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Radiological Habits Survey: Low Level Waste Repository, 2012

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Final report

Radiological Habits Survey: Low Level Waste Repository, 2012

F.J. Clyne, C.J. Garrod, V.E. Ly, A. Dewar and G.P. Papworth

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Approved for publication by W.C. Camplin

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SUMMARY

This report presents the results of a survey conducted in 2012 to determine the habits and consumption patterns of people living, working and pursuing recreational activities in the vicinity of the Low Level Waste Repository (LLWR) nuclear site near the village of Drigg in Cumbria. The LLWR is the UK's national low-level waste disposal facility. The main function of the LLWR is to receive low-level solid radioactive wastes from all UK nuclear sites (except Dounreay) and many non-nuclear sites. The site discharges gaseous radioactive wastes via stacks to the atmosphere, leachate via a pipeline into the Irish Sea and contains sources of direct radiation. The discharges to the Irish Sea are small compared with those discharged from the nearby Sellafield nuclear site. 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 the direct exposure arising from gaseous releases from the site. Due to the close proximity of the LLWR site to the Sellafield site, the aquatic survey area is the same for both sites and the terrestrial survey areas overlap.

The following potential exposure pathways related to the site 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

Interviews were conducted with members of the public and data collected for 404 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) was defined as the waters and intertidal areas between Parton and Tarn Bay, and extended 11 km offshore. The lower reaches of the rivers Ehen, Calder, Irt, Mite and Esk were also included.

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

- 37 kg y^{-1} for fish
- 29 kg y^{-1} for crustaceans
- 9.1 kg y^{-1} for molluscs
- 14 kg y^{-1} for wildfowl
- 1.9 kg y^{-1} for salt marsh grazed sheep

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

- For fish; cod, thornback ray, mackerel, plaice, pollack and whiting
- For crustaceans; *Nephrops,* brown crab, common lobster
- For molluscs; winkles, mussels and cockles
- For wildfowl; greylag goose, goose (unspecified species), Canada goose and mallard

The mean consumption rate for the adult high-rate group exceeded the generic 97.5th percentile rate for crustaceans but not for fish or molluscs. Generic consumption rates have not been determined for wildfowl or salt marsh grazed sheep meat.

The activities undertaken by adults in the high-rate groups for intertidal occupancy included wildfowling, dog walking, bait digging, walking, angling, collecting winkles, collecting mussels, collecting cockles, collecting crabs, setting nets, setting pots on the shore, boat maintenance, tending livestock and playing. Gamma dose rate measurements were taken at most locations in the aquatic survey area where activities were occurring. The activities undertaken by adults in the high-rate group for handling fishing gear were handling pots and nets. The activities undertaken by adults in the high-rate group for handling sediment were collecting winkles, bait digging, collecting limpets and collecting crabs. The activities undertaken by people in and on the water included kitesurfing, diving, working on a boat, swimming, trawling, potting, netting, angling, push netting and paddling. Seaweed was used as a fertiliser on two gardens 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) was defined as the land within 5 km of the centre of the LLWR site. Twenty-eight farms were identified that produced milk (from dairy cattle), beef cattle, lambs, chickens (sold for egg production), chicken eggs and arable crops. The farmers and their families consumed foods that were produced on their land. Two smallholdings and one small allotment site were identified. Many gardeners were growing a wide variety of fruit and vegetables within the survey area. Three beekeepers were identified who kept hives within the survey area but they could not be contacted.

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; pig meat; sheep meat; poultry; eggs; wild/free foods; honey; wild fungi; venison. Two mean consumption rates for the adult high-rate groups were found to be greater than the generic 97.5th percentile consumption rates. These were for milk and poultry. The consumption of rabbits/hares and cereals was not identified.

The consumption of borehole water by humans was identified. Livestock were consuming borehole water, well water or spring water. Livestock also had access to the River Irt, the River Mite and to ditches and streams for drinking water. The transfer of contamination off-site by wildlife was investigated as radionuclides could enter the food chain or contaminate the environment through this pathway. Representatives from the LLWR site thought that it was improbable that wildlife could come into contact with waste stored on site but regular checks were made to ensure that wildlife did not burrow into the pits or trenches.

The direct radiation survey area

The direct radiation survey area (see Figure 2) was defined as the land and sea within 1 km of the LLWR nuclear licensed site boundary. Occupancy rates were obtained for residents, employees, farmers, visitors, and people who were angling, bait digging, collecting shellfish and beachcombing.

The occupancy rates were analysed in zones according to the distance from the LLWR nuclear licensed site boundary. The highest indoor, outdoor and total occupancy rates in the 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.0 km zones were for residents. The highest outdoor occupancy rates in the 0 – 0.25 km and >0.25 – 0.5 km were for residents who also farm within the survey 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 at distances beyond 5 km of the LLWR site centre.

Comparisons with the previous survey

Comparisons were made with the results of the terrestrial and direct radiation survey areas from the last habits survey undertaken in the LLWR area in 2002. An aquatic survey area was not included in the 2002 survey; therefore, the 2012 aquatic survey area results cannot be compared. Reasons for significant changes in the consumption rates were identified for certain pathways and these are provided in Section 8.

In the terrestrial survey area in 2012, compared with 2002, there were relatively large increases in the mean consumption rates for the adult high-rate groups for pig meat, from 10 kg y^{-1} to 25 kg y^{-1}, for poultry, from 26 kg y^{-1} to 47 kg y^{-1}, and for wild fungi, from 1.1 kg y^{-1} to 6.4 kg y^{-1}. There were relatively large decreases in the mean consumption rates for the adult high-rate groups for the following food groups: green vegetables, from 53 kg y^{-1} to 19 kg y^{-1}; other vegetables, from 33 kg y^{-1} to 18 kg y^{-1}; wild/free foods, from 4.6 kg y^{-1} to 2.6 kg y^{-1}; honey, from 1.0 kg y^{-1} to 0.3 kg y^{-1}. There were small increases in the mean consumption rates for the adult high-rate groups for potato, sheep meat, eggs, and there were small decreases for root vegetables, domestic fruit, milk, cattle meat and venison. The consumption of rabbits/hares was identified in 2002 but was not identified in 2012.

In the direct radiation survey area in 2012 compared with 2002, there was a small decrease in the highest total occupancy rate in the 0 - 0.25 km zone, from 8760 h y^{-1} to 8600 h y^{-1}. There was a slight increase in the highest total occupancy rate in the >0.25 - 0.5 km zone in 2012 compared with 2002 from 8300 h y^{-1} to 8700 h y^{-1}. In the >0.5 – 1.0 km zone the highest total occupancy rate was 8200 h y^{-1} (rounded data) in 2012 and in 2002.

Recommendations

Recommendations for changes to the current environmental monitoring programmes are provided. These are based on the information collected during the survey and also take into account the potential radiological significance of the various pathways that were identified. These include, replacing the sample of lesser spotted dogfish with a sample of pollack, adding a sample of brown shrimps, replacing the sample of beetroot with a sample of carrots and taking a one-off sample of beef.

1 INTRODUCTION

The public may be exposed to radiation as a result of the operations of the Low Level Waste Repository (LLWR) nuclear licensed site either through the permitted discharges of leachate or gaseous radioactive wastes into the local environment, or from radiation emanating directly from the site. This report provides information on activities carried out locally by members of the public, which may influence their radiation exposure. The study has been funded by the Environment Agency, the Food Standards Agency and the Office for Nuclear Regulation in order to support their respective roles in protecting the public from exposure to radiation.

The site is located approximately 5 km south-east of the Sellafield nuclear site. Due to the close proximity of the two sites, the aquatic survey area used in the LLWR habits survey is the same as the aquatic survey area used in the Sellafield habits surveys. The terrestrial survey areas for both sites also overlap.

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

The Environment Agency regulates the discharges of radioactive waste under the Environmental Permitting Regulations (UK Parliament, 2010). The regulations take account of the European Union (EU) Basic Safety Standards (BSS) Directive 96/29/Euratom (CEC, 1996) which embody the recommendations of the ICRP, particularly ICRP 60 (ICRP, 1991). 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), an agency of the Health and Safety Executive, 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 (CEC, 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 Regulations 2010 (UK Parliament, 2010). 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), 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 assessment (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). This approach is being adopted

in Radioactivity in Food and the Environment (RIFE) publications, (e.g. EA, NIEA, FSA and SEPA, 2011), as combined habits surveys are completed. 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 environment agencies, the Health Protection Agency 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 LLWR site is located near the village of Drigg on the coast of Cumbria in north-west England, approximately 5 km to the south-east of the Sellafield nuclear site. The LLWR is the UK's national low-level waste disposal facility. The main function of the LLWR is to receive low-level solid radioactive wastes from all UK nuclear sites (except Dounreay) and many non-nuclear sites. Waste is disposed of in engineered concrete vaults on land, whereas, prior to the early 1990's, waste was disposed of in open clay lined trenches. The current site activities include the receipt, grouting and storage of low level waste, and the decommissioning of existing buildings. Routine operations were being undertaken throughout the period when the habits survey was conducted.

The site is by owned by the Nuclear Decommissioning Authority (NDA). LLW Repository Ltd is licensed to operate the site under NIA 65, which allows the installation and operation of certain activities, and is also responsible for the day-to-day operations. Under the Environmental Permitting Regulations, LLW Repository Ltd is permitted to discharge gaseous radioactive wastes via stacks to the atmosphere, and leachate from the site via a pipeline into the Irish Sea. The site contains 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, NIEA and SEPA, 2012. The discharges from LLWR are small compared with those discharged from the nearby Sellafield site.

The permit for disposal to the Drigg Stream was revoked in 2006 but reassurance monitoring of samples of water and sediment has continued. Surface water run-off, which is not associated with operations on site, drains into the stream which flows from the southern end of the site into the River Irt.

2.2 Survey objectives

The Centre for Environment, Fisheries & Aquaculture Science (Cefas) undertook the LLWR habits survey in 2012 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, leachate discharges and direct radiation from the LLWR 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
- New or unusual exposure pathways

No additional site-specific investigations were requested by the Environment Agency, the Food Standards Agency or the Office for Nuclear Regulation.

