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Radiological Habits Survey: Heysham, 2016

2017

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Radiological Habits Survey: Heysham, 2016

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Radiological Habits Survey: Heysham, 2016

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KEY POINTS

Aquatic survey area

- High consumption rates were identified for locally caught fish, crustaceans and molluscs. Wildfowl, salt marsh grazed sheep meat and small amounts of marine plants/algae were also consumed.
- A wide range of activities were identified taking place on the intertidal areas of Morecambe Bay and the associated estuaries. The highest intertidal occupancy rate was for people spending time on board boats resting on mud.
- The cockle fishery in Morecambe Bay, which had been closed at the time of the last survey in 2011, was open again in 2016, but in a limited capacity compared with historic levels. Many other types of fishery operated in the survey area, but all were on a small scale.

Terrestrial survey area

- High consumption rates were identified for locally produced food in the following food groups: green vegetables, other vegetables, root vegetables, domestic fruit, milk, cattle meat, sheep meat, eggs and honey. Potatoes, poultry, wild/free foods, rabbits/hares and wild fungi were also consumed.
- Since the last survey in 2011 there were notable decreases in the consumption rates of cattle meat and rabbits/hares, and notable increases in the consumption rates of sheep meat and eggs. The consumption of pig meat had ceased since the last survey because pigs were no longer being kept within the survey area.
- Livestock were supplied with groundwater for drinking at some farms but the human consumption of groundwater had ceased since the last survey in 2011 because the household that had previously drank borehole water was now supplied with mains water for drinking.

Direct radiation survey area

- Occupancy habits within 1 km of the site included those related to residential, work and recreational activities.
- The highest occupancy rates, which were over 8000 h y^{-1}, were for people who were living, or both living and working, close to the site.
- Occupancy rates were broadly similar to those in the last survey in 2011.

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SUMMARY

This report presents the results of a survey conducted in 2016 to determine the habits and consumption patterns of people living, working and pursuing recreational activities in the vicinity of the Heysham nuclear power stations. There are two separate nuclear power stations next to each other at Heysham but for the purposes of this survey they are considered together as a single site. Both stations discharge gaseous radioactive waste via stacks to the atmosphere, liquid radioactive waste into Morecambe Bay and contain sources of direct radiation. Areas likely to be most affected by the discharges and sources of radiation were defined as the aquatic survey area for liquid discharges, the terrestrial survey area for the deposition from gaseous discharges, and the direct radiation survey area for ionising radiation emanating directly from the site. The occupancy data collected from the direct radiation survey area is also applicable to inhalation and external exposure arising from gaseous releases from the site.

The following potential exposure pathways were investigated:

- The consumption of food from the aquatic survey area
- Activities and occupancy over intertidal substrates
- The handling of fishing gear and sediment
- Activities and occupancy in and on water
- The use of seaweed as a fertiliser or animal feed
- The consumption of food from the terrestrial survey area
- The use and destination of produce originating from the survey areas
- The consumption and use of groundwater and surface water in the terrestrial survey area
- The transfer of contamination off-site by wildlife
- Activities and occupancy within the direct radiation survey area
- Any new or unusual exposure pathways

Information was collected from members of the public by means of interviews and the data obtained for 631 individuals are presented and discussed. High rates of consumption, intertidal occupancy and handling are identified using established methods comprising (a) a 'cut off' to define the high-rate group and (b) 97.5th percentiles. The rates so identified can be used in dose assessments. Additionally, profiles of integrated habits data are presented specifically for use in total dose assessments.

The aquatic survey area

The aquatic survey area (see Figure 1, page 22) was defined as the waters and intertidal areas of Morecambe Bay to the north-east of a line extending from South East Point on Walney Island, to Rossall Point in Fleetwood. Walney Channel, which lies between Walney Island and the mainland, and the estuaries of the rivers Leven, Kent, Lune and Wyre were included in the survey area.

Foods from the aquatic survey area were consumed from the following food groups: fish; crustaceans; molluscs; wildfowl; marine plants/algae; salt marsh grazed sheep meat. The mean consumption rates for the adult high-rate groups for the separate aquatic consumption pathways for foods potentially affected by liquid discharges were:

- 24 kg y^{-1} for fish
- 10 kg y^{-1} for crustaceans
- 4.5 kg y^{-1} for molluscs
- 13 kg y^{-1} for wildfowl
- 0.7 kg y^{-1} for marine plants/algae
- 7.7 kg y^{-1} for salt marsh grazed sheep meat

The mean consumption rates for the adult high-rate groups for fish, crustaceans and molluscs were above the national adult mean consumption rates that are used for comparison in habits surveys.

The predominant foods consumed by the people in the adult high-rate groups were:

- For fish: plaice, bass and cod
- For crustaceans: brown shrimp
- For molluscs: mussels
- For wildfowl: mallard and pink-footed goose
- For marine plants/algae: samphire
- For salt marsh grazed sheep meat: salt marsh grazed lamb

The activities undertaken by adults in the high-rate groups for intertidal occupancy included shore angling, walking, dog walking, wildfowling, collecting cockles, collecting mussels, tractor fishing, setting nets, oyster farming, turf cutting, boat maintenance, leading guided walks, going to oyster beds, spending time on a boat (resting on mud), carrying out rescue duties, beach combing, sitting on the beach, going to shellfish grounds, collecting winkles and tending livestock. Gamma dose rate measurements were taken at most locations in the aquatic survey area where activities were occurring.

The only activity undertaken by adults in the high-rate group for handling fishing gear was handling nets, while the activities undertaken by adults in the high-rate group for handling sediment included collecting cockles, collecting mussels, collecting winkles, turf cutting, oyster farming and wildfowling.

The activities undertaken by people in and on the water included kite surfing, water skiing, jet skiing, windsurfing, swimming, kayaking, paddle boarding, wakeboarding, power boating, living on a boat, fishing (including trawling, gill netting, drift netting, haaf netting, stow netting and potting), boat angling, rescue duties, motor launch duties, sailing, boat maintenance, spending time on a boat, push netting and paddling.

Seaweed was used as a fertiliser on allotment plots where fruit and vegetables were grown. The use of seaweed as an animal feed was not identified.

The terrestrial survey area

The terrestrial survey area (see Figure 2, page 23) covered the land within 5 km of the centre of the Heysham site. Twelve farming businesses were identified that farmed the land in the terrestrial survey area. They produced milk (from dairy cattle), beef cattle and lambs. Hay, silage and maize were grown for use as animal feed on the farms on which they were produced but no arable crops were grown for human consumption. Farmers and their families were consuming cow's milk, beef and lamb produced on their own farms.

Two allotment sites, with approximately 130 plots in total, and many private gardens were identified, where a variety of fruit and vegetables were grown. Several individuals kept small numbers of chickens, and one person kept ducks, to produce chicken or duck eggs for their own families' consumption or for sale locally. Two beekeepers were interviewed who kept hives in the survey area and the consumption of honey was recorded. Shooting took place on farmland in the area and the shot game, including pheasant and rabbits, were consumed. Wild/free foods and wild fungi were collected and consumed.

Foods from the terrestrial survey area were consumed from the following food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; milk; cattle meat; sheep meat; poultry; eggs; wild/free foods; rabbits/hares; honey; wild fungi. No consumption of locally produced pig meat was identified. The mean consumption rates for the adult high-rate groups were above the national adult mean consumption rates that are used for comparison in habits surveys for the following nine food groups: green vegetables, other vegetables, root vegetables, domestic fruit, milk, cattle meat, sheep meat, eggs and honey.

The consumption of groundwater by livestock was identified but no human consumption of groundwater was identified.

Measures which limited the possibility that contamination was transferred off-site by wildlife included fences and paved areas to deter wildlife from entering the site. A falconer with birds of prey was used to deter seagulls, pigeons and other birds. Seagulls were discouraged from nesting on the site and although this was primarily for reasons of public safety, since the birds became aggressive when nesting, it coincidentally also limited the possibility that contamination was transferred offsite by the gulls.

The direct radiation survey area

The direct radiation survey area (see Figure 2, page 23) covered the land and sea within 1 km of the nuclear licensed site boundary. The occupancy data collected from the direct radiation survey area is also applicable to inhalation and external exposure pathways arising from gaseous releases from the site.

The occupancy rates were analysed in zones according to the distance from the Heysham nuclear licensed site boundary. The zones were 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.0 km. Except for the outdoor occupancy rate in the >0.5 – 1.0 km zone, the highest indoor, outdoor and total occupancy rates in all three zones were for residents or residents who also worked in the area. The highest outdoor occupancy rate in the >0.5 – 1.0 km zone was for people working in the area.

Gamma dose rate measurements were taken indoors and outdoors at most properties where interviews were conducted in the direct radiation survey area. Background readings were taken over grass at distances beyond 5 km from the Heysham site centre. The measurements taken outdoors at the properties were not notably different from the background measurements but several of the indoor measurements were notably higher than the background readings. Since gamma dose rate measurements are influenced by the nature of building materials, the substrate over which they are taken, and many other factors, the measurements taken inside properties are expected to be higher than those taken outdoors.

Comparisons with the previous survey

Comparisons were made with the results from a previous habits survey undertaken around the Heysham site in 2011. The consumption rates for the aquatic food groups in 2016 were generally similar to those in 2011, although there were slight or moderate decreases in the consumption rates for fish, crustaceans, molluscs, marine plants/algae and salt marsh grazed sheep meat, and a slight increase in the consumption rate for wildfowl (see Figure i). The most significant change in the intertidal occupancy rates and handling rates of fishing gear and sediment was a large increase in the occupancy rate on board a boat resting on mud (see Figure ii). This increase was due to the identification of people spending significant periods of time on board boats at Skippool Creek in 2016, that had not been identified in 2011. For activities taking place in the water, the maximum adult occupancy rate decreased from 560 h y^{-1} in 2011, to 210 h y^{-1} in 2016, and for activities taking place on the water the maximum adult occupancy rate decreased from 5300 h y^{-1} in 2011, to 5100 h y^{-1} in 2016. The most notable change in the consumption rates of terrestrial foods was the cessation of pig meat consumption (see Figure iii). Pig meat consumption ceased because the only farm in the survey area where pigs were reared in 2011 had been sold by 2016, and the new owners did not keep pigs. The occupancy rates in the direct radiation survey area in 2016 were very similar to those in 2011 (see Figure iv).

Figure i. Mean consumption rates for the high-rate groups for aquatic foods

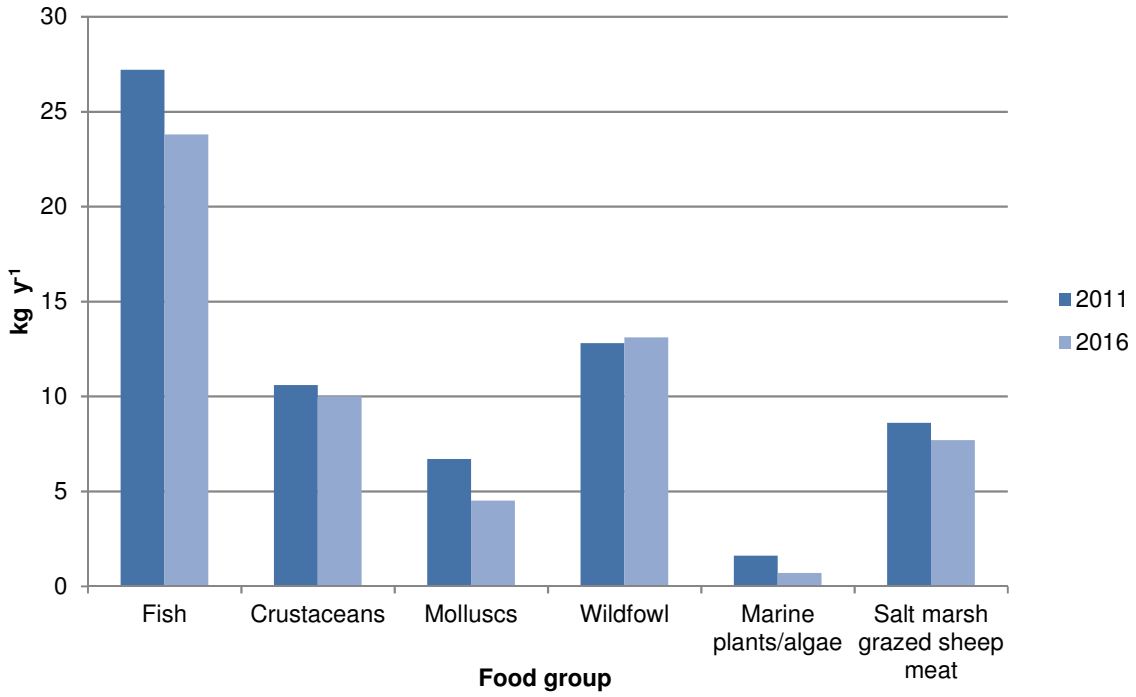
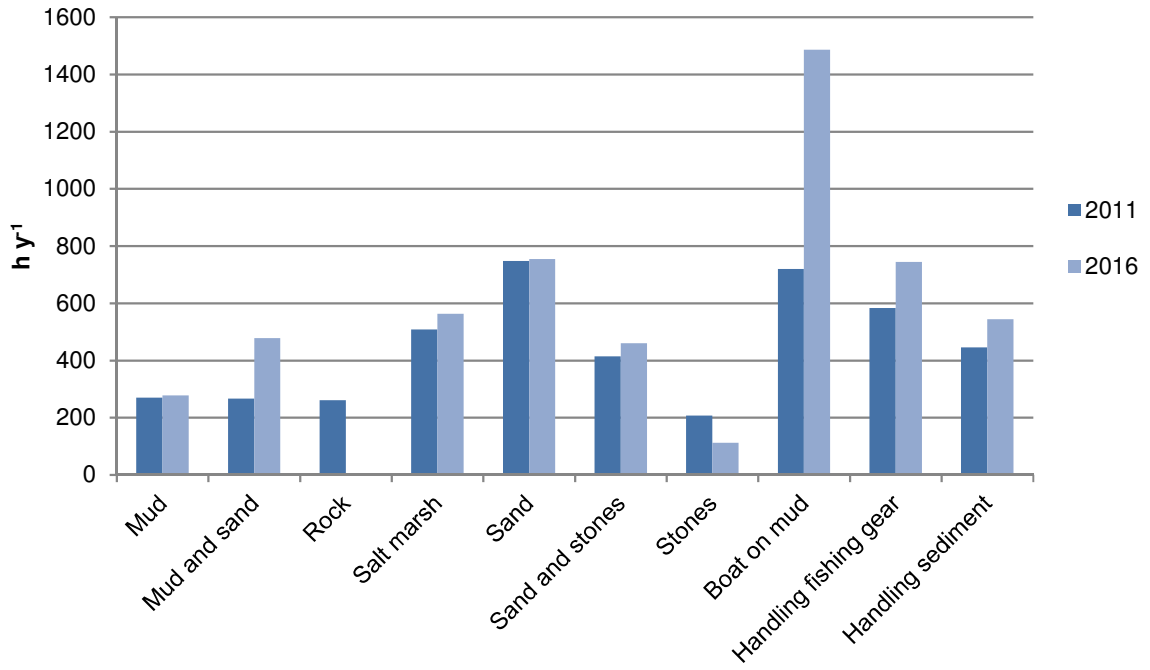


Figure ii. Mean rates for the high-rate groups for intertidal occupancy and handling of fishing gear and sediment



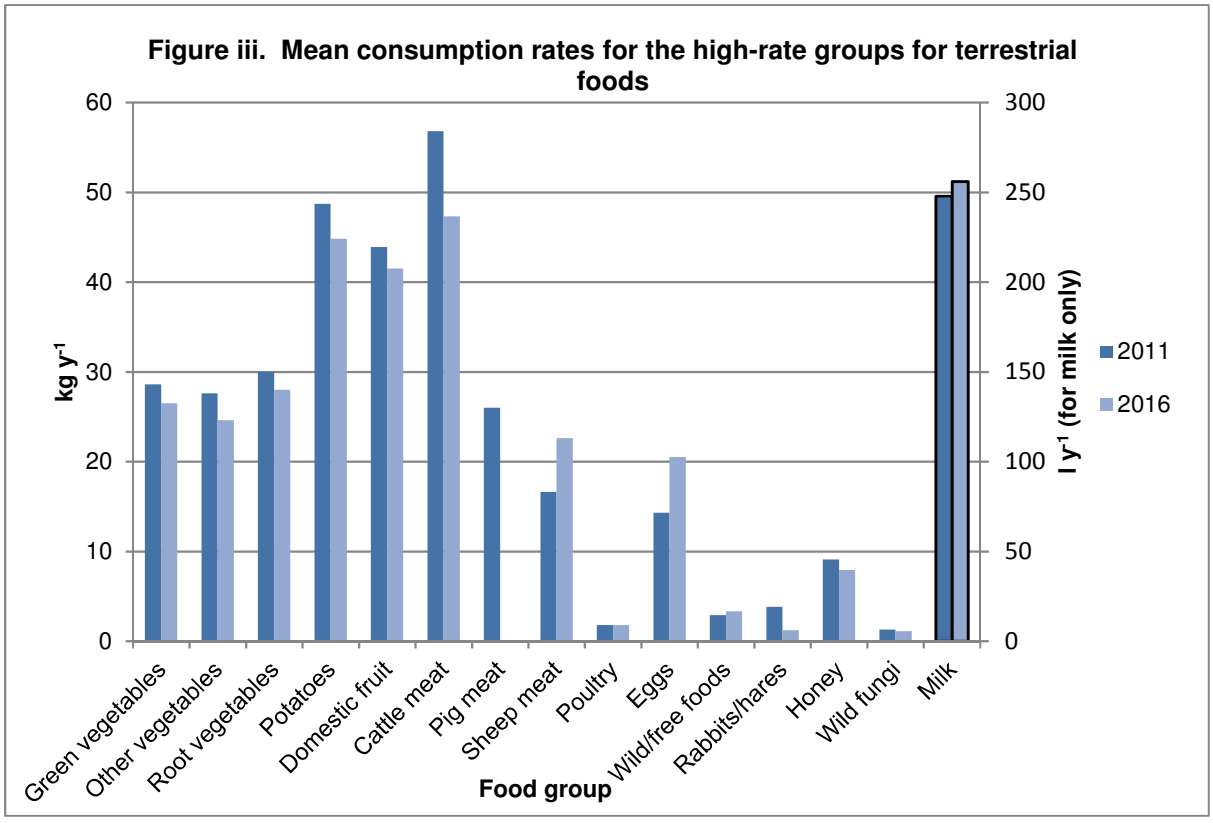


Figure iii. Mean consumption rates for the high-rate groups for terrestrial foods
kg y-1
l y-1 (for milk only)
2011
2016
Green vegetables
Other vegetables
Root vegetables
Potatoes
Domestic fruit
Cattle meat
Pig meat
Sheep meat
Poultry
Eggs
Wild/free foods
Rabbits/hares
Honey
Wild fungi
Milk
Food group

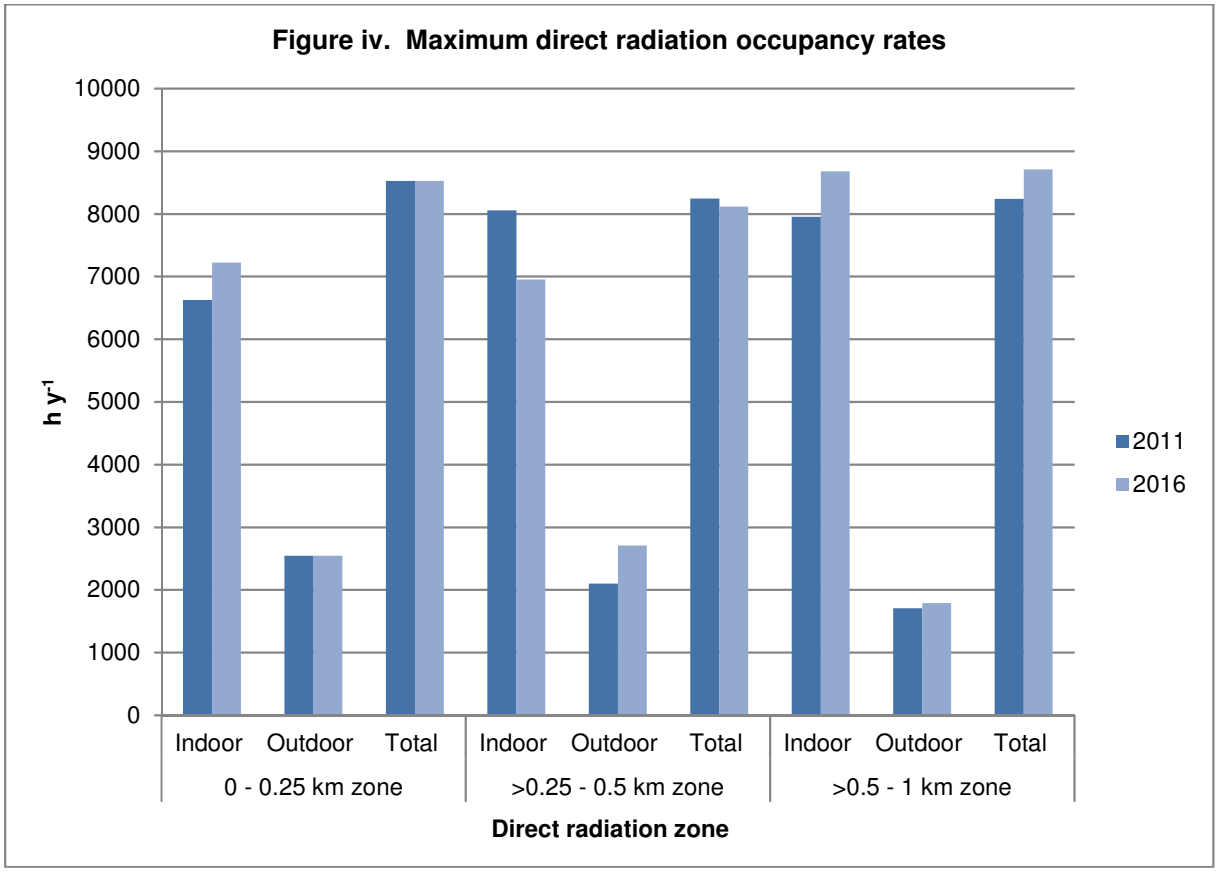


Figure iv. Maximum direct radiation occupancy rates
h y-1
2011
2016
Indoor
Outdoor
Total
0 - 0.25 km zone
>0.25 - 0.5 km zone
>0.5 - 1 km zone
Direct radiation zone

Habits survey information for consideration when selecting samples and measurements for monitoring programmes

The foods and intertidal locations identified in the 2016 Heysham habits survey could be used to assist in the selection of samples and measurements for monitoring programmes. The foods that were either consumed in the largest quantities in their food groups, or were the only food in their food group, are presented in Section 10.2 for consideration when selecting samples for the Food Standards Agency monitoring programme. The current environmental monitoring programme carried out for the Environment Agency adequately covers the Heysham area and no changes to this are suggested.

1 INTRODUCTION

Members of the public might be exposed to radiation as a result of the operations of the Heysham nuclear power stations, either through the permitted discharges of liquid or gaseous radioactive wastes into the local environment, or from radiation emanating directly from the stations. This report provides information on activities carried out by members of the public in the vicinity of the Heysham stations, which may influence their radiation exposure. The study has been funded by the Environment Agency, the Food Standards Agency and the Office for Nuclear Radiation in order to support their respective roles in protecting the public from exposure to radiation.

UK policy on the control of radiation exposure has long been based on the recommendations of the International Commission on Radiological Protection (ICRP), which embody the principles of justification of practices, optimisation of protection and dose limitation. Radiological protection of the public is based on the concept of a 'representative person'. This notional individual is defined as being representative of the more highly exposed members of the population. It follows that, if the dose to the representative person is acceptable when compared to dose limits and optimisation, other members of the public will receive acceptable doses, and overall protection to the public is provided from the effects of radiation. The term 'representative person' is equivalent to, and replaces, the term 'average member of the critical group' as recommended by ICRP (ICRP, 2006). The recommendations of the ICRP were updated in 2007 (ICRP, 2007) and, for the public, still include the principle of protecting the individuals most highly exposed to radiation, characterised by the representative person.

1.1 Regulatory framework

In England, the Environment Agency regulates the discharges of radioactive waste under the Environmental Permitting (England and Wales) Regulations 2016 (UK Parliament, 2016). The regulations take account of the European Union (EU) Basic Safety Standards (BSS) Directive 96/29/Euratom (Commission of the European Communities, 1996) which embody the recommendations of the ICRP, particularly ICRP 60 (ICRP, 1991). A new Basic Safety Standards (BSS) Directive was adopted by the European Council on 5th December 2013 (EC, 2014) and the UK Government is currently required to implement the Directive into UK law by 6th February 2018. Installation and operation of certain prescribed activities can only occur on sites if they are licensed under the Nuclear Installations Act 1965 (as amended) (NIA 65) (UK Parliament, 1965). Since 1st April 2011, the Office for Nuclear Regulation (ONR), has implemented this legislation and is also responsible for regulating, under the Ionising Radiations Regulations 1999 (IRR 99) (UK Parliament, 1999), the exposure of the public to direct radiation from the operations occurring on these sites. Prior to 1st April 2011 these functions were carried out by the Nuclear Installations Inspectorate of the Health and Safety Executive.

Appropriate discharge limits are set by the Environment Agency, after wide-ranging consultations that include the Food Standards Agency. The Food Standards Agency has responsibilities for ensuring that any radioactivity present in food does not compromise food safety and that permitted discharges of radioactivity do not result in unacceptable doses to consumers via the food chain. The Food Standards Agency also ensures that public radiation exposure via the food chain is within EU acceptable limits.

1.2 Radiological protection framework

Dose standards for the public are embodied in the national policy (UK Parliament, 2009a), in guidance from the International Atomic Energy Agency (IAEA), in the Basic Safety Standards for Radiation Protection (IAEA, 1996) and in European Community legislation in the EU BSS Directive 96/29/Euratom (Commission of the European Communities, 1996). The public dose standards were incorporated into UK law in IRR 99. The requirement to observe the conditions laid down in the Basic Safety Standards (BSS) in England and Wales is incorporated in the Environmental Permitting (England and Wales) Regulations 2016 (UK Parliament, 2016). These require that the environment agencies ensure, wherever applicable, that:

- All public radiation exposures from radioactive waste disposals are kept As Low As Reasonably Achievable (ALARA), with social and economic factors being taken into account
- The sum of all exposures does not exceed the dose limit of 1 mSv a year
- The dose received from any new source does not exceed 0.3 mSv a year
- The dose received from any single site does not exceed 0.5 mSv a year

The dose limit of 1 mSv per year to the public from all anthropogenic sources other than medical applications is also the recommendation made by the ICRP (ICRP, 2007).

The environment agencies are also required to ensure that the dose estimates are as realistic as possible for the population as a whole and for reference groups of the population. They are required to take all necessary steps to identify the reference groups of the population taking into account the effective pathways of transmission of radioactive substances. Guidance on the principles underlying prospective radiological assessments (i.e. assessments of potential future doses) has been provided by the National Dose Assessment Working Group (NDAWG), which consists of representatives of UK Government Bodies and other organisations with responsibilities for dose assessments (EA, SEPA, DoENI, NRPB and FSA, 2002). NDAWG has also published principles underlying retrospective radiological assessment (i.e. assessment of doses already received from past discharges) (Allott, 2005) and possible methods of carrying out these assessments using the data from combined habits surveys (Camplin *et al.*, 2005). NDAWG agreed that the optimal method for performing retrospective dose assessments would be to use habits profiles (profiling method) as described in Camplin *et al.* (2005). This approach is adopted in Radioactivity in Food and the Environment (RIFE) publications, (e.g. EA, FSA, FSS, NRW, NIEA and SEPA, 2016). NDAWG has also published reports on the collection and use of habits survey data in retrospective and prospective dose assessments (NDAWG, 2005; NDAWG

2009); the principles described in these reports are consistent with those used here. More recently, the UK environment agencies, the Health Protection Agency (now part of Public Health England) and the Food Standards Agency have jointly produced an update of the 2002 interim guidance and principles for assessing doses (EA, SEPA, NIEA, HPA and FSA, 2012).

2 THE SURVEY

2.1 Site activity

The Heysham nuclear site is located on the coast of Lancashire in north-west England, approximately 5 km to the south-west of Morecambe and 8 km west of Lancaster. There are two nuclear power stations situated next to each other at Heysham and each one is powered by two Advanced Gas-Cooled Reactors. Heysham 1 started generating electricity in 1983 and Heysham 2 started generating electricity in 1988. It is currently expected that Heysham 1 will continue to generate electricity until 2024 and that Heysham 2 will continue to generate electricity until 2030.

At the time of the habits survey fieldwork one of the reactors at Heysham 2 was operating at low power during refuelling. The other reactor at Heysham 2 and both reactors at Heysham 1 were operating at their normal operating capacity, however the current normal operating capacity of one of the reactors at Heysham 1 is slightly below its design capacity.

The stations are owned and operated by EDF Energy Nuclear Generation Ltd. Under the Radioactive Substances Regulation of the Environmental Permitting Regulations 2010, EDF is permitted to undertake radioactive substances activities at the Heysham 1 and Heysham 2 sites. This includes permission to discharge gaseous radioactive wastes via stacks to the atmosphere and liquid radioactive wastes via outfalls into Morecambe Bay. The sites are licensed for the purposes of operating certain activities prescribed under the Nuclear Installations Act, 1965. Both sites contain sources of direct radiation. Details of the amounts of gaseous and liquid radioactive waste discharged are published in the RIFE reports, for example, EA, FSA, FSS, NRW, NIEA and SEPA, 2016. For the purposes of this survey Heysham 1 and Heysham 2 will be considered together as a single site.

Heysham is a potential site for a possible new nuclear power station and approximately 115 hectares of land adjacent to the existing nuclear site have been proposed for new nuclear building activities (UK Parliament, 2009b). At the time of the habits survey fieldwork most of this land was occupied by a nature reserve, a golf course and a caravan park and no identifiable impact on the land use or activities were observed during the survey.

2.2 Survey objectives

The Centre for Environment, Fisheries & Aquaculture Science (Cefas) undertook the Heysham habits survey in 2016 on behalf of the Environment Agency, the Food Standards Agency, and the Office for Nuclear Regulation. The aim of the survey was to obtain comprehensive information on the habits of the public that might lead to their exposure to radiation via gaseous discharges, liquid discharges and direct radiation from the Heysham nuclear site.

Specifically, investigations were conducted into the following:

- The consumption of food from the aquatic survey area
- Activities and occupancy over intertidal substrates
- The handling of fishing gear and sediment
- Activities and occupancy in and on water
- The use of seaweed as a fertiliser or animal feed
- The consumption of food from the terrestrial survey area
- The use and destination of produce originating from the survey areas
- The consumption and use of groundwater and surface water in the terrestrial survey area
- The transfer of contamination off-site by wildlife
- Activities and occupancy within the direct radiation survey area
- Any new or unusual exposure pathways

Additionally, the Environment Agency requested that occupancy rates aboard boats moored at Skippool Creek be investigated.

2.3 Survey areas

The geographic extents of potential effects from liquid discharges, from deposition from gaseous releases, and from direct radiation are different. Therefore, different survey areas were defined to cover each of these three main possible sources of exposure. These were an aquatic survey area relating to liquid discharges, a terrestrial survey area relating to deposition from gaseous discharges, and a direct radiation survey area relating to ionising radiation emanating directly from the site.

The aquatic survey area (see Figure 1, page 22) covered the waters and intertidal areas of Morecambe Bay to the north-east of a line extending from South East Point on Walney Island, to Rossall Point in Fleetwood. Walney Channel, which lies between Walney Island and the mainland, and the estuaries of the rivers Leven, Kent, Lune and Wyre were included in the survey area. This area was taken to represent the predominant area of mixing of discharged radionuclides in seawater.

The terrestrial survey area (see Figure 2, page 23) covered the land within 5 km of the site centre (National Grid Reference: SD 401 596), to encompass the main areas of potential deposition from gaseous discharges.

The direct radiation survey area (see Figure 2, page 23) covered the land and sea within 1 km of the nuclear licensed site boundary. The occupancy data collected from the direct radiation survey area is also applicable to inhalation and external exposure pathways arising from gaseous releases from the site.

The same aquatic, terrestrial and direct radiation survey areas were used in the previous habits survey conducted by Cefas in the Heysham area, which was in 2011 (Garrod *et al*., 2012).

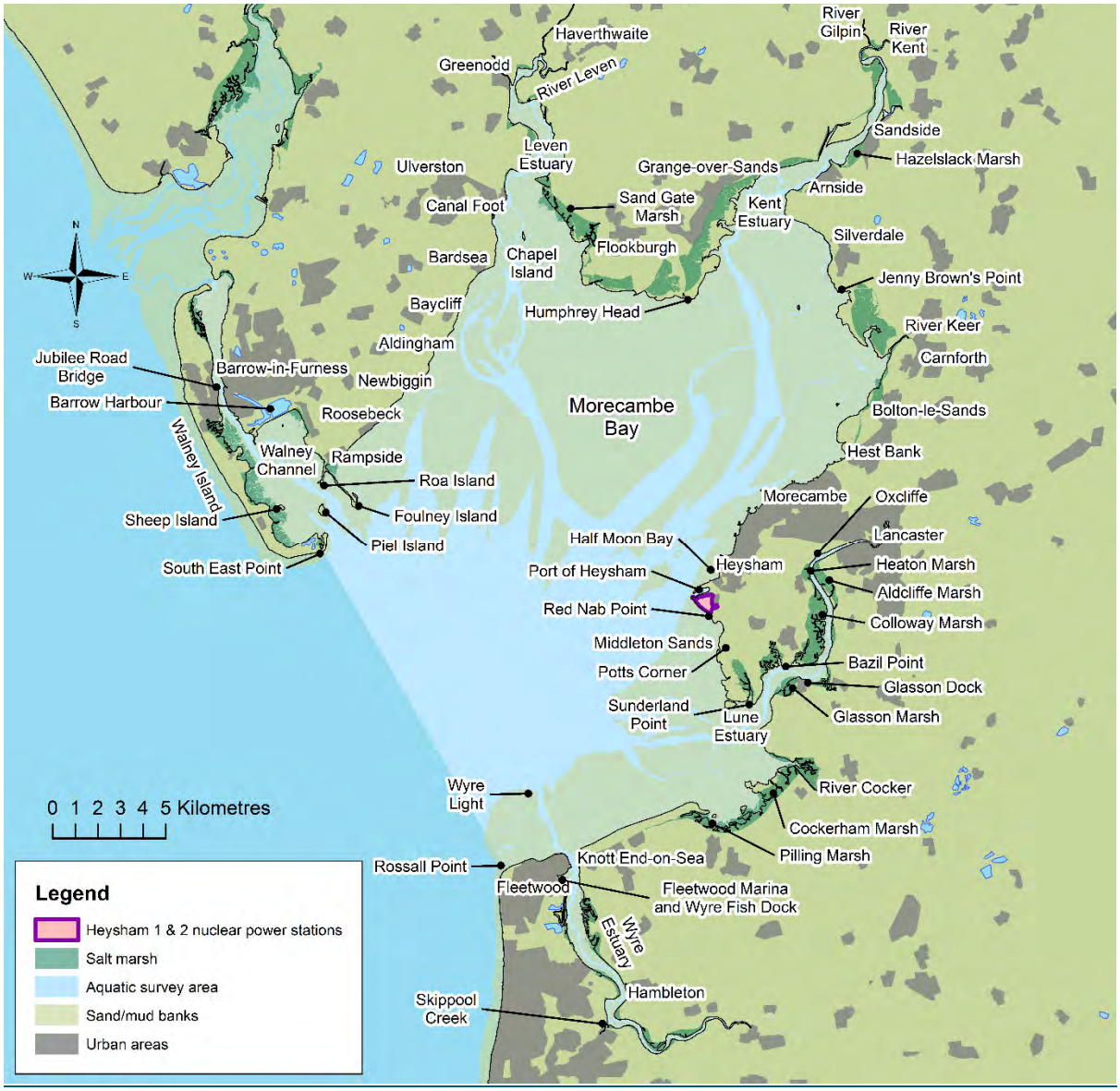


Figure 1. The Heysham aquatic survey area

Figure 2. The Heysham terrestrial and direct radiation survey areas.

2.4 Conduct of the survey

As part of the pre-survey preparation, the Environment Agency, the Food Standards Agency and the Office for Nuclear Regulation were contacted to identify any additional site-specific requirements. In response, the Environment Agency requested that occupancy rates for people aboard boats moored at Skippool Creek be investigated. Information relating to the activities of people in the aquatic and terrestrial survey areas was obtained from Internet searches, Ordnance Survey maps and from previous habits surveys undertaken around the Heysham site. People with local knowledge of the survey area were contacted for information relevant to the various exposure pathways. These included fisheries officers, representatives of the local fishing industry and representatives of an allotment association.

A proposed programme for fieldwork was distributed to the Environment Agency, the Food Standards Agency, and the Office for Nuclear Regulation before the fieldwork commenced, for their comment.

The fieldwork was carried out from the 19th to the 29th July 2016 according to techniques described by Leonard *et al.* (1982). During the fieldwork a meeting was held between a member of the survey team and representatives from EDF Energy Nuclear Generation Ltd. This discussion provided details about current site activities, local information, potential exposure pathways and activities in the area, and the potential for transfer of contamination off-site by wildlife.

The following information was obtained during the meeting:

- At the time of the habits survey fieldwork one of the reactors at Heysham 2 was operating at low power during refuelling. The other reactor at Heysham 2 and both reactors at Heysham 1 were operating at their normal operating capacity. (The current normal operating capacity of one of the reactors at Heysham 1 is slightly below its design capacity.)
- Control measures taken against wildlife in order to limit the possibility that contamination is transferred off-site included fences and paved areas to deter wildlife from entering the site. A falconer with birds of prey is used to deter seagulls, pigeons and other birds. Seagulls are discouraged from nesting on the site and although this is primarily for reasons of public safety, since the birds become aggressive when nesting, it coincidentally also limits the possibility that contamination is transferred offsite by the gulls.
- Information about potential exposure pathways and activities in the area included dog walking on tracks to the east of the site, nature conservation duties on the nature reserve, angling and bird watching at Red Nab Point, residents on the caravan park to the south of the site, fishing and shellfish collecting in Morecambe Bay and dredging in the Port of Heysham.

Interviews were conducted with individuals who were identified in the pre-survey preparation and others that were identified during the fieldwork. These included, for example, commercial and hobby fishermen, anglers, people spending time on intertidal substrates, farmers, allotment holders, beekeepers and people spending time within the direct radiation survey area. Interviews were used to

establish individuals' consumption, occupancy and handling rates relevant to the aquatic, terrestrial and direct radiation survey areas. Any other information of possible use to the survey was also obtained. Gamma dose rate measurements were taken over intertidal substrates in the aquatic area, and indoors and outdoors at most properties in the direct radiation survey area where interviews were conducted. Background gamma dose rates were taken at a distance beyond 5 km from the site centre. All gamma dose rate measurements were taken using a Mini 600 Series Type 6-81 Environmental Radiation Meter with a compensated Geiger-Müller tube.

