvements

Code	Likelihood of improvements being made
A	Very likely
B	Somewhat likely
C	Neither likely or unlikely
D	Somewhat unlikely
E	Very unlikely

SHOWCARD 11 –Question difficulty

Code	Difficulty level
A	Very easy
B	Fairly easy
C	Neither easy or difficult
D	Fairly difficult
E	Very difficult

SHOWCARD 12 –Importance of issues

I thought this issue was...

Very Important	Important	Neither	Unimportant	Completely Unimportant
A	B	C	D	E

SHOWCARD 13 – Who should pay for water quality improvements

Improvements to water quality should be paid for by...

Strongly Agree	Tend to Agree	Neither	Tend to disagree	Strongly Disagree
A	B	C	D	E

SHOWCARD 14 – Ethnic background

Code	Ethnicity
A	White
B	Mixed/Multiple ethnic groups
C	Asian/Asian British
D	Black/African/Caribbean/Black British
E	Other

SHOWCARD 15 – Religion

Code	Religion
A	no religion
B	Christian
C	Buddhist
D	Hindu
E	Jewish
F	Muslim
G	Sikh
I	Other

SHOWCARD 16 – Highest educational qualification

Code	Qualification type
A	No qualifications
B	NVQ Level 1, Foundation GNVQ
C	1 - 4 O levels/CSEs/GCSEs (any grades), Foundation Diploma
D	NVQ Level 2, Intermediate GNVQ, City and Guilds Craft, BTEC First/ General Diploma, RSA Diploma
E	5+ O levels/CSEs (grade 1)/GCSEs (grades A*- C), Higher Diploma
F	NVQ Level 3, Advanced GNVQ, City and Guilds Advanced Craft, ONC, OND, BTEC National, RSA Advanced Diploma
G	2+ A levels/VCEs, 4+ AS levels, Higher School Certificate, Advanced Diploma
H	NVQ Level 4 - 5, HNC, HND, RSA Higher Diploma, BTEC Higher Level
I	Degree (for example BA, BSc)
J	Higher degree (for example MA, PhD, PGCE)
K	Professional qualification(e.g. teaching, nursing, accountancy)
L	Other (please state)

SHOWCARD 17 – Total household income before tax

Code	Annual income £	Monthly income £
A	less than 6,000	less than 500
B	6,001 – 12,000	501 – 1,000
C	12,001 – 18,000	1,001 – 1,500
D	18,001 – 24,000	1,501 – 2,000
E	24,001 – 30,000	2,001 – 2,500
F	30,000 – 36,000	2,501 – 3,000
G	36,001 – 42,000	3,001 – 3,500
H	42,001 – 48,000	3,501 – 4,000
I	48,001 – 54,000	4,001 – 4,500
J	54,001 – 60,000	4,501 – 5,000
K	60,001 – 66,000	5,001 – 5,500
L	66,001 – 72,000	5,501 – 6,000
M	Over 72,001	over 6,001

SHOWCARD 18 –Organisation memberships

Code	Membership type
A	Religious, or faith group
B	School fundraising group / PTA / School Governors
C	Scouts, Guides, cadets, etc.
D	Lions club / Rotary club / other community volunteering group
E	Walking club / Ramblers Association
F	Fishing / Angling club
G	Rowing / Canoeing club
H	National Trust / RSPB / English Nature
I	Greenpeace, Friends of the Earth, WWF, other environmental group
J	Climbing club
K	Women's Institute
L	Not a member of any similar organisations
M	Other (please state)

SHOWCARD 19 – Employment Status

Code	Employment type
A	Self Employed
B	Employed full-time (more than 30 hours per week)
C	Employed part-time (less than 30 hours per week)
D	Student
E	Unemployed – seeking employment
F	Unemployed – other
G	Looking after the home /children
H	Retired
I	Unable to work due to sickness or disability
J	Other

SHOWCARD 20 – Recreational craft owned

Code	Craft type
A	Canoe / Rowing boat
B	Narrowboat / Widebeam / Cruiser
C	Yacht
D	Other (please state)