2.3 Survey areas

The geographic extents of potential effects from leachate 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 area relating to discharges of leachate, a terrestrial area relating to deposition from gaseous discharges, and a direct radiation area relating to ionising radiation emanating directly from the site.

The aquatic survey area, shown in Figure 1, covered the waters and intertidal areas between Parton and Tarn Bay, and extended 11 km offshore. The lower reaches of the rivers Ehen, Calder, Irt, Mite and Esk were also included. This area was taken to represent the predominant area of mixing of discharged radionuclides in seawater. The aquatic survey area used for the LLWR site is the same as the aquatic survey area used for the Sellafield nuclear site.

The terrestrial survey area, shown in Figure 2, covered all land within 5 km of the site centre (National Grid Reference: SD 055 991), to encompass the main areas of potential deposition from gaseous discharges. Due to the close proximity of the LLWR to the Sellafield site (approximately 5 km from the centre of the LLWR site to the centre of the Sellafield site) the terrestrial survey areas for both sites overlap.

The direct radiation survey area, which is also shown in Figure 2, was defined as all 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 terrestrial and direct radiation survey areas were used in the previous habits survey conducted by Cefas around the LLWR site, which was in 2002 (Joyce *et al*., 2003). An aquatic survey area was not included in the 2002 survey.

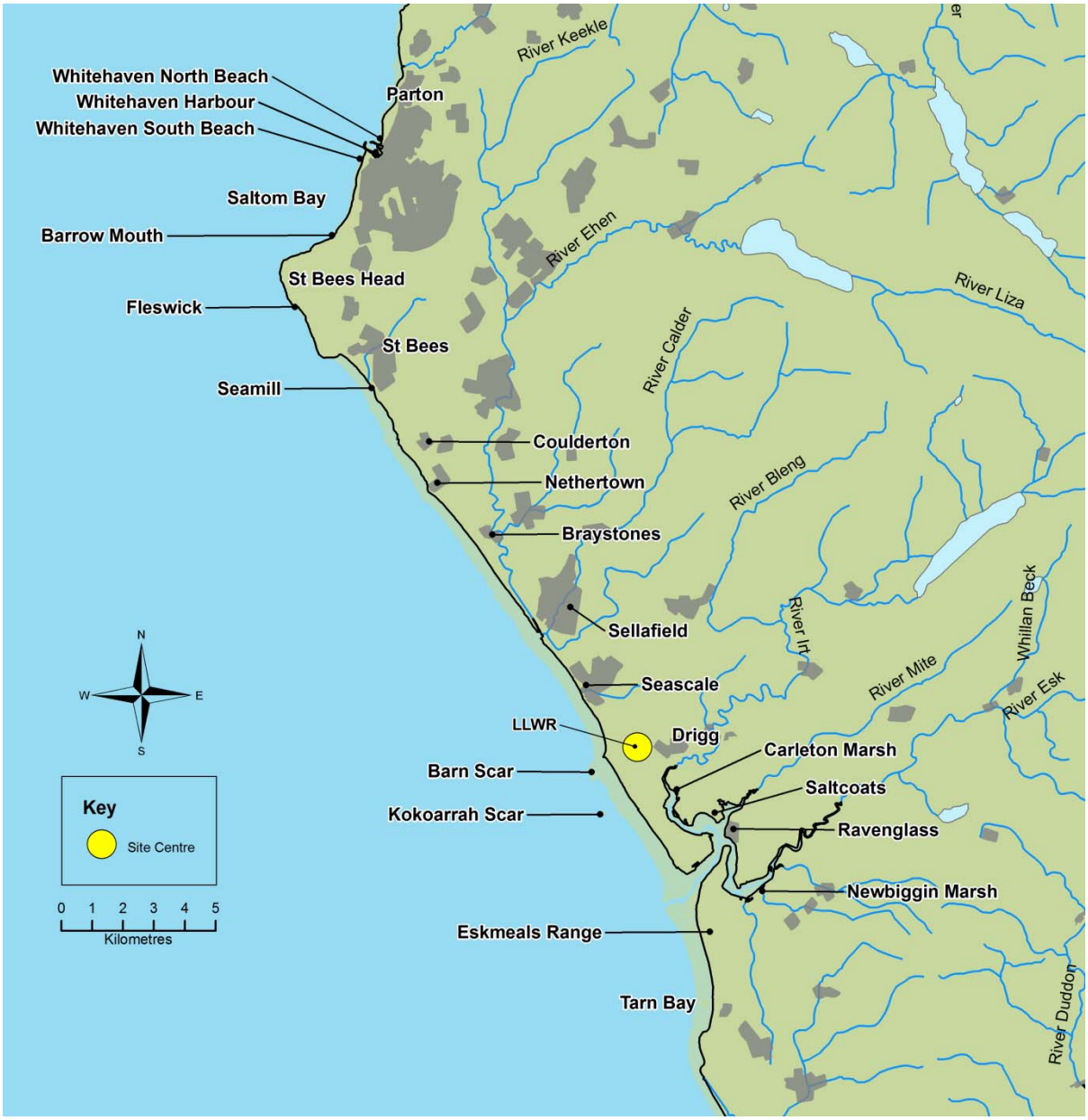

Figure 1. The LLWR aquatic survey area

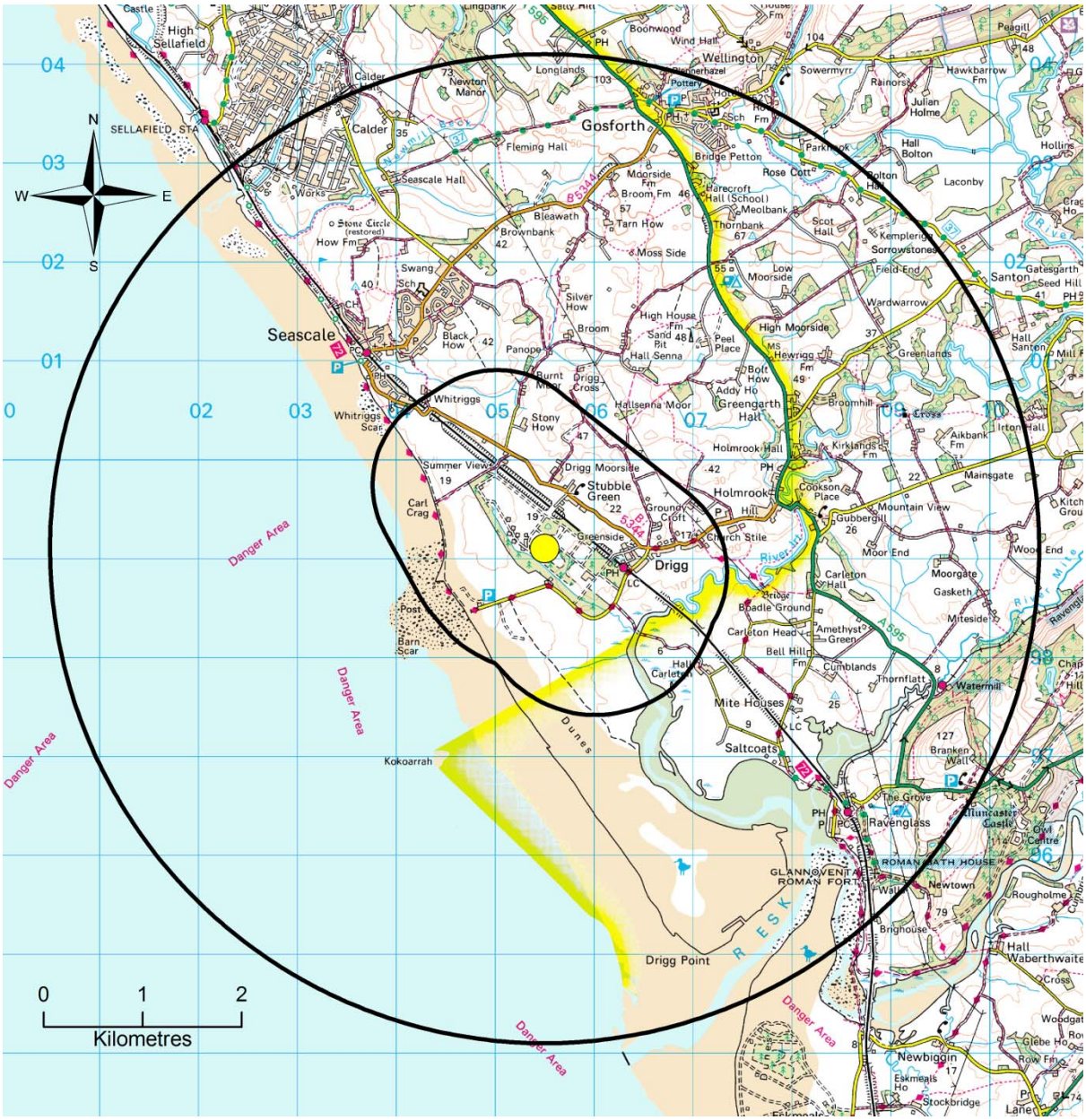

Figure 2. The LLWR terrestrial (outer ring) and direct radiation (inner ring) survey areas

Key

Site centre

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. 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 LLWR site. People with local knowledge of the survey area were contacted for information relevant to the various exposure pathways. These included representatives from the Marine Management Organisation, who provided information on commercial fishing, and representatives from the local fishing industry and parish councils.

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 14th to the 24th August 2012 by a survey team of four people, according to techniques described by Leonard *et al.* (1982). At the start of the fieldwork a meeting was held between the members of the survey team and representatives from the LLWR site. This discussion provided details about current site activities, local information, and the potential for transfer of contamination off-site by wildlife.