For practical and resource reasons, the survey did not involve the whole population in the vicinity of the Heysham site, but targeted subsets or groups, chosen in order to identify those individuals potentially most exposed to radiation pathways. However, it is possible that even within a subset or group there may have been people not interviewed during the survey. Therefore, to aid interpretation, the number of people for whom data were obtained in each group as a percentage of the estimated complete coverage for that group (where it was possible to make such an estimate) has been calculated. The results are summarised in Table 1. The 'groups' are described and quantified, and the numbers of people for whom data were obtained are given as percentages of the totals. For certain groups, such as anglers, it can be virtually impossible to calculate the total number of people who undertake the activity in the survey area because it is difficult to quantify visitors from outside the area or occasional visitors during the year. Based on UK Office of National Statistics residential data for electoral wards (www.ons.gov.uk) there were approximately 28,200 people living in the terrestrial survey area, although information was obtained for a significantly smaller number than this. The survey did not include employees or contractors at the nuclear licensed sites while they were at work. This is because dose criteria applicable to these people whilst at work and the dose assessment methods are different from those for members of the public. However, data were collected for employees and contractors while outside work if these people were encountered during the survey.

People were initially questioned about their habits relating to the survey area that their first identified activity occurred in and, where possible, they were also asked about their habits relating to the other two survey areas. For example, people in the terrestrial survey were initially questioned because it was known that they grew or produced significant quantities of terrestrial foodstuffs. However, they were also asked about habits that might lead to exposure to liquid discharges or direct radiation. During interviews with representatives from organisations such as local businesses it was not possible to collect data for all pathways (for example consumption of local foods) for each person. In these cases, the data were limited to those relating to the primary reason for the interview, for example, in the case of a business within the 1 km direct radiation survey area, the occupancy rates for the employees.

3 METHODS FOR DATA ANALYSIS

3.1 Data recording and presentation

Data collected during the fieldwork were recorded in logbooks. On return to the laboratory, the data were examined and any notably high rates were double-checked, where possible, by way of a follow-up phone call. In cases where follow-up phone calls were not possible (e.g. interviewees who wished to remain anonymous), the data were accepted at face value. The raw data were entered into a habits survey database where each individual for whom information was obtained was given a unique identifier (the Person ID number) to assist in maintaining data quality and traceability.

Where generalised data for groups of people were collected, such as occupancy rates in the direct radiation survey area for employees at businesses, only a limited number of representative individuals were included in the data entered into the database.

The results of the individuals' consumption, occupancy and handling rates collected during the survey were grouped and presented in tables with the high-rate group members indicated in bold and with the calculated mean rates for the high-rate group and 97.5th percentile rates. The consumption rates, occupancy rates and handling rates for all groups are presented in Annex 1 for adults and Annex 2 for children and infants, with the high-rate group members indicated in bold.

Where quantifiable data cannot be obtained from interviews but pathways are believed to exist, it is sometimes necessary to provide estimated habits data for use in dose assessments. In this series of habits survey reports, such data is usually presented in Annex 3. It was not necessary to estimate data for the Heysham survey, but Annex 3 is included in this report to maintain consistency of presentation through the series of reports.

3.2 Data conversion

During the interviews, people could not always provide consumption rates in kilograms per year for food or litres per year for milk. In these circumstances, interviewees were asked to provide the information in a different format. For example, some estimated the size and number of items (e.g. eggs) consumed per year, whereas others gave the number of plants in a crop or the length and number of rows in which the crop was grown per year. The habits survey database converted these data into consumption rates (kg y^{-1} for food and l y^{-1} for milk) using a variety of conversion factors. These factors included produce weights (Hessayon, 1990 and 1997 and Good Housekeeping, 1994), edible fraction data researched by Cefas, and information supplied by the Meat and Livestock Commission.

3.3 Rounding and grouping of data

The consumption and occupancy data in the text of this report are rounded to two significant figures, except for values less than 1.0, which are rounded to one decimal place. This method of presentation reflects the authors' judgement on the accuracy of the methods used. In the tables and annexes, the consumption rate data are presented to one decimal place. Occasionally, this rounding process causes the computed values (row totals, mean rates and 97.5th percentiles), which are based on un-rounded data, to appear slightly erroneous. Consumption rates less than 0.05 kg y^{-1} are presented to two decimal places in order to avoid the value of 0.0 kg y^{-1}. External exposure data are quoted as integer numbers of hours per year.

For the purpose of data analysis, foodstuffs were aggregated into food groups as identified in Table 2. Specific food types relevant to this survey are presented in the subsequent tables. The data are structured into groups when it is reasonable to assume that consistent concentrations or dose rates would apply within the group. For example, when considering terrestrial food consumption, all types of root vegetables are grouped together in a food group called 'root vegetables'. Similarly, for aquatic food consumption, all crustacean species are grouped as 'crustaceans'. For external exposure over intertidal sediments, occupancies over the same substrate (e.g. sand) are grouped together.

Data were structured into age groups because different dose coefficients (i.e. the factors which convert intakes of radioactivity into dose) can apply to different ages. The International Commission on Radiological Protection (ICRP) revised its recommendations for the age groupings to be used in radiological assessments and these recommendations were adopted in the 2010 habits survey reports and thereafter. Consequently, the age ranges used in the habits survey reports prior to 2010 differ from those used currently. The age ranges used in this report and the names used for the age groups, based on the recommendations in ICRP 101 (ICRP, 2007), are shown in Table A below, together with those used in reports prior to 2010, for comparison.

Table A. Names of age groups and range of ages within each age group.

Age ranges used from 2010 onwards			Age ranges used prior to 2010	
Name of age group[a]	**Age range in group**		**Name of age group**	**Age range in group**
Infant	0 to 5-year-old		3-month-old	Under 1-year-old
			1-year-old	1-year-old
			5-year-old	2-year-old to 6-year-old
Child	6-year-old to 15-year-old		10-year-old	7-year-old to 11-year-old
			15-year-old	12-year-old to 16-year-old
Adult	16-year-old and over		Adult	17-year-old and over

[a] In the 2010 reports only, the infant age group was called the 1-year-old age group and the child age group was called the 10-year-old age group.

Since there are fewer age groups for children in the current regime, there should, in general, be more observations in each group, resulting in greater robustness in the data. However, data since 2010 will

not be directly comparable with data prior to 2010, since the age ranges in the age groups will be different.

For direct radiation pathways, the data were grouped into distance zones from the nuclear site boundary as a coarse indication of the potential dose rate distribution due to this source of exposure. The bands used in this report were: 0 - 0.25 km; >0.25 - 0.5 km; >0.5 - 1.0 km. These distance bands are also useful when assessing exposure to gaseous discharges.

3.4 Approaches for the identification of high rates

The habits data have been analysed to identify high rates of consumption, occupancy and handling, which are suitable for use in radiological assessments. Two approaches have been used:

Firstly, the 'cut-off' method described by Hunt *et al.* (1982) was used. With the 'cut-off' method, the appropriate high rate was calculated by taking the arithmetic mean of the values between the maximum observed rate and one third of the maximum observed rate. In this report, the term 'high-rate group' is used to represent the individuals derived by the 'cut-off' method. The mean of the high-rate group was calculated for each food group, intertidal substrate and handling pathway identified in the survey. In certain cases, using the 'cut-off' method resulted in only one person being in the high-rate group. In these cases, expert judgement was used to decide whether the high-rate group should remain as one individual or whether others should be included. If others were included, the second highest rate was divided by three and all observations above this secondary 'cut-off' were included in the high-rate group.

Secondly, the 97.5th percentile rate was calculated for each group. The use of percentiles accords with precedents used in risk assessments of the safety of food consumption. It should be noted that the interviewees in this study are often selected and, therefore, the calculated percentiles are not based on random data.

Mean and 97.5th percentile consumption rates for adults, based on national statistics, are provided as a baseline for comparison with the observed rates. The rates based on national statistics are referred to as generic rates in this report and have been taken from Byrom *et al.,* 1995.

The mean rates for the high-rate groups for children and infants for consumption, intertidal occupancy and handling pathways, have been calculated. However, in cases where few child or infant observations were identified, an alternative approach that may be used for assessments is to estimate the mean rates for the high-rate groups for children and infants by applying scaling ratios to the mean rates for the high-rate groups for adults. Ratios for this purpose for the consumption and intertidal occupancy pathways, based on generic 97.5th percentile rates, are provided in Annex 4. The age ranges within the age groups in Annex 4 do not correspond exactly with the age ranges within the age

groups used throughout the rest of this report, but these ratios are the best available data for estimating child rates and infant rates from adult rates. Adult to child and adult to infant ratios are not available for handling pathways.

For use in assessments of foetal dose, consumption and occupancy rates are provided in Annex 5 for women of childbearing age. The age range used in this report for women of childbearing age is 15 – 44 years old, which is based on the classification used by the Office of National Statistics (www.ons.gov.uk).

For the direct radiation pathway, mean occupancy rates and 97.5th percentile rates have not been calculated. Such an analysis is of limited value without a detailed knowledge of the spatial extent of dose rates due to direct radiation.

3.5 Profiles of habits survey data for use in total dose assessments

The survey data have been analysed to produce profiles of consumption and occupancy rates according to the method described by Camplin *et. al.,* 2005. The profiles for adults are used to assess total dose integrated across all pathways of exposure in the RIFE reports (e.g. EA, FSA, FSS, NRW, NIEA, and SEPA, 2016).

Matrices of profiles for adults, children, infants and women of childbearing age are presented in Annexes 6 to 9 respectively. Within each matrix the means for the high-rate groups, as determined by the 'cut-off' method, are presented on the diagonal. Except for the direct radiation pathway the figures across the rows are the means of the consumption and occupancy rates for the other pathways for the individuals within that profile. For the direct radiation pathway the figure denotes the proportion of the individuals within that profile who spend time within the direct radiation survey area.

3.6 Data quality

To ensure the quality of the data collected during the survey fieldwork and presented in the report, the following procedures have been employed:

- Experienced scientific staff were used for the fieldwork and data analysis. They had been trained in the techniques of interviewing and obtaining data for all pathways that were relevant to the survey being conducted. Where individuals offered information during interview that was considered unusual, they were questioned further in order to double-check the validity of their claims.
- Where possible, interviewees were contacted again to confirm the results of the initial interview if, when final consumption or occupancy rates were calculated, observations were found to be high in relation to our experience of other surveys. Local factors were taken into account in these cases.

- Data were processed in a purpose-built habits survey database using a consistent set of conversion factors.
- Data were stored in a database in order to minimise transcription and other errors.
- Draft reports were reviewed by the Environment Agency, the Food Standards Agency and the Office for Nuclear Regulation, and by a senior radiological assessor.
- Final reports were only issued when the Environment Agency, the Food Standards Agency and the Office for Nuclear Regulation were entirely satisfied with the format and content of the draft report.

4 AQUATIC RADIATION PATHWAYS

4.1 Aquatic survey area

The aquatic survey area (see Figure 1, page 22) was defined as the waters and intertidal areas of Morecambe Bay to the north-east of a line extending from South East Point on Walney Island, to Rossall Point in Fleetwood. Walney Channel, which lies between Walney Island and the mainland, and the estuaries of the rivers Leven, Kent, Lune and Wyre were included in the survey area.

Morecambe Bay is a large shallow embayment on the eastern side of the Irish Sea. The bay has a large tidal range, up to 10.5 metres on spring tides, and vast areas of intertidal sandflats, covering 310 km^2, are exposed at low water (see Figure 3). It is a dynamic environment with strong currents and constantly shifting sediments. There are a number of boulder scars, which are patches of stones and boulders known locally as 'skears', close to the shore in several areas around the bay. The coastline of the bay is approximately 120 km long and the shore is predominantly either beaches of sand and stones or extensive areas of salt marsh.

Figure 3. Morecambe Bay sandflats off Baycliff

Several rivers flow into the bay, the most significant being the River Leven and River Kent to the north and the River Lune and River Wyre, to the east. The estuaries of these rivers become increasingly muddy further upstream.

The bay is important for wildlife and many areas are listed under a variety of conservation designations including Special Area of Conservation, Special Protected Area, Wetland of International Importance, Site of Special Scientific Interest, Ramsar Site and European Marine Site. There are several nature reserves and parts of the bay have been proposed as Marine Conservation Zones.

The description below starts at the Walney Channel and progresses around the bay in a clockwise direction, ending at Fleetwood. Sandflats or mudflats are exposed at low tide in nearly all areas around the bay.

Walney Channel and Barrow-in-Furness

Walney Channel (see Figure 4) runs between Walney Island and the mainland. The port at Barrow-in-Furnace is situated on the mainland side of the channel and vehicular access to Walney Island is possible via the Jubilee Bridge. The substrate in the channel is predominantly mud and sand, with scattered boulder scars, and at the southern end extensive mudflats and sandflats are exposed at low tide. There are large areas of salt marsh on the Walney Island side of the channel. At the southern end of Walney Channel there are four small islands: Sheep Island, Piel Island, Roa Island and Foulney Island. Roa Island was accessible by road along a causeway from the mainland and Foulney Island could be reached on foot from the mainland by a path along a stone causeway.

Figure 4. Walney Channel

Walney Channel was a very popular boating area and many yachts, pleasure boats, angling boats and fishing boats were moored in the channel, mainly in the area close to the Jubilee Bridge. Many of the boats rested on the sediment at low tide. A sailing club with 100 members had its own slipway on the east side of the channel just to the north of the Jubilee Bridge and slightly further north there was a compound on the quay where fishermen stored their gear. On the opposite side of the channel there was a public slipway, which was a popular place for launching small boats and jet-skis brought by road trailers. A boat club, with its own boat compound, storage huts and slipway was located on the east side of the channel approximately 1 km to the south of the bridge. The club had 45 adult members and 30 junior members and catered for yacht sailors, boat anglers and hobby fishermen. One person was identified who collected small quantities of winkles on a commercial basis from Walney Channel.

At Roa Island, at the south end of the Walney Channel, there was a boat club and a lifeboat station with both an inshore and an offshore lifeboat. The boat club had 250 members and catered for yacht sailors, dinghy sailors, boat anglers, and windsurfers. Many yachts and other pleasure boats were moored in the waters around Roa Island. The larger yachts either sailed outside Morecambe Bay or sailed across the bay to Fleetwood and Glasson. Piel Island was a popular weekend destination for the smaller local sailboats and for the cruising yachts based at Fleetwood, Glasson and the Wyre Estuary. A very small passenger ferry from Roa Island took visitors across to Piel Island. Boat angling took place within Morecambe Bay but many boat owners preferred to fish outside the survey area.

The shore along the west side of the causeway to Roa Island was a popular area for dog walking and activities such as angling, bait digging and peeler crab collecting took place at various locations within Walney Channel. Wildfowling took place on parts of the salt marsh on Walney Island.

Commercial mussel collecting took place from mussel beds off Foulney Island. A shellfish wholesaler based in Barrow-in-Furness bought shellfish collected throughout Morecambe Bay.

The port at Barrow-in-Furness was used mainly by bulk carrying cargo vessels and boats servicing the offshore wind farms. Ships transporting nuclear materials to and from Sellafield also used the port and cruise liners docked there occasionally. The port was protected by lock gates that retained the water level at low tide so the vessels did not rest on sediments. Periodic dredging took place in the port and its approaches in the south end of Walney Channel in order to maintain the water depth for ships to pass safely. BAE Systems have a shipyard at the port where nuclear submarines are manufactured and commissioned. The facility is a licensed nuclear site and is permitted to discharge liquid and gaseous radioactive wastes into the environment.

Rampside to Greenodd

There was an area of salt marsh at Rampside but northwards from Rampside towards Bardsea the upper shore was predominantly sand and stones, with scattered boulder scars. North of Bardsea the

upper shore was predominantly sand and mud, becoming increasingly muddy towards Greenodd, with small patches of salt marsh.

A road, with parking along its side, ran close to the shore between Rampside and Roosebeck, and the beaches in this area (see Figure 5) were popular for walking and dog walking. Approximately 4 km offshore from Roosebeck there was an oyster farm, where Pacific oysters were cultivated. The oysters were grown on trestles which were accessed using tractors across the sands at low tide. From Roosebeck northwards to Greenodd there was easy access to the shore at many places and activities such as dog walking, angling, bait digging and beach combing took place throughout the area. The most popular angling venues were at the pier at Canal Foot and along an embankment close to a large car park just to the south of Greenodd. One hobby fisherman was identified setting longlines offshore from Bardsea.

Figure 5. Roosebeck

Two commercial fishermen were based at Newbiggin and one commercial fisherman was based at Canal Foot. Their main method of fishing was to use tractors to tow nets through shallow water at low tide to catch shrimps. One of the fishermen also conducted guided walks across the sands from Canal Foot to Chapel Island and Sand Gate Marsh.

Greenodd to Arnside

The upper shore between Greenodd and Arnside is dominated by large areas of salt marsh. Extensive stretches of the coast do not have road access and therefore are not easily accessible by the public.

Sand Gate Marsh, to the north-west of Flookburgh, was used for grazing sheep and dog walking also took place along the shore. Five commercial fishermen, who mainly fished for shrimp with tractors, were based at Flookburgh and there was a shrimp processing plant near the village. It was reported that wildfowling took place on the salt marshes.

The town of Grange-over-Sands is situated further east along the coast. There had once been a sand beach in front of the town, but since the main channel of the Kent Estuary changed its course several years ago, the beach has been replaced by a substantial area of salt marsh. Guided walks from across the bay at Arnside came ashore near Grange-over-Sands.

Wildfowling took place on the salt marshes and foreshore of the Kent Estuary. Angling was very popular at the village of Sandside, on the east bank of the Kent Estuary, where a road with ample parking ran along an embankment. The anglers fished over the railings of the embankment, directly into the main channel of the river.

Sheep were grazed on Hazelslack Marsh, to the south of Sandside, and one individuals cut turf from the marsh, which was sent throughout the UK for use in coastal defence schemes.

Further south the village of Arnside was a popular tourist destination but most visitors stayed on the promenade. There was a small pier and a slipway, and a few pleasure boats were moored offshore. The area was popular with anglers, who mainly fished from the slipway and pier, although a few also fished from the shore, which was mainly mud and sand with patches of grass (see Figure 6).

There was a lave net fishery for salmon and sea trout in the Leven and Kent Estuaries but the fishermen reported they had not done very little fishing during 2016 owing to very poor catches in 2015.

Figure 6. Arnside

Arnside to Hest Bank

From the headland located to the south-west of Arnside, southwards past Silverdale to Jenny Brown's Point, the upper shore was mainly a mix of rocky outcrops and stone beaches, with small patches of salt marsh in a few places. The headland to the south-west of Arnside was the starting point for some of the guided walks across the sands of Morecambe Bay to Grange-over-Sands. There was road access and parking at Silverdale and the shore there was popular with anglers, walkers and dog walkers (see Figure 7). Angling and dog walking also took place at Jenny Brown's Point, although it was not such a popular area as it could only be reached by foot.

A wide expanse of salt marsh extended southwards from Jenny Brown's Point to Carnforth. This area was difficult for the public to access and no activities were observed taking place there. The salt marsh continued south in a narrow band from Carnforth to Hest Bank and there was easy access to the shore along this stretch, which was popular with dog walkers. Sheep were grazed on salt marsh near Bolton-le-Sands.

Figure 7. Silverdale

Hest Bank to Morecambe

An extensive sea wall and other sea defences stretched down the coast from just south of Hest Bank to the south end of Morecambe. The sea defences included approximately 12 rock breakwaters and piers jutting out from the shore, which formed a series of small bays between them. The upper shore varied between the bays; some were predominantly stones, some were sand, and others were mud or salt marsh. There were many sets of steps and slipways providing access to the shore but several of the slipways were partially blocked by large boulders to prevent vehicular use. The lower shore was mainly sand and mudflats, with stony scars in places.

Morecambe was a busy seaside town and the sandy beach close to the town centre (see Figure 8) was very popular for activities such as playing and sun bathing. Angling took place from the piers and breakwaters and from the beaches. Walkers and dogwalkers used most of the bays and bait digging took place on the sand and mudflats offshore. A few small commercial shrimp trawlers and several hobby fishing boats, angling boats and other pleasure craft were moored offshore. Small boats could also be launched from some of the slipways. The area was very popular for sailing and other water activities such as kayaking, windsurfing, kite surfing and swimming. There was a sailing club, coastguard station and a lifeboat station.

Figure 8. Morecambe

Morecambe to Red Nab

At its southern end, Morecambe merges into Heysham. There is a rocky headland and further south is Half Moon Bay (see Figure 9) and a promontory, where the Port of Heysham and the nuclear power stations are located. The rocky outcrop of Red Nab is situated on the southern side of the promontory. The upper shore at Half Moon Bay and Red Nab was a mix of patches of sand, stones and rock and the lower shore throughout this area was sand and mudflats. There was easy public access to the shore at Half Moon Bay and Red Nab. The public could also access the sea walls that ran along the north side of the Port of Heysham and along the seaward side of the power stations.

Half Moon Bay and Red Nab were very popular areas for dog walking. Walking, angling and bait digging also took place at both these locations. Additionally, at Half Moon Bay, swimming, playing and rock pooling were recorded and one person was identified push netting for shrimps for his own family's consumption. Anglers fished over the railings from the top of the sea wall to the north of the port but they no longer fished from near the outfalls on the sea wall in front of the nuclear power stations, since the area was now a protected bass nursery and fishing was not allowed. Small amounts of mussels and winkles were collected from the scars off Heysham. The Port of Heysham is a large commercial port with terminals for freight and passenger ferries. No commercial fishing vessels were based at the port. The port and its approaches were dredged regularly in order to maintain sufficient depth of water for navigation. The area around the nuclear power stations cooling water intake pipes were also dredged.

Figure 9. Half Moon Bay

Red Nab to Glasson Dock

Southwards from Red Nab the upper shore was predominantly sand and stones down to Pott's Corner. There were several holiday centres and caravan parks along this stretch of coast, some of which had their own access to the shore, and at Pott's corner there was public road access to the shore and parking. The area was popular with dog walkers and kite surfers. From Pott's Corner southwards to Sunderland Point the upper shore was predominantly salt marsh, parts of which were used for grazing beef cattle.

Sunderland Point marked the entrance to the Lune Estuary. Most of the upper shore of the estuary was salt marsh and at low tide, sand banks, mud banks and small patches of stony scars were revealed on the lower shore. Most of the salt marsh areas were used for grazing cattle and sheep, and small quantities of samphire were collected from the marshes. Wildfowling took place on the foreshore and many of the marshes and one individual was identified who used a punt gun (a very large shotgun mounted on a small boat similar to a canoe) for wildfowling. A few small fishing boats were based at the hamlet of Sunderland, near the mouth of the estuary (see Figure 9), and several small-scale fishing activities were pursued in the estuary and its approaches. These included: haaf netting and drift netting for salmon and sea trout; stow netting for sprats and whitebait; trawling for shrimps. Water sports such as water skiing and jet skiing also took place in the estuary.

Glasson Dock is a small commercial port on the east side of the Lune Estuary. There was a sailing club close to the dock, with approximately 200 members. The club catered for both dinghy sailors, who

sailed close to Glasson, and yacht sailors, who mainly sailed across to Piel Island, or made trips outside the survey area. Some of the yacht owners spent time on the sand flats in the estuary fixing moorings. A fish wholesaler/retailer, who bought fish from local fishermen, was based at the dock. A large marina at the end of the Lancaster Canal was adjacent to the dock but it was not considered relevant to the aquatic survey because it was freshwater and therefore not subject to the effects of liquid discharges.

Figure 10. The Lune Estuary at Sunderland

Glasson Dock to Fleetwood

Between the mouth of the Lune Estuary and the village of Knott End there were two significant areas of salt marsh: Cockerham Marsh and Pilling Marsh, which were both used for grazing sheep and wildfowling. There was a ramp over the sea defence dyke at the western end of Pilling Marsh and kite buggying took place at low tide on the extensive sandflats offshore between Pilling and Knott End.

Knott End was situated on the eastern side of the mouth of the Wyre Estuary, opposite Fleetwood, which was on the western side of the estuary. At Knott End there was a slipway which was used to launch small angling boats and other pleasure craft, and shore anglers fished from the slipway and the adjoining sea wall. There was a coastguard station and a small passenger ferry operated between Knott End and Fleetwood.

At Fleetwood, close to the mouth of the Wyre Estuary, there was a coastguard station, a lifeboat station and a concrete ramp to the shore for launching small craft. A beach of sand and stones extended westwards to Rossall Point (see Figure 11). The two ends of the beach were popular areas for angling

and dog walking and the central section, which was patrolled by lifeguards, was popular for activities such as playing, sunbathing, paddling and swimming. Litter collecting was carried out along the shore and bait digging took place on the sandflats at low tide. Fleetwood was a very popular area for water sports and a range of activities including kite surfing, jet skiing, kayaking, paddle boarding, power boating and wake boarding took place offshore.

Figure 11. Near Rossall Point

Wyre Fish Dock in Fleetwood was once a major fishing port but it has declined over the years and only a few small fishing boats are based at the dock now, although it remains an important fish processing centre and recreational harbour. Some of the fish caught in the survey area were sold through the fish market at the dock or directly to fish merchants in the port. The dock, together with Fleetwood Marina, adjacent to the dock, was home to about 400 craft, mainly sailing yachts and pleasure boats. There were several houseboats, which were lived on for most of the year, and these were permanently afloat since the marina and docks were protected by lock gates. Three charter angling vessels and a few hobby fishing boats and private angling boats, were also based in the marina.

The Wyre Estuary, which extends inland from Fleetwood, has patches of salt marsh along its banks and large areas of the estuary dry out at low tide to expose sand banks and mud flats. At Skippool Creek there was a sailing club that catered for both yacht and dinghy sailors and had approximately 500 members. The dinghies sailed within the estuary but the yachts mainly sailed outside the survey area or across to Piel Island. There were also over 100 other boats of various shapes and sizes moored on the shore at Skippool Creek. They rested on mud for most of the tidal cycle and many were moored

against wooden staves that provided access across the mud. They were used as recreational hideaways and houseboats. It was reported that some people spent a high amount of time on their boats but no one was positively identified as living on board permanently.

A little trawling for shrimps took place in the estuary and one individual was identified who undertook a small amount of commercial fishing for elvers. Small amounts of samphire were collected from the saltmarsh areas.

4.2 Commercial fisheries

A wide variety of small scale commercial fishing activities were identified in the survey area. These included: otter trawling for plaice, thornback ray, Dover sole, dab and flounder; gill netting for bass; set netting for flounder and plaice; stow netting for sprats and whitebait; drift netting, lave netting and haaf netting for salmon and sea trout; dip netting for elvers; tractor fishing and trawling for shrimp; potting for whelks; hand raking for cockles and mussels; hand picking winkles; oyster farming. Many of the fisheries were seasonal or periodic and most fishermen engaged in several different types of fishing. Many of the fishing activities were carried out from the shore rather than from fishing boats and fishermen used tractors or quad bikes to get to fishing areas out on the sandflats and mudflats, or went by foot. Fishing activities were pursued from many different access points around Morecambe Bay and the estuaries flowing into it.

Two or three small boats based at Fleetwood were engaged in otter trawling for part of the year. They fished partly outside the survey area and partly inside the area, mainly in the deeper water known as Lune Deep at the southern end of Morecambe Bay. The main species caught by otter trawling were plaice, thornback ray, Dover sole, dab and flounder. Cod, brill, turbot and gurnard were also caught, but in smaller quantities.

Several fishermen used gill nets from boats to catch bass. They also caught grey mullet and a range of other species. Set nets were deployed from the shore in several areas around the bay and these mainly caught flounder and plaice, with smaller amounts of bass, grey mullet and other species.

Two people operated stow nets in the Lune Estuary to catch pelagic species such as sprats and whitebait. Stow nets are funnel shaped nets that are staked out in the tide and left for the fish to swim into them. They were serviced at low water by wading out to them.

Fishing for salmon and sea trout took place in the Leven, Kent and Lune estuaries using lave nets, haaf nets and drift nets. Both lave netting and haaf netting involve fishermen standing in water holding a framed net on a pole. Haaf nets are rectangular and approximately 5 meters wide. The fisherman holds the net in the water, facing the water current, and waits for fish to swim into it. Lave nets are smaller and triangular in shape and are actively pushed through the water in order to catch the fish.

Salmon drift netting was carried out from small boats. In 2015, two lave net licences were issued for the Leven Estuary, four lave net licences were issued for the Kent Estuary, and 11 haaf net licences and seven drift net licences were issued for the Lune Estuary. However, although the fishermen retained their lave net licences in 2016 they reported that very little lave netting had been carried out in 2016 owing to poor catches. Haaf netting and drift netting continued at normal levels. The permitted fishing season using nets for salmon and sea trout is from 1st June to 31st August each year.

One fisherman was identified who fished for elvers for a few nights each year in the Wyre Estuary. This involved standing on a muddy riverbank and using a dip net with a long handle to scoop the elvers from the water. The elvers were kept alive after capture, since they were used for restocking purposes.

Small quantities of mackerel were caught incidentally in several fishing gears but in too small quantities to be marketed and they were usually eaten by the fishermen's families and friends, or discarded.

Tractors were used to tow nets through shallow water at low tide to catch shrimps. One tractor fisherman operated from Canal Foot, two operated from Newbiggin and five operated from Flookburgh. Shrimps were also caught by trawl from small boats operating from Morecambe, Sunderland Point and Fleetwood.

The mussel and cockle fisheries in the bay are regulated by the local Inshore Fisheries Conservation Authority and both fisheries were open to licensed fishermen in 2016, although the cockle fishery was only open for a few weeks. Approximately 100 licences were issued in 2016. The mussels and cockles were collected by hand raking at low tide. The mussels were mainly collected from off Foulney Island and the cockles were collected from the Leven Island cockle beds in the north of Morecambe Bay and the Pilling Sands cockle beds in the south east of the bay. Both edible size mussels and seed *(i.e.* immature) mussels were collected and both were for relaying elsewhere; the edible size for further fattening and the seed for growing on.

One person was identified who collected small quantities of winkles from Walney Channel and the same person had recently started potting for whelks in the area around Piel island.

Pacific oysters were cultivated at a commercial oyster farm, situated about 4 km offshore from Roosebeck.

4.3 Destination of seafood originating from the aquatic survey area

Fish and shellfish were sent to many destinations both within and outside the survey area.

White fish (i.e. plaice, Dover sole, bass etc.) were mainly sold through Fleetwood fish market, from where they were distributed nationally. They were also sold through retail outlets in Morecambe and

sold directly to the public by the fishermen. Most of the flounder were sold outside the survey area for use as lobster pot bait, since they are not highly regarded as a food fish and therefore do not command a high market value.

Salmon and sea trout were sold to fish merchants at Glasson Dock, Fleetwood and Blackburn and subsequently distributed locally and nationally.

Whitebait and sprats for human consumption were sold to fish merchants at Glasson Dock and Blackburn and also sold to a zoo as food for penguins and sea lions.

Live elvers were sold to a merchant in south-west England and from there exported to Europe for restocking purposes.

Shrimps were sold directly to the public from fishermen's houses and sold directly to local hotels and restaurants. They were also sold from two wet fish shops in Morecambe. Others were sold to a shrimp processing plant in Flookburgh from where they were distributed regionally and nationally. There was a thriving local cottage industry producing potted shrimps and much of the catch was processed in this way.

Mussels, cockles and winkles were bought by local wholesalers. Edible sized mussels were sold on to operations in south-west England for fattening and seed mussels were sold on for relaying elsewhere outside the survey area. Cockles and winkles were mainly exported to France. Whelks were sold from the door.

Farmed Pacific oysters were sent to a merchant in Scotland and distributed nationally from there.

At least four local fishermen also acted as merchants and bought fish and shellfish from other fishermen for selling on to other merchants or directly to the public.

4.4 Hobby fishing and angling

In this report, the term 'hobby fishing' is used to describe recreational fishing on a small scale with gear such as nets or pots. It is usually carried out by fishermen who do not have commercial fishing licences and therefore it is illegal to offer the catch for sale. Several hobby fishermen operated in the survey area and they mainly set nets from the shore or used shrimp trawls from boats. One individual was identified that set long-lines from the shore off Bardsea. Hobby fishermen mainly caught flounder, plaice, Dover sole, bass, cod and shrimps. The catches were consumed by the fishermen's families and friends.

Three charter angling boats operated from Fleetwood but they operated outside the survey area for much of the time. Many private angling boats were moored or launched from slipways in Walney Channel and at Morecambe, Sandylands, Knott End, the Wyre Estuary, Fleetwood Marina and other places throughout the survey area. Shore angling was popular at many locations including Walney Channel, Canal Foot, Greenodd, Sandside, Arnside, Silverdale, Jenny Brown's Point, Morecambe, Heysham, Red Nab, Knott End, Fleetwood and Rossall Point. Much of the shore angling was carried out from sea walls, piers and embankments rather than intertidal areas. The main edible species caught by shore anglers were plaice, flounder, dab, cod, whiting and bass. Lesser spotted dogfish were caught in abundance but not usually eaten. Boat anglers caught the same species as shore anglers and also mackerel and thornback rays.

A few people collected cockles or mussels for their own families' consumption. The mussels were collected from Foulney Island and off Heysham and the cockles were collected from the Leven Island cockle beds in the north of Morecambe Bay.

4.5 Wildfowling

Four wildfowling clubs were identified that shot in the survey area and together they had over 300 members. Shooting was also undertaken by a few independent wildfowlers that did not belong to clubs. The wildfowling season extended from 1st September to 20th February. Wildfowling took place on most of the salt marshes and associated foreshores within the survey area. Additionally, one individual was identified who used a punt gun to shoot wildfowl in the Lune Estuary. (A punt gun is a very large shotgun mounted on a small boat similar to a canoe.) The species being shot included mallard, pink-footed goose, Canada goose, greylag goose, wigeon, shoveler, snipe and teal. The shot wildfowl were consumed by the wildfowlers and their families and friends.

4.6 Other pathways

The Port of Heysham is liable to silting, and therefore it is dredged regularly by a contracted dredging vessel using a trailer suction dredge. Dredging takes place in the port and its approaches in order to maintain sufficient depth of water for navigation, and also around the power stations cooling water intake pipes and outfalls in order to ensure unimpeded water flow. Dredging is carried out over a period of approximately 5 days, every 8 weeks. The dredged sediment is dumped at a spoil ground located approximately 11 km away from the port, towards the mouth of Morecambe Bay. The dredger carries up to 11 crew members at one time. However, the contracted crew is liable to change through the year. Dredging also takes place in Walney Channel and the port at Barrow-in-Furness.

Livestock were identified grazing on salt marsh at 11 farms in the aquatic survey area, five of which were also in the terrestrial survey area. Five farms grazed sheep on salt marsh, one farm grazed sheep and beef cattle on salt marsh, four farms grazed beef cattle on salt marsh and one farm grazed dairy

cattle on salt marsh. The dairy cattle were only grazed on salt marsh for about five weeks per year, during a period when they were not producing milk.

Several people collected small quantities of samphire for their own families' consumption from salt marshes along the Leven, Lune and Wyre Estuaries.

Many anglers dug their own lug worms for bait and bait digging was identified at Roosebeck, Newbiggin, Bardsey, Morecambe, Half Moon Bay, Red Nab and Rossall Point.

Two people were identified who used seaweed as a fertiliser on their allotment plots. The seaweed (mostly bladder wrack) was collected from half Moon Bay after it had been washed-up onto the shore during rough weather. The seaweed was left to rot down and was then dug into the soil or applied as a surface mulch around fruit trees and bushes. The use of seaweed as livestock feed was not identified.

4.7 Food consumption data

Consumption data for aquatic foods are presented in Tables 3 to 8 for adults and in Tables 9 to 10 for children and infants. The mean consumption rates for the high-rate groups and the observed 97.5th percentile rates, calculated as described in Section 3.4, are given at the foot of each table.

Adults' consumption rates of vegetables and domestic fruit that were grown on land that had been fertilised with seaweed collected from the shore in the aquatic survey area are presented in Table 11, for use in studies of the potential dose arising from the possible transfer of radionuclides from sea to land.

Adults' consumption rates

The people consuming the greatest quantities of food from the aquatic survey area were commercial and hobby fishermen, anglers, wildfowlers, farmers and the families and friends of these groups of people.

Table B presents a summary of the adults' consumption rates for the following food groups: fish; crustaceans; molluscs; wildfowl; marine plants/algae; salt marsh grazed sheep meat. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. For comparison, the table also includes mean consumption rates and 97.5th percentile consumption rates for fish, crustaceans and molluscs based on national data, which are referred to as 'generic' data in this report. No generic consumption rates are available for wildfowl, marine plants/algae, or salt marsh grazed sheep meat, although generic consumption rates for sheep meat from sheep that have not been grazed on salt marsh are given in Table H on page 56.

Table B. Summary of adults' consumption rates of foods from the aquatic survey area

Food group	Number of observations	Number of high-rate consumers	Observed maximum for the high-rate group (kg y^{-1})	Observed minimum for the high-rate group (kg y^{-1})	Observed mean for the high-rate group (kg y^{-1})	Observed 97.5th percentile (kg y^{-1})	Generic mean* (kg y^{-1})	Generic 97.5th percentile* (kg y^{-1})
Fish	73	9	36.4	13.2	23.8	29.3	15	40
Crustaceans	47	8	13.9	4.8	10.0	13.9	3.5	10
Molluscs	9	2	4.5	4.5	4.5	4.5	3.5	10
Wildfowl	16	3	17.8	10.7	13.1	15.1	Not determined	Not determined
Marine plants/algae	11	3	0.9	0.4	0.7	0.9	Not determined	Not determined
Salt marsh grazed sheep meat	25	18	11.8	4.5	7.7	11.8	Not determined	Not determined

(*Generic rates based on data from Byrom *et al.*, 1995.)

The predominant species of fish consumed by adults were bass, cod, flounder and plaice, with smaller quantities of dab, Dover sole, lesser spotted dogfish, mackerel, pollack, sea trout and whiting. The fish were caught throughout the aquatic survey area. Of the fish consumed by the nine people in the high-rate group, the percentage breakdown of species, rounded to the nearest 5%, was 45% plaice, 15% bass, 15% cod, 5% dab, 5% Dover sole, 5% flounder, 5% mackerel and 5% whiting. No lesser spotted dogfish, pollack or sea trout were consumed by the members of the high-rate group.

The main species of crustaceans consumed by adults was brown shrimp, with smaller quantities of common lobster. The brown shrimps were caught from shallow areas throughout Morecambe Bay and the common lobster were caught from patches of rough ground near Fleetwood and Rossall Point. Of the crustaceans consumed by the eight people in the high-rate group, the percentage breakdown of species, rounded to the nearest 5%, was 85% brown shrimp and 15% common lobster.

The main species of molluscs consumed by adults was mussels, with smaller quantities of cockles. The mussels were collected from Foulney Island and offshore from Heysham. The cockles were collected from the Leven Island cockle bed in northern part of Morecambe Bay. The only species of mollusc consumed by the two people in the high-rate group was mussels. No cockles were consumed by the members of the high-rate group.

The main species of wildfowl consumed by adults were mallard, pink-footed goose and wigeon, with smaller quantities of Canada goose, greylag goose, shoveler, snipe and teal. These were shot on salt marshes and associated mud flats throughout the survey area. Of the wildfowl consumed by the three

people in the high-rate group, the percentage breakdown of species, rounded to the nearest 5%, was 60% mallard, 15% pink-footed goose, 10% wigeon, 5% Canada goose, 5% greylag goose, and 5% teal. No shoveler or snipe were consumed by the members of the high-rate group.

The only species of marine plants/algae consumed by adults was samphire. The plants were collected from salt marshes on the Leven, Lune and Wyre Estuaries.