The following information was obtained during the meeting:

- Current site activities include the receipt, grouting and storage of low level waste, and the decommissioning of existing buildings to make room for new vaults.
- New vaults will continue to be constructed subject to environmental permitting and planning permission. When the vaults are full they will be capped and a cut-off wall will be installed around the vaults and trenches to prevent leachate from entering the ground water.
- Surface water run-off, which is not associated with operations on site, drains into the stream which flows from the southern end of the site into the River Irt.
- It was considered improbable that wildlife could come into contact with waste stored on site but regular checks were made to ensure that wildlife did not burrow into the pits or trenches. Wildlife were not analysed by the site.

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, fishermen, anglers, shellfish collectors, people carrying out activities on intertidal areas, farmers, gardeners and people living, working and undertaking recreational activities close to the site. 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.

For practical and resource reasons, the survey did not involve the whole population in the vicinity of the LLWR 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.statistics.gov.uk) there were approximately 4,400 people living in the terrestrial survey area, although information was obtained for a significantly smaller number than this. It should be noted that the survey did not include employees or contractors at the LLWR nuclear site 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.

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 observation number) to assist in maintaining data quality and traceability.

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 LLWR 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 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. 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 listed below, together with those used in reports prior to 2010, for comparison.

Age ranges used from 2010 onwards

Name of age group[a]	Age range in group
• Infant	0 to 5-year-old
• Child	6-year-old to 15-year-old
• Adult	16-year-old and over

Age ranges used in reports prior to 2010

Name of age group	Age range in group
• 3-month-old	Under 1-year-old
• 1-year-old	1-year-old
• 5-year-old	2-year-old to 6-year-old
• 10-year-old	7-year-old to 11-year-old
• 15-year-old	12-year-old to 16-year-old
• Adult	17-year-old and over

Notes

[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 for children since 2010 will not be directly comparable with data for children 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. Three 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 were included in the high-rate group.

Secondly, the 97.5th percentile rate was calculated for each group by using the *Microsoft Excel* mathematical function for calculating percentiles. 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.

Thirdly, profiles have been produced that give a complete view of the habits of the individual that might lead to exposure to all the discharges and radiation from the site. The profiles are based on values calculated by the 'cut-off' method. The profiled data can be used to assess total dose integrated across all pathways of exposure.

Mean and 97.5th percentile consumption rates for adults based on national statistics have been derived by the Ministry of Agriculture, Fisheries and Food (MAFF) (now a part of the Department for Environment, Food and Rural Affairs, Defra) and the Food Standards Agency (Byrom *et al.,* 1995 and FSA, 2002), and these are referred to as generic rates in this report. The generic rates are used as a baseline for comparison with the observed rates.

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.statistics.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 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 manipulated in a purpose-built 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 consultant.
- 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, shown in Figure 1, covered the waters and intertidal areas between Parton and Tarn Bay, and extended 11 km offshore. The lower reaches of the rivers Ehen, Calder, Irt, Mite and Esk were also included. This area was taken to represent the predominant area of mixing of discharged radionuclides in seawater. The aquatic survey area used for the LLWR site is the same as the aquatic survey area used for the Sellafield nuclear site.

The shore in the northern part of the survey area between Parton and St Bees is predominantly rocky except for the beaches at Parton, Whitehaven and St Bees. Between St Bees and Drigg, the low-lying shore is a mixture of sand and stones with boulder scars. At low tide there are extensive areas of mud and sand or sand exposed. The Drigg Dunes and Irt Nature Reserve is a large sand dune system at the northern part of the Ravenglass Estuary. The rivers Irt, Mite and Esk flow into the Ravenglass Estuary, which is a vast expanse of mud and sand at low tide with areas of mud and salt marsh. At the southernmost part of the survey area there is a 4 km sand and stones beach in front of the Eskmeals firing range. The Cumbria Coastal Way is a popular coastal walk which follows the shore along much of the survey area and around the Ravenglass Estuary. The aquatic survey area is described below from north to south.

Parton

Parton (see Figure 3) marks the northern limit of the survey area. Parton Bay is predominantly coarse sand interspersed with patches of mud, stones and rocks. There is a public slipway for launching small boats and a secure compound where members of an angling club keep their boats and fishing gear. Activities undertaken at Parton included walking, dog walking, playing, angling and collecting winkles and mussels. Two individuals were identified push netting for brown shrimps and two hobby fishermen were identified setting pots offshore.

Figure 3. Parton

Whitehaven

Whitehaven north beach is sand and stones backed by large sea defence boulders. This beach was popular with dog walkers and anglers. Winkles were being collected near the rocks at the northern end of the beach near Redness Point.

The harbour at Whitehaven comprises an outer harbour which dries out at low tide (see Figure 4) and an inner harbour in which a permanent area of seawater is maintained behind lock gates. This is the largest base for leisure craft and for commercial and hobby fishing vessels in the survey area. Approximately 15 commercial fishing vessels were observed within the inner harbour during the fieldwork. The fishing vessels were predominately *Nephrops* trawlers, most of whom fished in the survey area as well as further afield. A charter boat based in the harbour offered angling and diving trips. A marina was located within the inner harbour, which had more than 285 berths for local and visiting angling and leisure craft. There was also a sailing and boating association with more than 100 members. In the outer harbour, the upper shore was predominantly sand and was regularly used by dog walkers and families playing. At low tide, a large area of mud and sand was exposed which was a favoured location for bait diggers in the survey area. The north and south outer harbour walls extended into the sea and were popular with anglers who preferred to fish into deeper waters.

Whitehaven south beach is predominantly sand and stones with patches of rocks. The council had deemed the beach unsafe for the public to access due to coastal erosion and fences had been

erected to deter people from going onto the beach. One person was identified collecting winkles for a small amount of time on the beach.

Further south at Saltom Bay, the cliffs become progressively steeper towards St Bees Head. Access to the shore at Saltom Bay is only possible via tracks and footpaths. Shellfish, including crabs, lobsters and winkles, were collected by hand from Barrow Mouth which is located within Saltom Bay.

Figure 4. Whitehaven outer harbour

St Bees

St Bees Head is a rocky headland with steep cliffs, which are a favoured location for rock climbers. The shore around St Bees Head is accessed via several paths down the cliffs, the easiest of which is a footpath leading to Fleswick. Anglers fished from the rocks around St Bees Head since it provided access to deeper water. The waters around St Bees Head were used by experienced and novice divers in the summer months who accessed the water from the shore and by boat.

The beach at St Bees is predominantly sand with a strip of stones on the upper shore (see Figure 5). There were rock pools at the northern end of the beach at St Bees Head. The 2 km beach attracted a large number of locals, tourists and people staying at the cliff top caravan site. There was an access road at the northern end of the beach and another at the southern end of the beach, which was locally known as Seamill. The activities undertaken on the beach included walking, dog walking, playing,

angling, bait digging, collecting winkles, swimming and kite-surfing. Small leisure craft were launched from the public slipway at St Bees near the lifeboat station.

Figure 5. St Bees

Coulderton, Nethertown and Braystones

South of Seamill, access to the shore is limited due to a railway track that runs parallel to the coastline. There are access roads to the shore at the villages of Coulderton, Nethertown and Braystones. There is no public parking at Coulderton but there is a large parking area at Nethertown and small parking area at Braystones. The upper shore at Coulderton and at Nethertown (see Figure 6) is a bank of stones and the mid and lower shore is boulders, stones and reefs of honeycomb worms (*Sabellaria alveolata*) interspersed with areas of sand. The shore is similar at Braystones but there are larger areas of sand (see Figure 7) or mud and sand exposed at low tide. At all three locations there are beach chalets located at the top of the stone bank, most of which are used as full-time residences or holiday homes. There were two large caravan sites at Braystones. Many hobby boats and angling boats were observed at Coulderton and Braystones pulled up onto the shore.

The beaches were regularly used by residents at the beach chalets and at the caravan sites who were walking, dog walking, angling, playing and beachcombing. Anglers collected peeler crabs for bait and were bait digging at Nethertown and Braystones. Several species of shellfish were collected from the shore; limpets from Coulderton, and winkles and razor shells from Nethertown and

Braystones. Hobby fishermen were identified launching boats from the shore at Coulderton to set pots for brown crab and common lobster offshore, push netting for brown shrimps at Nethertown and setting nets from the shore at Braystones for mixed fish species.

Figure 6. Nethertown

Figure 7. Braystones

Sellafield

The beach at Sellafield is predominantly sand with patches of stones on the upper shore and areas of boulders, stones and reefs of honeycomb worms on the mid to lower shore. The beach is backed by sand dunes behind which the River Ehen flows from the north-west. The River Calder flows from the north-east, through the Sellafield site and converges at the Calder Viaduct with the River Ehen before they flow out to sea. Access to the beach from Sellafield was not possible since the only public footpath to the beach via the bridge at the Sellafield Rail Station was closed. At the time of the fieldwork, the only public access to the beach at Sellafield was by foot from Braystones or Seascale. A small number of individuals were identified who were walking, dog walking, beachcombing, angling and collecting peeler crabs for bait on the beach at Sellafield. Quad bike tracks were observed in the dunes between Braystones and Sellafield. One hobby fisherman was identified who was setting nets from the shore. Angling took place on the lower reaches of the River Ehen.

Seascale

The seaside resort of Seascale is a popular location with locals and tourists, in part due to the easy access, large car park and local amenities. The beach is predominantly sand with a strip of stones on the upper shore and a small boulder scar. Activities identified at Seascale included walking, dog walking, playing, shore angling, bait digging, beachcombing and horse riding. There is a public slipway for launching small boats and a secure compound where members of an angling club keep their boats.

Drigg

To the south of Seascale, the beach at Drigg is mainly sand with boulder scars on the lower shore, a strip of stones on the upper shore (see Figure 8) and is backed by sand dunes. There is one access road to the beach and ample parking. The beach was regularly used by local dog walkers, walkers, anglers and bait diggers. One hobby fisherman was setting pots from the shore. There are two main boulder scars; Drigg Barn Scar and Kokoarrah Scar, the latter of which is beyond the mean low water mark and can only be reached on foot at low water on spring tides. Winkles and mussels were collected from Drigg Barn Scar and brown crabs were caught by using hand held crabbing hooks from Kokoarrah Scar.

Figure 8. Drigg

The River Irt and Saltcoats

The sand dunes at Drigg are part of a nature reserve that extends south to the mouth of the Ravenglass Estuary. The nature reserve comprises a large sand beach and extensive sand dune system. The River Irt flows from the north-east past Holmrook, through farmland and the nature reserve and into the Ravenglass Estuary near Saltcoats. At low tide the shores of the river are salt marsh, mud and sand. Access to the river is via farm fields, with the exception of a ford via a track from Shore Road at the southern side of the LLWR site. The only activities identified along the river were angling for salmon and sea trout and wildfowling. The shore at Saltcoats is mud, sand and salt marsh. There is a popular caravan site with privately owned caravans at Saltcoats, although intertidal activities were infrequently undertaken due to the nature of the substrate. Livestock were being grazed on salt marsh. Many angling boats were moored on the mud and sand near Saltcoats.

The River Mite and Ravenglass

The River Mite flows from the north-east through farmland and past the village of Ravenglass where it joins the rivers Irt and Esk in the Ravenglass Estuary. At very low tide people can cross the River Mite at a ford between Saltcoats and Ravenglass. Ravenglass is a busy tourist village with easy access to the firm mud, sand and stones beach. Walkers and dog walkers frequently used the beach and residents whose houses backed onto the beach used it as an extension to their gardens. Angling

and bait digging also took place and boat maintenance was undertaken on the boats that were moored in the channel near the village. Shellfish collection was popular at this location; mussels and cockles were collected on the shore and mussels were dredged offshore.

The River Esk

The River Esk flows from the north-east, under the Eskmeals Viaduct and into the Ravenglass Estuary where it joins the rivers Irt and Mite. The shores of the river are predominantly soft mud and salt marsh. There are two fords on the lower reaches of the Esk, near Waberthwaite Church and near the Eskmeals Viaduct, where it is possible to cross the river at very low tide. The ford near Waberthwaite Church has steep soft mud banks and deep gullies. A local resident reported that people walking the Cumbria Coastal Way occasionally crossed the river at the ford, although it is regarded as being a dangerous place to cross due to the soft mud and fast moving tides. The ford at the Eskmeals Viaduct is a firm substrate of mud, sand and stones, and the shores of the river at this location are salt marsh and soft mud (see Figure 9). It was reported that horse riders and cyclists, and to a lesser extent people on foot, used the ford to cross the river at low tide. Other activities identified along the River Esk were wildfowling at Newbiggin Marsh and angling.

Figure 9. River Esk near the Eskmeals Viaduct

Eskmeals

South of the confluence of the Rivers Esk, Mite and Irt, the Eskmeals Dunes Nature Reserve occupies a spit of land. The sand, shingle and salt marsh shore and extensive sand dune system is accessed by footpath along the River Esk or along the shore from Eskmeals. The Eskmeals firing range covers the southern part of the reserve and extends parallel to the coastline approximately 3 km to the south. The beach alongside the Eskmeals range (see Figure 10) is predominantly sand with patches of stones and a large expanse of mud, sand and boulder scars at low tide. The beach is accessed through the nature reserve or from a road near Tarn Bay. It was popular with dog walkers, walkers, anglers and bait diggers. The reserve and parts of the beach were closed to the public when firing was taking place on the range. At the southern end of this beach, Tarn Bay marks the southern limit of the survey area.

4.2 Commercial fisheries

Approximately 15 commercial trawlers were based at Whitehaven Harbour, which is the main fishing port in the survey area. This fleet comprised a larger number of smaller vessels than in previous years. The trawlers mainly fished for *Nephrops* with a by-catch of mixed demersal fish species; some trawlers spent 100% of the time in the survey area and some spent between 50 to 75% of the time within the survey area. Some of the larger vessels moved further afield to fish for scallops in the Irish Sea for 6 months per year. A number of visiting fishing vessels also use Whitehaven Harbour as a temporary base.

Three individuals were identified potting full-time for brown crabs and common lobsters within the survey area. One of the fishermen was also netting for mixed fish species. The fishermen moored their boats in the Ravenglass Estuary and at Whitehaven Harbour. The main potting areas were from Parton to Nethertown and from Sellafield to Tarn Bay.

Several local individuals collected winkles commercially in the survey area, mainly from the boulder scars between Parton and Drigg. There was a commercial mussel dredging operation near Ravenglass. Seed mussel harvested from Morecambe Bay was re-laid at Ravenglass every year to provide an annual harvest of edible sized mussels.

4.3 Destination of seafood originating from the aquatic survey area

Two fish and shellfish wholesalers based at Whitehaven Harbour bought the *Nephrops* and fish species landed from the survey area. The *Nephrops* were sold to processing factories outside the survey area and the fish were sold at Fleetwood auction. Brown crabs and common lobsters were predominantly exported to buyers in France and Spain with small amounts being sold directly from the fishermen to the public and to local restaurants and hotels. Winkles were sold to a shellfish wholesaler in Scotland and were exported mainly to France and Spain. Mussels were exported to Europe.

4.4 Hobby fishing, angling and non-commercial shellfish collecting.

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 mainly potting off Parton, off Coulderton and off Drigg or setting nets from the shore at Braystones and Sellafield. One fisherman set pots from the shore at Parton. Hobby fishermen mainly caught cod, mackerel, plaice, thornback ray, bass, pollack, brown crabs and common lobsters. Two individuals were identified push netting for brown shrimps at Parton, St Bees and Nethertown. The catches were consumed by the fishermen's families and friends.

Individuals caught brown crabs at Kokoarrah Scar using hand held crabbing hooks and caught brown crabs and common lobsters by hand from the rocks at Barrow Mouth.

A charter angling boat operated from Whitehaven Harbour. Many private angling boats were moored at Whitehaven Harbour and in the Ravenglass Estuary or were launched from slipways at Parton, St Bees and Seascale, or were launched from the shore at Coulderton, Nethertown and Braystones. Shore angling was popular at many locations including Parton, Whitehaven (including from the harbour walls), St Bees, Coulderton, Nethertown, Braystones, Sellafield, Seascale, Drigg and Ravenglass. The main edible species caught by anglers were plaice, flounder, dab, cod, whiting, bass, pollack, mackerel and thornback ray. Anglers were also identified fishing for salmon and sea trout on the lower reaches of the rivers Ehen, Irt and Esk.

Many people collected molluscs, mainly winkles, mussels and cockles, and a small amount of razor shells and limpets, for their own family's consumption. Winkles were collected from Parton, Whitehaven south beach, Barrow Mouth, Nethertown, Braystones and Drigg. Mussels and cockles were collected from Ravenglass, mussels were also collected at Drigg and between Parton and Whitehaven, razor shells were collected from Nethertown and Braystones and limpets were collected from Coulderton.

4.5 Wildfowling

Two wildfowling clubs were identified whose members were shooting in the survey area. One club had the rights to shoot on the River Irt from the ford near Carleton Marsh to Ravenglass and along the lower reaches of the River Mite. The other club had the rights to shoot on Newbiggin Marsh. The shooting season was from 1st September to the 31st January for the area above the level of mean spring tides and extended to 20th February for the area below the level of the mean spring tide. The main species shot were greylag goose, Canada goose, mallard, teal and wigeon. Wildfowl were consumed by the wildfowlers and their families and friends. Wildfowlers were shooting over salt marsh and mud and came into contact with the sediment when lying or kneeling in gullies, muddy creeks or the edge of river banks. Wildfowlers occasionally wore gloves and some used plastic sheets to protect themselves from the mud.

4.6 Other pathways

Beef cattle and sheep were identified grazing on salt marsh at one farm in the aquatic survey area; this was also in the terrestrial survey area.

Two people were identified who used seaweed as a fertiliser on their vegetable gardens. The seaweed was collected from Braystones after it had been washed-up onto the shore during rough weather. The consumption of marine plants and 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 7 for adults and in Tables 8 to 11 for children and infants. The tables include the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates calculated as described in Section 3.4.

Adults' consumption rates

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

Table A presents a summary of the adults' consumption rates for the following food groups: fish; crustaceans; molluscs; wildfowl; salt marsh grazed sheep meat. No consumption of marine plants/algae was identified. 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 rates have been determined for wildfowl or salt marsh grazed sheep meat.

Table A. 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	94	20	64.5	23.6	36.8	57.8	15.0	40.0
Crustaceans	62	16	53.0	17.7	29.3	48.2	3.5	10.0
Molluscs	27	4	12.8	4.4	9.1	12.2	3.5	10.0
Wildfowl	14	2	16.8	11.5	14.2	15.1	Not determined	Not determined
Salt marsh grazed sheep meat	6	6	1.9	1.9	1.9	1.9	Not determined	Not determined

The predominant species of fish consumed by all adults in the fish group were cod, plaice, thornback ray, bass, mackerel, pollack and whiting, with small quantities of brill, dab, Dover sole, flounder, grey mullet, haddock, herring, mixed fish, red gurnard, saithe, salmon, sea trout, squid (although squid are molluscs, they are in the fish group as radiologically they are more akin to fish) and turbot. These species were caught throughout the aquatic survey area. Of the fish consumed by the 20 people in the high-rate group, the percentage breakdown of species, rounded to the nearest 5%, was 25% cod, 15% thornback ray, 10% mackerel, 10% plaice, 10% pollack, 10% whiting and 20% of a mix of bass, Dover sole, grey mullet, haddock, herring, red gurnard, sea trout, squid and turbot.

The species of crustaceans consumed by all adults in the crustacean group were brown crab, brown shrimp, common lobster, common prawn and *Nephrops*. The brown crab, common lobster and *Nephrops* were caught throughout the survey area, brown shrimps were caught at Parton, Seamill and Nethertown, and common prawns were caught between Sellafield and Tarn Bay. Of the crustaceans consumed by the 16 people in the high-rate group, the percentage breakdown of species, rounded to the nearest 5%, was 40% *Nephrops*, 30% brown crab, 20% common lobster and 10% common prawn and brown shrimp combined.