Sheep and lambs were grazed on Sand Gate Marsh, marsh near Bolton-le-Sands, Colloway Marsh, Aldcliffe Marsh, Glasson Marsh, Cockerham Marsh and Pilling Marsh. Adults' consumption of lamb meat from animals grazed on these marshes was identified.

Children's and infants' consumption rates

Table C presents a summary of children's consumption rates of fish and salt marsh grazed sheep meat and infants' consumption rates of salt marsh grazed sheep meat from the aquatic survey area. No consumption of crustaceans, molluscs, wildfowl or marine plants/algae was identified for the child age group and no consumption of fish, crustaceans, molluscs, wildfowl or marine plants/algae was identified for the infant age group. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. No generic rates have been determined for the child or infant age groups.

Table C. Summary of children's and infants' consumption rates of foods from the aquatic survey area

Food group	Number of observations	Number of high-rate consumers	Observed maximum for the high-rate group (kg y^{-1})	Observed minimum for the high-rate group (kg y^{-1})	Observed mean for the high-rate group (kg y^{-1})	Observed 97.5th percentile (kg y^{-1})
Child age group (6 – 15 years old)						
Fish	3	3	5.9	3.4	5.1	5.9
Salt marsh grazed sheep meat	2	2	2.6	2	2.3	2.6
Infant age group (0 – 5 years old)						
Salt marsh grazed sheep meat	1	1	1	1.7	1.7	Not applicable

The species of fish consumed by the individuals in the child age group were bass cod, dab, place and whiting.

Consumption of vegetables and domestic fruit grown on land where seaweed has been used as a fertiliser

Consumption rate data for foods grown in soil that had been fertilised with seaweed collected from the shore in the aquatic survey area are presented in Table 11. Five adults were identified consuming green vegetables, other vegetables, root vegetables, potatoes and domestic fruit grown in seaweed fertilised soil. These data are presented for use in studies of the potential dose arising from the possible transfer onto the land of radionuclides originating from liquid discharges made into the sea. However, these foods were grown in the terrestrial survey area and the primary reason for investigating them was to gain information about foods potentially subject to gaseous discharges. Therefore, they are also included in the terrestrial food tables presented later in this report, and, in order to avoid double accounting in assessments of total dose, are entered only once in the Annexes, where they are classified as terrestrial foods.

4.8 Intertidal occupancy

Intertidal occupancy rates for adults are presented in Table 12 and intertidal occupancy rates for children and infants are presented in Table 13. It should be noted that there are often more than one substrate at one named location and that substrates at a given location are liable to change over time. Activities were assigned to the predominant substrate over which they were taking place.

Adults' intertidal occupancy rates

Table D presents a summary of the adults' intertidal occupancy rates in the aquatic survey area. The table includes the mean occupancy rates for the high-rate groups and the observed 97.5th percentile rates.

Table D. Summary of adults' intertidal occupancy rates

Intertidal substrate	Number of observations	Number of people in the high-rate group	Maximum of the high-rate group (h y^{-1})	Mean of the high-rate group (h y^{-1})	97.5th percentile (h y^{-1})
Mud	30	15	541	278	414
Mud and sand	18	5	674	478	674
Salt marsh	14	2	840	563	660
Sand	70	16	1052	754	1010
Sand and stones	72	15	912	460	680
Stones	2	2	112	112	112
Boat on mud	3	3	1642	1486	1631

The activities undertaken by people in the adult high-rate groups for occupancy over each of the intertidal substrates were:

- For mud: collecting mussels at Foulney Island; collecting winkles in Walney Channel; wildfowling at Cockerham Marsh and the Lune Estuary; carrying out rescue duties in Morecambe Bay.
- For mud and sand: dog walking at Hest Bank and Red Nab: walking at Arnside.
- For salt marsh: turf cutting at Hazleslack Marsh; tending livestock on Glasson Marsh.
- For sand: tractor fishing in Morecambe Bay (mainly between the Leven and Kent Estuaries); collecting cockles and going to shellfish grounds in Morecambe Bay, setting nets in the Leven estuary and off Canal Foot; leading guided walks between Canal Foot and Sandgate Marsh; dog walking, beech combing, oyster farming and going to oyster beds off Roosebeck.
- For sand and stones: shore angling at Fleetwood, Morecambe and Red Nab; dog walking at Half Moon Bay and Rossall Point; walking at Half Moon Bay.
- For stones: sitting on the beach at Silverdale.
- For boat on mud: boat maintenance and spending time on a boat at Skippool.

Children's and infants' intertidal occupancy rates

Table E presents a summary of the children's and infants' intertidal occupancy rates in the aquatic survey area. The table includes the mean occupancy rates for the high-rate groups and the observed 97.5th percentile rates.

Table E. Summary of children's and infants' intertidal occupancy rates

Intertidal substrate	Number of observations	Number of people in the high-rate group	Maximum of the high-rate group (h y^{-1})	Mean of the high-rate group (h y^{-1})	97.5th percentile (h y^{-1})
Child age group (6 – 15 years old)					
Mud and sand	1	1	72	72	Not applicable
Sand	5	3	52	30	49
Sand and stones	9	6	70	48	70
Infant age group (0 – 5 years old)					
Sand	3	2	52	35	50
Sand and stones	2	2	90	80	90

The activities undertaken by individuals in the child age group high-rate groups for occupancy over each of the intertidal substrates were:

- For mud and sand: shore angling at Arnside and Newbiggin.
- For sand: walking at Morecambe; playing at Morecambe and Heysham.
- For sand and stones: rock pooling and playing at Half Moon Bay; playing at Rossall Point and Fleetwood.

The activities undertaken by individuals in the infant age group high-rate groups for occupancy over each of the intertidal substrates were:

- For sand: walking at Morecambe; playing at Heysham.
- For sand and stones: playing at Rossall Point and Fleetwood.

4.9 Gamma dose rate measurements

Gamma dose rate measurements were taken over eight intertidal substrates. All measurements were taken at a height of 1 metre above the substrate. The results are presented in Table 14 and are summarised in Table F.

Table F. Summary of gamma dose rate measurements taken over intertidal substrates

Substrate	Number of measurements taken	Minimum gamma dose rate at 1 metre[a] ($\mu Gy\ h^{-1}$)	Maximum gamma dose rate at 1 metre[a] ($\mu Gy\ h^{-1}$)
Mud	1	0.070 (one measurement only)	
Mud and sand	7	0.055	0.075
Mud, sand and stones	2	0.077	0.078
Mud and stones	1	0.053 (one measurement only)	
Sand	3	0.060	0.060 (all readings the same)
Sand and stones	3	0.059	0.067
Salt marsh	2	0.062	0.062 (both readings the same)
Stones	1	0.062 (one measurement only)	

Notes

[a]These measurements have not been adjusted for background dose rates.

For comparison, natural background levels have been estimated at 0.05 $\mu Gy\ h^{-1}$ over sand, 0.07 $\mu Gy\ h^{-1}$ over mud and over salt marsh, and 0.06 $\mu Gy\ h^{-1}$ over other substrates (EA, FSA, FSS, NRW, NIEA and SEPA, 2016).

4.10 Handling of fishing gear and sediment

Handling fishing gear that has become entrained with fine sediment particles, or handling sediment while undertaking activities such as bait digging or mollusc collecting, can potentially give rise to skin exposure from beta radiation. Doses to the skin are considered within the dose limitation system (ICRP, 1991).

Fishing gear can also be a source of gamma exposure due to occupancy in the vicinity of the gear. However, this pathway is minor compared with the exposure received during occupancy over intertidal areas and it has therefore been omitted from the report. Handling of angling equipment was not

considered to be a significant pathway. Therefore, as in previous surveys, data for this pathway were not collected.

Handling rates of fishing gear and sediment for adults are presented in Table 15. No handling of fishing gear or sediment was identified for children or infants.

Adults' handling rates of fishing gear and sediment

Table G presents a summary of the handling rates of fishing gear and sediment for adults. The table includes the mean handling rates for the high-rate groups and the observed 97.5th percentile rates.

Table G. Summary of adults' handling rates of fishing gear and sediment

Handling activity	Number of observations	Number of people in the high-rate group	Maximum of the high-rate group (h y^{-1})	Mean of the high-rate group (h y^{-1})	97.5th percentile (h y^{-1})
Handling fishing gear	23	7	1307	744	1110
Handling sediment	42	17	840	544	747

The activities undertaken by people in the adult high-rate groups for handling included:

- For handling fishing gear: handling nets in the Lune Estuary, Morecambe Bay (including between the Leven and Kent Estuaries), the Wyre Estuary and the Leven Estuary.
- For handling sediment: collecting mussels at Foulney Island; collecting cockles in Morecambe Bay; collecting winkles in Walney Channel; turf cutting at Hazleslack Marsh; oyster farming at Roosebeck; wildfowling at Cockerham Marsh and in the Lune Estuary.

4.11 Water based activities

Activities taking place in or on the water can lead to ingestion of water and/or inhalation of spray. These pathways are generally considered to be of minor radiological importance in comparison with other exposure pathways such as the ingestion of foods produced in the vicinity of a nuclear site. However, relevant data have been collected for consideration in dose assessments. Mean occupancy rates for the high-rate groups and 97.5th percentile rates have not been calculated.

Activities where there is a high likelihood of the individual's face submerging under water have been classified as activities 'in water', as they are more likely to lead to ingestion of water. All other activities have been classified as activities 'on water'.

Occupancy rates for activities taking place 'in water' and 'on water' in the aquatic survey area are presented in Table 16 for adults and Table 17 for children and infants. Where generic data for groups

of people were collected, for example members of sailing clubs, only representative examples have been included in the data presented.

Activities in the water

The activities identified taking place in the water in the aquatic survey area were kite surfing, water skiing, jet skiing, windsurfing, swimming, kayaking, paddle boarding and wakeboarding. Forty-one observations were recorded for adults, three observations were recorded for the child age group and no observations were recorded for the infant age group. The highest occupancy rate for adults was 210 h y^{-1} for three individuals who were kite surfing at Morecambe, Heysham, Middleton Sands and Fleetwood. The highest occupancy rate for the child age group was 60 h y^{-1} for a child who was jet skiing at Fleetwood.

Activities on the water

The activities taking place on the water in the aquatic survey area were power boating, living on a boat, fishing (including trawling, gill netting, drift netting, haaf netting, stow netting and potting), boat angling, rescue duties, motor launch duties, sailing, boat maintenance, spending time on a boat, push netting and paddling. One hundred observations were recorded for adults, four observations were recorded for the child age group and two observations were recorded for the infant age group. The highest occupancy rate for adults was 5100 h y^{-1} for two individuals who were living on a boat at Fleetwood. The highest occupancy rate for the child age group was 120 h y^{-1} for a child who was sailing in Morecambe Bay. The highest occupancy rate for the infant age group was 10 h y^{-1} for an infant who was paddling at Rossall Point and Fleetwood.

5 TERRESTRIAL RADIATION PATHWAYS

5.1 Terrestrial survey area

The terrestrial survey area (see Figure 2, page 23) covered the land within 5 km of the site centre (National Grid Reference: SD 401 596).

The land in the terrestrial survey area is predominantly agricultural. The main population centres are the village of Heysham and the southern suburbs of Morecambe, which are situated to the north-east of the site. The villages of Middleton and Overton and the small village of Sunderland are located to the south-east of the survey area. The land is bordered by the Lune Estuary to the east and Morecambe Bay to the west and there are several areas of salt marsh that are used for grazing livestock.

Twelve working farms were identified in the Heysham terrestrial survey area. Of these farms:

- One produced milk (from dairy cattle)
- One produced milk (from dairy cattle) and beef cattle
- One produced milk (from dairy cattle) and lambs
- Two produced milk (from dairy cattle), beef cattle and lambs
- Four produced beef cattle
- Three produced beef cattle and lambs

Hay, silage and maize were grown for use as animal feed on the farms on which they were produced but no arable crops were produced for human consumption.

Farmers and their families were consuming milk, beef and lamb produced commercially on their own farms.

Two allotment sites, with a total of approximately 130 individual plots, and many private gardens were located in the survey area. A wide variety of fruit and vegetables were grown on the allotments and in the gardens and some people used small amounts of seaweed as fertiliser on their vegetable plots. Several individuals kept small numbers of chickens, and one person kept ducks, to produce chicken and duck eggs for their own families' consumption or for sale.

Two beekeepers, who kept bees jointly, were interviewed. They had a total of 12 hives located at Overton and on farmland in the north-east of the survey area, but only four of these were used to produce honey and the other eight were used to produce queen bees for distribution to other beekeepers. The hives used to produce honey yielded on average between 14 kg and 18 kg of honey per hive per year. Some of the honey was consumed by the apiarists' families and friends and some

was sold. It was reported that two other beekeepers had hives in the survey area but that they only had one hive each.

The wild foods collected from within the survey area and consumed comprised blackberries, damsons, elderberries, sloes and mushrooms.

Several individuals were shooting on farmland within the survey area but no organised game shoots were identified. The shooters and their families consumed the shot pheasant and rabbit.

No human consumption of groundwater was identified. Livestock were supplied with borehole water for drinking at three farms. Livestock at the other farms were supplied with mains water but some also had access to spring water or ditch water in the fields.

5.2 Destination of food originating from the terrestrial survey area

Beef cattle and lambs were sold at Lancaster Auction and subsequently distributed nationally for slaughter or for further rearing by other farmers. Milk was sold to a national distribution chain. Honey was sold from the door and at fetes. Chicken and duck eggs were sold from the door.

5.3 The potential transfer of contamination off-site by wildlife

Representatives from the Heysham site reported that control measures taken against wildlife in order to limit the possibility that contamination was transferred off-site included fences and paved areas to deter wildlife from entering the site. A falconer with birds of prey was used to deter seagulls, pigeons and other birds. Seagulls were discouraged from nesting on the site and although this was primarily for reasons of public safety, since the birds became aggressive when nesting, it coincidentally also limited the possibility that contamination was transferred offsite by the gulls.

5.4 Food consumption data

Consumption data for locally produced foodstuffs potentially affected by deposition of gaseous discharges are presented in Tables 18 to 31 for adults and Tables 32 to 40 for children and infants. The mean consumption rates for the high-rate groups and the observed 97.5th percentile rates, calculated as described in Section 3.4, are given at the foot of each table. The consumption of meat from livestock that have grazed on salt marsh has been classified as an aquatic pathway and the data is presented in the aquatic section of this report.

In order to provide information relevant to monitoring and assessments studies, the consumption rate data collected during the survey were analysed to indicate the percentage that each food type contributed to each food group. The data are summarised in Table 41.

Adults' consumption rates

Consumption of locally produced foods was identified in the following 14 food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; milk; cattle meat; sheep meat; poultry; eggs; wild/free foods; rabbits/hares; honey; wild fungi. No consumption of pig meat was identified.

Table H presents a summary of the adults' consumption rates for the foods consumed from the terrestrial survey area. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. For comparison, the table also includes mean consumption rates and 97.5th percentile consumption rates based on national data, which are referred to as 'generic' data in this report.

Table H. Summary of adults' consumption rates of foods from the terrestrial survey area

Food group	Number of observations	Number of high-rate consumers	Observed maximum for the high-rate group (kg y^{-1})	Observed minimum for the high-rate group (kg y^{-1})	Observed mean for the high-rate group (kg y^{-1})	Observed 97.5th percentile (kg y^{-1})	Generic mean* (kg y^{-1})	Generic 97.5th percentile* (kg y^{-1})
Green vegetables	59	13	40.8	20.3	26.5	35.4	15	45
Other vegetables	61	20	38.6	13.6	24.6	38.6	20	50
Root vegetables	63	16	42	18.2	28	38.3	10	40
Potato	52	11	68	33.1	44.8	61.2	50	120
Domestic fruit	55	4	54.4	28.5	41.5	45.4	20	75
Milk	18	17	312.9	174.6	255.9	312.9	95	240
Cattle meat	2	2	47.3	47.3	47.3	47.3	15	45
Sheep meat	2	2	22.6	22.6	22.6	22.6	8	25
Poultry	1	1	1.8	1.8	1.8	Not applicable	10	30
Eggs	22	7	27.7	12.2	20.5	27.7	8.5	25
Wild/free foods	33	10	5	2.3	3.3	5	7	25
Rabbits/hares	3	3	1.8	0.9	1.2	1.8	6	15
Honey	3	2	7.9	7.9	7.9	7.9	2.5	9.5
Wild fungi	24	6	1.4	0.5	1.1	1.4	3	10

(*Generic rates based on data from Byrom *et al.*, 1995.)

Two of the mean consumption rates for the high-rate groups were greater than the generic 97.5th percentile consumption rates. These were for milk and cattle meat. Nine of the mean consumption rates for the high-rate groups exceeded the generic mean consumption rates. These were for green vegetables, other vegetables, root vegetables, domestic fruit, milk, cattle meat, sheep meat, eggs and honey. Three of the observed 97.5th percentile consumption rates exceeded the generic 97.5th percentile consumption rates. These were for milk, cattle meat and eggs.

Children's and infants' consumption rates

Three individuals in the child age group and five individuals in the infant age group were identified consuming foods from the terrestrial survey area. Table I presents a summary of children's and infants' consumption rates. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. No generic data have been determined for the child or infant age groups. In the child age group, no consumption of foods from the following food groups was identified: cattle meat; pig meat; sheep meat; poultry; rabbits/hares; honey. In the infant age group, no consumption of foods from the following food groups was identified: potato; cattle meat; pig meat; sheep meat; poultry; eggs; rabbits/hares; honey; wild fungi.

Table I. Summary of children's and infants' consumption rates of foods from the terrestrial survey area

Food group	Number of observations	Number of high-rate consumers	Observed maximum for the high-rate group (kg y^{-1})	Observed minimum for the high-rate group (kg y^{-1})	Observed mean for the high-rate group (kg y^{-1})	Observed 97.5th percentile (kg y^{-1})
Child age group (6 - 15 years old)						
Green vegetables	1	1	2.9	2.9	2.9	Not applicable
Other vegetables	2	2	0.5	0.2	0.4	0.5
Root vegetables	3	2	8	2.8	5.4	7.7
Potato	2	2	5.7	4.4	5.1	5.7
Domestic fruit	2	1	6.7	6.7	6.7	6.6
Milk	1	1	151.6	151.6	151.6	Not applicable
Eggs	1	1	4.7	4.7	4.7	Not applicable
Wild/free foods	1	1	2.1	2.1	2.1	Not applicable
Wild fungi	1	1	0.2	0.2	0.2	Not applicable
Infant age group (0 - 5 years old)						
Green vegetables	1	1	1	1	1	Not applicable
Other vegetables	2	2	0.7	0.4	0.5	0.7
Root vegetables	2	2	2	1.8	1.9	2
Domestic fruit	2	1	4.5	4.5	4.5	4.4
Milk	4	4	132.2	87.3	112.9	132.1
Wild/free foods	1	1	1.4	1.4	1.4	Not applicable

6 DIRECT RADIATION PATHWAYS

6.1 Direct radiation survey area

The direct radiation survey area (see Figure 2, page 23) covered the land and sea within 1 km of the Heysham nuclear licensed site boundary. The occupancy data collected from the direct radiation survey area is also applicable to inhalation and external exposure pathways arising from gaseous releases from the site.

The Heysham site is situated on a small promontory extending out into Morecambe Bay and parts of the direct radiation survey area to the north and south of the site and all the area to the west of the site are taken up by the waters and intertidal areas of the bay. The land within the direct radiation survey area is a mix of small residential areas, industrial areas, port facilities, a nature reserve, a golf course and a caravan park.

Immediately to the north of the site is the Port of Heysham, which includes a harbour, a ferry terminal, various depots and other port facilities. At low tide the exposed sandflats of Heysham Sands and Half Moon Bay extend northwards from the port to the edge of the direct radiation survey area. There is a café close to the shore at half Moon Bay.

To the north-east of the site there are two industrial estates and a residential area, which includes a public house, a nursery school and a primary school.

Immediately to the east of the site is the Heysham Nature Reserve and beyond the reserve a large area of land is taken up by the golf course. Further east, near the outer limit of the survey area, there is a small residential mobile home park and an industrial estate.

To the south east of the site there is a large caravan park and part of a sewage treatment works lies just inside the 1 km area.

The western side of the site is directly next to the sea and is protected by a sea wall. The cooling water outfalls from both of the power stations extend out into the sea from the sea wall and at the south end of the wall there is a rocky outcrop called Red Nab. Extensive sand flats are exposed at low tide and these extend southwards to form Middleton Sands.

The proposed area for the possible new nuclear site at Heysham includes land in the direct radiation survey area, mainly to the east and south-east of the existing site, with a small area to the north. At the time of the habits survey fieldwork most of this land was occupied by a nature reserve, a golf course

and a caravan park and no identifiable impact on the land use or activities were observed during the survey.

6.2 Residential activities

Most of the permanent residential properties within the direct radiation survey area were located in the suburbs of Heysham in the north-east of the area, where there were approximately 280 properties. Most of these were in the >0.5 – 1.0 km zone but eight properties were in the >0.25 – 0.5 km zone. To the south of the site there was a large caravan park, which extended over all three distance zones, with pitches for approximately 700 caravans. Many of the caravans were privately owned, and some of the owners and park staff lived in the caravans for most of the year. A mobile home park with approximately 30 residential homes was located in the east of the survey area in the >0.5 – 1.0 km zone.

Interviews were conducted at 13 residences, two of which included families with children. Ten of these were permanent residences and three were caravans. Two residence were within the 0 – 0.25 km zone, three residences were within the >0.25 – 0.5 km zone and eight residences were within the >0.5 – 1.0 km zone.

6.3 Leisure and educational activities

A new Visitors Centre for the nuclear power stations, located inside the licensed area, was opened to the public in 2013. The centre also offered guided tours of Heysham 2 station. The Nature Reserve to the east of the site attracted walkers, bird watchers and people undertaking nature studies. The golf course was well used and the golf club had approximately 600 members. The track between the Nature Reserve and the golf course was a popular area for dog walking. The shores at Half Moon Bay and in front of the caravan park were popular areas where people undertook activities such as dog walking, playing, angling and bait digging. Angling also took place from the sea wall on the north side of the harbour but the sea wall near the outfalls on the western side of the power stations was no longer a popular angling venue, since the area had been designated as a protected bass nursery area and no fishing was permitted. There was a children's nursery school in Higher Heysham and also part of a primary school, which straddled the outer limit of the direct radiation survey area.

6.4 Commercial activities

The main business areas within the direct radiation survey area were the Port of Heysham Industrial Estate to the north-east of the site, where there were 15 industrial and service businesses, and the Port of Heysham itself, where there was a ferry terminal and other port facilities and depots. Part of another industrial estate with four businesses inside the survey area was located to the north-east of the site and part of another with three businesses inside the survey area was located to the east of the site.

Employees at the Nature Reserve, Golf Course and caravan site were classified as working at businesses.

Interviews were conducted at ten businesses; one in the 0 – 0.25 km zone, one in the >0.25 – 0.5 km zone, six in the >0.5 – 1.0 km zone, and two where staff were allocated to either the >0.25 – 0.5 km zone or the >0.5 – 1.0 km zone, depending on their duties. Where employers provided generic data for a large number of staff only a representative sample has been included in the analysis.

The activities of Heysham site employees and contractors while at work were not considered in the direct radiation survey, as radiation workers are subject to different radiation protection criteria.

6.5 Occupancy rates

Table 42 presents indoor, outdoor and total occupancy data for adults, children and infants. An analysis of the data by distance zones and occupancy rates is shown in Table 43. A summary of occupancy rates in the direct radiation survey area is presented in Table J. Where generic data for groups of people were collected, for example employees of businesses, only representative examples have been included in the data presented.

Table J. Summary of direct radiation occupancy rates

Zone	Number of observations	Highest indoor occupancy (h y^{-1})	Highest outdoor occupancy (h y^{-1})	Highest total occupancy (h y^{-1})
0 - 0.25 km	20	7221	2544	8524
>0.25 - 0.5 km	65	6949	2708	8114
>0.5 - 1.0 km	143	8677	1786	8708

0 - 0.25 km from the nuclear licensed site boundary

Occupancy data for 20 individuals in the 0 - 0.25 km zone were included in the analysis. The observations were for four residents, one of whom was also working in the area, four people carrying out nature conservation warden duties, five nature conservation volunteers and seven dog walkers. The highest indoor occupancy rate was for a resident. The highest outdoor and total occupancy rates were for a resident who was also working in the area.

>0.25 - 0.5 km from the nuclear licensed site boundary

Occupancy data for 65 individuals in the >0.25 - 0.5 km zone were included in the analysis. The observations were for four residents, two of whom were also working in the area, 58 other people who were working in the area, two people who were staying in a caravan and one person who was visiting

a friend. The highest indoor occupancy rate was for a resident, the highest outdoor occupancy rate was for a resident who also worked in the area and the highest total occupancy rate was for a different resident who also worked in the area.

>0.5 - 1.0 km from the nuclear licensed site boundary

Occupancy data for 143 people in the >0.5 - 1.0 km zone were included in the analysis. The observations were for 21 residents, one of whom only lived in the area part time, 120 people who were working in the area, one person who was visiting family and one angler. A resident had the highest indoor and total occupancy rates. Four people who were working in the area had the highest outdoor occupancy rate.

6.6 Gamma dose rate measurements

Gamma dose rate measurements were taken indoors and outdoors at most properties where interviews were conducted in the Heysham direct radiation survey area. Outdoor measurements were taken approximately 5 to 10 metres from the nearest building, and where possible, were taken over grass. Gamma dose rate measurements over grass were taken at locations further than 5 km from the site centre to obtain background dose rates. All measurements were taken at a height of 1 metre above the substrate using a Mini 600 Series Type 6-81 Environmental Radiation Meter with a compensated Geiger-Müller tube. The indoor and outdoor measurements have not been adjusted for background dose rates. The results are presented in Table 44 and are summarised in Table K.

Table K. Summary of gamma dose rate measurements taken indoors and outdoors at properties in the direct radiation survey area

Substrate	Number of measurements taken	Minimum gamma dose rate at 1 metre (µGy h^{-1})	Maximum gamma dose rate at 1 metre (µGy h^{-1})
Indoor measurements[a]			
Concrete	9	0.050	0.113
Wood	7	0.054	0.111
Outdoor measurements[a]			
Grass	6	0.060	0.071
Concrete	8	0.061	0.092
Tarmac	4	0.047	0.066
Background measurements			
Grass	3	0.061	0.070

Notes

[a]These measurements have not been adjusted for background dose rates.

In general, the measurements taken outdoors at the properties were not notably different from the background measurements, but several of the indoor measurements were notably higher than the background readings. Since gamma dose rate measurements are influenced by the nature of building

materials, the substrate over which they are taken, and many other factors, the measurements taken inside properties are expected to be higher than those taken outdoors.

The gamma dose rate measurements can be compared with readings taken by the RIMNET programme, which continuously monitors radiation levels at a network of 91 sampling stations distributed throughout the UK (www.gov.uk). The nearest RIMNET station to Heysham is at Squires Gate in Blackpool, which is approximately 30 km away. The ambient (*i.e.* background) gamma dose rates at Squires Gate in the third quarter of 2016, which includes the period of the habits survey, ranged from 0.08 μGy h^{-1} to 0.14 μGy h^{-1}, so all the readings taken during the Heysham habits survey were within, or below, this range.

Estimates of the average annual doses from background radiation to the population across the UK, by county, have been made by Public Health England (previously the Radiation Protection Division of the Health Protection Agency), the most recent of these being a review conducted in 2005 (Watson *et al*, 2005). Further information on background radiation relevant to the geographic region covered in the Heysham habits survey can be found in the review.

7 USES OF HABITS DATA FOR DOSE ASSESSMENTS

7.1 Combined pathways

In determining habits data for the purposes of assessing radiological doses to the public, it may be necessary to consider a combination of pathways. Data are provided in Annex 1 and Annex 2 so that the full effect of combining pathways can be assessed for individual observations, given the concentrations and dose rates for a particular assessment. The rates for individuals in the high-rate groups are emboldened. In some circumstances, it will be possible to make simplifying assumptions and define the consumption and external exposure rates appropriate to a series of potential high-rate groups.

The most extensive combinations of pathways for adult dose assessment are shown in Table 45. Each of the 29 combinations shown in Table 45 represents an actual individual (or individuals) from Annex 1 who has positive data (irrespective of the magnitude), for each pathway marked with a cross. Other individuals from Annex 1 have combinations that are not listed in Table 45 because they have fewer pathways and a dose assessment for them would be adequately covered by one of the 29 listed combinations.

7.2 Foetal dose assessment

Dose assessment of the foetus was introduced routinely for the first time in the Radioactivity in Food and the Environment report for 2005 (EA, EHS, FSA and SEPA, 2006), following the publication of recommendations by the Radiation Protection Division of the Health Protection Agency (National Radiological Protection Board, 2005). The adopted approach is to use the consumption and occupancy data for women of childbearing age in order to calculate the potential dose to the foetus. Therefore, consumption and occupancy data collected during the Heysham habits survey for females of childbearing age are presented in Annex 5. The Office of National Statistics classifies women to be of childbearing age if they are between 15 – 44 years old (www.ons.gov.uk); this age range has been used in Annex 5. It was not possible to collect ages for all female observations during the habits survey. However, these females with unknown ages have been included in Annex 5 as they might be women of childbearing age.

7.3 Total dose assessment

The UK environment agencies and the Food Standards Agency have considered ways of using habits data to estimate total dose retrospectively. The adopted approach is to use the adult consumption and occupancy data collected in each habits survey to create a matrix with a series of habits profiles for each site. The National Dose Assessment Working Group (NDAWG) has considered this approach to

assessing retrospective total doses (Camplin *et al*, 2005) and has agreed that using habits profiles is an appropriate approach. The method used to estimate total dose integrated across pathways is provided in the RIFE reports (e.g. EA, FSA, FSS, NRW, NIEA and SEPA, 2016).

The relevant matrix for the adults' profiled habits data is shown in Annex 6. Additionally, profiles have been created for the child and infant age groups, and for women of childbearing age. These are shown in Annexes 7, 8, and 9 respectively. Most of the groups used for the pathways in the matrices are exactly analogous to the groups used throughout this habits survey report, although the names used are slightly different, for example 'Fruit – Domestic' rather than 'Domestic fruit'. However, in order to increase the robustness of the total dose assessments, some of the groups that are used throughout the rest of this report have been amalgamated together for use in the matrices. These are indicated in the notes at the foot of each matrix, where applicable. The 'Plume pathways' are related to inhalation and external exposure arising from gaseous discharges and use the total of the individuals' indoor and outdoor occupancy rates for each of the direct radiation zones. The 'Direct' pathway is expressed as the proportion of the profile members who are exposed to direct radiation.

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8 COMPARISONS WITH THE PREVIOUS SURVEY

The results from this 2016 survey are compared below with results from the last combined habits survey undertaken at Heysham in 2011. The aquatic, terrestrial and direct radiation survey areas in the 2016 survey were the same as those in the 2011 survey. The comparison of occupancy rates in the direct radiation area is for all age groups combined. All other comparisons are for adults only.

8.1 Aquatic survey area

Activities in the aquatic survey area in 2016 were broadly similar to those in 2011. The main differences were that the commercial cockle fishery, which was closed in 2011, was open in 2016, and that the lave net fishery for salmon and seatrout, which had been active in 2011, was almost completely inactive in 2016.

The main species of fish consumed by the adult high-rate group in 2011 were bass, plaice and flounder and in 2016 the main species were bass, plaice and cod. The main species of crustacean consumed by the adult high-rate group in both 2011 and 2016 was brown shrimp. The main species of mollusc consumed by the adult high-rate group in 2011 were cockles and mussels, but in 2016 the only species consumed by the people in the high-rate group was mussels. The main species of wildfowl consumed by the adult high-rate group in 2011 were pink-footed goose, mallard and greylag goose, and in 2016 the main species were pink-footed goose and mallard. The only species of marine plants/algae consumed by the adult high-rate group in both 2011 and 2016 was samphire.

A comparison between the 2011 and 2016 data for the consumption of aquatic foods is presented in Table L.

Table L. Comparison between 2011 and 2016 consumption rates of aquatic food groups for adults						
	2011			2016		
Food group	**Number in high-rate group**	**Maximum consumption rate (kg y^{-1})**	**Mean consumption rate for the high-rate group (kg y^{-1})**	**Number in high-rate group**	**Maximum consumption rate (kg y^{-1})**	**Mean consumption rate for the high-rate group (kg y^{-1})**
Fish	23	49.4	27.2	9	36.4	23.8
Crustaceans	8	12.9	10.6	8	13.9	10.0
Molluscs	2	9.0	6.7	2	4.5	4.5
Wildfowl	6	21.7	12.8	3	17.8	13.1
Marine plants/algae	7	2.3	1.6	3	0.9	0.7
Salt marsh grazed sheep meat	19	17.0	8.6	18	11.8	7.7

In 2016, compared with 2011, there were decreases in the mean consumption rate for the adult high-rate group for fish, crustaceans, molluscs, marine plants algae and salt marsh grazed sheep meat, and an increase in the mean consumption rate for the adult high-rate group for wildfowl. Most of the changes were small and no specific reasons for the changes were identified.

In 2011 intertidal occupancy for adults was recorded over the following eight substrates: mud; mud and sand; rock; saltmarsh; sand; sand and stones; stones; boat on mud. In 2016 activities were recorded over similar substrates, except that occupancy over rock was not identified.

The following activities were undertaken by the individuals in the adult high-rate groups for occupancy over intertidal substrates:

- In 2011: shore angling, walking, dog walking, wildfowling, collecting cockles, collecting mussels, tractor fishing, setting nets, oyster farming, turf cutting, boat maintenance, leading guided walks, bird watching, bait digging, collecting crabs, collecting samphire, long-lining, lave netting and elver fishing.
- In 2016: shore angling, walking, dog walking, wildfowling, collecting cockles, collecting mussels, tractor fishing, setting nets, oyster farming, turf cutting, boat maintenance, leading guided walks, going to oyster beds, spending time on a boat (resting on mud), carrying out rescue duties, beech combing, sitting on the beach, going to shellfish grounds, collecting winkles and tending livestock.

The following activity was undertaken by the individuals in the adult high-rate groups for handling fishing gear:

- In 2011 and 2016: handling nets.

The following activities were undertaken by the individuals in the adult high-rate groups for handling sediment:

- In 2011: collecting mussels, collecting seaweed, turf cutting, oyster farming and wildfowling.
- In 2016: collecting mussels, collecting cockles, collecting winkles, turf cutting, oyster farming and wildfowling.

A comparison between the 2011 and 2016 data for adult occupancy over intertidal substrates, handling fishing gear and handling sediment is shown in Table M.

Table M. Comparison between 2011 and 2016 intertidal occupancy rates and handling rates of fishing gear and sediment for adults

	2011			2016		
Intertidal substrate or handling pathway	**Number in high-rate group**	**Maximum occupancy or handling rate (h y^{-1})**	**Mean occupancy or handling rate for the high-rate group (h y^{-1})**	**Number in high-rate group**	**Maximum occupancy or handling rate (h y^{-1})**	**Mean occupancy or handling rate for the high-rate group (h y^{-1})**
Mud	8	360	270	15	541	278
Mud and sand	2	350	266	5	674	478
Rock	3	350	261	Not identified		
Salt marsh	4	840	508	2	840	563
Sand	8	1269	748	16	1052	754
Sand and stones	6	650	414	15	912	460
Stones	4	322	207	2	112	112
Boat on mud	2	720	720	3	1642	1486
Handling fishing gear	11	964	583	7	1307	744
Handling sediment	9	840	445	17	840	544

In 2016, compared to 2011, the mean intertidal occupancy rate for the adult high-rate group increased slightly over mud, salt marsh, sand, and sand and stones; increased significantly over mud and sand, and boat on mud; and decreased significantly over stones. Occupancy over rock was identified in 2011 but not in 2016.

The increase in the occupancy rate over mud and sand was due to the identification in 2016 of several keen walkers and dog walkers over this substrate at Hest Bank, Arnside and Red Nab, who had not

been identified in 2011. The increase in the occupancy rate over boat on mud was due to the identification in 2016 of people spending significant periods of time on board boats at Skippool Creek. No specific reasons were identified for the other changes in intertidal occupancy rates.

The mean rates for the adult high-rate groups for handling fishing gear and for handling sediment increased moderately in 2016 compared to 2011. The increase in the handling rate for fishing gear in 2016 was mainly due to an increase in fishing effort by one individual. The increase in the handling rate of sediment in 2016 was mainly due to increased activity by shellfish collectors following the opening of the cockle beds.

For activities taking place in the water in the aquatic survey area, the maximum adult occupancy rate decreased from 560 h y^{-1} in 2011, for a person who was kite surfing at Morecambe, to 210 h y^{-1} in 2016, for three people who were kite surfing at Morecambe, Heysham, Middleton Sands and Fleetwood. Kite surfing is classified as an 'in water' activity since it is likely to lead to the ingestion of seawater.

For activities taking place on the water in the aquatic survey area, the maximum adult occupancy rate in both years was for two people living on a boat at Fleetwood, and this decreased from 5300 h y^{-1} in 2011 to 5100 h y^{-1} in 2016.

The use of seaweed as a fertiliser on allotment plots was recorded in 2016 and was reported in 2011, although no quantifiable data was obtained in that year. The use of seaweed as an animal feed was not identified in either year.

8.2 Terrestrial survey area

Activities in the terrestrial survey area in 2016 were broadly similar to those in 2011. The main differences were that a new allotment site had been established, so there were two in the area in 2016, and that pigs were no longer kept in the area, since the only farm that had produced pigs in 2011 had been sold to a neighbouring farm, and no longer kept pigs in 2016. The principal types of farm produce within the area continued to be a mix of milk from dairy cattle, beef cattle and lambs.

The growing of fruit and vegetables in gardens and on allotment sites, beekeeping, shooting on farmland and the collection of wild/free foods were identified in both surveys. The mean consumption rates for the adult high-rate groups for terrestrial food groups from the 2011 and 2016 surveys are shown in Table N.

Table N. Comparison between 2011 and 2016 mean consumption rates for the adult high-rate groups for terrestrial food groups (kg y^{-1} and l y^{-1})		
Food group	**2011**	**2016**
Green vegetables	28.6	26.5
Other vegetables	27.6	24.6
Root vegetables	30.0	28
Potatoes	48.7	44.8
Domestic fruit	43.9	41.5
Milk	247.9	255.9
Cattle meat	56.8	47.3
Pig meat	26.0	Not identified
Sheep meat	16.6	22.6
Poultry	1.8	1.8
Eggs	14.3	20.5
Wild/free foods	2.9	3.3
Rabbits/hares	3.8	1.2
Honey	9.1	7.9
Wild fungi	1.3	1.1

In 2016, compared to 2011, the mean consumption rates for the adult high-rate groups decreased in the following nine food groups: green vegetables; other vegetables; root vegetables; potatoes; domestic fruit; cattle meat; rabbits/hares; honey; wild fungi. The mean consumption rates for the adult high-rate groups increased in 2016 in the following four food groups: milk; sheep meat; eggs; wild/free foods. The consumption rate for poultry remained the same in both years and the consumption of pig meat was identified in 2011 but not in 2016.

The most significant decreases in the consumption rates were for cattle meat and rabbits/hares, while the most significant increases were for sheep meat and eggs.

The cessation of the consumption of pig meat was because the only farm where pigs were reared in 2011 had been sold in 2016 and the new owners did not keep pigs. The decrease in the consumption rate of rabbits/hares was reported to be due to a decline in the rabbit population within the survey area. No specific reasons were identified for the other changes in consumption rates.