The predominant species of molluscs consumed by all adults in the mollusc group were winkles and mussels, with smaller quantities of cockles, limpets and razor shells. The winkles were collected from Parton to Drigg and the mussels were collected at Parton and from Nethertown to Ravenglass. The limpets were collected at Coulderton, the cockles at Ravenglass and the razor shells at Nethertown, Braystones and Sellafield. Of the molluscs consumed by the four people in the high-rate group, the

percentage breakdown of species, rounded to the nearest 5%, was 60% winkles, 20% mussels, 15% cockles and 5% limpets.

The predominant species of wildfowl consumed by all adults in the wildfowl group were Canada goose, greylag goose and mallard, with smaller quantities of goose (unspecified species), snipe, teal and wigeon. These were shot on the shores of the River Irt and on other salt marshes in the Ravenglass Estuary including Carleton Marsh and Newbiggin Marsh. Of the wildfowl consumed by the two people in the high-rate group, the percentage breakdown of species, rounded to the nearest 5%, was 30% greylag goose, 30% goose (unspecified species), 20% Canada goose 15% mallard and 5% of a mix of teal and wigeon.

Livestock were grazed on salt marshes near Saltcoats. Adults' consumption of lamb meat from animals grazed on these marshes was identified.

Children's and infants' consumption rates

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

Table B. 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	8	4	8.2	5.2	6.1	7.8
Crustaceans	2	1	10.0	10.0	10.0	9.8
Molluscs	2	2	0.1	0.1	0.1	0.1
Wildfowl	1	1	2.8	2.8	2.8	Not applicable
Infant age group (0 – 5 years old)						
Fish	4	3	3.6	2.6	3.3	3.6

The predominant species of fish consumed by individuals in the child age group was cod, with smaller quantities of grey mullet, haddock, mackerel and whiting. The predominant species of fish consumed by the individuals in the infant age group was cod and bass, with smaller quantities of dab, flounder, grey mullet, mackerel, plaice and whiting.

The species of crustaceans consumed by the individuals in the child age group were brown crab, common lobster, common prawn and *Nephrops*.

The only species of molluscs consumed by the individuals in the child age group was razor shell.

The species of wildfowl consumed by the individual in the child age group were Canada goose, greylag goose and mallard.

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 C 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 C. 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	5	5	96	70	93
Mud and sand	16	8	234	156	224
Mud, sand and stones	7	1	1095	1095	980
Rock	13	7	400	228	358
Salt marsh	7	2	312	312	312
Sand	109	23	1026	553	805
Sand and stones	31	6	1398	795	1045

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

- For mud: wildfowling at Newbiggin Marsh, Carleton Marsh and on the banks of the River Irt.
- For mud and sand: bait digging at Whitehaven outer harbour, Ravenglass and Eskmeals; collecting cockles and mussels at Ravenglass.
- For mud, sand and stones: walking and boat maintenance at Ravenglass.
- For rock: angling at Parton, Saltom Bay, St Bees Head and Whitehaven; collecting crabs at Barrow Mouth.
- For salt marsh: tending livestock at Saltcoats.
- For sand: bait digging at St Bees, Nethertown, Drigg, Braystones and Eskmeals; walking at Braystones and Eskmeals; angling at Braystones, Drigg and St Bees; setting nets at Braystones and Sellafield; setting pots on the shore at Drigg; dog walking from Braystones to Drigg and at Eskmeals; playing at Seascale.
- For sand and stones: dog walking and collecting mussels at Parton; collecting winkles from Parton to Drigg; angling at Seascale and from Parton to Drigg; collecting peeler crabs at Nethertown.

Children's and infants' intertidal occupancy rates

Table D 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 D. 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)					
Sand	22	9	240	149	240
Sand and stones	7	5	546	480	546
Infant age group (0 – 5 years old)					
Sand	12	3	250	207	250

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

- For sand: dog walking at St Bees, Seascale and Drigg; playing at Braystones and Seascale.
- For sand and stones: angling from St Bees to Drigg; collecting winkles from Parton to Drigg; playing at Parton.

For individuals in the infant age group high-rate group, three children were identified playing on sand at Seascale.

4.9 Gamma dose rate measurements

Gamma dose rate measurements were taken over five 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 below.

- Two measurements taken over mud ranged from 0.097 µGy h^{-1} to 0.110 µGy h^{-1}
- Three measurements taken over salt marsh ranged from 0.088 µGy h^{-1} to 0.130 µGy h^{-1}
- Eight measurements taken over sand ranged from 0.059 µGy h^{-1} to 0.099 µGy h^{-1}
- Six measurements taken over sand and stones ranged from 0.084 µGy h^{-1} to 0.114 µGy h^{-1}
- Two measurements taken over stones ranged from 0.101 µGy h^{-1} to 0.104 µGy h^{-1}

For comparison, natural background levels have been estimated at 0.05 µGy h^{-1} over sand, 0.07 µGy h^{-1} over mud and over salt marsh, and 0.06 µGy h^{-1} over other substrates (EA, FSA, NIEA and SEPA, 2012).

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 need consideration as part of 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 and handling rates of sediment for children are presented in Table 16.

Adults' handling rates of fishing gear and sediment

Table E 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 E. 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	35	5	1524	1191	1524
Handling sediment	35	5	856	706	844

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

- For handling fishing gear: handling pots from Parton to Nethertown and from Sellafield to Tarn Bay; handling nets from Parton to Braystones.
- For handling sediment: collecting winkles from Parton to Drigg; bait digging from Whitehaven outer harbour to Eskmeals; collecting limpets at Coulderton; collecting crabs at Barrow Mouth.

Children's handling rates of sediment

Table F presents a summary of the handling rates of sediment for children. The table includes the mean handling rate for the high-rate group. No children were identified handling fishing gear and no infants were identified handling fishing gear or sediment.

Table F. Summary of children's handling rates of 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 sediment	1	1	80	80	Not applicable

The activity undertaken by the only child in the high-rate group was collecting winkles, which was undertaken from Parton to Drigg.

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 minor 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 survey area for adults are presented in Table 17 and occupancy rates for activities taking place 'in water' and 'on water' for children and infants are presented in Table 18. No children were identified spending time 'on water' and no infants were identified spending time 'in water'.

Activities in the water

The activities identified taking place in the water, in the aquatic survey area were kitesurfing, diving and swimming. Seven observations were recorded for adults and one observation was recorded for children. The highest occupancy rate for adults was 20 h y^{-1} for two individuals who were kitesurfing at St Bees. The individual in the child age group; the individual was swimming for 5 h y^{-1} at St Bees.

Activities on the water

The activities taking place on the water, in the aquatic survey area were working on a boat, trawling, potting, netting, angling, push netting and paddling. Thirty-nine observations were recorded for adults and one observation was recorded for individuals in the infant age group. The highest occupancy rate for adults was 2000 h y^{-1} for two people who were trawling from St Bees to Ravenglass. The individual in the infant age group was paddling for 5 h y^{-1} at St Bees.

5 TERRESTRIAL RADIATION PATHWAYS

5.1 Terrestrial survey area

The terrestrial survey area (shown in Figure 2) covered all land within 5 km of the LLWR site centre (National Grid Reference: SD 055 991). Due to the close proximity of the LLWR to the Sellafield site (approximately 5 km from the centre of the LLWR site to the centre of the Sellafield site) the terrestrial survey areas for both sites overlap.

The land in the terrestrial survey area was predominantly agricultural. There were areas of salt marsh in the south-east of the survey area where a farmer grazed beef cattle and sheep. Surface water run-off from the LLWR site (which is not associated with operations on site), drains into the Drigg Stream which flows from the southern end of the site through farmland into the River Irt. The main population centres are the village of Seascale situated to the north-west of the site and the village of Gosforth, situated to the north-east of the site. The villages of Drigg and Holmrook are located to the east of the site and the village of Ravenglass is located to the south-east of the site.

Twenty-eight working farms were identified in the LLWR terrestrial survey area. Of these farms:

- Three produced milk (from dairy cattle)
- Four produced milk (from dairy cattle), beef cattle and lambs
- Two produced milk (from dairy cattle), beef cattle, lambs and arable crops
- Three produced milk (from dairy cattle) and lambs
- One produced beef cattle
- Ten produced beef cattle and lambs
- One produced beef cattle, lambs and arable crops
- One produced beef cattle, lambs and chickens (sold for egg production)
- Two produced lambs
- One produced lambs and chicken eggs

Potatoes, cabbage, carrots, turnips, swede, Brussels sprouts and beetroot were produced for human consumption. Barley, silage and wheat were grown for animal feed.

Farmers and their families were consuming milk, beef, lamb, vegetables and potatoes produced on their own farms. One farmer kept pigs, five farmers kept chickens for eggs, and one farmer kept chickens and ducks for eggs as well as turkeys for their own family's consumption.

Two smallholdings were identified within the survey area. Both of the smallholders kept a small number of sheep and grew a wide variety of fruit and vegetables. One also kept chickens for eggs.

One very small allotment site was identified, which was located just outside Ravenglass. A small amount of produce was being grown but no one was observed at the allotment site during the survey. Many residents in the survey area were identified who grew a wide range of fruit and vegetables in their gardens.

Three beekeepers were identified with hives on farmland in the survey area. However, the beekeepers could not be contacted. Two beekeepers who were interviewed in the 2002 survey were no longer keeping hives in the survey area.

Blackberries, crab apples, elderflowers, rosehips, sloes, hazelnuts and mushrooms were growing wild in the survey area and these were being collected and consumed.

Two organised game shoots were identified on farmland in the survey area. A small number of farmers shot pheasant, pigeon and mallard but most of the shooting on farm land was for vermin control. The consumption of pheasant, pigeon, woodcock and venison was identified. The consumption of rabbits or hares was not identified.

The consumption of groundwater by humans and livestock was identified. Two households situated to the east of the survey area used borehole water as their sole domestic supply. Six farmers supplied their livestock with borehole water, spring water or well water for drinking. Livestock had access to the River Irt, the River Mite and to ditches and streams, including the Drigg Stream, for drinking.