The consumption of groundwater by humans and livestock was identified in 2011 but in 2016 only livestock were identified consuming groundwater. The property where humans had consumed groundwater in 2011 had since been connected to the mains water supply and in 2016 the inhabitants no longer consumed borehole water.

8.3 Direct radiation survey area

Activities identified in the direct radiation survey area in 2011 and 2016 were similar and included people residing, working and undertaking recreational activities.

A comparison between the 2011 and 2016 direct radiation occupancy rates for all age groups combined, by zone, is presented in Table O.

Table O. Comparison between 2011 and 2016 direct radiation occupancy rates for all age groups combined (h y^{-1})

	2011	2016
0 - 0.25 km zone		
Highest indoor	6624	7221
Highest outdoor	2544	2544
Highest total	8524	8524
>0.25 - 0.5 km zone		
Highest indoor	8052	6949
Highest outdoor	2099	2708
Highest total	8241	8114
>0.5 - 1.0 km zone		
Highest indoor	7954	8677
Highest outdoor	1706	1786
Highest total	8240	8708

Except for the outdoor occupancy rate in the >0.5 – 1.0 km zone, the highest indoor, outdoor and total occupancy rates in all three zones in both 2011 and 2016 were for residents or residents who also worked in the area. The highest outdoor occupancy rate in the >0.5 – 1.0 km zone in both years was for people working in the area.

In the Heysham direct radiation survey area, four sets of gamma dose measurements taken in 2016 can be compared with those taken at the same properties in 2011. These data are shown in Table P.

Table P. Comparison between 2011 and 2016 gamma dose rates (µGy h^{-1})

	Indoor		Outdoor	
Location	2011	2016	2011	2016
Residence 2	0.133	0.105	0.097	0.065
Residence 7	0.118	0.101	0.107	0.092
Business 1	0.054	0.054	0.058	0.061
Business 8	0.097	0.104	0.061	0.071

Notes
These measurements have not been adjusted for background dose rates.
The locations correspond to those in Table 43.

There was no consistent pattern in the differences in the gamma dose rates between 2011 and 2016. Two of the indoor readings were lower in 2016 than in 2011, one was the same, and one was higher. For the outdoor readings, two were lower in 2016 than in 2011, and two were higher.

9 MAIN FINDINGS

The survey investigated three potential sources of public radiation exposure from the Heysham site, which were:

- Discharges of liquid radioactive waste into Morecambe Bay
- Discharges of gaseous radioactive waste to the atmosphere
- Emissions of direct radiation

Information was obtained by conducting interviews with members of the public including, for example, commercial and hobby fishermen, anglers, people spending time on intertidal substrates, farmers, allotment holders, beekeepers and people spending time within the direct radiation survey area. These people were targeted because their diet and habits may cause them to be exposed to radioactivity from the site. However, it should be noted that the most exposed people can only be defined with the outcome of a dose assessment. Data for 631 individuals are presented in this report. All consumption rates recorded are only for foods produced, collected or caught from within the aquatic and terrestrial survey areas as defined in Section 2.3. The consumption and occupancy rates in this section are presented to two significant figures.

9.1 Aquatic survey area

The mean consumption rates for the adult high-rate groups (as defined in Section 3.4) for the separate aquatic consumption pathways for foods potentially affected by liquid discharges were:

- 24 kg y^{-1} for fish
- 10 kg y^{-1} for crustaceans
- 4.5 kg y^{-1} for molluscs
- 13 kg y^{-1} for wildfowl
- 0.7 kg y^{-1} for marine plants/algae
- 7.7 kg y^{-1} for salt marsh grazed sheep meat

The predominant foods consumed by the people in the adult high-rate groups were:

- For fish: plaice, bass and cod
- For crustaceans: brown shrimp
- For molluscs: mussels
- For wildfowl: mallard and pink-footed goose
- For marine plants/algae: samphire
- For salt marsh grazed sheep meat: salt marsh grazed lamb

Seaweed was used as a fertiliser on allotment plots where fruit and vegetables were grown. The use of seaweed as an animal feed was not identified.

The mean occupancy rates for the adult high-rate groups over the separate intertidal substrates were:

- 280 h y^{-1} for mud
- 480 h y^{-1} for mud and sand
- 560 h y^{-1} for salt marsh
- 750 h y^{-1} for sand
- 460 h y^{-1} for sand and stones
- 110 h y^{-1} for stones
- 1500 h y^{-1} for boat on mud

The mean rates for the adult high-rate groups for handling were:

- 740 h y^{-1} for handling fishing gear (nets)
- 540 h y^{-1} for handling sediment

The maximum adult occupancy rates for water based activities were:

- 210 h y^{-1} for 'in water'
- 5100 h y^{-1} for 'on water'

Individuals in the child and infant age groups were recorded consuming aquatic foods and undertaking activities in the aquatic survey area.

9.2 Terrestrial survey area

The mean consumption rates for the adult high-rate groups for the separate consumption pathways for foods potentially affected by gaseous discharges were:

- 27 kg y^{-1} for green vegetables
- 25 kg y^{-1} for other vegetables
- 28 kg y^{-1} for root vegetables
- 45 kg y^{-1} for potato
- 42 kg y^{-1} for domestic fruit
- 260 l y^{-1} for milk
- 47 kg y^{-1} for cattle meat
- 23 kg y^{-1} for sheep meat
- 1.8 kg y^{-1} for poultry
- 21 kg y^{-1} for eggs
- 3.3 kg y^{-1} for wild/free foods
- 1.2 kg y^{-1} for rabbits/hares

- 7.9 kg y^{-1} for honey
- 1.1 kg y^{-1} for wild fungi

The consumption of terrestrial foodstuffs by individuals in the child and infant age groups was also recorded.

No consumption of pig meat from the survey area was identified.

No human consumption of groundwater was identified, but the consumption of groundwater by livestock was identified.

9.3 Direct radiation survey area

The highest indoor, outdoor and total occupancy rates recorded for each zone were:

0 - 0.25 km zone

- 7200 h y^{-1} for the indoor occupancy rate
- 2500 h y^{-1} for the outdoor occupancy rate
- 8500 h y^{-1} for the total occupancy rate

>0.25 - 0.5 km zone

- 6900 h y^{-1} for the indoor occupancy rate
- 2700 h y^{-1} for the outdoor occupancy rate
- 8100 h y^{-1} for the total occupancy rate

>0.5 - 1.0 km zone

- 8700 h y^{-1} for the indoor occupancy rate
- 1800 h y^{-1} for the outdoor occupancy rate
- 8700 h y^{-1} for the total occupancy rate

In the 0 - 0.25 km zone the highest indoor occupancy rate was for a resident and the highest outdoor and total occupancy rates were for a resident who was also working in the area.

In the >0.25 - 0.5 km zone the highest indoor occupancy rate was for a resident, the highest outdoor occupancy rate was for a resident who also worked in the area and the highest total occupancy rate was for a different resident who also worked in the area.

In the >0.5 - 1.0 km zone the highest indoor and total occupancy rates were for a resident and the highest outdoor occupancy rate was for four people who were working in the area.

10 HABITS SURVEY INFORMATION FOR CONSIDERATION IN THE SELECTION OF SAMPLES AND MEASUREMENTS FOR MONITORING PROGRAMMES

Habits surveys provide site-specific information on the consumption of locally produced foods and the location and types of activities which may affect the public's exposure to radiation. This information can be used to help in the selection of samples and measurements for the monitoring programmes by identifying foods that are consumed at high rates and the locations where people spend high amounts of time.

In England and Wales, the monitoring programme for radioactivity in food is undertaken by the Food Standards Agency, and the monitoring programme for radioactivity in the environment is conducted by the Environment Agency. The results of these programmes are published annually in the RIFE reports (e.g. EA, FSA, FSS, NRW, NIEA and SEPA, 2016).

In 2013 the Food Standards Agency completed a public consultation to review the way that they monitor radioactivity in food (FSA, 2012 and 2013). The outcome of the consultation was to implement a revised monitoring programme in 2014, with reductions in sampling and analysis of some foods that were considered to represent a very low radiological risk.

10.1 Summary of the monitoring programmes for Heysham

The 2015 monitoring programmes relevant to the Heysham area included the samples and measurements listed below. The location names, foods and substrate classifications are taken directly from RIFE. Some of the samples and measurements taken for the monitoring programmes may be from outside the survey areas used for the 2016 Heysham habits survey.

Aquatic samples

Food and environmental samples

Sample	***Location***
Flounder	Morecambe
Shrimps	Morecambe
Winkles	Middleton Sands
Mussels	Morecambe
Wildfowl	Morecambe
Seaweed	Half Moon Bay
Sediment	Half Moon Bay
Sediment	Pott's Corner
Sediment	Morecambe Central Pier
Sediment	Red Nab Point
Sediment	Sunderland Point
Sediment	Condor Green
Sediment	Sand Gate Marsh
Seawater	Heysham Harbour

Gamma dose rate measurements over intertidal sediments

Location	***Substrate***
Greenodd Salt Marsh	Salt marsh
Greenodd Salt Marsh	Grass
Sand Gate Marsh	Salt marsh
Sand Gate Marsh	Grass
High Foulshaw	Mud
High Foulshaw	Sand and mud
High Foulshaw	Grass and mud
High Foulshaw	Salt marsh
Arnside 1	Mud and sand
Arnside 1	Sand
Arnside 1	Grass and sand
Arnside 2	Salt marsh
Morecambe Central Pier	Sand
Half Moon Bay	Sand
Half Moon Bay	Sand and stones
Red Nab Point	Sand
Middleton Sands	Sand
Sunderland	Mud and sand
Sunderland	Salt marsh
Sunderland Point	Mud and sand
Colloway Marsh	Salt marsh
Lancaster	Grass
Aldcliffe Marsh	Salt marsh
Condor Green	Mud
Condor Green	Salt marsh

Terrestrial samples

Milk
Potatoes
Wheat
Freshwater from Lancaster

10.2 Information from the 2016 Heysham habits survey for use in the selection of samples and measurements for monitoring programmes

Food Standards Agency monitoring

The following foods were either consumed in the largest quantities in their food groups or were the only food in their food group and could be considered when selecting samples for the Food Standards Agency monitoring programme.

Food	*Food Group*
Plaice	Fish
Brown shrimp	Crustacean
Mussel	Mollusc
Mallard	Wildfowl
Samphire	Marine plants/algae
Cabbage	Green vegetables
Pumpkin	Other vegetables
Onion	Root vegetables
Potato	Potato
Apple	Domestic fruit
Cow's milk	Milk
Beef	Cattle meat
Lamb	Sheep meat
Pheasant	Poultry
Chicken egg	Eggs
Blackberry	Wild/free foods
Rabbit	Rabbits/hares
Honey	Honey
Mushroom	Wild fungi

Environment Agency monitoring

The current environmental monitoring programme adequately covers the Heysham area and no changes to this are suggested.

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12 REFERENCES

Allott, R., 2005. Assessment of compliance with the public dose limit. Principles for the assessment of total retrospective public doses. National Dose Assessment Working Group. NDAWG/2/2005.

Byrom, J., Robinson, C., Simmonds, J.R., Walters, B., and Taylor, R.R., 1995. Food consumption rates for use in generalised radiological dose assessments. J. Radiol. Prot. 1995 Vol. 15 No 4 335-341.

Camplin, W.C., Grzechnik, M.P. and Smedley, C.A., 2005. Methods for assessment of total dose in the Radioactivity in Food and the Environment report. Presented to the *National Dose Assessments Working Group (NDAWG)*. Paper NDAWG/3/2005, 27th April 2005.

Commission of the European Communities, 1996. Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation. Off. J. Eur. Commun., 39(L159): 1-114.

EC, 2014. Council Directive 2013/59/EURATOM laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation. OJ L13, 17.1.2014:1-73. EC, Brussels.

EA, EHS, FSA and SEPA, 2006. Radioactivity in Food and the Environment, 2005. EA, EHS, FSA and SEPA, Warrington, Belfast, London and Stirling. RIFE (11).

EA, FSA, FSS, NRW, NIEA and SEPA, 2016. Radioactivity in Food and the Environment, 2015. EA, FSA, FSS, NRW, NIEA and SEPA, Bristol, London, Aberdeen, Cardiff, Belfast and Stirling. RIFE (21).

EA, SEPA, DoENI, NRPB and FSA, 2002. Authorisation of discharges of radioactive waste to the environment. Principles for the assessment of prospective public doses. Interim Guidance. EA, SEPA, DoENI, NRPB and FSA, Lancaster.

EA, SEPA, NIEA, HPA and FSA, 2012. Principles for the Assessment of Prospective Public Doses arising from Authorised Discharges of Radioactive Waste to the Environment. EA, SEPA, NIEA, HPA and FSA, Penrith.

FSA, 2012. Radioactivity in Food Monitoring Review. FSA, London.

FSA, 2013. Radioactivity in Food Monitoring Review. Summary report of responses to consultation from stakeholders. FOODSA0128. FSA, London.

Garrod, C. J., Clyne, F. J., Ly, V.E., and Rumney, P., 2012. Radiological Habits Survey: Heysham, 2011. RL 02/12. Cefas, Lowestoft.

Good Housekeeping, 1994. Good Housekeeping Cook Book. Ebury Press, London.

Hessayon, D. G., 1990. The Fruit Expert, pbi Publications, Waltham Cross.

Hessayon, D. G., 1997. The New Vegetable & Herb Expert, Expert Books, London.

Hunt, G.J., Hewett, C.J. and Shepherd, J.G., 1982. The identification of critical groups and its application to fish and shellfish consumers in the coastal area of the north-east Irish Sea. Health Physics, Vol. 43, No 6, 875-889.

IAEA, 1996. International basic safety standards for protection against ionizing radiation and for the safety of radiation sources. Saf. Ser. No. 115. IAEA, Vienna.

ICRP, 1991. 1990 Recommendations of the International Commission on Radiological Protection. Annal. ICRP 21 (1-3). Pergamon Press, Oxford, (ICRP Publ. 60).

ICRP, 2006. Assessing dose of the representative person for the purpose of radiation protection of the public. Annal. ICRP 36 (3). Elsevier Science, Oxford, (ICRP Publ. 101).

ICRP, 2007. The 2007 Recommendations of the International Commission on Radiological Protection. Annal. ICRP 37 (2-4). Elsevier Science, Oxford, (ICRP Publ. 103).

Leonard, D.R.P., Hunt, G.J. and Jones, P.G.W., 1982. Investigation of individual radiation exposures from discharges to the aquatic environment: techniques used in habits surveys. Proc. 3rd Int. Symp. Soc. Radiol. Prot., Inverness, 6 to 11 June 1982. Vol 2, 512-517. Society for Radiological Protection.

NDAWG, 2005. Position paper on the collection and use of habits data for retrospective dose assessments. National Dose Assessment Working Group. NDAWG/4/2005.

NDAWG, 2009. Acquisition and use of habits data for prospective assessments. National Dose Assessment Working Group. NDAWG/2/2009.

National Radiological Protection Board, 2005. Guidance on the application of dose coefficients for the embryo and fetus from intakes of radionuclides by the mother. Docs NRPB 16(2). NRPB, Chilton, 41pp.

Smith, K.R. and Jones, A.L., 2003. Generalised habit data for radiological assessments. NRPB-W41. NRPB, Chilton.

UK Parliament, 1965. Nuclear Installations Act, 1965 (as amended). HMSO, London.

UK Parliament, 1999. The Ionising Radiation Regulations 1999. Stat. Inst. 1999/3232. HMSO, London, 67pp.

UK Parliament, 2009a. UK Strategy for Radioactive Discharges. DECC, London.

UK Parliament, 2009b. Draft National Policy Statement for Nuclear Power Generation (EN-6). DECC, London.

UK Parliament, 2016. Environmental Permitting (England and Wales) Regulations. Stat. Inst. 2016 No 1154. HMSO, London.

Watson, S.J., Jones, A.L., Oatway, W.B. and Hughes, J.S., 2005. Ionising Radiation Exposure of the UK Population: 2005 review. HPA-RPD-001, Chilton.

www.food.gov.uk

www.gov.uk

www.ons.gov.uk

Table 1. Survey coverage

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
SUMMARY OF ALL PATHWAYS					
All potential interviewees in the Heysham aquatic, terrestrial and direct radiation survey areas.	Number of people resident in the terrestrial survey area (excluding those resident in the direct radiation survey area) (See **(B) TERRESTRIAL PATHWAYS**)	27500[a]	95[b]	0.35%	The survey targeted individuals who were potentially the most exposed, mostly producers of local foods such as farmers and allotment holders.
	Number of people resident in the direct radiation survey area (See **(C) DIRECT RADIATION PATHWAYS**)	700	29[b]	4%	Interviews were conducted at 13 residences out of an estimated total of 310 permanent residences (not including approximately 700 caravans, some of which could be occupied for most of the year).
	Number of people working, visiting and undertaking recreational activities in the direct radiation survey area (See **(C) DIRECT RADIATION PATHWAYS**)	U	199[b]	U	Excluding employees and contractors at the nuclear licensed site. Where generalised data for groups of people were obtained, for example employees at some businesses, only a limited number of representative individuals have been included.
	Number of people effected by liquid discharges (excluding those assigned to other categories above) (See **(A) AQUATIC PATHWAYS**)	U	308[b]	U	Where generalised data for groups of people were obtained, for example members of sailing clubs, only a limited number of representative individuals have been included.
	Total for aquatic, terrestrial and direct radiation survey areas	U	631[b]	U	
(A) AQUATIC PATHWAYS					
Commercial and hobby fishermen	Number of commercial and hobby fishermen fishing in the aquatic survey area	U	30	U	
People undertaking activities in or on water (*e.g.* swimmers, surfers, boat anglers, commercial and hobby fishermen etc.)	Number of people undertaking activities in or on water in the aquatic survey area	U	147	U	Where generalised data for groups of people were obtained, for example members of sailing clubs, only a limited number of representative individuals have been included.
People using the shore (e.g. dog walkers, shore anglers, people playing, etc.)	Number of people undertaking intertidal activities in the aquatic survey area	U	182	U	
Fish consumers	Number of people consuming fish from the aquatic survey area	U	76	U	
Crustacean consumers	Number of people consuming crustaceans from the aquatic survey area	U	47	U	
Mollusc consumers	Number of people consuming molluscs from the aquatic survey area	U	9	U	

Table 1. Survey coverage

(B) TERRESTRIAL PATHWAYS					
Farmers	Number of farmers and their family members consuming food from the terrestrial survey area	45	41	92%	Interviews were conducted at 11 farms out of a total of 12 farms in the terrestrial survey area.
Allotment holders and gardeners	Number of allotment holders and gardeners and their family members consuming food from the terrestrial survey area	U	52	U	
Honey consumers	Number of people consuming honey produced in the survey area	U	3	U	Two beekeepers who kept hives in the survey area were interviewed.
(C) DIRECT RADIATION PATHWAYS					
Residents	Number of residents in the survey area	700	29	4%	Interviews were conducted at 13 residences out of an estimated total of 310 permanent residences (not including approximately 700 caravans, some of which could be occupied for most of the year).
Employees	Number of people working in the survey area	U	182	U	Excluding people who were living in the direct radiation survey area and employees and contractors at the nuclear licensed site. Where generalised data for groups of people were obtained, for example employees at some businesses, only a limited number of representative individuals have been included.
Visitors (people undertaking recreational activities or visiting relatives)	Number of people visiting the survey area	U	17	U	
BREAKDOWN OF AGE GROUPS FOR PEOPLE RESIDENT IN THE 5 km TERRESTRIAL SURVEY AREA					
Adult	16-year-old and over	22600[a]	597	3%	
Child	6-year-old to 15-year-old	3200[a]	21	1%	
Infant	0 to 5-year-old	2400[a]	13	1%	

Notes

[a] Estimate of the number of people resident in the 5 km terrestrial survey area based on data from www.ons.gov.uk.

[b] The number of people for whom positive data was obtained for pathways (A) and (B) and (C) will usually not equal the relevant totals in the summary of all pathways. This is because in sections (A), (B)

U - Unknown

Table 2. Typical food groups used in habits surveys

Food group	Examples of foods within the group
Green vegetables	Asparagus, broccoli, Brussels sprout, cabbage, calabrese, cauliflower, chard, courgette, cucumber, gherkin, globe artichoke, herbs, kale, leaf beet, lettuce, marrow, spinach
Other vegetables	Aubergine, broad bean, chilli pepper, French bean, kohl rabi, mangetout, pea, pepper, pumpkin, runner bean, sweetcorn, tomato
Root vegetables	Beetroot, carrot, celeriac, celery, chicory, fennel, garlic, Jerusalem artichoke, leek, onion, parsnip, radish, shallot, spring onion, swede, turnip
Potato	Potato
Domestic fruit	Apple, apricot, blackberry, blackcurrant, boysenberry, cherry, damson, fig, gooseberry, grape, greengage, huckleberry, loganberry, melon, nectarine, peach, pear, plum, raspberry, redcurrant, rhubarb, rowanberry, strawberry, tayberry, whitecurrant
Milk	Cows' milk, cream, goats' milk, yoghurt
Cattle meat[a]	Beef
Pig meat[a]	Pork
Sheep meat[a]	Lamb, mutton
Poultry[b]	Chicken, duck, goose, grouse, guinea fowl, partridge, pheasant, pigeon, turkey, woodcock
Eggs	Chicken egg, duck egg, goose egg
Wild/free foods	Blackberry, chestnut, crab apple, damson, dandelion root, elderberry, nettle, rowanberry, sloe
Honey	Honey
Wild fungi	Mushrooms, other edible fungi
Rabbits/Hares	Hare, rabbit
Venison[a]	Venison
Fish (sea)	Bass, brill, cod, ling, dab, Dover sole, flounder, gurnard, haddock, hake, herring, lemon sole, mackerel, monkfish, mullet, plaice, pollack, rays, saithe, salmon, sea trout, sprat, turbot, whitebait, whiting, witch, cuttlefish[c], squid[c]
Fish (freshwater)	Brown trout, eel (river), perch, pike, rainbow trout, salmon (river)
Crustaceans	Brown crab, common lobster, crawfish, *Nephrops*, prawn, shrimp, spider crab, squat lobster, velvet swimming crab
Molluscs	Cockles, limpets, mussels, oysters, razor clam, scallops, whelks, winkles
Wildfowl[b]	Canada goose, greylag goose, mallard, pink-footed goose, pintail, shoveler, teal, wigeon

Notes

[a] Including offal

[b] Domesticated ducks and geese are classified as poultry. Wild ducks and geese are classified as wildfowl.

[c] Although squid and cuttlefish are molluscs, radiologically they are more akin to fish.

Table 3. Adults' consumption rates of fish from the Heysham aquatic survey area (kg y^{-1})

Person ID number	Bass	Cod	Dab	Dover sole	Flounder	Lesser spotted dogfish	Mackerel	Plaice	Pollack	Sea trout	Whiting	Total
1078/1/1	**10.0**	**10.0**	**-**	**-**	**-**	**-**	**-**	**16.4**	**-**	**-**	**-**	**36.4**
1078/2/1	**10.0**	**10.0**	**-**	**-**	**-**	**-**	**-**	**16.4**	**-**	**-**	**-**	**36.4**
960/1/1	**-**	**10.5**	**7.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**9.0**	**27.5**
1109/1/1	**-**	**-**	**-**	**2.3**	**-**	**-**	**3.6**	**18.1**	**-**	**-**	**2.3**	**26.3**
1109/2/1	**-**	**-**	**-**	**2.3**	**-**	**-**	**3.6**	**18.1**	**-**	**-**	**2.3**	**26.3**
835/1/1	**3.6**	**3.6**	**-**	**-**	**-**	**-**	**-**	**11.8**	**-**	**-**	**-**	**19.1**
955/1/1	**-**	**-**	**-**	**-**	**16.0**	**-**	**-**	**-**	**-**	**-**	**-**	**16.0**
975/1/1	**4.3**	**-**	**-**	**-**	**-**	**-**	**-**	**9.0**	**-**	**-**	**-**	**13.2**
975/2/1	**4.3**	**-**	**-**	**-**	**-**	**-**	**-**	**9.0**	**-**	**-**	**-**	**13.2**
832/1/1	-	4.5	-	-	3.6	-	-	-	-	-	3.6	11.8
832/2/1	-	4.5	-	-	3.6	-	-	-	-	-	3.6	11.8
919/1/1	2.7	2.7	-	1.8	-	-	-	2.7	-	-	1.8	11.8
919/2/1	2.7	2.7	-	1.8	-	-	-	2.7	-	-	1.8	11.8
1015/1/1	2.3	2.3	-	-	2.3	-	-	2.3	-	-	2.3	11.3
958/1/1	-	-	-	-	-	-	-	11.2	-	-	-	11.2
955/2/1	-	-	-	-	10.2	-	-	-	-	-	-	10.2
1080/1/1	-	1.4	-	1.4	-	-	-	6.8	-	-	-	9.5
1080/2/1	-	1.4	-	1.4	-	-	-	6.8	-	-	-	9.5
1080/3/1	-	1.4	-	1.4	-	-	-	6.8	-	-	-	9.5
1078/3/1	2.3	2.3	-	-	-	-	-	4.5	-	-	-	9.1
1078/4/1	2.3	2.3	-	-	-	-	-	4.5	-	-	-	9.1
1078/5/1	2.3	2.3	-	-	-	-	-	4.5	-	-	-	9.1
1078/6/1	2.3	2.3	-	-	-	-	-	4.5	-	-	-	9.1
1078/7/1	2.3	2.3	-	-	-	-	-	4.5	-	-	-	9.1
1078/8/1	2.3	2.3	-	-	-	-	-	4.5	-	-	-	9.1
979/1/1	1.8	1.8	-	-	1.8	-	-	1.8	-	1.8	-	8.8
979/2/1	1.8	1.8	-	-	1.8	-	-	1.8	-	1.8	-	8.8
974/1/1	2.1	-	-	-	3.1	-	-	3.4	-	-	-	8.6
983/1/1	-	-	-	-	4.3	-	-	4.2	-	-	-	8.5
983/2/1	-	-	-	-	4.3	-	-	4.2	-	-	-	8.5
983/3/1	-	-	-	-	4.3	-	-	4.2	-	-	-	8.5
841/1/1	2.7	3.6	-	-	-	-	-	1.4	-	-	-	7.7
1011/1/1	-	-	-	1.7	-	-	-	5.7	-	-	-	7.4
1011/2/1	-	-	-	1.7	-	-	-	5.7	-	-	-	7.4
972/1/1	-	1.4	-	-	1.4	-	-	1.4	1.4	-	1.4	6.8
972/2/1	-	1.4	-	-	1.4	-	-	1.4	1.4	-	1.4	6.8
844/1/1	0.9	0.9	0.7	-	1.1	0.7	-	1.1	-	-	0.9	6.4
844/2/1	0.9	0.9	0.7	-	1.1	0.7	-	1.1	-	-	0.9	6.4
920/1/1	1.4	1.4	-	-	-	-	-	1.8	-	-	1.4	5.9
920/2/1	1.4	1.4	-	-	-	-	-	1.8	-	-	1.4	5.9
1118/1/1	-	-	-	-	-	-	-	4.4	-	-	-	4.4

Table 3. Adults' consumption rates of fish from the Heysham aquatic survey area (kg y^{-1})

Person ID number	Bass	Cod	Dab	Dover sole	Flounder	Lesser spotted dogfish	Mackerel	Plaice	Pollack	Sea trout	Whiting	Total
1118/2/1	-	-	-	-	-	-	-	4.4	-	-	-	4.4
1118/3/1	-	-	-	-	-	-	-	4.4	-	-	-	4.4
1118/4/1	-	-	-	-	-	-	-	4.4	-	-	-	4.4
1118/5/1	-	-	-	-	-	-	-	4.4	-	-	-	4.4
902/1/1	1.4	-	-	-	-	-	-	1.4	-	-	1.4	4.3
902/2/1	1.4	-	-	-	-	-	-	1.4	-	-	1.4	4.3
902/3/1	1.4	-	-	-	-	-	-	1.4	-	-	1.4	4.3
902/4/1	1.4	-	-	-	-	-	-	1.4	-	-	1.4	4.3
902/5/1	1.4	-	-	-	-	-	-	1.4	-	-	1.4	4.3
1113/1/1	-	-	1.3	-	1.3	-	-	1.3	-	-	-	3.9
1113/2/1	-	-	1.3	-	1.3	-	-	1.3	-	-	-	3.9
1113/3/1	-	-	1.3	-	1.3	-	-	1.3	-	-	-	3.9
1113/4/1	-	-	1.3	-	1.3	-	-	1.3	-	-	-	3.9
1113/5/1	-	-	1.3	-	1.3	-	-	1.3	-	-	-	3.9
833/1/1	-	-	3.4	-	-	-	-	-	-	-	-	3.4
833/2/1	-	-	3.4	-	-	-	-	-	-	-	-	3.4
867/1/1	-	2.7	-	-	-	-	-	-	-	-	0.7	3.4
980/3/1	-	-	-	-	-	-	3.1	-	-	-	-	3.1
980/4/1	-	-	-	-	-	-	3.1	-	-	-	-	3.1
825/1/1	-	-	-	1.4	-	-	-	1.4	-	-	-	2.7
825/2/1	-	-	-	1.4	-	-	-	1.4	-	-	-	2.7
866/1/1	-	1.4	-	-	-	-	-	0.5	-	-	-	1.8
900/1/1	0.9	-	-	-	0.9	-	-	-	-	-	-	1.7
900/2/1	0.9	-	-	-	0.9	-	-	-	-	-	-	1.7
900/3/1	0.9	-	-	-	0.9	-	-	-	-	-	-	1.7
908/1/1	0.6	0.6	-	-	-	-	-	-	-	-	0.6	1.7
908/2/1	0.6	0.6	-	-	-	-	-	-	-	-	0.6	1.7
908/3/1	0.6	0.6	-	-	-	-	-	-	-	-	0.6	1.7
908/4/1	0.6	0.6	-	-	-	-	-	-	-	-	0.6	1.7
908/5/1	0.6	0.6	-	-	-	-	-	-	-	-	0.6	1.7
826/1/1	0.3	-	-	-	-	-	-	-	-	-	-	0.3
826/2/1	0.3	-	-	-	-	-	-	-	-	-	-	0.3

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish for adults based on the 9 high-rate consumers is 23.8 kg y^{-1}

The observed 97.5th percentile rate based on 73 observations is 29.3 kg y^{-1}

Table 4. Adults' consumption rates of crustaceans from the Heysham aquatic survey area (kg y^{-1})

Person ID number	Brown shrimp	Common lobster	Total
1080/1/1	**9.6**	**4.3**	**13.9**
1080/2/1	**9.6**	**4.3**	**13.9**
1080/3/1	**9.6**	**4.3**	**13.9**
1109/1/1	**11.8**	**-**	**11.8**
1109/2/1	**11.8**	**-**	**11.8**
983/1/1	**4.8**	**-**	**4.8**
983/2/1	**4.8**	**-**	**4.8**
983/3/1	**4.8**	**-**	**4.8**
1011/1/1	4.4	-	4.4
1011/2/1	4.4	-	4.4
832/1/1	4.1	-	4.1
832/2/1	4.1	-	4.1
979/1/1	3.4	-	3.4
979/2/1	3.4	-	3.4
985/1/1	2.7	-	2.7
985/2/1	2.7	-	2.7
1078/1/1	2.4	-	2.4
1078/2/1	2.4	-	2.4
975/1/1	2.0	-	2.0
975/2/1	2.0	-	2.0
836/1/1	2.0	-	2.0
836/2/1	2.0	-	2.0
1113/1/1	2.0	-	2.0
1113/2/1	2.0	-	2.0
1113/3/1	2.0	-	2.0
1113/4/1	2.0	-	2.0
1113/5/1	2.0	-	2.0
1118/1/1	1.6	-	1.6
1118/2/1	1.6	-	1.6
1118/3/1	1.6	-	1.6
1118/4/1	1.6	-	1.6
1118/5/1	1.6	-	1.6
825/1/1	1.4	-	1.4
825/2/1	1.4	-	1.4
1015/1/1	0.7	-	0.7
837/1/1	0.5	-	0.5

Table 4. Adults' consumption rates of crustaceans from the Heysham aquatic survey area (kg y^{-1})

Person ID number	Brown shrimp	Common lobster	Total
1078/3/1	0.5	-	0.5
1078/4/1	0.5	-	0.5
1078/5/1	0.5	-	0.5
1078/6/1	0.5	-	0.5
1078/7/1	0.5	-	0.5
1078/8/1	0.5	-	0.5
843/1/1	0.3	-	0.3
946/1/1	0.3	-	0.3
946/2/1	0.3	-	0.3
826/1/1	0.2	-	0.2
826/2/1	0.2	-	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of crustaceans for adults based on the 8 high-rate consumers is 10.0 kg y^{-1}

The observed 97.5^{th} percentile rate based on 47 observations is 13.9 kg y^{-1}

Table 5. Adults' consumption rates of molluscs from the Heysham aquatic survey area (kg y^{-1})

Person ID number	Cockle	Mussel	Total
1078/1/1	**-**	**4.5**	**4.5**
1078/2/1	**-**	**4.5**	**4.5**
979/1/1	-	1.0	1.0
979/2/1	-	1.0	1.0
983/1/1	0.2	-	0.2
983/2/1	0.2	-	0.2
983/3/1	0.2	-	0.2
985/1/1	0.2	-	0.2
985/2/1	0.2	-	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of molluscs for adults based on the 2 high-rate consumers is 4.5 kg y^{-1}

The observed 97.5th percentile rate based on 9 observations is 4.5 kg y^{-1}

Table 6. Adults' consumption rates of wildfowl from the Heysham aquatic survey area (kg y^{-1})

Person ID number	Canada goose	Greylag goose	Mallard	Pink-footed goose	Shoveler	Snipe	Teal	Wigeon	Total
999/1/1	**2.8**	**2.2**	**3.6**	**5.1**	**-**	**-**	**1.3**	**2.8**	**17.8**
983/1/1	**-**	**-**	**9.8**	**-**	**-**	**-**	**-**	**0.9**	**10.7**
983/3/1	**-**	**-**	**9.8**	**-**	**-**	**-**	**-**	**0.9**	**10.7**
1000/1/1	0.5	0.7	0.9	1.1	0.2	0.1	0.3	0.6	4.4
1000/2/1	0.5	0.7	0.9	1.1	0.2	0.1	0.3	0.6	4.4
1000/3/1	0.5	0.7	0.9	1.1	-	-	0.3	0.6	4.1
1000/4/1	0.5	0.7	0.9	1.1	-	-	0.3	0.6	4.1
1000/5/1	0.5	0.7	0.9	1.1	-	-	0.3	0.6	4.1
1000/6/1	0.5	0.7	0.9	1.1	-	-	0.3	0.6	4.1
1078/1/1	-	-	1.4	-	-	-	0.9	0.5	2.7
1078/2/1	-	-	1.4	-	-	-	0.9	0.5	2.7
1118/1/1	-	-	0.3	-	-	-	-	-	0.3
1118/2/1	-	-	0.3	-	-	-	-	-	0.3
1118/3/1	-	-	0.3	-	-	-	-	-	0.3
1118/4/1	-	-	0.3	-	-	-	-	-	0.3
1118/5/1	-	-	0.3	-	-	-	-	-	0.3

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wildfowl for adults based on the 3 high-rate consumers is 13.1 kg y^{-1}

The observed 97.5th percentile rate based on 16 observations is 15.1 kg y^{-1}

Table 7. Adults' consumption rates of marine plants/algae from the Heysham aquatic survey area (kg y^{-1})

Person ID number	Samphire
1078/1/1	**0.9**
1078/2/1	**0.9**
1118/1/1	**0.4**
981/1/1	0.2
1080/1/1	0.2
1080/2/1	0.2
1080/3/1	0.2
882/1/1	0.1
882/2/1	0.1
882/3/1	0.1
882/4/1	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of marine plants/algae for adults based on the 3 high-rate consumers is 0.7 kg y^{-1}

The observed 97.5th percentile rate based on 11 observations is 0.9 kg y^{-1}

Table 8. Adults' consumption rates of salt marsh grazed sheep meat from the Heysham aquatic survey area (kg y^{-1})

Person ID number	Salt marsh lamb
882/1/1	**11.8**
882/2/1	**11.8**
882/3/1	**11.8**
882/4/1	**11.8**
883/1/1	**9.0**
883/2/1	**9.0**
883/3/1	**9.0**
883/4/1	**9.0**
883/5/1	**9.0**
981/1/1	**5.7**
981/2/1	**5.7**
981/3/1	**5.7**
981/4/1	**5.7**
884/1/1	**4.5**
884/2/1	**4.5**
884/3/1	**4.5**
884/4/1	**4.5**
884/5/1	**4.5**
1119/1/1	3.5
1119/2/1	3.5
873/1/1	2.0
873/2/1	2.0
873/4/1	2.0
873/5/1	2.0
873/6/1	2.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of salt marsh grazed sheep for adults based on the 18 high-rate consumers is 7.7 kg y^{-1}

The observed 97.5th percentile rate based on 25 observations is 11.8 kg y^{-1}

Table 9. Children's and infants' consumption rates of fish from the Heysham aquatic survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Bass	Cod	Dab	Plaice	Whiting	Total
920/3/1	14	1.4	1.4	-	1.8	1.4	5.9
920/4/1	11	1.4	1.4	-	1.8	1.4	5.9
833/3/1	13	-	-	3.4	-	-	3.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish for the child age group based on the 3 high-rate consumers is 5.1 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 5.9 kg y^{-1}

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 10. Children's and infants' consumption rates of salt marsh grazed sheep meat from the Heysham aquatic survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Salt marsh lamb
1119/4/1	6	2.6
873/3/1	14	2.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of salt marsh grazed sheep for the child age group based on the 2 high-rate consumers is 2.3 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 2.6 kg y^{-1}

Infant age group (0 - 5 years old)

Person ID number	Age	Salt marsh lamb
1119/3/1	4	1.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of salt marsh grazed sheep for the infant age group based on the 1 high-rate consumer is 1.7 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 11. Adults' consumption rates of vegetables and domestic fruit grown on land where seaweed has been used as a fertiliser (kg y^{-1})

Green vegetables

Person ID number	Broccoli	Chard	Courgette	Herbs	Kale	Lettuce	Rocket	Total
826/1/1	1.7	1.3	18.4	-	2.3	-	-	23.7
826/2/1	1.7	1.3	18.4	-	2.3	-	-	23.7
1106/1/1	-	-	2.1	0.1	-	2.7	0.7	5.6
1106/2/1	-	-	2.1	0.1	-	2.7	0.7	5.6
1106/3/1	-	-	2.1	0.1	-	2.7	0.7	5.6

Other vegetables

Person ID number	Broad bean	Mangetout	Pea	Pumpkin	Runner bean	Sweetcorn	Tomato	Total
826/1/1	1.8	-	2.0	18.0	0.7	0.5	1.1	24.1
826/2/1	1.8	-	2.0	18.0	0.7	0.5	1.1	24.1
1106/1/1	0.5	1.3	-	10.2	0.4	-	-	12.4
1106/2/1	0.5	1.3	-	10.2	0.4	-	-	12.4
1106/3/1	0.5	1.3	-	10.2	0.4	-	-	12.4

Root vegetables

Person ID number	Beetroot	Garlic	Leek	Onion	Sweet potato	Total
826/1/1	1.8	0.8	3.0	5.8	-	11.4
826/2/1	1.8	0.8	3.0	5.8	-	11.4
1106/1/1	-	0.3	-	-	2.0	2.3
1106/2/1	-	0.3	-	-	2.0	2.3
1106/3/1	-	0.3	-	-	2.0	2.3

Table 11. Adults' consumption rates of vegetables and domestic fruit grown on land where seaweed has been used as a fertiliser (kg y^{-1})

Potato

Person ID number	Potato
1106/1/1	14.4
1106/2/1	14.4
1106/3/1	14.4
826/1/1	12.7
826/2/1	12.7

Domestic fruit

Person ID number	Apple	Blackcurrant	Gooseberry	Melon	Pear	Raspberry	Redcurrant	Rhubarb	Strawberry	Total
826/1/1	0.5	1.6	1.6	-	0.5	4.1	1.6	1.1	0.9	11.8
826/2/1	0.5	1.6	1.6	-	0.5	4.1	1.6	1.1	0.9	11.8
1106/1/1	-	-	-	1.5	-	-	-	-	-	1.5
1106/2/1	-	-	-	1.5	-	-	-	-	-	1.5
1106/3/1	-	-	-	1.5	-	-	-	-	-	1.5

Notes

These data are presented for use in studies of the potential dose arising from the possible transfer onto the land of radionuclides originating from liquid discharges made into the sea. However, these foods were grown in the terrestrial survey area and the primary reason for investigating them was to gain information about foods potentially subject to gaseous discharges. Therefore, they are also included in the terrestrial food tables presented later in this report, and, in order to avoid double accounting in assessments of total dose, are entered only once in the Annexes, where they are classified as terrestrial foods.

Table 12. Adults' intertidal occupancy rates in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Mud	Mud and sand	Salt marsh	Sand	Sand and stones	Stones	Boat on mud
979/3/1	Foulney Island	Collecting mussels	541	-	-	-	-	-	-
	Walney Channel	Collecting winkles		-	-	-	-	-	-
	Morecambe Bay	Tractor fishing	-	-	-	478	-	-	-
	Morecambe Bay	Collecting cockles	-	-	-		-	-	-
1003/2/1	Cockerham Marsh and Lune Estuary	Wildfowling	366	-	-	-	-	-	-
1003/1/1	Cockerham Marsh and Lune Estuary	Wildfowling	340	-	-	-	-	-	-
1003/1/2	Cockerham Marsh and Lune Estuary	Wildfowling	340	-	-	-	-	-	-
1003/1/3	Cockerham Marsh and Lune Estuary	Wildfowling	340	-	-	-	-	-	-
983/1/1	Foulney Island	Collecting mussels	337	-	-	-	-	-	-
	Between the Leven and Kent Estuaries	Tractor fishing	-	-	-	897	-	-	-
	Morecambe Bay	Going to shellfish grounds	-	-	-		-	-	-
	Morecambe Bay	Collecting cockles	-	-	-		-	-	-
983/2/1	Foulney Island	Collecting mussels	337	-	-	-	-	-	-
	Between the Leven and Kent Estuaries	Tractor fishing	-	-	-	897	-	-	-
	Morecambe Bay	Going to shellfish grounds	-	-	-		-	-	-
	Morecambe Bay	Collecting cockles	-	-	-		-	-	-
979/1/1	Foulney Island	Collecting mussels	278	-	-	-	-	-	-
	Morecambe Bay	Tractor fishing	-	-	-	478	-	-	-
	Morecambe Bay	Collecting cockles	-	-	-		-	-	-
989/1/1	Morecambe Bay	Rescue duties	184	-	-	-	-	-	-
	Morecambe Bay	Beach cleaning	-	-	-	184	-	-	-
989/1/2	Morecambe Bay	Rescue duties	184	-	-	-	-	-	-
	Morecambe Bay	Beach cleaning	-	-	-	184	-	-	-
989/1/3	Morecambe Bay	Rescue duties	184	-	-	-	-	-	-
	Morecambe Bay	Beach cleaning	-	-	-	184	-	-	-
989/1/4	Morecambe Bay	Rescue duties	184	-	-	-	-	-	-
	Morecambe Bay	Beach cleaning	-	-	-	184	-	-	-
989/1/5	Morecambe Bay	Rescue duties	184	-	-	-	-	-	-
	Morecambe Bay	Beach cleaning	-	-	-	184	-	-	-
989/1/6	Morecambe Bay	Rescue duties	184	-	-	-	-	-	-
	Morecambe Bay	Beach cleaning	-	-	-	184	-	-	-
989/1/7	Morecambe Bay	Rescue duties	184	-	-	-	-	-	-
	Morecambe Bay	Beach cleaning	-	-	-	184	-	-	-
965/1/1	Walney Channel	Shore angling	166	-	-	-	-	-	-
	Roa Island	Collecting peeler crabs		-	-	-	-	-	-
1078/1/1	Cockerham Marsh and Pilling Marsh	Wildfowling	144	-	-	-	-	-	-
	Wyre Estuary	Dip netting		-	-	-	-	-	-
	Heysham	Collecting mussels		-	-	-	-	-	-
	Wyre Estuary	Collecting samphire	-	-	5	-	-	-	-
974/1/1	Walney Channel and Leven Estuary	Shore angling	140	-	-	-	-	-	-
	Bardsey	Long lining	-	-	-	93	-	-	-
	Newbiggin	Bait digging	-	-	-		-	-	-
999/1/1	Cockerham Marsh and Lune Estuary	Wildfowling	138	-	-	-	-	-	-
1000/1/1	Cockerham Marsh and Lune Estuary	Wildfowling	122	-	-	-	-	-	-

Table 12. Adults' intertidal occupancy rates in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Mud	Mud and sand	Salt marsh	Sand	Sand and stones	Stones	Boat on mud
975/1/1	Walney Channel and Leven Estuary	Shore angling	90	-	-	-	-	-	-
	Roosebeck, Newbiggin and Bardsey	Bait digging	-	-	-	104	-	-	-
	Arnside, Walney Island and Roa Island	Shore angling	-	-	-	-	134	-	-
975/2/1	Walney Channel and Leven Estuary	Shore angling	90	-	-	-	-	-	-
	Roosebeck, Newbiggin and Bardsey	Bait digging	-	-	-	104	-	-	-
	Arnside, Walney Island and Roa Island	Shore angling	-	-	-	-	134	-	-
958/1/1	Walney Channel	Shore angling	80	-	-	-	-	-	-
959/1/1	Walney Channel	Shore angling	69	-	-	-	-	-	-
	Morecambe and Half Moon Bay	Shore angling	-	-	-	-	139	-	-
1003/3/1	Cockerham Marsh and Lune Estuary	Wildfowling	66	-	-	-	-	-	-
1003/3/2	Cockerham Marsh and Lune Estuary	Wildfowling	66	-	-	-	-	-	-
976/1/1	Walney Channel and Leven Estuary	Shore angling	52	-	-	-	-	-	-
	Newbiggin and Aldingham	Shore angling	-	-	-	52	-	-	-
961/1/1	Walney Channel	Shore angling	30	-	-	-	-	-	-
961/2/1	Walney Channel	Shore angling	30	-	-	-	-	-	-
960/1/1	Walney Channel	Shore angling	12	-	-	-	-	-	-
	Fleetwood and Morecambe	**Shore angling**	-	-	-	-	**612**	-	-
861/1/1	**Hest Bank**	**Dog walking**	-	**674**	-	-	-	-	-
861/2/1	**Hest Bank**	**Dog walking**	-	**674**	-	-	-	-	-
834/1/1	**Arnside**	**Walking**	-	**417**	-	-	-	-	-
993/1/1	**Red Nab**	**Dog walking**	-	**350**	-	-	-	-	-
992/1/1	**Red Nab**	**Dog walking**	-	**274**	-	-	-	-	-
1109/1/1	Lune Estuary	Going to haaf netting grounds	-	138	-	-	-	-	-
	Lune Estuary	Going to stow nets	-		-	-	-	-	-
	Heysham	Collecting winkles	-		-	-	-	-	-
	Heysham	Collecting mussels	-		-	-	-	-	-
872/1/1	Hest Bank	Dog walking	-	91	-	-	-	-	-
	Morecambe	Dog walking	-	-	-	91	-	-	-
872/2/1	Hest Bank	Dog walking	-	91	-	-	-	-	-
	Morecambe	Dog walking	-	-	-	91	-	-	-
858/1/1	Hest Bank	Dog walking	-	91	-	-	-	-	-
	Half Moon Bay	Dog walking	-	-	-	-	91	-	-
858/2/1	Hest Bank	Dog walking	-	91	-	-	-	-	-
	Half Moon Bay	Dog walking	-	-	-	-	91	-	-
1109/2/1	Lune Estuary	Going to stow nets	-	73	-	-	-	-	-
	Heysham	Collecting winkles	-		-	-	-	-	-
	Heysham	Collecting mussels	-		-	-	-	-	-
833/1/1	Arnside and Newbiggin	Shore angling	-	72	-	-	-	-	-
833/2/1	Arnside and Newbiggin	Shore angling	-	72	-	-	-	-	-
930/1/1	Lune Estuary	Walking	-	65	-	-	-	-	-
931/1/1	Lune Estuary	Walking	-	65	-	-	-	-	-
931/1/2	Lune Estuary	Walking	-	65	-	-	-	-	-
893/1/1	Pott's Corner	Dog walking	-	52	-	-	-	-	-

Table 12. Adults' intertidal occupancy rates in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Mud	Mud and sand	Salt marsh	Sand	Sand and stones	Stones	Boat on mud
977/1/1	Canal Foot	Shore angling	-	32	-	-	-	-	-
	Newbiggin	Bait digging	-	-	-	48	-	-	-
	Leven Estuary	Shore angling	-	-	-	-	32	-	-
998/1/1	**Hazelslack Marsh**	**Turf Cutting**	-	-	**840**	-	-	-	-
883/1/1	**Glasson Marsh**	**Tending livestock**	-	-	**287**	-	-	-	-
888/2/1	Sunderland Point	Tending livestock	-	-	240	-	-	-	-
884/1/1	Pilling Marsh	Tending livestock	-	-	238	-	-	-	-
888/1/1	Sunderland Point	Tending livestock	-	-	120	-	-	-	-
888/3/1	Sunderland Point	Tending livestock	-	-	120	-	-	-	-
873/1/1	Bolton-le-Sands	Tending livestock	-	-	80	-	-	-	-
981/4/1	Sand Gate Marsh near Flookburgh	Tending livestock	-	-	61	-	-	-	-
	Leven Estuary	Dog walking	-	-	-	183	-	-	-
981/1/1	Sand Gate Marsh near Flookburgh	Tending livestock	-	-	61	-	-	-	-
1119/2/1	Colloway Marsh and Aldcliffe Marsh	Tending livestock	-	-	52	-	-	-	-
	Heysham	Playing	-	-	-	18	-	-	-
1119/5/1	Colloway Marsh and Aldcliffe Marsh	Tending livestock	-	-	52	-	-	-	-
1080/1/1	Wyre Estuary	Collecting samphire	-	-	6	-	-	-	-
1080/4/1	Wyre Estuary	Collecting samphire	-	-	6	-	-	-	-
985/1/1	**Between the Leven and Kent Estuaries**	**Tractor fishing**	-	-	-	**1052**	-	-	-
	Morecambe Bay	**Collecting cockles**	-	-	-		-	-	-
	Leven Estuary	**Setting nets**	-	-	-		-	-	-
1118/1/1	**Leven Estuary**	**Tractor fishing**	-	-	-	**1031**	-	-	-
	Canal Foot	**Setting nets**	-	-	-		-	-	-
	Canal Foot to Sand Gate Marsh	**Leading guided walks**	-	-	-		-	-	-
968/1/1	**Roosebeck**	**Dog walking**	-	-	-	**1002**	-	-	-
	Roosebeck	**Beach combing**	-	-	-		-	-	-
1006/1/1	**Roosebeck**	**Oyster farming**	-	-	-	**726**	-	-	-
	Roosebeck	**Going to oyster beds**	-	-	-		-	-	-
1006/1/2	**Roosebeck**	**Oyster farming**	-	-	-	**726**	-	-	-
	Roosebeck	**Going to oyster beds**	-	-	-		-	-	-
1006/1/3	**Roosebeck**	**Oyster farming**	-	-	-	**726**	-	-	-
	Roosebeck	**Going to oyster beds**	-	-	-		-	-	-
1006/1/4	**Roosebeck**	**Oyster farming**	-	-	-	**726**	-	-	-
	Roosebeck	**Going to oyster beds**	-	-	-		-	-	-
1006/1/5	**Roosebeck**	**Oyster farming**	-	-	-	**726**	-	-	-
	Roosebeck	**Going to oyster beds**	-	-	-		-	-	-
1006/1/6	**Roosebeck**	**Oyster farming**	-	-	-	**726**	-	-	-
	Roosebeck	**Going to oyster beds**	-	-	-		-	-	-
1006/1/7	**Roosebeck**	**Oyster farming**	-	-	-	**726**	-	-	-
	Roosebeck	**Going to oyster beds**	-	-	-		-	-	-
1006/1/8	**Roosebeck**	**Oyster farming**	-	-	-	**726**	-	-	-
	Roosebeck	**Going to oyster beds**	-	-	-		-	-	-
835/1/1	**Morecambe**	**Shore angling**	-	-	-	**416**	-	-	-
857/1/1	Morecambe	Walking	-	-	-	337	-	-	-
	Morecambe	**Shore angling**	-	-	-	-	**361**	-	-

Table 12. Adults' intertidal occupancy rates in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Mud	Mud and sand	Salt marsh	Sand	Sand and stones	Stones	Boat on mud
1015/1/1	Red Nab	Shore angling	-	-	-	312	-	-	-
	Red Nab	Bait digging	-	-	-		-	-	-
	Red Nab	**Shore angling**	-	-	-	-	**313**	-	-
832/1/1	Morecambe	Shore angling	-	-	-	313	-	-	-
832/2/1	Morecambe	Shore angling	-	-	-	313	-	-	-
952/1/1	Bardsey	Dog walking	-	-	-	274	-	-	-
979/4/1	Morecambe Bay	Tractor fishing	-	-	-	268	-	-	-
981/3/1	Leven Estuary	Dog walking	-	-	-	183	-	-	-
867/1/1	Half Moon Bay	Bait digging	-	-	-	104	-	-	-
1110/2/1	Middleton Sands	Dog walking	-	-	-	104	-	-	-
970/1/1	Roosebeck and Bardsey	Shore angling	-	-	-	104	-	-	-
	Walney Island and Foulney Island	Shore angling	-	-	-	-	104	-	-
972/1/1	Bardsey	Shore angling	-	-	-	70	-	-	-
	Morecambe, Half Moon Bay and Roa Island	Shore angling	-	-	-	-	208	-	-
836/1/1	Morecambe	Dog walking	-	-	-	60	-	-	-
836/2/1	Morecambe	Dog walking	-	-	-	60	-	-	-
908/1/1	Rossall Point	Bait digging	-	-	-	52	-	-	-
	Rossall Point	Shore angling	-	-	-	-	209	-	-
908/2/1	Rossall Point	Bait digging	-	-	-	52	-	-	-
	Rossall Point	Shore angling	-	-	-	-	209	-	-
919/1/1	Rossall Point and Fleetwood	Bait digging	-	-	-	52	-	-	-
	Rossall Point and Fleetwood	Shore angling	-	-	-	-	156	-	-
844/1/1	Half Moon Bay	Bait digging	-	-	-	52	-	-	-
	Fleetwood, Half Moon Bay and Morecambe	Shore angling	-	-	-	-	130	-	-
831/1/1	Morecambe	Walking	-	-	-	52	-	-	-
831/2/1	Morecambe	Walking	-	-	-	52	-	-	-
831/4/1	Morecambe	Walking	-	-	-	52	-	-	-
936/1/1	Morecambe and Middleton Sands	Water sports preparation	-	-	-	52	-	-	-
	Heysham and Fleetwood	Water sports preparation	-	-	-	-	52	-	-
936/1/2	Morecambe and Middleton Sands	Water sports preparation	-	-	-	52	-	-	-
	Heysham and Fleetwood	Water sports preparation	-	-	-	-	52	-	-
936/2/1	Morecambe and Middleton Sands	Water sports preparation	-	-	-	52	-	-	-
	Heysham and Fleetwood	Water sports preparation	-	-	-	-	52	-	-
909/1/1	Rossall Point	Bait digging	-	-	-	39	-	-	-
	Rossall Point	Bait digging	-	-	-		-	-	-
	Rossall Point	Shore angling	-	-	-	-	157	-	-
	Rossall Point	Shore angling	-	-	-	-		-	-
916/1/1	Pilling Sands	Kite buggying	-	-	-	30	-	-	-
	Fleetwood	Water sports preparation	-	-	-	-	15	-	-
936/3/1	Morecambe and Middleton Sands	Water sports preparation	-	-	-	26	-	-	-
	Heysham and Fleetwood	Water sports preparation	-	-	-	-	26	-	-
936/3/2	Morecambe and Middleton Sands	Water sports preparation	-	-	-	26	-	-	-
	Heysham and Fleetwood	Water sports preparation	-	-	-	-	26	-	-
936/4/1	Morecambe and Middleton Sands	Water sports preparation	-	-	-	26	-	-	-
	Heysham and Fleetwood	Water sports preparation	-	-	-	-	26	-	-
918/1/1	Lune Estuary	Fixing moorings	-	-	-	24	-	-	-
918/1/2	Lune Estuary	Fixing moorings	-	-	-	24	-	-	-

Table 12. Adults' intertidal occupancy rates in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Mud	Mud and sand	Salt marsh	Sand	Sand and stones	Stones	Boat on mud
859/1/1	Morecambe	Playing	-	-	-	20	-	-	-
	Half Moon Bay	Rock pooling	-	-	-	-	25	-	-
934/1/1	Morecambe	Playing	-	-	-	14	-	-	-
934/2/1	Morecambe	Playing	-	-	-	14	-	-	-
830/1/1	Morecambe	Walking	-	-	-	12	-	-	-
830/2/1	Morecambe	Walking	-	-	-	12	-	-	-
918/3/1	Lune Estuary	Fixing moorings	-	-	-	12	-	-	-
918/3/2	Lune Estuary	Fixing moorings	-	-	-	12	-	-	-
866/1/1	Morecambe	Bait digging	-	-	-	2	-	-	-
	Morecambe	Shore angling	-	-	-	-	235	-	-
1117/1/1	**Half Moon Bay**	**Dog walking**	-	-	-	-	**912**	-	-
1117/3/1	**Half Moon Bay**	**Dog walking**	-	-	-	-	**912**	-	-
906/1/1	**Rossall Point**	**Dog walking**	-	-	-	-	**456**	-	-
871/1/1	**Half Moon Bay**	**Walking**	-	-	-	-	**391**	-	-
871/2/1	**Half Moon Bay**	**Walking**	-	-	-	-	**391**	-	-
851/1/1	**Half Moon Bay**	**Dog walking**	-	-	-	-	**365**	-	-
899/1/1	**Half Moon Bay**	**Dog walking**	-	-	-	-	**365**	-	-
899/2/1	**Half Moon Bay**	**Dog walking**	-	-	-	-	**365**	-	-
904/1/1	**Rossall Point**	**Dog walking**	-	-	-	-	**365**	-	-
904/2/1	**Rossall Point**	**Dog walking**	-	-	-	-	**365**	-	-
1107/1/1	**Half Moon Bay**	**Dog walking**	-	-	-	-	**365**	-	-
1107/2/1	**Half Moon Bay**	**Dog walking**	-	-	-	-	**365**	-	-
905/1/1	Rossall Point	Playing	-	-	-	-	273	-	-
	Rossall Point	Dog walking	-	-	-	-		-	-
907/1/1	Rossall Point and Fleetwood	Litter collecting	-	-	-	-	261	-	-
907/1/2	Rossall Point and Fleetwood	Litter collecting	-	-	-	-	261	-	-
907/1/3	Rossall Point and Fleetwood	Litter collecting	-	-	-	-	261	-	-
903/1/1	Rossall Point	Dog walking	-	-	-	-	243	-	-
829/1/1	Half Moon Bay	Dog walking	-	-	-	-	156	-	-
829/2/1	Half Moon Bay	Dog walking	-	-	-	-	156	-	-
853/1/1	Half Moon Bay	Dog walking	-	-	-	-	156	-	-
853/2/1	Half Moon Bay	Dog walking	-	-	-	-	156	-	-
910/1/1	Rossall Point	Shore angling	-	-	-	-	130	-	-
	Rossall Point	Walking	-	-	-	-		-	-
825/1/1	Half Moon Bay	Dog walking	-	-	-	-	122	-	-
879/1/1	Half Moon Bay	Dog walking	-	-	-	-	104	-	-
1079/1/1	Half Moon Bay	Dog walking	-	-	-	-	104	-	-
1079/2/1	Half Moon Bay	Dog walking	-	-	-	-	104	-	-
826/1/1	Half Moon Bay	Playing	-	-	-	-	104	-	-
	Half Moon Bay	Collecting seaweed	-	-	-	-		-	-
905/2/1	Rossall Point	Playing	-	-	-	-	90	-	-
902/1/1	Rossall Point	Shore angling	-	-	-	-	80	-	-
902/2/1	Rossall Point	Shore angling	-	-	-	-	80	-	-
902/3/1	Rossall Point	Shore angling	-	-	-	-	80	-	-
912/2/1	Rossall Point and Fleetwood	Playing	-	-	-	-	80	-	-
963/1/1	Roosebeck, Walney Island, Morecambe and Half Moon Bay	Shore angling	-	-	-	-	60	-	-
1009/1/1	Half Moon Bay	Dog walking	-	-	-	-	52	-	-

Table 12. Adults' intertidal occupancy rates in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Mud	Mud and sand	Salt marsh	Sand	Sand and stones	Stones	Boat on mud
1009/2/1	Half Moon Bay	Dog walking	-	-	-	-	52	-	-
1009/3/1	Half Moon Bay	Dog walking	-	-	-	-	52	-	-
912/1/1	Rossall Point and Fleetwood	Playing	-	-	-	-	40	-	-
935/1/1	Half Moon Bay	Playing	-	-	-	-	40	-	-
	Half Moon Bay	Rock pooling	-	-	-	-		-	-
935/2/1	Half Moon Bay	Playing	-	-	-	-	40	-	-
	Half Moon Bay	Rock pooling	-	-	-	-		-	-
915/1/1	Fleetwood	Water sports preparation	-	-	-	-	25	-	-
915/2/1	Fleetwood	Water sports preparation	-	-	-	-	25	-	-
915/3/1	Fleetwood	Water sports preparation	-	-	-	-	25	-	-
852/1/1	Half Moon Bay	Dog walking	-	-	-	-	16	-	-
852/2/1	Half Moon Bay	Dog walking	-	-	-	-	16	-	-
916/2/1	Fleetwood	Water sports preparation	-	-	-	-	15	-	-
916/3/1	Fleetwood	Water sports preparation	-	-	-	-	15	-	-
916/4/1	Fleetwood	Water sports preparation	-	-	-	-	15	-	-
865/1/1	**Silverdale**	**Sitting on the beach**	-	-	-	-	-	**112**	-
865/2/1	**Silverdale**	**Sitting on the beach**	-	-	-	-	-	**112**	-
923/1/1	**Skippool**	**Boat maintenance**	-	-	-	-	-	-	**1642**
924/1/1	**Skippool**	**Spending time on a boat**	-	-	-	-	-	-	**1408**
924/1/2	**Skippool**	**Spending time on a boat**	-	-	-	-	-	-	**1408**

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over mud for adults based on 15 high-rate observations is 278 h y^{-1}

The observed 97.5th percentile rate based on 30 observations is 414 h y^{-1}

The mean intertidal occupancy rate over mud and sand for adults based on 5 high-rate observations is 478 h y^{-1}

The observed 97.5th percentile rate based on 18 observations is 674 h y^{-1}

The mean intertidal occupancy rate over salt marsh for adults based on 2 high-rate observations is 563 h y^{-1}

The observed 97.5th percentile rate based on 14 observations is 660 h y^{-1}

The mean intertidal occupancy rate over sand for adults based on 16 high-rate observations is 754 h y^{-1}

The observed 97.5th percentile rate based on 70 observations is 1010 h y^{-1}

The mean intertidal occupancy rate over sand and stones for adults based on 15 high-rate observations is 460 h y^{-1}

The observed 97.5th percentile rate based on 72 observations is 680 h y^{-1}

The mean intertidal occupancy rate over stones for adults based on 2 high-rate observations is 112 h y^{-1}

The observed 97.5th percentile rate based on 2 observations is 112 h y^{-1}

The mean intertidal occupancy rate over boat on mud for adults based on 3 high-rate observations is 1486 h y^{-1}

The observed 97.5th percentile rate based on 3 observations is 1631 h y^{-1}

Table 13. Children's and infants' intertidal occupancy rates in the Heysham aquatic survey area (h y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Location	Activity	Mud and sand	Sand	Sand and stones
833/3/1	**13**	**Arnside and Newbiggin**	**Shore angling**	**72**	-	-
831/3/1	**14**	**Morecambe**	**Walking**	-	**52**	-
859/2/1	**10**	**Morecambe**	**Playing**	-	**20**	-
		Half Moon Bay	**Rock pooling**	-	-	**25**
1119/4/1	**6**	**Heysham**	**Playing**	-	**18**	-
934/3/1	10	Morecambe	Playing	-	14	-
934/4/1	7	Morecambe	Playing	-	14	-
912/3/1	**9**	**Rossall Point and Fleetwood**	**Playing**	-	-	**70**
912/4/1	**6**	**Rossall Point and Fleetwood**	**Playing**	-	-	**70**
935/3/1	**15**	**Half Moon Bay**	**Playing and rock pooling**	-	-	**40**
935/4/1	**12**	**Half Moon Bay**	**Playing and rock pooling**	-	-	**40**
935/5/1	**8**	**Half Moon Bay**	**Playing and rock pooling**	-	-	**40**
852/3/1	14	Half Moon Bay	Dog walking	-	-	16
852/4/1	14	Half Moon Bay	Dog walking	-	-	16
916/5/1	14	Fleetwood	Water sports preparation	-	-	15

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over mud and sand for the child age group based on 1 high-rate observation is 72 h y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

The mean intertidal occupancy rate over sand for the child age group based on 3 high-rate observations is 30 h y^{-1}

The observed 97.5th percentile rate based on 5 observations is 49 h y^{-1}

The mean intertidal occupancy rate over sand and stones for the child age group based on 6 high-rate observations is 48 h y^{-1}

The observed 97.5th percentile rate based on 9 observations is 70 h y^{-1}

Table 13. Children's and infants' intertidal occupancy rates in the Heysham aquatic survey area (h y^{-1})

Infant age group (0 - 5 years old)

Person ID number	Age	Location	Activity	Mud and sand	Sand	Sand and stones
831/5/1	**5**	**Morecambe**	**Walking**	-	**52**	-
1119/3/1	**4**	**Heysham**	**Playing**	-	**18**	-
934/5/1	5	Morecambe	Playing	-	14	-
905/3/1	**4**	**Rossall Point**	**Playing**	-	-	**90**
912/5/1	**4**	**Rossall Point and Fleetwood**	**Playing**	-	-	**70**

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over sand for the infant age group based on 2 high-rate observations is 35 h y^{-1}

The observed 97.5th percentile rate based on 3 observations is 50 h y^{-1}

The mean intertidal occupancy rate over sand and stones for the infant age group based on 2 high-rate observations is 80 h y^{-1}

The observed 97.5th percentile rate based on 2 observations is 90 h y^{-1}

Table 14. Gamma dose rate measurements over intertidal substrates in the Heysham aquatic survey area (mGyh^{-1})

Location	National Grid Reference	Substrate	Gamma dose rate at 1m[a]
Walney Channel	SD 185 692	Mud	0.070
Walney Channel	SD 187 688	Mud, sand and stones	0.077
Roa Island Causeway	SD 234 654	Mud and sand	0.075
Newbiggin	SD 262 682	Sand	0.060
Bardsey	SD 304 742	Mud and sand	0.067
Sandside	SD 475 807	Mud and sand	0.055
Arnside	SD 457 790	Mud and sand	0.069
Silverdale	SD 457 749	Mud and stones	0.053
Carnforth	SD 482 703	Salt marsh	0.062
Bolton-le-Sands	SD 472 682	Sand	0.060
Bolton-le-Sands	SD 472 682	Salt marsh	0.062
Hest Bank	SD 467 666	Mud and sand	0.074
Morecambe	SD 426 639	Sand	0.060
Morecambe	SD 427 642	Stones	0.062
Half Moon Bay	SD 407 607	Sand and stones	0.059
Red Nab	SD 403 590	Mud, sand and stones	0.078
Red Nab	SD 403 590	Mud and sand	0.070
Middleton Sands	SD 411 572	Mud and sand	0.058
Fleetwood	SD 331 483	Sand and stones	0.065
Rossall Point	SD 318 480	Sand and stones	0.067

Notes

[a] These measurements have not been adjusted for background dose rates

Table 15. Adults' handling rates of fishing gear and sediment in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Fishing gear	Sediment
1109/1/1	**Lune Estuary**	**Handling nets**	**1307**	**-**
	Heysham	Collecting mussels and winkles	**-**	10
1109/2/1	**Lune Estuary and Morecambe Bay**	**Handling nets**	**950**	**-**
	Heysham	Collecting mussels and winkles	**-**	10
931/1/2	**Lune Estuary**	**Handling nets**	**715**	**-**
931/1/1	**Lune Estuary**	**Handling nets**	**715**	**-**
1078/1/1	**Morecambe Bay, Lune Estuary and Wyre Estuary**	**Handling nets**	**558**	**-**
	Cockerham Marsh and Pilling Marsh	Wildfowling	**-**	212
	Heysham	Collecting mussels	**-**	
930/1/1	**Lune Estuary**	**Handling nets**	**520**	**-**
985/1/1	**Leven Estuary and between the Leven and Kent Estuaries**	**Handling nets**	**442**	**-**
	Morecambe Bay	Collecting cockles	**-**	87
1011/1/1	Lune Estuary and Morecambe Bay	Handling nets	240	-
1011/3/1	Lune Estuary and Morecambe Bay	Handling nets	240	-
1118/1/1	Leven Estuary and Canal Foot	Handling nets	221	-
979/3/1	Morecambe Bay	Handling nets	178	-
	Piel Island	Handling pots		**-**
	Foulney Island	**Collecting mussels**	**-**	**751**
	Morecambe Bay	**Collecting cockles**	**-**	
	Walney Channel	**Collecting winkles**	**-**	
1080/4/1	Wyre Estuary and Morecambe Bay	Handling nets	128	-
	Morecambe Bay	Handling pots		
1080/5/1	Wyre Estuary and Morecambe Bay	Handling nets	128	-
	Morecambe Bay	Handling pots		
1080/1/1	Wyre Estuary and Morecambe Bay	Handling nets	128	-
	Morecambe Bay	Handling pots		
983/1/1	Between the Leven and Kent Estuaries	Handling nets	107	**-**
	Morecambe Bay	**Collecting cockles**	**-**	**445**
	Foulney Island	**Collecting mussels**	**-**	
983/2/1	Between the Leven and Kent Estuaries	Handling nets	107	**-**
	Morecambe Bay	**Collecting cockles**	**-**	**445**
	Foulney Island	**Collecting mussels**	**-**	
927/1/3	Morecambe Bay	Trawling	90	-
927/1/1	Morecambe Bay	Trawling	90	-
927/1/2	Morecambe Bay	Trawling	90	-

Table 15. Adults' handling rates of fishing gear and sediment in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Fishing gear	Sediment
979/1/1	Morecambe Bay	Handling nets	38	**-**
	Morecambe Bay	**Collecting cockles**		**488**
	Foulney Island	**Collecting mussels**	**-**	
979/4/1	Morecambe Bay	Handling nets	38	-
1015/1/1	Half Moon Bay	Handling nets	27	**-**
	Red Nab	Bait digging	**-**	182
974/1/1	Bardsey	Handling lines	10	**-**
	Newbiggin	Bait digging	**-**	78
998/1/1	**Hazelslack Marsh**	**Turf Cutting**	**-**	**840**
1006/1/4	**Roosebeck**	**Oyster farming**	**-**	**612**
1006/1/7	**Roosebeck**	**Oyster farming**	**-**	**612**
1006/1/3	**Roosebeck**	**Oyster farming**	**-**	**612**
1006/1/6	**Roosebeck**	**Oyster farming**	**-**	**612**
1006/1/8	**Roosebeck**	**Oyster farming**	**-**	**612**
1006/1/2	**Roosebeck**	**Oyster farming**	**-**	**612**
1006/1/5	**Roosebeck**	**Oyster farming**	**-**	**612**
1006/1/1	**Roosebeck**	**Oyster farming**	**-**	**612**
1003/2/1	**Cockerham Marsh and Lune Estuary**	**Wildfowling**	**-**	**366**
1003/1/1	**Cockerham Marsh and Lune Estuary**	**Wildfowling**	**-**	**340**
1003/1/3	**Cockerham Marsh and Lune Estuary**	**Wildfowling**	**-**	**340**
1003/1/2	**Cockerham Marsh and Lune Estuary**	**Wildfowling**	**-**	**340**
999/1/1	Cockerham Marsh and Lune Estuary	Wildfowling	-	138
1000/1/1	Cockerham Marsh and Lune Estuary	Wildfowling	-	122
867/1/1	Half Moon Bay	Bait digging	-	104
975/1/1	Roosebeck, Newbiggin and Bardsey	Bait digging	-	104
975/2/1	Roosebeck, Newbiggin and Bardsey	Bait digging	-	104
965/1/1	Roa Island	Collecting peeler crabs	-	78
1003/3/2	Cockerham Marsh and Lune Estuary	Wildfowling	-	66
1003/3/1	Cockerham Marsh and Lune Estuary	Wildfowling	-	66
908/2/1	Rossall Point	Bait digging	-	52
908/1/1	Rossall Point	Bait digging	-	52
844/1/1	Half Moon Bay	Bait digging	-	52
919/1/1	Rossall Point and Fleetwood	Bait digging	-	52
977/1/1	Newbiggin	Bait digging	-	48
909/1/1	Rossall Point	Bait digging	-	39
918/1/2	Lune Estuary	Fixing moorings	-	24

Table 15. Adults' handling rates of fishing gear and sediment in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Fishing gear	Sediment
918/1/1	Lune Estuary	Fixing moorings	-	24
918/3/1	Lune Estuary	Fixing moorings	-	12
918/3/2	Lune Estuary	Fixing moorings	-	12
866/1/1	Morecambe	Bait digging	-	2

Notes

Emboldened observations are the high-rate individuals

The mean handling rate of fishing gear for adults based on 7 high-rate observations is 744 h y^{-1}

The observed 97.5th percentile rate based on 23 observations is 1110 h y^{-1}

The mean handling rate of sediments for adults based on 17 high-rate observations is 544 h y^{-1}

The observed 97.5th percentile rate based on 42 observations is 747 h y^{-1}

Table 16. Adults' occupancy rates in and on water in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	IN water	ON water
936/1/1	Morecambe, Heysham, Middleton Sands and Fleetwood	Kite surfing	208	-
936/1/2	Morecambe, Heysham, Middleton Sands and Fleetwood	Kite surfing	208	-
936/2/1	Morecambe, Heysham, Middleton Sands and Fleetwood	Kite surfing	208	-
837/1/1	Lune Estuary	Water skiing and jet skiing	130	-
936/3/1	Morecambe, Heysham, Middleton Sands and Fleetwood	Kite surfing	104	-
936/3/2	Morecambe, Heysham, Middleton Sands and Fleetwood	Kite surfing	104	-
936/4/1	Morecambe, Heysham, Middleton Sands and Fleetwood	Kite surfing	104	-
915/1/1	Fleetwood	Jet skiing	100	-
915/2/1	Fleetwood	Jet skiing	100	-
915/3/1	Fleetwood	Jet skiing	100	-
967/5/1	Roa Island	Windsurfing	76	-
967/5/2	Roa Island	Windsurfing	76	-
967/5/3	Roa Island	Windsurfing	76	-
967/5/4	Roa Island	Windsurfing	76	-
838/1/1	Morecambe Bay	Jet skiing	72	-
838/2/1	Morecambe Bay	Jet skiing	72	-
838/3/1	Morecambe Bay	Jet skiing	72	-
838/4/1	Morecambe Bay	Jet skiing	72	-
916/1/1	Fleetwood	Jet skiing	60	-
916/2/1	Fleetwood	Jet skiing	60	-
916/3/1	Fleetwood	Jet skiing	60	-
916/4/1	Fleetwood	Jet skiing	60	-
914/1/1	Fleetwood	Swimming and kayaking	50	-
914/2/1	Fleetwood	Swimming, kayaking and paddle boarding	50	-
914/3/1	Fleetwood	Swimming, kayaking and paddle boarding	50	-
914/4/1	Fleetwood	Swimming, kayaking and paddle boarding	50	-
969/1/1	Morecambe Bay	Kayaking	35	-
969/2/1	Morecambe Bay	Kayaking	35	-
917/1/1	Fleetwood	Wakeboarding	20	-
	Fleetwood	Power boating	-	60
917/2/1	Fleetwood	Wakeboarding	20	-
	Fleetwood	Power boating	-	60
917/3/1	Fleetwood	Wakeboarding	20	-
	Fleetwood	Power boating	-	60
871/1/1	Half Moon Bay	Swimming	15	-
871/2/1	Half Moon Bay	Swimming	15	-

Table 16. Adults' occupancy rates in and on water in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	IN water	ON water
843/1/1	Morecambe Bay	Water skiing	15	-
914/5/1	Fleetwood	Swimming	10	-
914/5/2	Fleetwood	Swimming	10	-
914/5/3	Fleetwood	Swimming	10	-
914/6/1	Fleetwood	Swimming	10	-
914/6/2	Fleetwood	Swimming	10	-
914/6/3	Fleetwood	Swimming	10	-
826/1/1	Morecambe	Swimming	7	-
937/1/1	Fleetwood	Living on a boat	-	5110
937/2/1	Fleetwood	Living on a boat	-	5110
1078/1/1	Morecambe Bay	Trawling, gill netting and drift netting	-	1599
	Lune estuary	Drift netting and wildfowling	-	
1109/1/1	Lune Estuary	Haaf netting, stow netting and trawling	-	1305
1109/2/1	Lune Estuary	Stow netting and trawling	-	1305
	Lune Estuary and Morecambe Bay	Drift netting	-	
1080/1/1	Morecambe Bay	Trawling, potting, boat angling and rescue duties	-	960
	Wyre Estuary	Trawling and motor launch duties	-	
927/1/1	Morecambe Bay	Trawling	-	720
927/1/2	Morecambe Bay	Trawling	-	720
927/1/3	Morecambe Bay	Trawling	-	720
1011/1/1	Morecambe Bay	Trawling, gill netting and drift netting	-	670
	Lune Estuary	Drift netting	-	
1011/3/1	Morecambe Bay	Trawling, gill netting and drift netting	-	670
	Lune Estuary	Drift netting	-	
931/1/1	Lune Estuary	Haaf netting	-	650
931/1/2	Lune Estuary	Haaf netting	-	650
918/1/1	Morecambe Bay	Sailing	-	576
918/1/2	Morecambe Bay	Sailing	-	576
918/2/1	Morecambe Bay	Sailing	-	576
918/2/2	Morecambe Bay	Sailing	-	576
923/1/1	Skippool	Boat maintenance	-	548
921/3/1	Morecambe Bay	Sailing	-	480
921/3/2	Morecambe Bay	Sailing	-	480
921/3/3	Morecambe Bay	Sailing	-	480
921/3/4	Morecambe Bay	Sailing	-	480
921/3/5	Morecambe Bay	Sailing	-	480