5.2 Destination of food originating from the terrestrial survey area

Livestock were sold at auctions in Cockermouth and Ulverston. Chickens were sold nationally to eggs farms. Milk was sold to three national distribution chains. Chicken eggs and duck eggs were sold from the door at one farm and chickens eggs were sold from the door at a smallholding. Vegetables and potatoes were sold to a wholesaler and from the door at a farm.

5.3 The transfer of contamination off-site by wildlife

The transfer of contamination off-site by wildlife was investigated as radionuclides could enter the food chain or contaminate the environment through this pathway. LLWR site representatives considered that it was improbable that wildlife could come into contact with waste stored on site but regular checks were made to ensure that wildlife did not burrow into the pits or trenches. Wildlife were not analysed by the site.

5.4 Food consumption data

Consumption data for locally produced foodstuffs potentially affected by deposition of gaseous discharges are presented in Tables 19 to 33 for adults and Tables 34 to 43 for children and infants.

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 44 and the foods sampled as part of the 2011 Food Standards Agency monitoring programme (EA, FSA, NIEA and SEPA, 2012) are identified by emboldened italics in the table.

Adults' consumption rates

Consumption of locally produced foods was identified in the following 15 food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; milk; cattle meat; pig meat; sheep meat; poultry; eggs; wild/free foods; honey; wild fungi; venison. No consumption of rabbits/hares or cereals was identified.

Table G 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 calculated as described in Section 3.4. 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. No generic data have been determined for venison.

Table G. 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} or l y^{-1})	Observed minimum for the high-rate group (kg y^{-1} or l y^{-1})	Observed mean for the high-rate group (kg y^{-1} or l y^{-1})	Observed 97.5th percentile (kg y^{-1} or l y^{-1})	Generic mean (kg y^{-1} or l y^{-1})	Generic 97.5th percentile (kg y^{-1} or l y^{-1})
Green vegetables	64	19	32.9	11.9	18.8	28.9	15.0	45.0
Other vegetables	44	15	27.0	12.5	18.3	26.9	20.0	50.0
Root vegetables	75	16	53.3	19.6	33.5	50.5	10.0	40.0
Potato	93	29	131.6	47.2	91.8	131.6	50.0	120.0
Domestic fruit	55	14	42.7	15.0	22.6	38.1	20.0	75.0
Milk	61	38	414.8	146.0	253.1	414.8	95.0	240.0
Cattle meat	40	24	71.0	24.9	44.6	71.0	15.0	45.0
Pig meat	6	6	25.3	25.3	25.3	25.3	15.0	40.0
Sheep meat	52	18	23.7	8.5	14.3	22.4	8.0	25.0
Poultry	23	1	47.2	47.2	47.2	23.1	10.0	30.0
Eggs	67	28	41.6	15.0	23.9	39.8	8.5	25.0
Wild/free foods	53	21	4.5	2.0	2.6	3.9	7.0	25.0
Honey	8	8	0.5	0.2	0.3	0.5	2.5	9.5
Wild fungi	5	1	6.4	6.4	6.4	5.8	3.0	10.0
Venison	6	3	12.0	5.0	7.3	11.1	Not determined	Not determined

Two mean consumption rates for the high-rate groups were found to be greater than the generic 97.5th percentile consumption rates. These were for milk and poultry. Eleven mean consumption rates for the high-rate groups exceeded the generic mean consumption rates. These were for green vegetables, root vegetables, potato, domestic fruit, milk, cattle meat, pig meat, sheep meat, poultry, eggs and wild fungi. Four observed 97.5th percentile consumption rates exceeded the generic 97.5th percentile consumption rates. These were for root vegetables, milk, cattle meat and eggs.

Children's and infants' consumption rates

Twenty individuals in the child age group and nine individuals in the infant age group were identified consuming foods from the terrestrial survey area. Table H 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: pig meat; poultry; rabbits/hares; honey; wild fungi; venison; cereals. In the infant age group, no consumption of foods from the following food groups was identified: green vegetables; other vegetables; root vegetables; domestic fruit; pig meat; poultry; rabbits/hares; honey; wild fungi; venison; cereals.

Table H. 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	6	2	13.0	7.1	10.1	12.3
Other vegetables	2	1	14.1	14.1	14.1	13.9
Root vegetables	6	4	13.0	5.4	8.0	12.2
Potato	10	2	75.0	65.5	70.2	72.9
Domestic fruit	5	3	15.5	5.4	12.1	15.5
Milk	10	9	219.0	103.7	156.8	219.0
Cattle meat	4	4	18.9	13.2	17.5	18.9
Sheep meat	5	1	8.5	8.5	8.5	7.9
Eggs	5	5	7.8	3.4	6.5	7.8
Wild/free foods	1	1	0.8	0.8	0.8	Not applicable
Infant age group (0 - 5 years old)						
Potato	4	4	19.7	19.7	19.7	19.7
Milk	2	2	182.5	182.5	182.5	182.5
Cattle meat	4	4	3.7	3.7	3.7	3.7
Sheep meat	4	4	0.4	0.4	0.4	0.4
Eggs	3	3	5.9	5.9	5.9	5.9
Wild/free foods	3	3	2.0	2.0	2.0	2.0

6 DIRECT RADIATION PATHWAYS

6.1 Direct radiation survey area

The direct radiation survey area (shown in Figure 2) covered all land and sea within 1 km of the LLWR nuclear licensed site boundary. The occupancy data collected from the direct radiation area is also applicable to the direct exposure arising from gaseous releases from the site.

The direct radiation survey area is predominantly farmland in the north, east and south-east. An area of moorland is located to the west of the site, beyond which is an area of sand dunes and a sandy shore. The shore is accessed either by car from Shore Road via the village of Drigg, or on foot via a path to the north of the site or along the beach from Seascale. A section of the Cumbria Coastal Way is located in the survey area; the route passes along the shore from Seascale to Shore Road and inland along Shore Road adjacent to the site perimeter fence to Drigg village. The River Irt flows though the south-eastern part of the survey area.

The main residential area is located to the east of the site in the village of Drigg. Other residential properties were located along or near the B5344 road that runs parallel with the eastern side of the site. One residential road in the southern part of the village of Seascale was also included in the survey area to the north-west. A railway line transected the survey area from the north-west to the south-east, adjacent to the eastern side of the site perimeter.

6.2 Residential activities

Interviews were conducted at 32 residences, three of which included families with children. Thirteen properties were within the 0 – 0.25 km zone, 11 properties were within the >0.25 – 0.5 km zone and eight properties were within the >0.5 – 1.0 km zone.

6.3 Leisure activities

The shore at Drigg was popular with people who were angling, bait digging, collecting shellfish, walking, dog walking and beachcombing. People were also walking and dog walking on the moorland near to the site, on the sand dunes and along the Cumbria Coastal Way. A caravan site was located on one of the non-working farms in the survey area.

6.4 Commercial activities

Very few businesses were located within the direct radiation survey area. The Drigg railway station with a manned signal box was located adjacent to the south-eastern corner of the LLWR site along with a café and a hotel nearby. Two businesses were located close to the northern perimeter of the site.

Four working farms were identified in the survey area and a further three farms located outside the area had fields in the area. A campsite was located on a non-working farm in the >0.25 – 0.5 zone.

The activities of LLWR 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 45 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 46. A summary of occupancy rates in the direct radiation survey area is presented in Table I.

Table I. 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	34	8156	2520	8572
>0.25 - 0.5 km	35	8095	3400	8656
>0.5 - 1.0 km	29	7452	4200	8224

0 - 0.25 km from the nuclear licensed site boundary

Occupancy data were collected for 34 individuals in the 0 - 0.25 km zone. The observations were for 26 residents, seven visitors and an employee. The highest indoor occupancy and total occupancy rates were for a resident and the highest outdoor occupancy rate was for another resident.

>0.25 - 0.5 km from the nuclear licensed site boundary

Occupancy data was collected for 35 individuals in the >0.25 - 0.5 km zone. The observations were for 25 residents, four of whom also farmed in the area, eight visitors and two farmers. The highest

indoor occupancy and total occupancy rates were for a resident and the highest outdoor occupancy rate was for other resident who also farms in the survey area.

>0.5 - 1.0 km from the nuclear licensed site boundary

Occupancy data were collected for 29 people in the >0.5 - 1.0 km zone. The observations were for 15 residents (four of whom also farmed in the area), five shellfish collectors (two of whom were also angling and one was beachcombing), four anglers (one of whom was also a bait digger and another was playing), three farmers and two people tending to livestock. One resident had the highest indoor occupancy rate, two other residents had the same highest total occupancy rates and three residents who also farmed in the area had the highest outdoor occupancy rate.

6.7 Gamma dose rate measurements

Gamma dose rate measurements were taken indoors and outdoors at most properties where interviews were conducted in the LLWR direct radiation survey area. Outdoor measurements were taken approximately 5 to 10 metres from the nearest building where possible. Gamma dose rate measurements over rough grass were taken at locations at distances 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. It should be noted that the indoor and outdoor measurements have not been adjusted for background dose rates. The results are presented in Table 47 and are summarised below.

Indoor measurements

- Eleven measurements taken over wood ranged from 0.070 µGyh^{-1} to 0.114 µGy h^{-1}
- Fourteen measurements taken over concrete ranged from 0.074 µGy h^{-1} to 0.132 µGy h^{-1}

Outdoor measurements

- Twenty-six measurements taken over grass ranged from 0.062 µGy h^{-1} to 0.093 µGy h^{-1}
- One measurement taken over stones was 0.092 µGy h^{-1}
- Three measurements taken over concrete ranged from 0.063 µGy h^{-1} to 0.090 µGy h^{-1}

Background measurements

- Three measurements taken over grass ranged from 0.067 µGy h^{-1} to 0.081 µGy h^{-1}

Comprehensive studies of background radiation have been carried out on a national scale by the Radiation Protection Division of the Health Protection Agency (previously the National Radiological Protection Board), the most recent of these being a review conducted in 2005 (Watson *et al*, 2005). The results from the 2005 review could be used for comparison with the data collected during this survey.