Table 16. Adults' occupancy rates in and on water in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	IN water	ON water
921/4/1	Morecambe Bay	Sailing	-	480
921/4/2	Morecambe Bay	Sailing	-	480
921/4/3	Morecambe Bay	Sailing	-	480
921/4/4	Morecambe Bay	Sailing	-	480
921/4/5	Morecambe Bay	Sailing	-	480
924/1/1	Skippool	Spending time on a boat	-	469
924/1/2	Skippool	Spending time on a boat	-	469
930/1/1	Lune Estuary	Haaf netting	-	455
967/4/1	Roa Island	Sailing	-	382
979/3/1	Piel Island	Potting	-	349
1080/4/1	Morecambe Bay	Trawling, potting and boat angling	-	345
	Wyre Estuary	Trawling	-	
1080/5/1	Morecambe Bay	Trawling, potting and boat angling	-	345
	Wyre Estuary	Trawling	-	
980/1/1	Between Barrow and Fleetwood	Sailing	-	327
980/1/2	Between Barrow and Fleetwood	Sailing	-	327
980/1/3	Between Barrow and Fleetwood	Sailing	-	327
980/1/4	Between Barrow and Fleetwood	Sailing	-	327
980/1/5	Between Barrow and Fleetwood	Sailing	-	327
980/2/1	Between Barrow and Fleetwood	Sailing	-	327
980/2/2	Between Barrow and Fleetwood	Sailing	-	327
980/2/3	Between Barrow and Fleetwood	Sailing	-	327
980/2/4	Between Barrow and Fleetwood	Sailing	-	327
980/2/5	Between Barrow and Fleetwood	Sailing	-	327
980/3/1	Between Barrow and Fleetwood	Sailing	-	306
980/4/1	Between Barrow and Fleetwood	Sailing	-	306
967/1/1	Morecambe Bay	Sailing	-	306
918/3/1	Morecambe Bay	Sailing	-	288
918/3/2	Morecambe Bay	Sailing	-	288
918/4/1	Morecambe Bay	Sailing	-	288
918/4/2	Morecambe Bay	Sailing	-	288
842/5/1	Morecambe Bay	Sailing and rescue duties	-	240
842/6/1	Morecambe Bay	Sailing and rescue duties	-	240
921/1/1	Wyre Estuary	Sailing	-	210
921/1/2	Wyre Estuary	Sailing	-	210
921/1/3	Wyre Estuary	Sailing	-	210

Table 16. Adults' occupancy rates in and on water in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	IN water	ON water
921/1/4	Wyre Estuary	Sailing	-	210
921/1/5	Wyre Estuary	Sailing	-	210
921/2/1	Wyre Estuary	Sailing	-	210
921/2/2	Wyre Estuary	Sailing	-	210
921/2/3	Wyre Estuary	Sailing	-	210
921/2/4	Wyre Estuary	Sailing	-	210
921/2/5	Wyre Estuary	Sailing	-	210
972/1/1	Walney Island and Roa Island	Boat angling	-	157
926/1/1	Morecambe Bay	Rescue duties	-	138
926/1/2	Morecambe Bay	Rescue duties	-	138
926/1/3	Morecambe Bay	Rescue duties	-	138
926/1/4	Morecambe Bay	Rescue duties	-	138
926/1/5	Morecambe Bay	Rescue duties	-	138
926/1/6	Morecambe Bay	Rescue duties	-	138
926/1/7	Morecambe Bay	Rescue duties	-	138
926/1/8	Morecambe Bay	Rescue duties	-	138
967/2/1	Morecambe Bay	Sailing	-	122
967/2/2	Morecambe Bay	Sailing	-	122
967/2/3	Morecambe Bay	Sailing	-	122
967/2/4	Morecambe Bay	Sailing	-	122
967/2/5	Morecambe Bay	Sailing	-	122
967/3/1	Morecambe Bay	Sailing	-	122
967/3/2	Morecambe Bay	Sailing	-	122
967/3/3	Morecambe Bay	Sailing	-	122
967/3/4	Morecambe Bay	Sailing	-	122
967/3/5	Morecambe Bay	Sailing	-	122
842/1/1	Morecambe Bay	Sailing	-	120
842/1/2	Morecambe Bay	Sailing	-	120
842/1/3	Morecambe Bay	Sailing	-	120
842/2/1	Morecambe Bay	Sailing	-	120
842/2/2	Morecambe Bay	Sailing	-	120
842/2/3	Morecambe Bay	Sailing	-	120
842/4/1	Morecambe Bay	Sailing	-	120
839/1/1	Morecambe Bay	Sailing	-	105
918/5/1	Lune Estuary	Sailing	-	60
918/6/1	Lune Estuary	Sailing	-	60

Table 16. Adults' occupancy rates in and on water in the Heysham aquatic survey area (h y^{-1})

Person ID number	Location	Activity	IN water	ON water
1015/1/1	Half Moon Bay	Push netting	-	27
859/1/1	Morecambe	Paddling	-	5
934/1/1	Morecambe	Paddling	-	1
934/2/1	Morecambe	Paddling	-	1

Table 17. Children's and infants' occupancy rates in and on water in the Heysham aquatic survey area (h y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Location	Activity	IN water	ON water
916/5/1	14	Fleetwood	Jet skiing	60	-
912/3/1	9	Rossall Point and Fleetwood	Swimming	10	-
912/4/1	6	Rossall Point and Fleetwood	Swimming	10	-
842/3/1	14	Morecambe Bay	Sailing	-	120
859/2/1	10	Morecambe	Paddling	-	5
934/3/1	10	Morecambe	Paddling	-	1
934/4/1	7	Morecambe	Paddling	-	1

Infant age group (0 - 5 years old)

Person ID number	Age	Location	Activity	IN water	ON water
912/5/1	4	Rossall Point and Fleetwood	Paddling	-	10
934/5/1	5	Morecambe	Paddling	-	1

Table 18. Adults' consumption rates of green vegetables from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Asparagus	Broccoli	Brussel sprout	Cabbage	Calabrese	Cauliflower	Chard	Courgette	Cucumber	Herbs	Kale	Lettuce	Nasturtium leaves	Rocket	Spinach	Total
1112/1/1	**3.4**	**1.1**	**1.1**	**11.1**	**-**	**2.3**	**-**	**6.8**	**-**	**-**	**-**	**15.0**	**-**	**-**	**-**	**40.8**
1112/2/1	**3.4**	**1.1**	**1.1**	**11.1**	**-**	**2.3**	**-**	**6.8**	**-**	**-**	**-**	**15.0**	**-**	**-**	**-**	**40.8**
1114/1/1	**-**	**3.6**	**3.0**	**6.8**	**-**	**4.1**	**-**	**-**	**8.5**	**-**	**2.1**	**-**	**-**	**0.3**	**0.3**	**28.8**
1114/2/1	**-**	**3.6**	**3.0**	**6.8**	**-**	**4.1**	**-**	**-**	**8.5**	**-**	**2.1**	**-**	**-**	**0.3**	**0.3**	**28.8**
1114/3/1	**-**	**3.6**	**3.0**	**6.8**	**-**	**4.1**	**-**	**-**	**8.5**	**-**	**2.1**	**-**	**-**	**0.3**	**0.3**	**28.8**
826/1/1	**-**	**1.7**	**-**	**-**	**-**	**-**	**1.3**	**18.4**	**-**	**-**	**2.3**	**-**	**-**	**-**	**-**	**23.7**
826/2/1	**-**	**1.7**	**-**	**-**	**-**	**-**	**1.3**	**18.4**	**-**	**-**	**2.3**	**-**	**-**	**-**	**-**	**23.7**
1008/1/1	**1.4**	**5.1**	**2.5**	**10.2**	**1.8**	**-**	**-**	**1.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**22.1**
1008/2/1	**1.4**	**5.1**	**2.5**	**10.2**	**1.8**	**-**	**-**	**1.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**22.1**
943/1/1	**-**	**-**	**8.2**	**5.1**	**-**	**7.7**	**-**	**-**	**-**	**-**	**-**	**1.1**	**-**	**-**	**-**	**22.1**
943/2/1	**-**	**-**	**8.2**	**5.1**	**-**	**7.7**	**-**	**-**	**-**	**-**	**-**	**1.1**	**-**	**-**	**-**	**22.1**
948/1/1	**-**	**-**	**3.1**	**4.1**	**-**	**2.5**	**-**	**5.5**	**5.1**	**-**	**-**	**-**	**-**	**-**	**-**	**20.3**
948/2/1	**-**	**-**	**3.1**	**4.1**	**-**	**2.5**	**-**	**5.5**	**5.1**	**-**	**-**	**-**	**-**	**-**	**-**	**20.3**
828/1/1	-	-	1.3	1.8	-	1.4	-	7.7	-	-	-	0.7	-	-	-	12.9
828/2/1	-	-	1.3	1.8	-	1.4	-	7.7	-	-	-	0.7	-	-	-	12.9
889/1/1	-	3.7	-	9.1	-	-	-	-	-	-	-	-	-	-	-	12.9
889/2/1	-	3.7	-	9.1	-	-	-	-	-	-	-	-	-	-	-	12.9
872/1/1	-	-	-	9.6	-	-	-	2.8	0.5	-	-	-	-	-	-	12.8
872/2/1	-	-	-	9.6	-	-	-	2.8	0.5	-	-	-	-	-	-	12.8
946/1/1	-	-	-	8.9	-	-	0.8	1.8	-	-	-	-	-	-	-	11.6
946/2/1	-	-	-	8.9	-	-	0.8	1.8	-	-	-	-	-	-	-	11.6
871/1/1	-	-	-	4.9	-	3.0	-	-	-	-	-	1.8	-	-	-	9.7
871/2/1	-	-	-	4.9	-	3.0	-	-	-	-	-	1.8	-	-	-	9.7
1116/1/1	-	0.3	-	-	-	-	-	7.4	-	-	1.1	-	0.2	-	-	8.9
1116/2/1	-	0.3	-	-	-	-	-	7.4	-	-	1.1	-	0.2	-	-	8.9
1113/1/1	-	1.0	1.0	0.8	-	0.2	-	1.3	0.6	-	1.7	0.8	-	-	0.9	8.5
1113/2/1	-	1.0	1.0	0.8	-	0.2	-	1.3	0.6	-	1.7	0.8	-	-	0.9	8.5
1113/3/1	-	1.0	1.0	0.8	-	0.2	-	1.3	0.6	-	1.7	0.8	-	-	0.9	8.5
1113/4/1	-	1.0	1.0	0.8	-	0.2	-	1.3	0.6	-	1.7	0.8	-	-	0.9	8.5
1113/5/1	-	1.0	1.0	0.8	-	0.2	-	1.3	0.6	-	1.7	0.8	-	-	0.9	8.5
1117/1/1	-	-	-	-	-	-	-	-	5.1	-	-	1.4	-	-	-	6.5
1117/2/1	-	-	-	-	-	-	-	-	5.1	-	-	1.4	-	-	-	6.5
1117/3/1	-	-	-	-	-	-	-	-	5.1	-	-	1.4	-	-	-	6.5
1117/4/1	-	-	-	-	-	-	-	-	5.1	-	-	1.4	-	-	-	6.5
1117/5/1	-	-	-	-	-	-	-	-	5.1	-	-	1.4	-	-	-	6.5
1107/1/1	0.3	-	2.0	-	-	1.0	-	-	-	0.3	2.3	0.5	-	-	-	6.3
1107/2/1	0.3	-	2.0	-	-	1.0	-	-	-	0.3	2.3	0.5	-	-	-	6.3
947/1/1	-	-	-	3.7	-	0.9	-	1.2	-	-	-	0.3	-	-	-	6.2
947/2/1	-	-	-	3.7	-	0.9	-	1.2	-	-	-	0.3	-	-	-	6.2
947/3/1	-	-	-	3.7	-	0.9	-	1.2	-	-	-	0.3	-	-	-	6.2
947/4/1	-	-	-	3.7	-	0.9	-	1.2	-	-	-	0.3	-	-	-	6.2
947/5/1	-	-	-	3.7	-	0.9	-	1.2	-	-	-	0.3	-	-	-	6.2
947/6/1	-	-	-	3.7	-	0.9	-	1.2	-	-	-	0.3	-	-	-	6.2
1106/1/1	-	-	-	-	-	-	-	2.1	-	0.1	-	2.7	-	0.7	-	5.6
1106/2/1	-	-	-	-	-	-	-	2.1	-	0.1	-	2.7	-	0.7	-	5.6
1106/3/1	-	-	-	-	-	-	-	2.1	-	0.1	-	2.7	-	0.7	-	5.6
890/1/1	-	-	-	-	-	-	-	5.5	-	-	-	-	-	-	-	5.5

Table 18. Adults' consumption rates of green vegetables from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Asparagus	Broccoli	Brussel sprout	Cabbage	Calabrese	Cauliflower	Chard	Courgette	Cucumber	Herbs	Kale	Lettuce	Nasturtium leaves	Rocket	Spinach	Total
890/2/1	-	-	-	-	-	-	-	5.5	-	-	-	-	-	-	-	5.5
825/1/1	0.7	-	-	2.0	-	-	-	0.7	-	-	1.3	-	-	-	-	4.7
984/1/1	-	-	-	-	-	-	-	4.4	-	-	-	-	-	-	-	4.4
984/2/1	-	-	-	-	-	-	-	4.4	-	-	-	-	-	-	-	4.4
828/6/1	-	-	0.4	0.5	-	0.4	-	2.2	-	-	-	0.2	-	-	-	3.7
828/3/1	-	-	0.3	0.4	-	0.4	-	1.9	-	-	-	0.2	-	-	-	3.2
828/4/1	-	-	0.3	0.4	-	0.4	-	1.9	-	-	-	0.2	-	-	-	3.2
943/3/1	-	-	1.1	0.7	-	1.0	-	-	-	-	-	0.2	-	-	-	2.9
943/4/1	-	-	1.1	0.7	-	1.0	-	-	-	-	-	0.2	-	-	-	2.9
943/5/1	-	-	1.1	0.7	-	1.0	-	-	-	-	-	0.2	-	-	-	2.9
943/6/1	-	-	1.1	0.7	-	1.0	-	-	-	-	-	0.2	-	-	-	2.9
825/2/1	0.3	-	-	1.0	-	-	-	0.3	-	-	0.7	-	-	-	-	2.3

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for adults based on the 13 high-rate consumers is 26.5 kg y^{-1}

The observed 97.5th percentile rate based on 59 observations is 35.4 kg y^{-1}

Table 19. Adults' consumption rates of other vegetables from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Broad bean	Chilli pepper	French bean	Mangetout	Pea	Pepper	Pumpkin	Runner bean	Squash	Sweetcorn	Tomato	Total
1113/1/1	**4.9**	**-**	**3.5**	**-**	**3.9**	**3.5**	**9.7**	**-**	**-**	**3.3**	**9.7**	**38.6**
1113/2/1	**4.9**	**-**	**3.5**	**-**	**3.9**	**3.5**	**9.7**	**-**	**-**	**3.3**	**9.7**	**38.6**
1113/3/1	**4.9**	**-**	**3.5**	**-**	**3.9**	**3.5**	**9.7**	**-**	**-**	**3.3**	**9.7**	**38.6**
1113/4/1	**4.9**	**-**	**3.5**	**-**	**3.9**	**3.5**	**9.7**	**-**	**-**	**3.3**	**9.7**	**38.6**
1113/5/1	**4.9**	**-**	**3.5**	**-**	**3.9**	**3.5**	**9.7**	**-**	**-**	**3.3**	**9.7**	**38.6**
1112/1/1	**9.1**	**0.5**	**4.5**	**2.3**	**-**	**4.5**	**-**	**9.1**	**3.6**	**-**	**-**	**33.6**
1112/2/1	**9.1**	**0.5**	**4.5**	**2.3**	**-**	**4.5**	**-**	**9.1**	**3.6**	**-**	**-**	**33.6**
826/1/1	**1.8**	**-**	**-**	**-**	**2.0**	**-**	**18.0**	**0.7**	**-**	**0.5**	**1.1**	**24.1**
826/2/1	**1.8**	**-**	**-**	**-**	**2.0**	**-**	**18.0**	**0.7**	**-**	**0.5**	**1.1**	**24.1**
1116/1/1	**-**	**-**	**1.4**	**-**	**-**	**-**	**19.2**	**-**	**1.5**	**0.9**	**-**	**23.0**
1116/2/1	**-**	**-**	**1.4**	**-**	**-**	**-**	**19.2**	**-**	**1.5**	**0.9**	**-**	**23.0**
1114/1/1	**2.8**	**-**	**0.9**	**-**	**-**	**0.3**	**-**	**1.4**	**3.6**	**2.5**	**5.4**	**16.9**
1114/2/1	**2.8**	**-**	**0.9**	**-**	**-**	**0.3**	**-**	**1.4**	**3.6**	**2.5**	**5.4**	**16.9**
1114/3/1	**2.8**	**-**	**0.9**	**-**	**-**	**0.3**	**-**	**1.4**	**3.6**	**2.5**	**5.4**	**16.9**
1008/1/1	**4.4**	**-**	**-**	**-**	**3.2**	**-**	**7.2**	**-**	**-**	**1.0**	**-**	**15.8**
1008/2/1	**4.4**	**-**	**-**	**-**	**3.2**	**-**	**7.2**	**-**	**-**	**1.0**	**-**	**15.8**
948/1/1	**-**	**-**	**0.4**	**-**	**3.0**	**-**	**-**	**-**	**-**	**0.8**	**10.1**	**14.3**
948/2/1	**-**	**-**	**0.4**	**-**	**3.0**	**-**	**-**	**-**	**-**	**0.8**	**10.1**	**14.3**
871/1/1	**7.3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**6.3**	**13.6**
871/2/1	**7.3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**6.3**	**13.6**
984/1/1	4.5	-	-	-	-	-	-	8.2	-	-	-	12.6
984/2/1	4.5	-	-	-	-	-	-	8.2	-	-	-	12.6
1106/1/1	0.5	-	-	1.3	-	-	10.2	0.4	-	-	-	12.4
1106/2/1	0.5	-	-	1.3	-	-	10.2	0.4	-	-	-	12.4
1106/3/1	0.5	-	-	1.3	-	-	10.2	0.4	-	-	-	12.4
890/1/1	-	-	-	-	-	-	-	-	-	-	9.0	9.0
890/2/1	-	-	-	-	-	-	-	-	-	-	9.0	9.0
889/1/1	-	-	-	-	-	-	-	-	-	-	9.0	9.0
889/2/1	-	-	-	-	-	-	-	-	-	-	9.0	9.0
828/1/1	-	-	0.8	-	4.7	-	-	2.5	-	0.5	-	8.5
828/2/1	-	-	0.8	-	4.7	-	-	2.5	-	0.5	-	8.5
872/1/1	-	-	-	-	1.7	2.2	-	-	-	-	1.7	5.6
872/2/1	-	-	-	-	1.7	2.2	-	-	-	-	1.7	5.6
1107/1/1	2.5	-	-	-	1.0	-	-	2.0	-	-	-	5.5
1107/2/1	2.5	-	-	-	1.0	-	-	2.0	-	-	-	5.5
943/1/1	-	-	0.4	-	-	-	-	0.8	-	1.6	-	2.7

Table 19. Adults' consumption rates of other vegetables from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Broad bean	Chilli pepper	French bean	Mangetout	Pea	Pepper	Pumpkin	Runner bean	Squash	Sweetcorn	Tomato	Total
943/2/1	-	-	0.4	-	-	-	-	0.8	-	1.6	-	2.7
828/6/1	-	-	0.2	-	1.4	-	-	0.7	-	0.1	-	2.4
828/3/1	-	-	0.2	-	1.2	-	-	0.6	-	0.1	-	2.1
828/4/1	-	-	0.2	-	1.2	-	-	0.6	-	0.1	-	2.1
946/1/1	-	-	-	-	-	-	-	2.0	-	-	-	2.0
946/2/1	-	-	-	-	-	-	-	2.0	-	-	-	2.0
1117/1/1	-	-	-	-	0.2	0.4	-	-	-	-	1.4	2.0
1117/2/1	-	-	-	-	0.2	0.4	-	-	-	-	1.4	2.0
1117/3/1	-	-	-	-	0.2	0.4	-	-	-	-	1.4	2.0
1117/4/1	-	-	-	-	0.2	0.4	-	-	-	-	1.4	2.0
1117/5/1	-	-	-	-	0.2	0.4	-	-	-	-	1.4	2.0
825/1/1	0.7	-	0.7	-	0.3	-	-	-	-	-	-	1.7
825/2/1	0.3	-	0.3	-	0.2	-	-	-	-	-	-	0.8
1119/1/1	-	-	-	-	-	-	-	-	-	0.7	-	0.7
1119/2/1	-	-	-	-	-	-	-	-	-	0.7	-	0.7
947/1/1	-	-	-	-	-	-	-	-	-	0.5	-	0.5
947/2/1	-	-	-	-	-	-	-	-	-	0.5	-	0.5
947/3/1	-	-	-	-	-	-	-	-	-	0.5	-	0.5
947/4/1	-	-	-	-	-	-	-	-	-	0.5	-	0.5
947/5/1	-	-	-	-	-	-	-	-	-	0.5	-	0.5
947/6/1	-	-	-	-	-	-	-	-	-	0.5	-	0.5
943/3/1	-	-	-	-	-	-	-	-	-	0.2	-	0.2
943/4/1	-	-	-	-	-	-	-	-	-	0.2	-	0.2
943/5/1	-	-	-	-	-	-	-	-	-	0.2	-	0.2
943/6/1	-	-	-	-	-	-	-	-	-	0.2	-	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables for adults based on the 20 high-rate consumers is 24.6 kg y^{-1}

The observed 97.5th percentile rate based on 61 observations is 38.6 kg y^{-1}

Table 20. Adults' consumption rates of root vegetables from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Beetroot	Carrot	Celery	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Sweet potato	Turnip	Total
1112/1/1	**4.5**	**-**	**-**	**-**	**-**	**5.0**	**18.1**	**3.4**	**-**	**6.8**	**-**	**4.1**	**-**	**-**	**42.0**
1112/2/1	**4.5**	**-**	**-**	**-**	**-**	**5.0**	**18.1**	**3.4**	**-**	**6.8**	**-**	**4.1**	**-**	**-**	**42.0**
1113/1/1	**2.4**	**3.4**	**-**	**-**	**-**	**3.6**	**6.5**	**1.5**	**-**	**1.0**	**-**	**12.3**	**-**	**4.5**	**35.3**
1113/2/1	**2.4**	**3.4**	**-**	**-**	**-**	**3.6**	**6.5**	**1.5**	**-**	**1.0**	**-**	**12.3**	**-**	**4.5**	**35.3**
1113/3/1	**2.4**	**3.4**	**-**	**-**	**-**	**3.6**	**6.5**	**1.5**	**-**	**1.0**	**-**	**12.3**	**-**	**4.5**	**35.3**
1113/4/1	**2.4**	**3.4**	**-**	**-**	**-**	**3.6**	**6.5**	**1.5**	**-**	**1.0**	**-**	**12.3**	**-**	**4.5**	**35.3**
1113/5/1	**2.4**	**3.4**	**-**	**-**	**-**	**3.6**	**6.5**	**1.5**	**-**	**1.0**	**-**	**12.3**	**-**	**4.5**	**35.3**
828/1/1	**3.2**	**-**	**-**	**-**	**-**	**4.7**	**5.0**	**2.5**	**-**	**-**	**-**	**9.5**	**-**	**-**	**25.0**
828/2/1	**3.2**	**-**	**-**	**-**	**-**	**4.7**	**5.0**	**2.5**	**-**	**-**	**-**	**9.5**	**-**	**-**	**25.0**
943/1/1	**3.4**	**-**	**-**	**-**	**-**	**-**	**8.2**	**-**	**0.5**	**-**	**1.7**	**6.8**	**-**	**-**	**20.7**
943/2/1	**3.4**	**-**	**-**	**-**	**-**	**-**	**8.2**	**-**	**0.5**	**-**	**1.7**	**6.8**	**-**	**-**	**20.7**
1114/1/1	**5.0**	**4.3**	**-**	**-**	**-**	**6.0**	**3.7**	**-**	**0.2**	**1.0**	**-**	**-**	**-**	**-**	**20.1**
1114/2/1	**5.0**	**4.3**	**-**	**-**	**-**	**6.0**	**3.7**	**-**	**0.2**	**1.0**	**-**	**-**	**-**	**-**	**20.1**
1114/3/1	**5.0**	**4.3**	**-**	**-**	**-**	**6.0**	**3.7**	**-**	**0.2**	**1.0**	**-**	**-**	**-**	**-**	**20.1**
948/1/1	**2.5**	**4.8**	**-**	**-**	**-**	**6.1**	**4.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**18.2**
948/2/1	**2.5**	**4.8**	**-**	**-**	**-**	**6.1**	**4.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**18.2**
871/1/1	2.7	-	-	-	1.1	5.4	4.3	-	-	-	-	-	-	-	13.5
871/2/1	2.7	-	-	-	1.1	5.4	4.3	-	-	-	-	-	-	-	13.5
947/1/1	1.6	2.6	-	-	-	-	3.4	1.3	-	-	-	3.2	-	-	12.0
947/2/1	1.6	2.6	-	-	-	-	3.4	1.3	-	-	-	3.2	-	-	12.0
947/3/1	1.6	2.6	-	-	-	-	3.4	1.3	-	-	-	3.2	-	-	12.0
947/4/1	1.6	2.6	-	-	-	-	3.4	1.3	-	-	-	3.2	-	-	12.0
947/5/1	1.6	2.6	-	-	-	-	3.4	1.3	-	-	-	3.2	-	-	12.0
947/6/1	1.6	2.6	-	-	-	-	3.4	1.3	-	-	-	3.2	-	-	12.0
826/1/1	1.8	-	-	-	0.8	3.0	5.8	-	-	-	-	-	-	-	11.4
826/2/1	1.8	-	-	-	0.8	3.0	5.8	-	-	-	-	-	-	-	11.4
889/1/1	2.3	4.5	-	-	-	4.5	-	-	-	-	-	-	-	-	11.3
889/2/1	2.3	4.5	-	-	-	4.5	-	-	-	-	-	-	-	-	11.3
1115/1/1	3.8	-	-	-	-	3.8	3.0	-	-	-	-	-	-	-	10.6
1115/2/1	3.8	-	-	-	-	3.8	3.0	-	-	-	-	-	-	-	10.6
1115/3/1	3.8	-	-	-	-	3.8	3.0	-	-	-	-	-	-	-	10.6
1115/4/1	3.8	-	-	-	-	3.8	3.0	-	-	-	-	-	-	-	10.6
984/1/1	-	-	-	-	-	-	8.8	-	-	-	-	-	-	-	8.8
984/2/1	-	-	-	-	-	-	8.8	-	-	-	-	-	-	-	8.8
828/6/1	0.9	-	-	-	-	1.4	1.4	0.7	-	-	-	2.7	-	-	7.1
872/1/1	-	6.8	-	-	-	-	-	-	-	-	-	-	-	-	6.8

Table 20. Adults' consumption rates of root vegetables from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Beetroot	Carrot	Celery	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Sweet potato	Turnip	Total
872/2/1	-	6.8	-	-	-	-	-	-	-	-	-	-	-	-	6.8
1107/1/1	2.0	-	-	-	-	-	4.5	-	-	-	-	-	-	-	6.5
1107/2/1	2.0	-	-	-	-	-	4.5	-	-	-	-	-	-	-	6.5
828/3/1	0.8	-	-	-	-	1.2	1.2	0.6	-	-	-	2.3	-	-	6.1
828/4/1	0.8	-	-	-	-	1.2	1.2	0.6	-	-	-	2.3	-	-	6.1
1117/1/1	1.1	-	1.3	-	-	1.1	1.7	-	-	-	-	-	-	-	5.2
1117/2/1	1.1	-	1.3	-	-	1.1	1.7	-	-	-	-	-	-	-	5.2
1117/3/1	1.1	-	1.3	-	-	1.1	1.7	-	-	-	-	-	-	-	5.2
1117/4/1	1.1	-	1.3	-	-	1.1	1.7	-	-	-	-	-	-	-	5.2
1117/5/1	1.1	-	1.3	-	-	1.1	1.7	-	-	-	-	-	-	-	5.2
1008/1/1	0.5	-	-	0.1	-	-	3.7	-	-	-	-	-	-	-	4.3
1008/2/1	0.5	-	-	0.1	-	-	3.7	-	-	-	-	-	-	-	4.3
1119/1/1	-	2.5	-	-	-	-	0.8	-	-	-	0.4	-	-	-	3.7
1119/2/1	-	2.5	-	-	-	-	0.8	-	-	-	0.4	-	-	-	3.7
943/3/1	0.5	-	-	-	-	-	1.1	-	-	-	-	0.9	-	-	2.5
943/4/1	0.5	-	-	-	-	-	1.1	-	-	-	-	0.9	-	-	2.5
943/5/1	0.5	-	-	-	-	-	1.1	-	-	-	-	0.9	-	-	2.5
943/6/1	0.5	-	-	-	-	-	1.1	-	-	-	-	0.9	-	-	2.5
1106/1/1	-	-	-	-	0.3	-	-	-	-	-	-	-	2.0	-	2.3
1106/2/1	-	-	-	-	0.3	-	-	-	-	-	-	-	2.0	-	2.3
1106/3/1	-	-	-	-	0.3	-	-	-	-	-	-	-	2.0	-	2.3
825/1/1	-	-	-	-	-	-	2.0	-	-	-	-	-	-	-	2.0
946/1/1	1.1	-	-	-	-	-	-	0.4	-	-	-	-	-	-	1.5
946/2/1	1.1	-	-	-	-	-	-	0.4	-	-	-	-	-	-	1.5
825/2/1	-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	1.0
1116/1/1	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	0.4
1116/2/1	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	0.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables for adults based on the 16 high-rate consumers is 28.0 kg y^{-1}

The observed 97.5th percentile rate based on 63 observations is 38.3 kg y^{-1}

Table 21. Adults' consumption rates of potato from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Potato
1112/1/1	**68.0**
1112/2/1	**68.0**
948/1/1	**43.0**
948/2/1	**43.0**
1113/1/1	**40.9**
1113/2/1	**40.9**
1113/3/1	**40.9**
1113/4/1	**40.9**
1113/5/1	**40.9**
943/1/1	**33.1**
943/2/1	**33.1**
1114/1/1	20.2
1114/2/1	20.2
1114/3/1	20.2
984/1/1	19.1
984/2/1	19.1
889/1/1	18.2
889/2/1	18.2
1106/1/1	14.4
1106/2/1	14.4
1106/3/1	14.4
1117/1/1	13.1
1117/2/1	13.1
1117/3/1	13.1
1117/4/1	13.1
1117/5/1	13.1
826/1/1	12.7
826/2/1	12.7
947/1/1	9.3
947/2/1	9.3
947/3/1	9.3
947/4/1	9.3
947/5/1	9.3
947/6/1	9.3
946/1/1	9.1
946/2/1	9.1

Table 21. Adults' consumption rates of potato from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Potato
1008/1/1	8.7
1008/2/1	8.7
1115/1/1	7.7
1115/2/1	7.7
1115/3/1	7.7
1115/4/1	7.7
1116/1/1	7.3
1116/2/1	7.3
872/1/1	6.8
872/2/1	6.8
943/3/1	4.4
943/4/1	4.4
943/5/1	4.4
943/6/1	4.4
1107/1/1	4.0
1107/2/1	4.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato for adults based on the 11 high-rate consumers is 44.8 kg y^{-1}

The observed 97.5th percentile rate based on 52 observations is 61.2 kg y^{-1}

Table 22. Adults' consumption rates of domestic fruit from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Apple	Blackberry	Blackcurrant	Blueberry	Cherry	Gooseberry	Grapes	Greengage	Jostaberry	Loganberry	Melon	Mulberry	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	Tayberry	White currant	Total
1112/1/1	**24.9**	**3.6**	**2.3**	**-**	**-**	**-**	**-**	**2.7**	**-**	**1.4**	**-**	**1.4**	**8.2**	**2.7**	**-**	**2.3**	**-**	**3.6**	**1.4**	**-**	**54.4**
1112/2/1	**24.9**	**3.6**	**2.3**	**-**	**-**	**-**	**-**	**2.7**	**-**	**1.4**	**-**	**1.4**	**8.2**	**2.7**	**-**	**2.3**	**-**	**3.6**	**1.4**	**-**	**54.4**
1107/1/1	**-**	**5.0**	**5.5**	**-**	**-**	**2.0**	**1.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.0**	**-**	**10.0**	**4.0**	**-**	**-**	**28.5**
1107/2/1	**-**	**5.0**	**5.5**	**-**	**-**	**2.0**	**1.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.0**	**-**	**10.0**	**4.0**	**-**	**-**	**28.5**
1114/1/1	3.8	-	-	0.5	0.7	2.7	-	-	-	-	1.2	-	-	0.8	2.3	-	1.5	4.5	-	-	18.0
1114/2/1	3.8	-	-	0.5	0.7	2.7	-	-	-	-	1.2	-	-	0.8	2.3	-	1.5	4.5	-	-	18.0
1114/3/1	3.8	-	-	0.5	0.7	2.7	-	-	-	-	1.2	-	-	0.8	2.3	-	1.5	4.5	-	-	18.0
1116/1/1	3.2	-	1.1	-	-	1.1	-	-	-	-	-	-	-	-	1.5	-	-	6.7	-	-	13.5
1116/2/1	3.2	-	1.1	-	-	1.1	-	-	-	-	-	-	-	-	1.5	-	-	6.7	-	-	13.5
826/1/1	0.5	-	1.6	-	-	1.6	-	-	-	-	-	-	0.5	-	4.1	1.6	1.1	0.9	-	-	11.8
826/2/1	0.5	-	1.6	-	-	1.6	-	-	-	-	-	-	0.5	-	4.1	1.6	1.1	0.9	-	-	11.8
946/1/1	-	-	2.8	-	-	0.2	-	-	-	-	-	-	-	-	2.0	4.5	0.2	0.3	-	-	10.2
946/2/1	-	-	2.8	-	-	0.2	-	-	-	-	-	-	-	-	2.0	4.5	0.2	0.3	-	-	10.2
825/1/1	2.0	-	1.0	0.3	-	-	-	-	2.0	-	-	-	-	-	2.0	0.7	-	2.0	-	-	10.0
1008/1/1	0.4	-	-	-	-	0.8	-	0.3	-	-	-	-	0.3	1.2	2.7	0.7	1.1	1.6	-	-	9.1
1008/2/1	0.4	-	-	-	-	0.8	-	0.3	-	-	-	-	0.3	1.2	2.7	0.7	1.1	1.6	-	-	9.1
1119/1/1	2.8	-	0.6	-	-	0.8	-	1.8	-	-	-	-	0.8	0.9	-	0.6	0.1	0.3	-	0.2	9.0
1119/2/1	2.8	-	0.6	-	-	0.8	-	1.8	-	-	-	-	0.8	0.9	-	0.6	0.1	0.3	-	0.2	9.0
872/1/1	0.2	-	-	1.0	-	1.7	-	-	-	-	-	-	-	-	-	0.5	1.7	0.5	-	-	5.6
872/2/1	0.2	-	-	1.0	-	1.7	-	-	-	-	-	-	-	-	-	0.5	1.7	0.5	-	-	5.6
825/2/1	1.0	-	0.5	0.2	-	-	-	-	1.0	-	-	-	-	-	1.0	0.3	-	1.0	-	-	5.0
1117/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	4.6	-	-	4.8
1117/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	4.6	-	-	4.8
1117/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	4.6	-	-	4.8
1117/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	4.6	-	-	4.8
1117/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	4.6	-	-	4.8
828/1/1	-	-	0.2	-	-	0.5	-	-	-	-	-	-	-	-	0.9	0.2	1.1	1.3	-	-	4.2
828/2/1	-	-	0.2	-	-	0.5	-	-	-	-	-	-	-	-	0.9	0.2	1.1	1.3	-	-	4.2
948/1/1	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	3.7
948/2/1	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	3.7
1113/1/1	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	2.2	-	-	0.1	-	-	2.5
1113/2/1	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	2.2	-	-	0.1	-	-	2.5
1113/3/1	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	2.2	-	-	0.1	-	-	2.5
1113/4/1	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	2.2	-	-	0.1	-	-	2.5

Table 22. Adults' consumption rates of domestic fruit from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Apple	Blackberry	Blackcurrant	Blueberry	Cherry	Gooseberry	Grapes	Greengage	Jostaberry	Loganberry	Melon	Mulberry	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	Tayberry	White currant	Total
1113/5/1	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	2.2	-	-	0.1	-	-	2.5
1108/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	-	-	-	2.0
1108/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	-	-	-	2.0
1106/1/1	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	1.5
1106/2/1	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	1.5
1106/3/1	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	1.5
1115/1/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.5	-	-	-	1.3
1115/2/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.5	-	-	-	1.3
1115/3/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.5	-	-	-	1.3
1115/4/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.5	-	-	-	1.3
1079/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	1.0
1079/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	1.0
947/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-	-	0.8
947/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-	-	0.8
947/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-	-	0.8
947/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-	-	0.8
947/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-	-	0.8
947/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-	-	0.8
828/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	0.4	-	-	0.6
828/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	0.3	-	-	0.5
828/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	0.3	-	-	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for adults based on the 4 high-rate consumers is 41.5 kg y^{-1}

The observed 97.5th percentile rate based on 55 observations is 45.4 kg y^{-1}

Table 23. Adults' consumption rates of milk from the Heysham terrestrial survey area (l y^{-1})

Person ID number	Cows' milk
939/1/1	**312.9**
939/2/1	**312.9**
939/3/1	**312.9**
939/4/1	**312.9**
939/5/1	**312.9**
939/6/1	**312.9**
939/7/1	**312.9**
938/1/1	**264.5**
938/2/1	**264.5**
938/3/1	**264.5**
938/4/1	**264.5**
1119/1/1	**202.2**
1119/2/1	**202.2**
1110/1/1	**174.6**
1110/2/1	**174.6**
1110/3/1	**174.6**
1110/4/1	**174.6**
1119/5/1	73.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk for adults based on the 17 high-rate consumers is 255.9 l y^{-1}

The observed 97.5th percentile rate based on 18 observations is 312.9 l y^{-1}

Table 24. Adults' consumption rates of cattle meat from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Beef
984/1/1	**47.3**
984/3/1	**47.3**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of cattle meat for adults based on the 2 high-rate consumers is 47.3 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 47.3 kg y^{-1}

Table 25. Adults' consumption rates of sheep meat from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Lamb
984/1/1	**22.6**
984/3/1	**22.6**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sheep meat for adults based on the 2 high-rate consumers is 22.6 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 22.6 kg y^{-1}

Table 26. Adults' consumption rates of poultry from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Pheasant
999/1/1	**1.8**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of poultry for adults based on the 1 high-rate consumers is 1.8 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 27. Adults' consumption rates of eggs from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Chicken egg	Duck egg	Total
1114/1/1	**27.7**	**-**	**27.7**
1114/2/1	**27.7**	**-**	**27.7**
1114/3/1	**27.7**	**-**	**27.7**
1109/1/1	**17.8**	**-**	**17.8**
1109/2/1	**17.8**	**-**	**17.8**
984/1/1	**12.2**	**-**	**12.2**
984/2/1	**12.2**	**-**	**12.2**
1113/1/1	3.2	3.7	6.9
1113/2/1	3.2	3.7	6.9
1113/3/1	3.2	3.7	6.9
1113/4/1	3.2	3.7	6.9
1113/5/1	3.2	3.7	6.9
1115/1/1	6.3	-	6.3
1115/2/1	6.3	-	6.3
1115/3/1	6.3	-	6.3
1115/4/1	6.3	-	6.3
825/1/1	4.5	-	4.5
825/2/1	4.5	-	4.5
943/1/1	4.1	-	4.1
943/2/1	4.1	-	4.1
948/1/1	2.6	-	2.6
948/2/1	2.6	-	2.6