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 48. Each of the 34 combinations shown in Table 48 represents an actual individual (or individuals) from Annex 1 who has positive data (irrespective of the magnitude), for each pathway marked with a cross. It should be noted that combination numbers in Table 48 do not correlate directly with observation numbers in Annex 1. Other individuals from Annex 1 have combinations that are not listed in Table 48 because they have fewer pathways and a dose assessment for them would be adequately covered by one of the 34 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, 2005), 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 LLWR 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.statistics.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 calculate 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 relevant matrix for the LLWR adults' profiled habits data is shown in Annex 6. 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. Retrospective total doses around LLWR are made using these profiles and reported in the Radioactivity in Food and the Environment reports (e.g. EA, FSA, NIEA and SEPA, 2010). 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. They are not currently used in the Radioactivity in Food and the Environment reports.

8 COMPARISONS WITH THE PREVIOUS SURVEY

The results from this 2012 survey can be compared with results of the terrestrial and direct radiation survey areas from the last habits survey undertaken in the LLWR area in 2002. All comparisons for consumption and occupancy rates in the direct radiation area are for adults only. An aquatic survey area was not included in the 2002 survey so the aquatic pathways cannot be compared.

8.1 Terrestrial survey area

Activities in the terrestrial survey area in 2012 were broadly similar to those in 2002. The principal types of farm produce continued to be a mix of milk (from dairy cattle), beef cattle and lambs. In both surveys, one small allotment site was identified.

The mean consumption rates for the adult high-rate group for terrestrial food groups from the 2002 and 2012 surveys are shown in Table J.

Table J. Comparison between 2002 and 2012 mean consumption rates for the adult high-rate groups for terrestrial food groups (kg y^{-1} or l y^{-1})

Food group	2002	2012
Green vegetables	52.7	18.8
Other vegetables	33.3	18.3
Root vegetables	38.3	33.5
Potato	91.2	91.8
Domestic fruit	36.2	22.6
Milk	299.4	253.1
Cattle meat	44.8	44.6
Pig meat	10.0	25.3
Sheep meat	13.0	14.3
Poultry	25.7	47.2
Eggs	20.0	23.9
Wild/free foods	4.6	2.6
Rabbits/hares	3.2	Not identified
Honey	1.0	0.3
Wild fungi	1.1	6.4
Venison	11.5	7.3

Consumption rates increased in 2012 in the following six food groups: potato; pig meat; sheep meat; poultry; eggs; wild fungi. Consumption rates decreased in 2012 in the following nine food groups: green vegetables; other vegetables; root vegetables; domestic fruit; milk; cattle meat; wild/free foods; honey; venison.

There were relatively large increases in the consumption rates for pig meat, poultry and wild fungi. There were relatively large decreases in the consumption rates for green vegetables, other

vegetables, wild/free foods and honey. The consumption of rabbits/hares was identified in 2002 but was not identified in 2012. No consumption of cereals was identified in either 2002 or 2012.

The increase in the mean consumption rate for the high-rate group for poultry was attributed to one individual who shot and consumed large quantities of game. No specific reasons were identified for the other changes in consumption rates.

The consumption of water by humans and livestock cannot be compared since information on this pathway was not obtained in the 2002 survey.

8.2 Direct radiation survey area

Activities identified in the direct radiation survey area in 2002 and 2012 were similar and included people residing, working, dog walking, bait digging and angling. Additionally in 2012, collecting shellfish and beachcombing were also identified.

A comparison between the 2002 and 2012 direct radiation occupancy rates, by zone, is presented in Table K.

Table K. Comparison between 2002 and 2012 direct radiation occupancy rates (h y^{-1})

	2002	**2012**
0 - 0.25 km zone		
Highest indoor	8760	8156
Highest outdoor	1872	2520
Highest total	8760	8572
>0.25 - 0.5 km zone		
Highest indoor	7589	8095
Highest outdoor	4506	3400
Highest total	8332	8656
>0.5 - 1 km zone		
Highest indoor	7086	7452
Highest outdoor	7214	4200
Highest total	8208	8224

In 2002, in all three zones the highest indoor, outdoor and total occupancy rates were for residents with the exception of the highest outdoor occupancy rate in the 0 – 0.25 km, which was for an employee. The residents with the highest outdoor occupancy rates in the >0.25 – 0.5 km zone and in the >0.5 – 1.0 km zone were also farming in the area.

In 2012, the highest indoor, outdoor and total occupancy rates in all three zones were for residents. The highest outdoor occupancy rates in the 0 – 0.25 km and >0.25 – 0.5 km were attributed to residents who farm within the area.

In the LLWR direct radiation survey area, two sets of gamma dose measurements taken in 2012 can be compared with those taken at the same properties in 2002. These data are shown in Table L.

Table L. Comparison between 2002 and 2012 gamma dose rates (μGy h^{-1})

	Indoor		Outdoor	
Location	**2002**	**2012**	**2002**	**2012**
Residence 5	0.097	Not taken	0.065	0.063
Residence 24	0.066	0.074	0.079	0.081

Notes
These measurements have not been adjusted for background dose rates.
The locations correspond to those in Table 47.

9 MAIN FINDINGS

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

- Discharges of leachate from the site to the Irish Sea
- Discharges of gaseous radioactive waste to the atmosphere
- Emissions of direct radiation

Data were collected for 404 individuals including, for example, commercial and hobby fishermen, shellfish collectors, anglers, people spending time on intertidal substrates, farmers, gardeners, and people spending time within the direct radiation survey area. These people were targeted because their habits and where they live 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. 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.

9.1 Aquatic survey area

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

- 37 kg y^{-1} for fish
- 29 kg y^{-1} for crustaceans
- 9.1 kg y^{-1} for molluscs
- 14 kg y^{-1} for wildfowl
- 1.9 kg y^{-1} for salt marsh grazed sheep

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

- For fish; cod, thornback ray, mackerel, plaice, pollack and whiting
- For crustaceans; *Nephrops,* brown crab, common lobster
- For molluscs; winkles, mussels and cockles
- For wildfowl; greylag goose, goose (unspecified species), Canada goose and mallard

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

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

- 70 h y^{-1} for mud
- 160 h y^{-1} for mud and sand
- 1100 h y^{-1} for mud, sand and stones
- 230 h y^{-1} for rock
- 310 h y^{-1} for salt marsh
- 550 h y^{-1} for sand
- 800 h y^{-1} for sand and stones

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

- 1200 h y^{-1} for handling fishing gear
- 710 h y^{-1} for handling sediment

The adult maximum occupancy rates for water based activities were:

- 20 h y^{-1} for 'in water'
- 2000 h y^{-1} for 'on water'

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:

- 19 kg y^{-1} for green vegetables
- 18 kg y^{-1} for other vegetables
- 34 kg y^{-1} for root vegetables
- 92 kg y^{-1} for potato
- 23 kg y^{-1} for domestic fruit
- 250 l y^{-1} for milk
- 45 kg y^{-1} for cattle meat
- 25 kg y^{-1} for pig meat
- 14 kg y^{-1} for sheep meat
- 47 kg y^{-1} for poultry
- 24 kg y^{-1} for eggs
- 2.6 kg y^{-1} for wild/free foods
- 0.3 kg y^{-1} for honey
- 6.4 kg y^{-1} for wild fungi
- 7.3 kg y^{-1} for venison

No consumption of rabbits/hares or cereals was identified from the survey area.

The consumption of foodstuffs by children (child and infant age groups) was also recorded.

The consumption of groundwater by humans and livestock was identified. Two households used borehole water as their sole domestic supply. Six farmers supplied their livestock with borehole water, spring water or well water for drinking. Livestock had access to the River Irt, the River Mite and to ditches and streams for drinking water.

The transfer of contamination off-site by wildlife was investigated as radionuclides could enter the food chain or contaminate the environment through this pathway. Representatives from the LLWR site considered it improbable that wildlife could come into contact with waste stored on site but regular checks were made to ensure that wildlife did not burrow into the pits or trenches.

9.3 Direct radiation survey area

The highest indoor, outdoor and total occupancy rates in the 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.0 km zones were for residents. The highest outdoor occupancy rates in the 0 – 0.25 km and >0.25 – 0.5 km were attributed to residents who farm within the area. The highest indoor, outdoor and total occupancy rates recorded for all zones were:

0 - 0.25 km zone

- 8200 h y^{-1} for the indoor occupancy rate
- 2500 h y^{-1} for the outdoor occupancy rate
- 8600 h y^{-1} for the total occupancy rate

>0.25 - 0.5 km zone

- 8100 h y^{-1} for the indoor occupancy rate
- 3400 h y^{-1} for the outdoor occupancy rate
- 8700 h y^{-1} for the total occupancy rate

>0.5 - 1 km zone

- 7500 h y^{-1} for the indoor occupancy rate
- 4200 h y^{-1} for the outdoor occupancy rate
- 8200 h y^{-1} for the total occupancy rate

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10 RECOMMENDATIONS FOR CHANGES TO THE MONITORING PROGRAMME

The information collected during this habits survey can be used to make recommendations for changes to the current monitoring programmes operated by the Environment Agency and the Food Standards Agency, and published in the RIFE report (EA, FSA, NIEA and SEPA, 2012).

10.1 Summary of current environmental monitoring programmes

The 2011 monitoring programmes relevant to the areas covered in this report included the samples and measurements listed below. The location names, foods and substrate classifications are taken directly from RIFE. The discharges of leachate from LLWR are small compared with the liquid discharges from the nearby Sellafield site. The aquatic monitoring programme for LLWR is subsumed within the Sellafield monitoring programme.