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for adults based on the 7 high-rate consumers is 20.5 kg y^{-1}

The observed 97.5th percentile rate based on 22 observations is 27.7 kg y^{-1}

Table 28. Adults' consumption rates of wild/free foods from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Blackberry	Damson	Elderberry	Sloe	Total
1107/1/1	**5.0**	**-**	**-**	**-**	**5.0**
1107/2/1	**5.0**	**-**	**-**	**-**	**5.0**
890/1/1	**3.4**	**-**	**-**	**-**	**3.4**
890/2/1	**3.4**	**-**	**-**	**-**	**3.4**
1119/1/1	**2.8**	**-**	**-**	**0.5**	**3.3**
1119/2/1	**2.8**	**-**	**-**	**0.5**	**3.3**
1109/1/1	**2.0**	**0.5**	**-**	**-**	**2.5**
1109/2/1	**2.0**	**0.5**	**-**	**-**	**2.5**
826/1/1	**1.1**	**-**	**1.1**	**-**	**2.3**
826/2/1	**1.1**	**-**	**1.1**	**-**	**2.3**
825/1/1	1.3	-	-	-	1.3
1114/1/1	0.7	-	-	-	0.7
1114/2/1	0.7	-	-	-	0.7
1114/3/1	0.7	-	-	-	0.7
825/2/1	0.7	-	-	-	0.7
946/1/1	0.5	-	-	-	0.5
946/2/1	0.5	-	-	-	0.5
1079/1/1	0.5	-	-	-	0.5
1079/2/1	0.5	-	-	-	0.5
888/1/1	0.4	-	-	-	0.4
888/2/1	0.4	-	-	-	0.4
888/3/1	0.4	-	-	-	0.4
888/4/1	0.4	-	-	-	0.4
888/5/1	0.4	-	-	-	0.4
1117/1/1	0.3	-	-	-	0.3
1117/2/1	0.3	-	-	-	0.3
1117/3/1	0.3	-	-	-	0.3
1117/4/1	0.3	-	-	-	0.3
1117/5/1	0.3	-	-	-	0.3
828/1/1	0.2	-	-	-	0.2
828/2/1	0.2	-	-	-	0.2
984/1/1	0.1	-	-	-	0.1
984/2/1	0.1	-	-	-	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild/free foods for adults based on the 10 high-rate consumers is 3.3 kg y^{-1}

The observed 97.5th percentile rate based on 33 observations is 5.0 kg y^{-1}

Table 29. Adults' consumption rates of rabbits/hares from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Rabbit
999/1/1	**1.8**
825/1/1	**0.9**
825/2/1	**0.9**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of rabbits/hares for adults based on the 3 high-rate consumers is 1.2 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 1.8 kg y^{-1}

Table 30. Adults' consumption rates of honey from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Honey
1112/1/1	**7.9**
1112/2/1	**7.9**
938/1/1	0.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of honey for adults based on the 2 high-rate consumers is 7.9 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 7.9 kg y^{-1}

Table 31. Adults' consumption rates of wild fungi from the Heysham terrestrial survey area (kg y^{-1})

Person ID number	Mushrooms
1110/1/1	**1.4**
1110/2/1	**1.4**
1110/3/1	**1.4**
1110/4/1	**1.4**
1107/1/1	**0.5**
1107/2/1	**0.5**
939/1/1	0.4
939/2/1	0.4
939/3/1	0.4
939/4/1	0.4
939/5/1	0.4
939/6/1	0.4
939/7/1	0.4
888/1/1	0.4
888/2/1	0.4
888/3/1	0.4
888/4/1	0.4
888/5/1	0.4
984/1/1	0.3
984/2/1	0.3
1115/1/1	0.2
1115/2/1	0.2
1115/3/1	0.2
1115/4/1	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild fungi for adults based on the 6 high-rate consumers is 1.1 kg y^{-1}

The observed 97.5th percentile rate based on 24 observations is 1.4 kg y^{-1}

Table 32. Children's and infants' consumption rates of green vegetables from the Heysham terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Brussel sprout	Cabbage	Cauliflower	Courgette	Lettuce	Total
943/7/1	15	1.1	0.7	1.0	-	0.2	2.9

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for the child age group based on the 1 high-rate consumer is 2.9 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

Person ID number	Age	Brussel sprout	Cabbage	Cauliflower	Courgette	Lettuce	Total
828/5/1	2	0.1	0.1	0.1	0.6	0.1	1.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for the infant age group based on the 1 high-rate consumer is 1.0 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 33. Children's and infants' consumption rates of other vegetables from the Heysham terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	French bean	Pea	Runner bean	Sweetcorn	Total
1119/4/1	6	-	-	-	0.5	0.5
943/7/1	15	-	-	-	0.2	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables for the child age group based on the 2 high-rate consumers is 0.4 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 0.5 kg y^{-1}

Infant age group (0 - 5 years old)

Person ID number	Age	French bean	Pea	Runner bean	Sweetcorn	Total
828/5/1	2	0.07	0.4	0.2	0.04	0.7
1119/3/1	4	-	-	-	0.4	0.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables for the infant age group based on the 2 high-rate consumers is 0.5 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 0.7 kg y^{-1}

Table 34. Children's and infants' consumption rates of root vegetables from the Heysham terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Beetroot	Carrot	Leek	Onion	Parsnip	Spring onion	Swede	Total
1115/5/1	**8**	**2.8**	**-**	**2.8**	**2.3**	**-**	**-**	**-**	**8.0**
1119/4/1	**6**	**-**	**1.9**	**-**	**0.6**	**-**	**0.3**	**-**	**2.8**
943/7/1	15	0.5	-	-	1.1	-	-	0.9	2.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables for the child age group based on the 2 high-rate consumers is 5.4 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 7.7 kg y^{-1}

Infant age group (0 - 5 years old)

Person ID number	Age	Beetroot	Carrot	Leek	Onion	Parsnip	Spring onion	Swede	Total
828/5/1	**2**	**0.3**	**-**	**0.4**	**0.4**	**0.2**	**-**	**0.8**	**2.0**
1119/3/1	**4**	**-**	**1.2**	**-**	**0.4**	**-**	**0.2**	**-**	**1.8**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables for the infant age group based on the 2 high-rate consumers is 1.9 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 2.0 kg y^{-1}

Table 35. Children's and infants' consumption rates of potato from the Heysham terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Potato
1115/5/1	8	5.7
943/7/1	15	4.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato for the child age group based on the 2 high-rate consumers is 5.1 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 5.7 kg y^{-1}

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 36. Children's and infants' consumption rates of domestic fruit from the Heysham terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Apple	Blackcurrant	Gooseberry	Greengage	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	White currant	Total
1119/4/1	**6**	**2.1**	**0.4**	**0.6**	**1.4**	**0.6**	**0.7**	**-**	**0.4**	**0.1**	**0.2**	**0.2**	**6.7**
1115/5/1	8	0.3	-	-	-	-	0.3	-	-	0.4	-	-	1.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for the child age group based on the 1 high-rate consumers is 6.7 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 6.6 kg y^{-1}

Infant age group (0 - 5 years old)

Person ID number	Age	Apple	Blackcurrant	Gooseberry	Greengage	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	White currant	Total
1119/3/1	**4**	**1.4**	**0.3**	**0.4**	**0.9**	**0.4**	**0.5**	**-**	**0.3**	**0.1**	**0.1**	**0.1**	**4.5**
828/5/1	2	-	-	-	-	-	-	0.1	-	-	0.1	-	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for the infant age group based on the 1 high-rate consumers is 4.5 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 4.4 kg y^{-1}

Table 37. Children's and infants' consumption rates of milk from the Heysham terrestrial survey area (l y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Cows' milk
1119/4/1	**6**	**151.6**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk for the child age group based on the 1 high-rate consumer is 151.6 l y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

Person ID number	Age	Cows' milk
938/5/1	**3**	**132.2**
1110/5/1	**4**	**130.9**
1119/3/1	**4**	**101.1**
938/6/1	**2**	**87.3**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk for the infant age group based on the 4 high-rate consumers is 112.9 l y^{-1}

The observed 97.5th percentile rate based on 4 observations is 132.1 l y^{-1}

Table 38. Children's and infants' consumption rates of eggs from the Heysham terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Chicken egg
1115/5/1	8	4.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for the child age group based on the 1 high-rate consumer is 4.7 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 39. Children's and infants' consumption rates of wild/free foods from the Heysham terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Blackberry
1119/4/1	**6**	**2.1**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild/free foods for the child age group based on the 1 high-rate consumer is 2.1 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

Person ID number	Age	Blackberry
1119/3/1	**4**	**1.4**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild/free foods for the infant age group based on the 1 high-rate consumer is 1.4 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 40. Children's and infants' consumption rates of wild fungi from the Heysham terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Mushrooms
1115/5/1	**8**	**0.2**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild fungi for the child age group based on the 1 high-rate consumer is 0.2 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 41. Percentage contribution each food type makes to its terrestrial food group for adults

Green vegetables	
Cabbage	27.3 %
Courgette	22.3 %
Cucumber	9.7 %
Lettuce	9.0 %
Cauliflower	8.9 %
Brussel sprout	8.3 %
Broccoli	5.9 %
Kale	4.2 %
Asparagus	1.7 %
Spinach	0.8 %
Chard	0.6 %
Calabrese	0.5 %
Rocket	0.5 %
Herbs	0.1 %
Nasturtium leaves	0.1 %

Other vegetables	
Pumpkin	25.3 %
Tomato	22.1 %
Broad bean	14.2 %
Runner bean	8.7 %
Pea	8.4 %
Sweetcorn	6.1 %
French bean	5.6 %
Pepper	5.1 %
Squash	3.2 %
Mangetout	1.3 %
Chilli pepper	0.1 %

Root vegetables	
Onion	29.4 %
Swede	17.3 %
Leek	15.4 %
Beetroot	14.3 %
Carrot	10.8 %
Parsnip	3.8 %
Turnip	3.0 %
Shallot	2.8 %
Sweet potato	0.9 %
Celery	0.8 %
Garlic	0.6 %
Spring onion	0.6 %
Radish	0.2 %
Fennel	0.03 %

Potato	
Potato	100.0 %

Domestic fruit	
Apple	20.3 %
Strawberry	18.6 %
Rhubarb	11.2 %
Raspberry	11.0 %
Blackcurrant	6.9 %
Gooseberry	6.3 %
Redcurrant	5.1 %
Pear	4.6 %
Blackberry	4.0 %
Plum	3.3 %
Greengage	2.3 %
Melon	1.8 %
Blueberry	0.9 %
Jostaberry	0.7 %
Mulberry	0.6 %
Loganberry	0.6 %
Tayberry	0.6 %
Grapes	0.5 %
Cherry	0.5 %
White currant	0.1 %

Milk	
Cows' milk	100.0 %

Cattle meat	
Beef	100.0 %

Sheep meat	
Lamb	100.0 %

Poultry	
Pheasant	100.0 %

Eggs	
Chicken egg	91.8 %
Duck egg	8.2 %

Wild/free foods	
Blackberry (wild)	90.1 %
Elderberry	5.3 %
Sloe	2.3 %
Damson (wild)	2.3 %

Rabbits/hares	
Rabbit	100.0 %

Honey	
Honey	100.0 %

Wild fungi	
Mushrooms	100.0 %

Notes

Percentages are based on the consumption of all adults in the survey consuming that particular food group.

Table 42. Direct radiation occupancy rates for adults, children and infants in the Heysham area (h y^{-1})

Person ID number	Gender	Age	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
0 to 0.25 km zone						
987/1/1	M	64	Residing and working	5980	2544	8524
993/1/1	M	76	Residing	6694	1228	7923
993/2/1	F	76	Residing	7221	702	7923
987/2/1	F	59	Residing	6623	209	6832
949/1/1	M	U	Nature conservation warden duties	736	736	1472
949/2/1	M	U	Nature conservation warden duties	552	552	1104
949/5/1	M	U	Nature conservation warden duties	209	834	1043
949/3/1	F	U	Nature conservation warden duties	368	368	736
991/1/1	F	71	Dog walking	0	730	730
991/2/1	F	U	Dog walking	0	730	730
991/3/1	M	U	Dog walking	0	730	730
991/2/2	F	U	Dog walking	0	730	730
991/3/2	M	U	Dog walking	0	730	730
991/3/3	M	U	Dog walking	0	730	730
949/6/1	F	U	Nature conservation volunteer duties	104	521	626
992/1/1	M	53	Dog walking	0	548	548
949/7/1	M	U	Nature conservation volunteer duties	104	365	469
949/4/1	F	U	Nature conservation volunteer duties	78	340	418
949/8/1	M	U	Nature conservation volunteer duties	104	313	417
949/9/1	M	U	Nature conservation volunteer duties	52	156	209
>0.25 to 0.5 km zone						
1108/1/1	M	33	Residing and working	5908	2206	8114
1015/1/1	M	U	Residing and working	4939	2708	7647
1079/1/1	F	57	Residing	6949	548	7497
1108/2/1	F	32	Residing	5908	178	6086
986/1/1	M	U	Working	310	1908	2218
986/1/3	M	U	Working	310	1908	2218
986/1/2	M	U	Working	310	1908	2218
881/1/1	M	U	Working	1610	402	2012
881/2/1	F	U	Working	1610	402	2012
881/1/2	M	U	Working	1610	402	2012
881/2/2	F	U	Working	1610	402	2012
881/1/3	M	U	Working	1610	402	2012
881/2/3	F	U	Working	1610	402	2012
881/1/4	M	U	Working	1610	402	2012
881/2/4	F	U	Working	1610	402	2012
881/1/5	M	U	Working	1610	402	2012
986/2/1	M	U	Working	188	1786	1974
986/3/1	M	U	Working	1034	940	1974
986/4/1	F	U	Working	1034	940	1974
986/5/1	F	U	Working	1269	705	1974
986/3/4	M	U	Working	1034	940	1974
986/2/5	M	U	Working	188	1786	1974
986/3/3	M	U	Working	1034	940	1974
986/2/4	M	U	Working	188	1786	1974
986/2/3	M	U	Working	188	1786	1974
986/2/2	M	U	Working	188	1786	1974
986/3/2	M	U	Working	1034	940	1974
829/1/1	M	54	Staying in a caravan	1200	240	1440
829/2/1	F	54	Staying in a caravan	1200	240	1440
1079/2/1	M	62	Visiting friend	938	313	1251
986/6/1	F	U	Working	964	94	1058
986/7/10	M	U	Working	964	94	1058
986/6/8	F	U	Working	964	94	1058
986/7/8	M	U	Working	964	94	1058
986/6/9	F	U	Working	964	94	1058
986/7/9	M	U	Working	964	94	1058
986/6/10	F	U	Working	964	94	1058
986/6/7	F	U	Working	964	94	1058
986/7/7	M	U	Working	964	94	1058
986/6/5	F	U	Working	964	94	1058
986/7/5	M	U	Working	964	94	1058
986/6/6	F	U	Working	964	94	1058

Table 42. Direct radiation occupancy rates for adults, children and infants in the Heysham area (h y^{-1})

Person ID number	Gender	Age	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
986/7/6	M	U	Working	964	94	1058
986/6/4	F	U	Working	964	94	1058
986/7/4	M	U	Working	964	94	1058
986/6/3	F	U	Working	964	94	1058
986/7/3	M	U	Working	964	94	1058
986/6/2	F	U	Working	964	94	1058
986/7/2	M	U	Working	964	94	1058
986/7/1	M	U	Working	964	94	1058
986/9/8	M	U	Working	726	71	797
986/8/6	F	U	Working	726	71	797
986/9/6	M	U	Working	726	71	797
986/8/7	F	U	Working	726	71	797
986/9/7	M	U	Working	726	71	797
986/8/5	F	U	Working	726	71	797
986/9/5	M	U	Working	726	71	797
986/8/4	F	U	Working	726	71	797
986/9/4	M	U	Working	726	71	797
986/8/3	F	U	Working	726	71	797
986/9/3	M	U	Working	726	71	797
986/8/2	F	U	Working	726	71	797
986/9/2	M	U	Working	726	71	797
986/8/1	F	U	Working	726	71	797
986/9/1	M	U	Working	726	71	797
>0.5 to 1.0 km zone						
900/1/1	F	63	Residing	8677	30	8708
898/1/1	F	30	Residing	8564	91	8656
899/2/1	M	25	Residing	8134	365	8499
1009/1/1	M	71	Residing	7585	914	8499
898/2/1	F	3	Residing	8219	229	8447
898/3/1	F	1	Residing	8219	229	8447
898/4/1	M	1	Residing	8219	229	8447
899/1/1	F	23	Residing	8030	365	8395
868/1/1	F	47	Residing	7795	548	8343
868/2/1	F	14	Residing	7613	730	8343
846/1/1	F	68	Residing	7310	121	7431
847/1/1	M	65	Residing	5561	842	6403
847/2/1	F	72	Residing	5561	842	6403
901/1/1	M	27	Residing	5950	213	6163
1009/2/1	F	57	Residing	5632	365	5997
1009/3/1	F	28	Residing	4719	548	5267
846/2/1	M	69	Residing	5124	121	5246
900/2/1	M	43	Residing	4745	365	5110
900/3/1	M	26	Residing	4745	365	5110
1009/4/1	M	21	Residing	4927	183	5110
996/3/1	M	U	Working	1785	674	2459
850/1/1	M	U	Working	1840	276	2116
850/2/1	F	U	Working	1840	276	2116
850/1/2	M	U	Working	1840	276	2116
850/2/2	F	U	Working	1840	276	2116
850/1/3	M	U	Working	1840	276	2116
850/2/3	F	U	Working	1840	276	2116
850/1/4	M	U	Working	1840	276	2116
850/2/4	F	U	Working	1840	276	2116
850/1/5	M	U	Working	1840	276	2116
850/2/5	F	U	Working	1840	276	2116
880/1/1	M	U	Working	1035	1081	2116
880/2/1	F	42	Working	1035	1081	2116
880/1/2	M	U	Working	1035	1081	2116
996/6/1	F	U	Working	2065	50	2115
996/6/2	F	U	Working	2065	50	2115
868/3/1	M	44	Residing (part time)	1877	209	2086
876/1/1	M	U	Working	1909	161	2070
876/2/1	F	U	Working	1909	161	2070
876/1/2	M	U	Working	1909	161	2070

Table 42. Direct radiation occupancy rates for adults, children and infants in the Heysham area (h y^{-1})

Person ID number	Gender	Age	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
876/2/2	F	U	Working	1909	161	2070
876/2/8	F	U	Working	1909	161	2070
876/1/9	M	U	Working	1909	161	2070
876/2/9	F	U	Working	1909	161	2070
876/1/10	M	U	Working	1909	161	2070
876/2/10	F	U	Working	1909	161	2070
876/2/5	F	U	Working	1909	161	2070
876/1/6	M	U	Working	1909	161	2070
876/2/6	F	U	Working	1909	161	2070
876/1/7	M	U	Working	1909	161	2070
876/2/7	F	U	Working	1909	161	2070
876/1/8	M	U	Working	1909	161	2070
876/1/3	M	U	Working	1909	161	2070
876/2/3	F	U	Working	1909	161	2070
876/1/4	M	U	Working	1909	161	2070
876/2/4	F	U	Working	1909	161	2070
876/1/5	M	U	Working	1909	161	2070
845/1/1	M	U	Working	1665	313	1978
845/2/1	F	U	Working	1926	52	1978
845/1/2	M	U	Working	1665	313	1978
845/2/2	F	U	Working	1926	52	1978
845/1/3	M	U	Working	1665	313	1978
845/2/3	F	U	Working	1926	52	1978
845/1/4	M	U	Working	1665	313	1978
845/2/4	F	U	Working	1926	52	1978
878/1/18	M	U	Working	1794	161	1955
878/2/18	F	U	Working	1794	161	1955
878/1/19	M	U	Working	1794	161	1955
878/2/19	F	U	Working	1794	161	1955
878/1/20	M	U	Working	1794	161	1955
878/2/20	F	U	Working	1794	161	1955
878/1/15	M	U	Working	1794	161	1955
878/2/15	F	U	Working	1794	161	1955
878/1/16	M	U	Working	1794	161	1955
878/2/16	F	U	Working	1794	161	1955
878/1/17	M	U	Working	1794	161	1955
878/2/17	F	U	Working	1794	161	1955
878/1/12	M	U	Working	1794	161	1955
878/2/12	F	U	Working	1794	161	1955
878/1/13	M	U	Working	1794	161	1955
878/2/13	F	U	Working	1794	161	1955
878/1/14	M	U	Working	1794	161	1955
878/2/14	F	U	Working	1794	161	1955
878/1/9	M	U	Working	1794	161	1955
878/2/9	F	U	Working	1794	161	1955
878/1/10	M	U	Working	1794	161	1955
878/2/10	F	U	Working	1794	161	1955
878/1/11	M	U	Working	1794	161	1955
878/2/11	F	U	Working	1794	161	1955
878/1/6	M	U	Working	1794	161	1955
878/2/6	F	U	Working	1794	161	1955
878/1/7	M	U	Working	1794	161	1955
878/2/7	F	U	Working	1794	161	1955
878/1/8	M	U	Working	1794	161	1955
878/2/8	F	U	Working	1794	161	1955
878/1/4	M	U	Working	1794	161	1955
878/2/4	F	U	Working	1794	161	1955
878/1/5	M	U	Working	1794	161	1955
878/2/5	F	U	Working	1794	161	1955
878/1/3	M	U	Working	1794	161	1955
878/2/3	F	U	Working	1794	161	1955
878/1/2	M	U	Working	1794	161	1955
878/2/2	F	U	Working	1794	161	1955
878/1/1	M	U	Working	1794	161	1955

Table 42. Direct radiation occupancy rates for adults, children and infants in the Heysham area (h y^{-1})

Person ID number	Gender	Age	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
878/2/1	F	U	Working	1794	161	1955
1014/1/1	M	U	Working	94	1786	1880
1014/1/2	M	U	Working	94	1786	1880
1014/1/3	M	U	Working	94	1786	1880
1014/1/4	M	U	Working	94	1786	1880
996/1/1	M	U	Working	1783	50	1833
996/5/1	M	U	Working	964	649	1613
845/4/1	M	U	Working	1104	138	1242
996/2/1	F	U	Working	1145	30	1175
880/3/1	M	U	Working	506	506	1012
880/3/2	M	U	Working	506	506	1012
880/3/3	M	U	Working	506	506	1012
880/3/4	M	U	Working	506	506	1012
876/3/1	F	U	Working	920	46	966
876/3/2	F	U	Working	920	46	966
876/3/3	F	U	Working	920	46	966
845/3/1	F	U	Working	736	92	828
996/4/1	M	U	Working	178	636	814
1009/5/1	M	1	Visiting family	417	104	521
841/1/1	M	48	Angling	0	417	417
877/1/1	M	U	Working	368	46	414
877/2/1	F	U	Working	368	46	414
877/1/2	M	U	Working	368	46	414
877/2/2	F	U	Working	368	46	414
877/1/3	M	U	Working	368	46	414
877/2/3	F	U	Working	368	46	414
877/1/10	M	U	Working	368	46	414
877/1/7	M	U	Working	368	46	414
877/2/7	F	U	Working	368	46	414
877/1/8	M	U	Working	368	46	414
877/2/8	F	U	Working	368	46	414
877/1/9	M	U	Working	368	46	414
877/2/9	F	U	Working	368	46	414
877/1/4	M	U	Working	368	46	414
877/2/4	F	U	Working	368	46	414
877/1/5	M	U	Working	368	46	414
877/2/5	F	U	Working	368	46	414
877/1/6	M	U	Working	368	46	414
877/2/6	F	U	Working	368	46	414

Table 43. Anaysis of direct radiation occupancy rates for adults, children and infants in the Heysham area

0 to 0.25 km zone	
Number of hours	**Number of observations**
>8000 to 8760	1
>7000 to 8000	2
>6000 to 7000	1
>5000 to 6000	0
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	0
>1000 to 2000	3
0 to 1000	13
0 to 8760	**20**

>0.25 to 0.5 km zone	
Number of hours	**Number of observations**
>8000 to 8760	1
>7000 to 8000	2
>6000 to 7000	1
>5000 to 6000	0
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	12
>1000 to 2000	34
0 to 1000	15
0 to 8760	**65**

>0.5 to 1.0 km zone	
Number of hours	**Number of observations**
>8000 to 8760	10
>7000 to 8000	1
>6000 to 7000	3
>5000 to 6000	6
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	37
>1000 to 2000	60
0 to 1000	26
0 to 8760	**143**

Notes

Where generalised data for groups of people were collected, for example employees at some businesses, only a limited number of representative individuals have been included.

Table 44. Gamma dose rate measurements for the Heysham direct radiation survey area (μGyh^{-1})

Residences and businesses

Location	Indoor substrate	Indoor gamma dose rate at 1m[a]	Outdoor substrate	Outdoor gamma dose rate at 1m[a]
Residence 1	Not taken	Not taken	Grass	0.062
Residence 2	Wood	0.105	Grass	0.065
Residence 3	Concrete	0.091	Grass	0.060
Residence 4	Concrete	0.108	Concrete	0.088
Residence 5	Concrete	0.109	Concrete	0.085
Residence 6	Concrete	0.113	Concrete	0.084
Residence 7	Wood	0.101	Concrete	0.092
Residence 8	Wood	0.111	Concrete	0.083
Residence 9	Wood	0.100	Concrete	0.084
Residence 10	Wood	0.104	Concrete	0.091
Business 1	Wood	0.054	Grass	0.061
Business 2	Concrete	0.057	Tarmac	0.066
Business 3	Concrete	0.052	Tarmac	0.047
Business 4	Not taken	Not taken	Tarmac	0.058
Business 5	Concrete	0.062	Concrete	0.061
Business 6	Concrete	0.050	Grass	0.063
Business 7	Concrete	0.062	Tarmac	0.052
Business 8	Wood	0.104	Grass	0.071

Notes

[a] These measurements have not been adjusted for background dose rates

Backgrounds

	Location	National Grid Reference	Substrate	Background gamma dose rate at 1m
Background 1	West of Lancaster University	SD 477 572	Grass	0.067
Background 2	Near Hest Bank	SD 474 662	Grass	0.061
Background 3	Lane Ends	SD 415 494	Grass	0.070

Table 45. Combinations of adult pathways for consideration in dose assessments in the Heysham area

Combination number	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle Meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
1												X							X														
2																											X				X			
3																														X	X			
4																						X										X		X
5	X	X					X	X	X	X	X					X																		
6							X	X	X	X	X								X															
7					X	X																	X											
8							X	X	X	X	X											X		X										
9																								X	X					X				
10																					X			X				X	X		X			
11	X	X																			X			X	X				X					
12																						X		X	X				X					
13	X	X																						X	X			X	X		X	X		X
14																										X								
15									X	X	X					X				X														
16												X								X				X										
17							X	X	X	X	X					X	X																	
18						X		X	X		X	X					X						X	X										
19											X						X								X							X		X
20	X	X					X	X	X	X	X						X								X					X				
21	X	X					X	X	X		X					X	X	X							X									
22	X	X														X	X					X						X	X		X			
23																	X			X			X											
24							X	X	X	X	X						X			X					X									
25							X	X	X	X			X	X		X	X			X															
26	X	X		X	X																			X				X						
27				X											X			X			X								X					
28	X	X	X	X	X																X		X					X	X		X			
29	X	X	X	X																	X			X				X	X					

Notes

The food groups and external pathways marked with a cross are combined for the corresponding combination number. For example, combination number 1 represents an individual (or individuals) from Annex 1 who had positive data for the following pathways: milk, honey.

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
825/1/1	F	U	2.7	1.4	-	-	-	-	4.7	1.7	2.0	-	10.0	-	-	-	-	4.5	1.3	**0.9**	-	-	-	-	-	-	122	-	-	-	-	-	-	-	-
825/2/1	M	U	2.7	1.4	-	-	-	-	2.3	0.8	1.0	-	5.0	-	-	-	-	4.5	0.7	**0.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
826/1/1	F	U	0.3	0.2	-	-	-	-	**23.7**	**24.1**	11.4	12.7	11.8	-	-	-	-	-	**2.3**	-	-	-	-	-	-	104	-	-	-	-	7	-	-	-
826/2/1	M	U	0.3	0.2	-	-	-	-	**23.7**	**24.1**	11.4	12.7	11.8	-	-	-	-	-	**2.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
828/1/1	M	58	-	-	-	-	-	-	12.9	8.5	**25.0**	-	4.2	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
828/2/1	F	56	-	-	-	-	-	-	12.9	8.5	**25.0**	-	4.2	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
828/3/1	M	35	-	-	-	-	-	-	3.2	2.1	6.1	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
828/4/1	F	34	-	-	-	-	-	-	3.2	2.1	6.1	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
828/6/1	M	65	-	-	-	-	-	-	3.7	2.4	7.1	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
829/1/1	M	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	-	-	-	-	1200	240
829/2/1	F	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	-	-	-	-	1200	240
830/1/1	F	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-
830/2/1	F	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-
831/1/1	F	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	-	-
831/2/1	F	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	-	-
831/4/1	M	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	-	-
832/1/1	M	31	11.8	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	313	-	-	-	-	-	-	-	-	-
832/2/1	F	31	11.8	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	313	-	-	-	-	-	-	-	-	-
833/1/1	M	53	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-	-	-	-	-	-	-	-
833/2/1	F	37	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-	-	-	-	-	-	-	-
834/1/1	M	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**417**	-	-	-	-	-	-	-	-	-	-	-
835/1/1	M	68	**19.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**416**	-	-	-	-	-	-	-	-	-
836/1/1	M	46	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
836/2/1	F	30	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
837/1/1	M	45	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	-	-	-	-
838/1/1	M	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-
838/2/1	F	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-
838/3/1	M	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-
838/4/1	M	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-
839/1/1	M	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105	-	-	-
841/1/1	M	48	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	417
842/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-
842/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-
842/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-
842/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-
842/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-
842/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-
842/4/1	F	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-
842/5/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-	-
842/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-	-
843/1/1	M	57	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
844/1/1	M	46	6.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	130	-	-	-	52	-	-	-	-
844/2/1	F	42	6.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
845/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1665	313
845/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1665	313
845/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1665	313
845/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1665	313
845/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1926	52
845/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1926	52
845/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1926	52
845/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1926	52
845/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	736	92
845/4/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1104	138
846/1/1	F	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7310	121
846/2/1	M	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5124	121
847/1/1	M	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5561	842
847/2/1	F	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5561	842
850/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
851/1/1	F	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-	-
852/1/1	M	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-	-	-
852/2/1	F	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-	-	-
853/1/1	F	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	-	-	-	-	-	-
853/2/1	M	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	-	-	-	-	-	-
857/1/1	M	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	337	**361**	-	-	-	-	-	-	-	-
858/1/1	M	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91	-	-	91	-	-	-	-	-	-	-	-
858/2/1	F	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91	-	-	91	-	-	-	-	-	-	-	-
859/1/1	F	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	25	-	-	-	-	-	5	-	-
861/1/1	M	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**674**	-	-	-	-	-	-	-	-	-	-	-
861/2/1	F	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**674**	-	-	-	-	-	-	-	-	-	-	-
865/1/1	M	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**112**	-	-	-	-	-	-	-
865/2/1	F	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**112**	-	-	-	-	-	-	-
866/1/1	M	68	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	235	-	-	-	2	-	-	-	-
867/1/1	M	40	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	104	-	-	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
868/1/1	F	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7795	548
868/3/1	M	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	209
871/1/1	M	U	-	-	-	-	-	-	9.7	**13.6**	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**391**	-	-	-	-	15	-	-	-
871/2/1	F	U	-	-	-	-	-	-	9.7	**13.6**	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**391**	-	-	-	-	15	-	-	-
872/1/1	M	61	-	-	-	-	-	-	12.8	5.6	6.8	6.8	5.6	-	-	-	-	-	-	-	-	-	-	91	-	91	-	-	-	-	-	-	-	-	-
872/2/1	F	52	-	-	-	-	-	-	12.8	5.6	6.8	6.8	5.6	-	-	-	-	-	-	-	-	-	-	91	-	91	-	-	-	-	-	-	-	-	-
873/1/1	M	U	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-	-	-	-	-	-	-	-	-
873/2/1	F	U	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
873/4/1	M	U	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
873/5/1	F	U	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
873/6/1	F	17	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
876/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/1/6	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/1/7	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/1/8	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/1/9	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/1/10	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/8	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/9	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/10	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	920	46
876/3/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	920	46
876/3/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	920	46
877/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/1/6	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/1/7	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
877/1/8	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/1/9	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/1/10	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/8	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/9	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
878/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/6	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/7	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/8	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/9	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/10	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/11	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/12	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/13	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/14	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/15	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/16	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/17	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/18	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/19	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/1/20	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/8	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/9	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
878/2/10	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/11	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/12	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/13	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/14	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/15	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/16	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/17	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/18	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/19	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/20	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
879/1/1	F	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	-
880/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1035	1081
880/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1035	1081
880/2/1	F	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1035	1081
880/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	506	506
880/3/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	506	506
880/3/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	506	506
880/3/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	506	506
881/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
882/1/1	M	51	-	-	-	-	0.1	**11.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
882/2/1	F	50	-	-	-	-	0.1	**11.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
882/3/1	M	30	-	-	-	-	0.1	**11.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
882/4/1	M	22	-	-	-	-	0.1	**11.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
883/1/1	M	65	-	-	-	-	-	**9.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**287**	-	-	-	-	-	-	-	-	-	-
883/2/1	F	63	-	-	-	-	-	**9.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
883/3/1	M	33	-	-	-	-	-	**9.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
883/4/1	F	25	-	-	-	-	-	**9.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
883/5/1	U	35	-	-	-	-	-	**9.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
884/1/1	M	70	-	-	-	-	-	**4.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	238	-	-	-	-	-	-	-	-	-	-
884/2/1	F	68	-	-	-	-	-	**4.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
884/3/1	F	50	-	-	-	-	-	**4.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
884/4/1	M	45	-	-	-	-	-	**4.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
884/5/1	F	48	-	-	-	-	-	**4.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
888/1/1	M	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.4	-	-	120	-	-	-	-	-	-	-	-	-	-
888/2/1	F	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.4	-	-	240	-	-	-	-	-	-	-	-	-	-
888/3/1	M	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.4	-	-	120	-	-	-	-	-	-	-	-	-	-
888/4/1	F	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
888/5/1	F	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
889/1/1	M	71	-	-	-	-	-	-	12.9	9.0	11.3	18.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
889/2/1	F	70	-	-	-	-	-	-	12.9	9.0	11.3	18.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
890/1/1	F	51	-	-	-	-	-	-	5.5	9.0	-	-	-	-	-	-	-	-	**3.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
890/2/1	F	86	-	-	-	-	-	-	5.5	9.0	-	-	-	-	-	-	-	-	**3.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
893/1/1	M	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	-	-	-	-
898/1/1	F	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8564	91
899/1/1	F	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	8030	365
899/2/1	M	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	8134	365
900/1/1	F	63	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8677	30
900/2/1	M	43	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4745	365
900/3/1	M	26	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4745	365
901/1/1	M	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5950	213
902/1/1	M	74	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-	-	-	-	-	-
902/2/1	M	53	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-	-	-	-	-	-
902/3/1	M	34	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-	-	-	-	-	-
902/4/1	F	71	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
902/5/1	F	54	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
903/1/1	M	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	243	-	-	-	-	-	-	-
904/1/1	M	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-
904/2/1	F	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-
905/1/1	M	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	273	-	-	-	-	-	-	-
905/2/1	F	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-
906/1/1	M	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**456**	-	-	-	-	-	-	-
907/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	261	-	-	-	-	-	-	-
907/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	261	-	-	-	-	-	-	-
907/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	261	-	-	-	-	-	-	-
908/1/1	M	52	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	209	-	-	-	52	-	-	-
908/2/1	M	51	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	209	-	-	-	52	-	-	-
908/3/1	F	50	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
908/4/1	F	48	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
908/5/1	F	23	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
909/1/1	M	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	157	-	-	-	39	-	-	-
910/1/1	M	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	-	-	-	-	-	-	-
912/1/1	M	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-
912/2/1	F	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-	-	-	-	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
914/1/1	M	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-
914/2/1	M	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-
914/3/1	F	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-
914/4/1	F	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-
914/5/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
914/5/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
914/5/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
914/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
914/6/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
914/6/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
915/1/1	F	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-	100	-	-	-
915/2/1	M	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-	100	-	-	-
915/3/1	M	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-	100	-	-	-
916/1/1	M	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	15	-	-	-	-	60	-	-	-
916/2/1	M	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	60	-	-	-
916/3/1	M	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	60	-	-	-
916/4/1	F	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	60	-	-	-
917/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	60	-	-
917/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	60	-	-
917/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	60	-	-
918/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	24	-	576	-	-
918/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	24	-	576	-	-
918/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	576	-	-
918/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	576	-	-
918/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	12	-	288	-	-
918/3/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	12	-	288	-	-
918/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	288	-	-
918/4/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	288	-	-
918/5/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-
918/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-
919/1/1	M	70	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	156	-	-	-	52	-	-	-	-
919/2/1	F	69	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
920/1/1	M	41	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
920/2/1	F	38	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
921/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
921/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/3/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/3/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/3/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/3/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/4/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/4/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/4/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/4/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
923/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1642**	-	-	-	548	-	-
924/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1408**	-	-	-	469	-	-
924/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1408**	-	-	-	469	-	-
926/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
926/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
926/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
926/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
926/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
926/1/6	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
926/1/7	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
926/1/8	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
927/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	720	-	-
927/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	720	-	-
927/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	720	-	-
930/1/1	M	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	-	-	-	-	-	**520**	-	-	455	-	-
931/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	-	-	-	-	-	**715**	-	-	650	-	-
931/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	-	-	-	-	-	**715**	-	-	650	-	-
934/1/1	M	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	1	-	-
934/2/1	F	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	1	-	-
935/1/1	M	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-	-
935/2/1	F	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-	-
936/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	52	-	-	-	-	208	-	-	-
936/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	52	-	-	-	-	208	-	-	-
936/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	52	-	-	-	-	208	-	-	-
936/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	-	-	-	-	104	-	-	-
936/3/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	-	-	-	-	104	-	-	-
936/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	-	-	-	-	104	-	-	-
937/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5110	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
937/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5110	-	-
938/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	**264.5**	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
938/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	**264.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
938/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	**264.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
938/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	**264.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
939/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	**312.9**	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
939/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	**312.9**	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
939/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	**312.9**	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
939/4/1	M	U	-	-	-	-	-	-	-	-	-	-	-	**312.9**	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
939/5/1	M	U	-	-	-	-	-	-	-	-	-	-	-	**312.9**	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
939/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	**312.9**	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
939/7/1	M	U	-	-	-	-	-	-	-	-	-	-	-	**312.9**	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
943/1/1	F	58	-	-	-	-	-	-	**22.1**	2.7	**20.7**	**33.1**	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
943/2/1	M	63	-	-	-	-	-	-	**22.1**	2.7	**20.7**	**33.1**	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
943/3/1	M	30	-	-	-	-	-	-	2.9	0.2	2.5	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
943/4/1	F	30	-	-	-	-	-	-	2.9	0.2	2.5	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
943/5/1	M	34	-	-	-	-	-	-	2.9	0.2	2.5	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
943/6/1	F	34	-	-	-	-	-	-	2.9	0.2	2.5	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
946/1/1	F	51	-	0.3	-	-	-	-	11.6	2.0	1.5	9.1	10.2	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
946/2/1	M	54	-	0.3	-	-	-	-	11.6	2.0	1.5	9.1	10.2	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
947/1/1	M	50	-	-	-	-	-	-	6.2	0.5	12.0	9.3	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
947/2/1	F	46	-	-	-	-	-	-	6.2	0.5	12.0	9.3	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
947/3/1	F	75	-	-	-	-	-	-	6.2	0.5	12.0	9.3	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
947/4/1	M	76	-	-	-	-	-	-	6.2	0.5	12.0	9.3	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
947/5/1	M	18	-	-	-	-	-	-	6.2	0.5	12.0	9.3	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
947/6/1	F	18	-	-	-	-	-	-	6.2	0.5	12.0	9.3	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
948/1/1	M	66	-	-	-	-	-	-	**20.3**	**14.3**	**18.2**	**43.0**	3.7	-	-	-	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
948/2/1	F	59	-	-	-	-	-	-	**20.3**	**14.3**	**18.2**	**43.0**	3.7	-	-	-	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
949/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	736	736
949/2/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	552	552
949/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	368
949/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	340
949/5/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	209	834
949/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	521
949/7/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	365
949/8/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	313
949/9/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	156
952/1/1	M	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	274	-	-	-	-	-	-	-	-	-
955/1/1	M	52	**16.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
955/2/1	F	60	10.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
958/1/1	U	U	11.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-	-	-	-	-	-	-	-	-	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
959/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	-	-	-	139	-	-	-	-	-	-	-	-
960/1/1	M	U	**27.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	**612**	-	-	-	-	-	-	-	-
961/1/1	M	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	-
961/2/1	M	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	-
963/1/1	M	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-
965/1/1	M	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	166	-	-	-	-	-	-	-	78	-	-	-	-
967/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	306	-	-	-
967/2/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/2/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/2/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/2/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/2/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/3/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/3/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/3/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/3/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-
967/4/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	-	-
967/5/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	-	-	-
967/5/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	-	-	-
967/5/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	-	-	-
967/5/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	-	-	-
968/1/1	F	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1002**	-	-	-	-	-	-	-	-	-
969/1/1	M	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-	-
969/2/1	M	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-	-
970/1/1	M	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	104	-	-	-	-	-	-	-	-
972/1/1	U	U	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	208	-	-	-	-	-	157	-	-
972/2/1	F	78	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
974/1/1	M	43	8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	-	-	93	-	-	-	10	78	-	-	-	-
975/1/1	M	62	**13.2**	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	104	134	-	-	-	104	-	-	-	-
975/2/1	M	34	**13.2**	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	104	134	-	-	-	104	-	-	-	-
976/1/1	M	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	52	-	-	-	-	-	-	-	-	-
977/1/1	M	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	-	48	32	-	-	-	48	-	-	-	-
979/1/1	M	70	8.8	3.4	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**278**	-	-	**478**	-	-	-	38	**488**	-	-	-	-
979/2/1	F	U	8.8	3.4	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
979/3/1	M	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**541**	-	-	**478**	-	-	-	178	**751**	-	349	-	-
979/4/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	268	-	-	-	38	-	-	-	-	-
980/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-	-
980/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-	-
980/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-	-
980/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
980/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/3/1	M	68	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	306	-	-
980/4/1	F	68	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	306	-	-
981/1/1	F	45	-	-	-	-	0.2	**5.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61	-	-	-	-	-	-	-	-	-	-
981/2/1	M	47	-	-	-	-	-	**5.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
981/3/1	F	19	-	-	-	-	-	**5.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-	-	-	-	-	-	-
981/4/1	M	17	-	-	-	-	-	**5.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61	183	-	-	-	-	-	-	-	-	-
983/1/1	M	U	8.5	**4.8**	0.2	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**337**	-	-	**897**	-	-	-	107	**445**	-	-	-	-
983/2/1	M	U	8.5	**4.8**	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**337**	-	-	**897**	-	-	-	107	**445**	-	-	-	-
983/3/1	F	U	8.5	**4.8**	0.2	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
984/1/1	M	69	-	-	-	-	-	-	4.4	12.6	8.8	19.1	-	-	**47.3**	**22.6**	-	**12.2**	0.1	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
984/2/1	F	69	-	-	-	-	-	-	4.4	12.6	8.8	19.1	-	-	-	-	-	**12.2**	0.1	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
984/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	**47.3**	**22.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
985/1/1	M	U	-	2.7	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1052**	-	-	-	**442**	87	-	-	-	-
985/2/1	F	U	-	2.7	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
986/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	310	1908
986/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	310	1908
986/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	310	1908
986/2/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188	1786
986/2/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188	1786
986/2/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188	1786
986/2/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188	1786
986/2/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188	1786
986/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1034	940
986/3/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1034	940
986/3/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1034	940
986/3/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1034	940
986/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1034	940
986/5/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1269	705
986/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
986/6/8	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/9	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/10	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/6	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/7	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/8	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/9	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/7/10	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/8/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/9/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/9/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/9/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/9/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/9/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/9/6	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/9/7	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/9/8	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
987/1/1	M	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5980	2544
987/2/1	F	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6623	209
989/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**184**	-	-	184	-	-	-	-	-	-	-	-	-
989/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**184**	-	-	184	-	-	-	-	-	-	-	-	-
989/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**184**	-	-	184	-	-	-	-	-	-	-	-	-
989/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**184**	-	-	184	-	-	-	-	-	-	-	-	-
989/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**184**	-	-	184	-	-	-	-	-	-	-	-	-
989/1/6	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**184**	-	-	184	-	-	-	-	-	-	-	-	-
989/1/7	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**184**	-	-	184	-	-	-	-	-	-	-	-	-
991/1/1	F	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730
991/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730
991/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730
991/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
991/3/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730
991/3/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730
992/1/1	M	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**274**	-	-	-	-	-	-	-	-	-	-	548
993/1/1	M	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**350**	-	-	-	-	-	-	-	-	-	6694	1228
993/2/1	F	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7221	702
996/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1783	50
996/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1145	30
996/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1785	674
996/4/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	178	636
996/5/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	649
996/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2065	50
996/6/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2065	50
998/1/1	M	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**840**	-	-	-	-	-	**840**	-	-	-	-
999/1/1	M	U	-	-	-	**17.8**	-	-	-	-	-	-	-	-	-	-	**1.8**	-	-	**1.8**	-	-	138	-	-	-	-	-	-	-	138	-	-	-	-
1000/1/1	M	56	-	-	-	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-	-	-	-	-	122	-	-	-	-
1000/2/1	F	58	-	-	-	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1000/3/1	M	79	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1000/4/1	M	35	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1000/5/1	M	85	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1000/6/1	F	91	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1003/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**340**	-	-	-	-	-	-	-	**340**	-	-	-	-
1003/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**340**	-	-	-	-	-	-	-	**340**	-	-	-	-
1003/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**340**	-	-	-	-	-	-	-	**340**	-	-	-	-
1003/2/1	U	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**366**	-	-	-	-	-	-	-	**366**	-	-	-	-
1003/3/1	U	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66	-	-	-	-	-	-	-	66	-	-	-	-
1003/3/2	U	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66	-	-	-	-	-	-	-	66	-	-	-	-
1006/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**726**	-	-	-	-	**612**	-	-	-	-
1006/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**726**	-	-	-	-	**612**	-	-	-	-
1006/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**726**	-	-	-	-	**612**	-	-	-	-
1006/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**726**	-	-	-	-	**612**	-	-	-	-
1006/1/5	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**726**	-	-	-	-	**612**	-	-	-	-
1006/1/6	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**726**	-	-	-	-	**612**	-	-	-	-
1006/1/7	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**726**	-	-	-	-	**612**	-	-	-	-
1006/1/8	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**726**	-	-	-	-	**612**	-	-	-	-
1008/1/1	M	70	-	-	-	-	-	-	**22.1**	**15.8**	4.3	8.7	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1008/2/1	F	73	-	-	-	-	-	-	**22.1**	**15.8**	4.3	8.7	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1009/1/1	M	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	7585	914
1009/2/1	F	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	5632	365
1009/3/1	F	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	4719	548
1009/4/1	M	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4927	183
1011/1/1	M	70	7.4	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-	670	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
1011/2/1	F	65	7.4	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1011/3/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-	670	-	-
1014/1/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	1786
1014/1/2	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	1786
1014/1/3	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	1786
1014/1/4	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	1786
1015/1/1	M	U	11.3	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	313	**313**	-	-	27	182	-	27	4939	2708
1078/1/1	M	69	**36.4**	2.4	**4.5**	2.7	**0.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	144	-	5	-	-	-	-	**558**	212	-	1599	-	-
1078/2/1	F	67	**36.4**	2.4	**4.5**	2.7	**0.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1078/3/1	F	41	9.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1078/4/1	M	U	9.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1078/5/1	F	39	9.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1078/6/1	M	U	9.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1078/7/1	F	31	9.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1078/8/1	M	U	9.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1079/1/1	F	57	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	-	-	0.5	-	-	-	-	-	-	-	104	-	-	-	-	-	-	6949	548
1079/2/1	M	62	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	-	-	0.5	-	-	-	-	-	-	-	104	-	-	-	-	-	-	938	313
1080/1/1	M	50	9.5	**13.9**	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	128	-	-	960	-	-
1080/2/1	F	44	9.5	**13.9**	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1080/3/1	F	87	9.5	**13.9**	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1080/4/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	128	-	-	345	-	-
1080/5/1	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	128	-	-	345	-	-
1106/1/1	M	47	-	-	-	-	-	-	5.6	12.4	2.3	14.4	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1106/2/1	F	41	-	-	-	-	-	-	5.6	12.4	2.3	14.4	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1106/3/1	F	23	-	-	-	-	-	-	5.6	12.4	2.3	14.4	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1107/1/1	F	70	-	-	-	-	-	-	6.3	5.5	6.5	4.0	**28.5**	-	-	-	-	-	**5.0**	-	-	**0.5**	-	-	-	-	**365**	-	-	-	-	-	-	-	-
1107/2/1	M	71	-	-	-	-	-	-	6.3	5.5	6.5	4.0	**28.5**	-	-	-	-	-	**5.0**	-	-	**0.5**	-	-	-	-	**365**	-	-	-	-	-	-	-	-
1108/1/1	M	33	-	-	-	-	-	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5908	2206
1108/2/1	F	32	-	-	-	-	-	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5908	178
1109/1/1	F	64	**26.3**	**11.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	**17.8**	**2.5**	-	-	-	-	138	-	-	-	-	-	**1307**	10	-	1305	-	-
1109/2/1	M	70	**26.3**	**11.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	**17.8**	**2.5**	-	-	-	-	73	-	-	-	-	-	**950**	10	-	1305	-	-
1110/1/1	M	61	-	-	-	-	-	-	-	-	-	-	-	**174.6**	-	-	-	-	-	-	-	**1.4**	-	-	-	-	-	-	-	-	-	-	-	-	-
1110/2/1	F	58	-	-	-	-	-	-	-	-	-	-	-	**174.6**	-	-	-	-	-	-	-	**1.4**	-	-	-	104	-	-	-	-	-	-	-	-	-
1110/3/1	M	31	-	-	-	-	-	-	-	-	-	-	-	**174.6**	-	-	-	-	-	-	-	**1.4**	-	-	-	-	-	-	-	-	-	-	-	-	-
1110/4/1	F	33	-	-	-	-	-	-	-	-	-	-	-	**174.6**	-	-	-	-	-	-	-	**1.4**	-	-	-	-	-	-	-	-	-	-	-	-	-
1112/1/1	M	74	-	-	-	-	-	-	**40.8**	**33.6**	**42.0**	**68.0**	**54.4**	-	-	-	-	-	-	-	**7.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1112/2/1	F	66	-	-	-	-	-	-	**40.8**	**33.6**	**42.0**	**68.0**	**54.4**	-	-	-	-	-	-	-	**7.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1113/1/1	F	80	3.9	2.0	-	-	-	-	8.5	**38.6**	**35.3**	**40.9**	2.5	-	-	-	-	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1113/2/1	M	80	3.9	2.0	-	-	-	-	8.5	**38.6**	**35.3**	**40.9**	2.5	-	-	-	-	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1113/3/1	F	56	3.9	2.0	-	-	-	-	8.5	**38.6**	**35.3**	**40.9**	2.5	-	-	-	-	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1113/4/1	F	23	3.9	2.0	-	-	-	-	8.5	**38.6**	**35.3**	**40.9**	2.5	-	-	-	-	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Annex 1. Adults' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
1113/5/1	F	28	3.9	2.0	-	-	-	-	8.5	**38.6**	**35.3**	**40.9**	2.5	-	-	-	-	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1114/1/1	F	60	-	-	-	-	-	-	**28.8**	**16.9**	**20.1**	20.2	18.0	-	-	-	-	**27.7**	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1114/2/1	F	31	-	-	-	-	-	-	**28.8**	**16.9**	**20.1**	20.2	18.0	-	-	-	-	**27.7**	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1114/3/1	M	72	-	-	-	-	-	-	**28.8**	**16.9**	**20.1**	20.2	18.0	-	-	-	-	**27.7**	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1115/1/1	M	50	-	-	-	-	-	-	-	-	10.6	7.7	1.3	-	-	-	-	6.3	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
1115/2/1	F	46	-	-	-	-	-	-	-	-	10.6	7.7	1.3	-	-	-	-	6.3	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
1115/3/1	M	21	-	-	-	-	-	-	-	-	10.6	7.7	1.3	-	-	-	-	6.3	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
1115/4/1	F	20	-	-	-	-	-	-	-	-	10.6	7.7	1.3	-	-	-	-	6.3	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
1116/1/1	M	74	-	-	-	-	-	-	8.9	**23.0**	0.4	7.3	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1116/2/1	F	74	-	-	-	-	-	-	8.9	**23.0**	0.4	7.3	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1117/1/1	F	49	-	-	-	-	-	-	6.5	2.0	5.2	13.1	4.8	-	-	-	-	-	0.3	-	-	-	-	-	-	-	**912**	-	-	-	-	-	-	-	-
1117/2/1	M	20	-	-	-	-	-	-	6.5	2.0	5.2	13.1	4.8	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1117/3/1	M	50	-	-	-	-	-	-	6.5	2.0	5.2	13.1	4.8	-	-	-	-	-	0.3	-	-	-	-	-	-	-	**912**	-	-	-	-	-	-	-	-
1117/4/1	M	22	-	-	-	-	-	-	6.5	2.0	5.2	13.1	4.8	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1117/5/1	F	22	-	-	-	-	-	-	6.5	2.0	5.2	13.1	4.8	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1118/1/1	M	52	4.4	1.6	-	0.3	**0.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1031**	-	-	-	221	-	-	-	-	-
1118/2/1	F	24	4.4	1.6	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1118/3/1	F	22	4.4	1.6	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1118/4/1	F	18	4.4	1.6	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1118/5/1	F	47	4.4	1.6	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1119/1/1	F	31	-	-	-	-	-	3.5	-	0.7	3.7	-	9.0	**202.2**	-	-	-	-	**3.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1119/2/1	M	32	-	-	-	-	-	3.5	-	0.7	3.7	-	9.0	**202.2**	-	-	-	-	**3.3**	-	-	-	-	-	52	18	-	-	-	-	-	-	-	-	-
1119/5/1	M	U	-	-	-	-	-	-	-	-	-	-	-	73.0	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	-	-	-

Notes

U = Unknown

Emboldened observations are the high-rate individuals

Annex 2. Children's and infants' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Eggs	Wild/free foods	Wild fungi	Intertidal occupancy over mud and sand	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
Child age group (6 - 15 years old)																				
831/3/1	F	14	-	-	-	-	-	-	-	-	-	-	-	-	**52**	-	-	-	-	-
833/3/1	M	13	**3.4**	-	-	-	-	-	-	-	-	-	-	**72**	-	-	-	-	-	-
842/3/1	M	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
852/3/1	M	14	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-
852/4/1	M	14	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-
859/2/1	F	10	-	-	-	-	-	-	-	-	-	-	-	-	**20**	**25**	-	5	-	-
868/2/1	F	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7613	730
873/3/1	F	14	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
912/3/1	F	9	-	-	-	-	-	-	-	-	-	-	-	-	-	**70**	10	-	-	-
912/4/1	F	6	-	-	-	-	-	-	-	-	-	-	-	-	-	**70**	10	-	-	-
916/5/1	M	14	-	-	-	-	-	-	-	-	-	-	-	-	-	15	60	-	-	-
920/3/1	M	14	**5.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
920/4/1	F	11	**5.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
934/3/1	F	10	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	1	-	-
934/4/1	M	7	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	1	-	-
935/3/1	M	15	-	-	-	-	-	-	-	-	-	-	-	-	-	**40**	-	-	-	-
935/4/1	M	12	-	-	-	-	-	-	-	-	-	-	-	-	-	**40**	-	-	-	-
935/5/1	F	8	-	-	-	-	-	-	-	-	-	-	-	-	-	**40**	-	-	-	-
943/7/1	M	15	-	-	**2.9**	**0.2**	2.5	**4.4**	-	-	-	-	-	-	-	-	-	-	-	-
1115/5/1	M	8	-	-	-	-	**8.0**	**5.7**	1.0	-	**4.7**	-	**0.2**	-	-	-	-	-	-	-
1119/4/1	M	6	-	**2.6**	-	**0.5**	**2.8**	-	**6.7**	**151.6**	-	**2.1**	-	-	**18**	-	-	-	-	-

Annex 2. Children's and infants' consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) in the Heysham area

Person ID number	Gender	Age	Fish	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Eggs	Wild/free foods	Wild fungi	Intertidal occupancy over mud and sand	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
Infant age group (0 - 5 years old)																				
828/5/1	F	2	-	-	**1.0**	**0.7**	**2.0**	-	0.2	-	-	-	-	-	-	-	-	-	-	-
831/5/1	M	5	-	-	-	-	-	-	-	-	-	-	-	-	**52**	-	-	-	-	-
898/2/1	F	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8219	229
898/3/1	F	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8219	229
898/4/1	M	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8219	229
905/3/1	M	4	-	-	-	-	-	-	-	-	-	-	-	-	-	**90**	-	-	-	-
912/5/1	M	4	-	-	-	-	-	-	-	-	-	-	-	-	-	**70**	-	10	-	-
934/5/1	F	5	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	1	-	-
938/5/1	M	3	-	-	-	-	-	-	-	**132.2**	-	-	-	-	-	-	-	-	-	-
938/6/1	M	2	-	-	-	-	-	-	-	**87.3**	-	-	-	-	-	-	-	-	-	-
1009/5/1	M	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	417	104
1110/5/1	M	4	-	-	-	-	-	-	-	**130.9**	-	-	-	-	-	-	-	-	-	-
1119/3/1	F	4	-	**1.7**	-	**0.4**	**1.8**	-	**4.5**	**101.1**	-	**1.4**	-	-	**18**	-	-	-	-	-

Notes

Emboldened observations are the high-rate individuals

Annex 3. Qualitative and estimated data for use in dose assessments

Details of activity	Exposure pathways involved	Estimated rate
None identified	None identified	Not applicable

Annex 4. Ratios for determining consumption and occupancy rates for children and infants

Group	Ratio[a]	
	Child[e]/adult	Infant[e]/adult
Fish[b]	0.200	0.050
Crustaceans[b]	0.250	0.050
Molluscs[b]	0.250	0.050
Green vegetables	0.444	0.222
Other vegetables	0.500	0.200
Root vegetables	0.500	0.375
Potatoes	0.708	0.292
Domestic fruit	0.667	0.467
Milk	1.000	1.333
Cattle meat	0.667	0.222
Pig meat	0.625	0.138
Sheep meat	0.400	0.120
Poultry	0.500	0.183
Eggs	0.800	0.600
Wild/free foods[c]	0.490	0.110
Game[d]	0.500	0.140
Honey	0.789	0.789
Wild fungi	0.450	0.150
Freshwater fish[b]	0.250	0.050
External exposure over intertidal substrates[b]	0.500	0.030

Notes

[a]Excepting notes b and c, consumption ratios were derived from Byrom et al., (1995) which presented data for infants aged 6 to 12 months and children aged 10 to 11 years.

[b]Ratios were derived from Smith and Jones, (2003) which presented data for infants and children of unspecified ages.

[c]Ratios were derived from FSA data for wild fruit and nuts for infants and 10-year-old children.

[d]Game includes rabbits/hares and venison.

[e]Note that the age ranges within the age groups in this table do not correspond exactly with the age ranges within the age groups used throughout the rest of this report.

Annex 5. Consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) for women of childbearing age in the Heysham area, for use in foetal dose assessments

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud and sand	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
825/1/1	F	U	2.7	1.4	-	-	-	-	4.7	1.7	2.0	-	10.0	-	4.5	1.3	0.9	-	-	-	122	-	-	-	-	-
826/1/1	F	U	0.3	0.2	-	-	-	-	23.7	24.1	11.4	12.7	11.8	-	-	2.3	-	-	-	-	104	-	7	-	-	-
828/4/1	F	34	-	-	-	-	-	-	3.2	2.1	6.1	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
830/1/1	F	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-
830/2/1	F	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-
831/1/1	F	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-
831/2/1	F	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-
832/2/1	F	31	11.8	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	313	-	-	-	-	-	-
833/2/1	F	37	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-	-	-	-
836/2/1	F	30	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-
842/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
842/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
842/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
842/4/1	F	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
842/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-
844/2/1	F	42	6.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
845/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1926	52
845/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1926	52
845/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1926	52
845/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1926	52
845/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	736	92
850/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
850/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1840	276
851/1/1	F	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	365	-	-	-	-	-
865/2/1	F	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	112	-	-	-	-
871/2/1	F	U	-	-	-	-	-	-	9.7	13.6	13.5	-	-	-	-	-	-	-	-	-	391	-	15	-	-	-
873/2/1	F	U	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Annex 5. Consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) for women of childbearing age in the Heysham area, for use in foetal dose assessments

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud and sand	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
873/5/1	F	U	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
873/6/1	F	17	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
876/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/8	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/9	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/2/10	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1909	161
876/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	920	46
876/3/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	920	46
876/3/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	920	46
877/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/8	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
877/2/9	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	46
878/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161

Annex 5. Consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) for women of childbearing age in the Heysham area, for use in foetal dose assessments

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud and sand	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
878/2/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/8	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/9	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/10	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/11	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/12	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/13	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/14	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/15	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/16	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/17	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/18	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/19	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
878/2/20	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1794	161
879/1/1	F	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-
880/2/1	F	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1035	1081
881/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
881/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	402
883/4/1	F	25	-	-	-	-	-	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
888/5/1	F	29	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	0.4	-	-	-	-	-	-	-	-
898/1/1	F	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8564	91
899/1/1	F	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	365	-	-	-	8030	365
904/2/1	F	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	365	-	-	-	-	-
905/2/1	F	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-
908/5/1	F	23	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
912/2/1	F	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-	-	-	-
914/3/1	F	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-
914/4/1	F	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-

Annex 5. Consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) for women of childbearing age in the Heysham area, for use in foetal dose assessments

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud and sand	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
914/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
914/6/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
914/6/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
915/1/1	F	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	100	-	-	-
916/4/1	F	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	60	-	-	-
917/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	60	-	-
918/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	576	-	-
918/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	576	-	-
918/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	288	-	-
918/4/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	288	-	-
918/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-
920/2/1	F	38	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
921/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-
921/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/4/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/4/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/4/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
921/4/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-
934/2/1	F	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	1	-	-
936/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	52	-	208	-	-	-
936/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	-	104	-	-	-
937/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5110	-	-
938/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	264.5	-	-	-	-	-	-	-	-	-	-	-	-
938/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	264.5	-	-	-	-	-	-	-	-	-	-	-	-
939/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	312.9	-	-	-	0.4	-	-	-	-	-	-	-	-
939/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	312.9	-	-	-	0.4	-	-	-	-	-	-	-	-

Annex 5. Consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) for women of childbearing age in the Heysham area, for use in foetal dose assessments

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud and sand	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
939/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	312.9	-	-	-	0.4	-	-	-	-	-	-	-	-
943/4/1	F	30	-	-	-	-	-	-	2.9	0.2	2.5	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
943/6/1	F	34	-	-	-	-	-	-	2.9	0.2	2.5	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
947/6/1	F	18	-	-	-	-	-	-	6.2	0.5	12.0	9.3	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-
949/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	368
949/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	340
949/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	521
967/3/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-
967/3/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-
967/3/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-
967/3/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-
967/3/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-
979/2/1	F	U	8.8	3.4	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
980/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/2/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/2/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
980/2/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	327	-	-
981/3/1	F	19	-	-	-	-	-	5.7	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-	-	-	-
983/3/1	F	U	8.5	4.8	0.2	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
985/2/1	F	U	-	2.7	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
986/4/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1034	940
986/5/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1269	705
986/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94

Annex 5. Consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) for women of childbearing age in the Heysham area, for use in foetal dose assessments

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud and sand	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
986/6/8	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/9	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/6/10	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	964	94
986/8/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/3	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/4	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/5	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/6	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
986/8/7	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	71
991/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730
991/2/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730
996/2/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1145	30
996/6/1	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2065	50
996/6/2	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2065	50
1009/3/1	F	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	4719	548
1078/3/1	F	41	9.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1078/5/1	F	39	9.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1078/7/1	F	31	9.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1080/2/1	F	44	9.5	13.9	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1106/2/1	F	41	-	-	-	-	-	-	5.6	12.4	2.3	14.4	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
1106/3/1	F	23	-	-	-	-	-	-	5.6	12.4	2.3	14.4	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
1108/2/1	F	32	-	-	-	-	-	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	5908	178
1110/4/1	F	33	-	-	-	-	-	-	-	-	-	-	-	174.6	-	-	-	1.4	-	-	-	-	-	-	-	-
1113/4/1	F	23	3.9	2.0	-	-	-	-	8.5	38.6	35.3	40.9	2.5	-	6.9	-	-	-	-	-	-	-	-	-	-	-
1113/5/1	F	28	3.9	2.0	-	-	-	-	8.5	38.6	35.3	40.9	2.5	-	6.9	-	-	-	-	-	-	-	-	-	-	-
1114/2/1	F	31	-	-	-	-	-	-	28.8	16.9	20.1	20.2	18.0	-	27.7	0.7	-	-	-	-	-	-	-	-	-	-
1115/4/1	F	20	-	-	-	-	-	-	-	-	10.6	7.7	1.3	-	6.3	-	-	0.2	-	-	-	-	-	-	-	-
1117/5/1	F	22	-	-	-	-	-	-	6.5	2.0	5.2	13.1	4.8	-	-	0.3	-	-	-	-	-	-	-	-	-	-
1118/2/1	F	24	4.4	1.6	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Annex 5. Consumption rates (kg y^{-1} or l y^{-1}) and occupancy rates (h y^{-1}) for women of childbearing age in the Heysham area, for use in foetal dose assessments

Person ID number	Gender	Age	Fish	Crustaceans	Molluscs	Wildfowl	Marine plants/algae	Salt marsh grazed sheep	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud and sand	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
1118/3/1	F	22	4.4	1.6	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1118/4/1	F	18	4.4	1.6	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1119/1/1	F	31	-	-	-	-	-	3.5	-	0.7	3.7	-	9.0	202.2	-	3.3	-	-	-	-	-	-	-	-	-	-	-

Notes

U = Unknown

[a] Based on National Statistics guidelines, women were deemed to be of childbearing age if they were between 15 and 44 years old. Women of unknown age were included as they were potentially women of childbearing age

Annex 6. Summary of profiles for adults in the Heysham area for use in the assessment of total dose

Profile Name	Number of individuals	Pathway Name: Crustacea	Direct	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma external - Houseboat	Gamma external - Saltmarsh	Gamma external - Sediments	Honey	Marine plants/algae	Meat - Cow	Meat - Game	Meat - Poultry	Meat - Salt Marsh Grazed Sheep	Meat - Sheep	Milk	Mollusca	Mushrooms	Occupancy IN water	Occupancy ON water	Plume (IN; 0 - 0.25km)	Plume (MID; >0.25 - 0.5km)	Plume (OUT; >0.5 - 1km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
Notes:			1					2	3	4				5									6	6	6				
Units:		kg	-	kg	kg	kg	kg	h	h	h	kg	kg	kg	kg	kg	kg	kg	l	kg	kg	h	h	h	h	h	kg	kg	kg	kg
Crustacean Consumers	**8**	10.0	-	4.5	13.3	-	0.63	-	<1	330	-	0.06	-	2.7	-	-	-	-	0.08	-	-	450	-	-	-	-	-	-	-
Occupants for Direct Radiation	**223**	<0.01	1.00	-	0.11	0.03	<0.01	-	-	12	-	-	-	-	-	-	-	-	-	-	-	<1	190	510	1400	-	-	-	-
Egg Consumers	**7**	3.4	-	20.5	7.5	7.7	1.0	-	-	30	-	-	6.8	-	-	-	3.2	-	-	0.07	-	370	-	-	-	13.6	10.8	14.1	11.1
Sea Fish Consumers	**9**	3.6	-	4.0	23.8	-	0.56	-	<1	230	-	0.20	-	0.60	-	-	-	-	1.0	-	-	470	-	-	-	-	-	-	-
Domestic Fruit Consumers	**4**	-	-	-	-	41.5	2.5	-	-	180	4.0	-	-	-	-	-	-	-	-	0.25	-	-	-	-	-	23.5	19.5	36.0	24.2
Wild Fruit and Nut Consumers	**10**	2.4	-	3.6	5.3	9.8	3.3	-	5	110	-	-	-	-	-	0.70	-	40.4	-	0.10	<1	260	-	-	-	7.1	7.9	3.3	4.3
Houseboat Occupants	**3**	-	-	-	-	-	-	1490	-	-	-	-	-	-	-	-	-	-	-	-	-	500	-	-	-	-	-	-	-
Occupants over Saltmarsh	**2**	-	-	-	-	-	-	-	560	-	-	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Occupants over Sediment	**25**	0.72	0.04	-	3.5	0.38	0.02	-	-	780	-	0.02	-	0.44	-	-	-	-	0.07	-	-	15	-	310	-	0.52	0.16	1.0	0.41
Honey Consumers	**2**	-	-	-	-	54.4	-	-	-	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40.8	33.6	68.0	42.0
Consumers of Marine Plants and Algae	**3**	2.1	-	-	25.7	-	-	-	2	390	-	0.74	-	1.9	-	-	-	-	3.0	-	-	530	-	-	-	-	-	-	-
Cattle Meat Consumers	**2**	-	-	6.1	-	-	0.06	-	-	-	-	-	47.3	-	-	-	22.6	-	-	0.13	-	-	-	-	-	2.2	6.3	9.6	4.4
Game Meat Consumers	**3**	3.2	-	-	5.7	-	-	-	-	460	-	-	-	13.7	0.60	-	-	-	0.15	-	-	-	-	-	-	-	-	-	-
Poultry Meat Consumers	**1**	-	-	-	-	-	-	-	-	140	-	-	-	19.6	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumers of Salt Marsh Grazed Sheep	**18**	-	-	-	-	-	-	-	36	20	-	0.04	-	-	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep Meat Consumers	**2**	-	-	6.1	-	-	0.06	-	-	-	-	-	47.3	-	-	-	22.6	-	-	0.13	-	-	-	-	-	2.2	6.3	9.6	4.4
Milk Consumers	**17**	-	-	-	-	1.1	0.38	-	3	7	0.04	-	-	-	-	0.41	-	255.9	-	0.50	-	-	-	-	-	-	0.08	-	0.44
Mollusc Consumers	**2**	2.4	-	-	36.4	-	-	-	3	72	-	0.91	-	2.7	-	-	-	-	4.5	-	-	800	-	-	-	-	-	-	-
Mushroom Consumers	**6**	-	-	-	-	9.5	1.7	-	-	140	-	-	-	-	-	-	-	116.4	-	1.1	-	-	-	-	-	2.1	1.8	1.3	2.2
Occupants IN Water	**18**	0.03	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	110	-	-	-	-	-	-	-	-
Occupants ON Water	**2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5110	-	-	-	-	-	-	-
Local Inhabitants (0 - 0.25km)	**4**	-	1.00	-	-	-	-	-	-	88	-	-	-	-	-	-	-	-	-	-	-	-	7800	-	-	-	-	-	-
Local Inhabitants (>0.25 - 0.5km)	**4**	0.18	1.00	-	2.8	1.3	0.13	-	-	180	-	-	-	-	-	-	-	-	-	-	-	7	-	7340	-	-	-	-	-
Local Inhabitants (>0.5 - 1km)	**16**	-	1.00	-	0.32	-	-	-	-	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6830	-	-	-	-
Green Vegetable Consumers	**13**	0.03	-	7.4	0.04	16.3	0.51	-	-	8	1.2	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	26.5	17.8	30.1	19.5
Other Domestic Vegetable Consumers	**20**	0.53	-	6.1	1.0	12.6	0.33	-	-	44	0.79	-	-	-	-	-	-	-	-	-	2	-	-	-	-	19.0	24.6	27.2	20.8
Potato Consumers	**11**	0.93	-	4.4	1.8	11.7	-	-	-	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.0	26.7	44.8	30.8
Root Vegetable Consumers	**16**	0.64	-	8.2	1.2	11.9	0.16	-	-	-	0.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.1	22.6	34.6	28.0

Notes:

1. Expressed as the proportion of the profile members who are exposed to direct radiation
2. 'Gamma external - Houseboat' includes occupancy over boat on mud
3. 'Gamma external - Salt marsh' includes occupancy over salt marsh
4. 'Gamma external - Sediments' includes occupancy over mud; mud and sand; sand; sand and stones; stones
5. 'Meat - Game' includes consumption of rabbits and wildfowl
6. Plume times are the sums of individuals' indoor and outdoor occupancy rates in each of the direct radiation zones.

The means of the high-rate groups are determined by the 'cut-off' method and are highlighted on the diagonal

Annex 7. Summary of profiles for the child age group (6 - 15 years old) in the Heysham area for use in the assessment of total dose

		Pathway Name																
			Direct	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sediments	Meat - Salt Marsh Grazed Sheep	Milk	Mushrooms	Occupancy IN water	Occupancy ON water	Plume (OUT; >0.5 - 1km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
		Notes:	1					2						3				
Profile Name	Number of individuals	Units:	-	kg	kg	kg	kg	h	kg	l	kg	h	h	h	kg	kg	kg	kg
Occupants for Direct Radiation	**1**		1.00	-	-	-	-	-	-	-	-	-	-	8340	-	-	-	-
Egg Consumers	**1**		-	4.7	-	0.99	-	-	-	-	0.16	-	-	-	-	-	5.7	8.0
Sea Fish Consumers	**3**		-	-	5.1	-	-	24	-	-	-	-	-	-	-	-	-	-
Domestic Fruit Consumers	**1**		-	-	-	6.7	2.1	18	2.6	151.6	-	-	-	-	-	0.53	-	2.8
Wild Fruit and Nut Consumers	**1**		-	-	-	6.7	2.1	18	2.6	151.6	-	-	-	-	-	0.53	-	2.8
Occupants over Sediment	**8**		-	-	0.43	-	-	54	-	-	-	3	<1	-	-	-	-	-
Consumers of Salt Marsh Grazed Sheep	**2**		-	-	-	3.4	1.0	9	2.3	75.8	-	-	-	-	-	0.27	-	1.4
Milk Consumers	**1**		-	-	-	6.7	2.1	18	2.6	151.6	-	-	-	-	-	0.53	-	2.8
Mushroom Consumers	**1**		-	4.7	-	0.99	-	-	-	-	0.16	-	-	-	-	-	5.7	8.0
Occupants IN Water	**1**		-	-	-	-	-	15	-	-	-	60	-	-	-	-	-	-
Occupants ON Water	**1**		-	-	-	-	-	-	-	-	-	-	120	-	-	-	-	-
Local Inhabitants (>0.5 - 1km)	**1**		1.00	-	-	-	-	-	-	-	-	-	-	8340	-	-	-	-
Green Vegetable Consumers	**1**		-	-	-	-	-	-	-	-	-	-	-	-	2.9	0.21	4.4	2.5
Other Domestic Vegetable Consumers	**2**		-	-	-	3.4	1.0	9	1.3	75.8	-	-	-	-	1.5	0.37	2.2	2.6
Potato Consumers	**2**		-	2.3	-	0.49	-	-	-	-	0.08	-	-	-	1.5	0.10	5.1	5.2
Root Vegetable Consumers	**2**		-	2.3	-	3.9	1.0	9	1.3	75.8	0.08	-	-	-	-	0.27	2.9	5.4

Notes:

1. Expressed as the proportion of the profile members who are exposed to direct radiation
2. 'Gamma external - Sediments' includes occupancy over mud and sand; sand; sand and stones
3. Plume times are the sums of individuals' indoor and outdoor occupancy rates in each of the direct radiation zones.

The means of the high-rate groups are determined by the 'cut-off' method and are highlighted on the diagonal

Annex 8. Summary of profiles for the infant age group (0 - 5 years old) in the Heysham area for use in the assessment of total dose

Profile Name	Number of individuals	Pathway Name: Direct	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sediments	Meat - Salt Marsh Grazed Sheep	Milk	Occupancy ON water	Plume (OUT; >0.5 - 1km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Root
Notes:		1			2				3			
Units:		-	kg	kg	h	kg	l	h	h	kg	kg	kg
Occupants for Direct Radiation	**4**	1.00	-	-	-	-	-	-	6470	-	-	-
Domestic Fruit Consumers	**1**	-	4.5	1.4	18	1.7	101.1	-	-	-	0.35	1.8
Wild Fruit and Nut Consumers	**1**	-	4.5	1.4	18	1.7	101.1	-	-	-	0.35	1.8
Occupants over Sediment	**3**	-	-	-	71	-	-	3	-	-	-	-
Consumers of Salt Marsh Grazed Sheep	**1**	-	4.5	1.4	18	1.7	101.1	-	-	-	0.35	1.8
Milk Consumers	**4**	-	1.1	0.35	5	0.43	112.9	-	-	-	0.09	0.46
Occupants ON Water	**1**	-	-	-	70	-	-	10	-	-	-	-
Local Inhabitants (>0.5 - 1km)	**3**	1.00	-	-	-	-	-	-	8450	-	-	-
Green Vegetable Consumers	**1**	-	0.17	-	-	-	-	-	-	1.0	0.69	2.0
Other Domestic Vegetable Consumers	**2**	-	2.3	0.69	9	0.87	50.5	-	-	0.52	0.52	1.9
Root Vegetable Consumers	**2**	-	2.3	0.69	9	0.87	50.5	-	-	0.52	0.52	1.9

Notes:

1. Expressed as the proportion of the profile members who are exposed to direct radiation
2. 'Gamma external - Sediments' includes occupancy over sand; sand and stones
3. Plume times are the sums of individuals' indoor and outdoor occupancy rates in each of the direct radiation zones.

The means of the high-rate groups are determined by the 'cut-off' method and are highlighted on the diagonal

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