Aquatic monitoring (reported in RIFE under Sellafield)

Aquatic samples	
Sample	**Location**
Cod	Parton
Cod	Whitehaven
Skates/rays	Whitehaven
Sole	Whitehaven
Salmon	River Ehen
Cod	Sellafield coastal area
Plaice	Sellafield coastal area
Bass	Sellafield coastal area
Grey mullet	Sellafield coastal area
Cod	Sellafield offshore area
Plaice	Sellafield offshore area
Lesser spotted dogfish	Sellafield offshore area
Red gurnard	Sellafield offshore area
Salmon	River Esk
Sea trout	River Esk
Brown trout	River Calder
Sea trout	River Calder
Cod	Ravenglass
Plaice	Ravenglass
Crabs	Parton
Lobsters	Parton
Winkles	Parton
Nephrops	Whitehaven
Cockles	Whitehaven
Mussels	Whitehaven

Mussels	Whitehaven outer harbour
Winkles	Saltom Bay
Winkles	St Bees
Mussels	St Bees
Limpets	St Bees
Winkles	Nethertown
Mussels	Nethertown
Crabs	Sellafield coastal area
Lobsters	Sellafield coastal area
Winkles	Sellafield coastal area
Mussels	Sellafield coastal area
Limpets	Sellafield coastal area
Prawns	Whitriggs
Winkles	Drigg
Crabs	Ravenglass
Lobsters	Ravenglass
Winkles	Ravenglass
Cockles	Ravenglass
Mussels	Ravenglass
Winkles	Tarn Bay

Gamma dose rate measurements

Substrate	***Location***
Sand	Whitehaven – outer harbour
Pebbles and sand	Whitehaven – outer harbour
Sand	St Bees
Pebbles and sand	St Bees
Pebbles and stones	Nethertown beach
Stones	Nethertown beach
Sand and stones	Braystones
Pebbles	Braystones
Grass	Sellafield dunes
Sand	North of former pipeline on foreshore
Sand	South of former pipeline on foreshore
Grass	River Calder downstream of factory sewer
Grass	River Calder upstream of factory sewer
Sand	Seascale beach
Sand and stones	Seascale beach
Sand and pebbles	Seascale beach
Grass	Seascale
Grass	Ravenglass – Carleton Marsh
Grass	Ravenglass – River Mite estuary (erosional)
Mud and salt marsh	Ravenglass – Raven Villa
Grass and salt marsh	Ravenglass – Raven Villa
Mud and sand	Ravenglass – boat area
Mud and pebbles	Ravenglass – boat area
Sand and pebbles	Ravenglass – boat area
Sand and stones	Ravenglass – boat area

Mud	Ravenglass - ford
Mud and sand	Ravenglass - ford
Grass	Muncaster Bridge
Mud	Ravenglass – salmon garth
Mud and sand	Ravenglass – salmon garth
Mud and pebbles	Ravenglass – salmon garth
Sand	Ravenglass – salmon garth
Mud and salt marsh	Ravenglass – Eskmeals Nature Reserve
Mud	Newbiggin/Eskmeals viaduct
Mud and salt marsh	Newbiggin/Eskmeals viaduct
Salt marsh	Newbiggin/Eskmeals Bridge
Grass and salt marsh	Newbiggin/Eskmeals Bridge
Sand	Tarn Bay
Sand and stones	Tarn Bay

Terrestrial monitoring

- Milk
- Beetroot
- Blackberries
- Cabbage
- Deer muscle
- Duck
- Eggs
- Potatoes
- Sheep muscle
- Sheep offal
- Grass
- Sediment
- Freshwater

10.2 Recommendations

Recommendations for changes to the current environmental monitoring programmes are made below. They are based on the findings of this survey and also take into account the potential radiological significance of the various pathways that were identified.

It is recommended that the samples and gamma dose rate measurements currently taken, which are not listed below, remain unchanged in the monitoring programmes.

Environment Agency monitoring

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

Food Standards Agency monitoring

- The sample of lesser spotted dogfish could be replaced with a sample of pollack as lesser spotted dogfish was not being consumed.
- A sample of brown shrimps could be added to the monitoring programme as it was consumed in high quantities by one person but is not currently monitored.
- Within the 'root vegetables' food group, the sample of beetroot currently collected could be replaced with a sample of carrots since this was consumed in higher quantities.
- A one-off sample of beef could be taken since this was consumed at high rates and it is not currently being monitored. Alternatively, a sample of beef cattle faeces could be taken as a more economic option.

11 ACKNOWLEDGEMENTS

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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 LLWR 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**)	4,200[a]	118[c]	2.8%	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**)	200[b]	65[c]	33%	Interviews were conducted at 32 residences.
	Number of people employed, visiting and undertaking leisure actvities in the direct radiation survey area (See **(C) DIRECT RADIATION PATHWAYS**)	U	19[c]	U	Excluding people living in the direct radiation survey area and employees and contractors of the Devonport site. Fourteen people who were potentially affected by liquid discharges or gaseous discharges as well as spending time in the direct radiation survey area (e.g. anglers or farmers) have been allocated to aquatic or terrestrial pathways.
	Number of people effected by liquid discharges (excluding those assigned to other categories above) (See **(A) AQUATIC PATHWAYS**)	U	202[c]	U	
	Total for aquatic, terrestrial and direct radiation survey areas	U	404[c]	U	
(A) AQUATIC PATHWAYS					
Commercial fishermen	Number of commercial fishing vessels based in the aquatic survey area	20	11	55%	Includes part-time and full-time commercial fishermen.
People undertaking activities in or on water (e.g. swimming and angling)	Number of people undertaking activities in or on water in the aquatic survey area	U	44	U	Includes commercial fishermen, boat anglers etc.
People using the shore including anglers, dog walkers and people playing etc.	Number of people undertaking intertidal activities in the aquatic survey area	U	170	U	
Fish consumers	Number of people consuming fish from the aquatic survey area	U	106	U	
Shellfish consumers	Number of people consuming shellfish from the aquatic survey area	U	93	U	
Wildfowl consumers	Number of people consuming wildfowl from the aquatic survey area	U	15	U	

Table 1. Survey coverage

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
(B) TERRESTRIAL PATHWAYS					
Farmers	Number of farmers and their family members consuming food from the terrestrial survey area	116	98	84%	Interviews were conducted at 28 working farms out of a total of 33 farms identified within the survey area.
Smallholders	Number of smallholders and their family members consuming food from the terrestrial survey area	U	7	U	
Fruit and vegetable gardeners	Number of gardeners and their family members consuming food from the terrestrial survey area	U	9	U	
(C) DIRECT RADIATION PATHWAYS					
Residents	Number of residents in the survey area	200	71	36%	Interviews were conducted at 32 residences.
Employees	Number of people employed in the survey area	U	4	U	Excluding people living in the direct radiation survey area and employees and contractors of the Devonport site.
Visitors	Number of visitors to the survey area	U	15	U	
People undertaking leisure activitie	Number of people undertaking leisure activities in the survey area	U	9	U	
BREAKDOWN OF AGE GROUPS					
Adult	16-year-old and over	3,700	344	9.2%	
Child	6-year-old to 15-year-old	500	42	8%	
Infant	0 to 5-year-old	200	18	9%	

Notes

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

[b] Estimate of the number of people resident in the 1 km direct radiation survey area based on data from www.statistics.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) and (C) some individuals may be counted two or more times, for example someone who goes shore angling and consumes the catch.

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, common 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 LLWR aquatic survey area (kg y^{-1})

Observation number	Bass	Brill	Cod	Dab	Dover sole	Flounder	Grey mullet	Haddock	Herring	Mackerel	Mixed fish	Plaice	Pollack	Red gurnard	Saithe	Salmon	Sea trout	Squid	Thornback ray	Turbot	Whiting	Total
235	**3.2**	**-**	**6.8**	**-**	**3.2**	**-**	**5.5**	**6.8**	**3.2**	**3.2**	**-**	**6.8**	**6.8**	**-**	**-**	**-**	**-**	**5.9**	**6.8**	**3.2**	**3.2**	**64.5**
48	**-**	**-**	**22.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**15.0**	**-**	**-**	**-**	**-**	**-**	**-**	**22.5**	**-**	**-**	**59.9**
133	**-**	**-**	**14.7**	**-**	**-**	**-**	**-**	**-**	**4.7**	**-**	**-**	**17.7**	**-**	**-**	**-**	**-**	**-**	**-**	**20.6**	**-**	**-**	**57.8**
134	**-**	**-**	**14.7**	**-**	**-**	**-**	**-**	**-**	**4.7**	**-**	**-**	**17.7**	**-**	**-**	**-**	**-**	**-**	**-**	**20.6**	**-**	**-**	**57.8**
234	**-**	**-**	**20.4**	**-**	**-**	**-**	**5.5**	**20.4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.3**	**-**	**-**	**-**	**46.7**
339	**-**	**-**	**16.5**	**-**	**-**	**-**	**-**	**-**	**-**	**25.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**41.5**
187	**5.0**	**-**	**10.0**	**-**	**-**	**-**	**5.0**	**-**	**-**	**2.0**	**-**	**-**	**2.0**	**2.0**	**-**	**-**	**-**	**-**	**10.0**	**5.0**	**-**	**41.0**
138	**16.3**	**-**	**10.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10.9**	**-**	**-**	**38.1**
164	**3.2**	**-**	**15.9**	**-**	**-**	**-**	**-**	**-**	**-**	**6.9**	**-**	**6.0**	**2.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**34.5**
232	**11.3**	**-**	**13.6**	**-**	**-**	**-**	**-**	**-**	**-**	**6.8**	**-**	**-**	**-**	**-**	**-**	**-**	**2.3**	**-**	**-**	**-**	**-**	**34.0**
240	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**27.2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**27.2**
98	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**12.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12.5**	**26.8**
99	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**12.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12.5**	**26.8**
100	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**12.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12.5**	**26.8**
101	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**12.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12.5**	**26.8**
102	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**12.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12.5**	**26.8**
103	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**12.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12.5**	**26.8**
125	**-**	**-**	**14.5**	**-**	**-**	**-**	**-**	**-**	**-**	**1.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8.2**	**-**	**-**	**23.8**
126	**-**	**-**	**14.5**	**-**	**-**	**-**	**-**	**-**	**-**	**1.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8.2**	**-**	**-**	**23.8**
139	**-**	**-**	**10.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**-**	**-**	**-**	**-**	**10.9**	**-**	**-**	**23.6**
188	2.5	-	5.0	-	-	-	2.5	-	-	1.0	-	-	1.0	1.0	-	-	-	-	5.0	2.5	-	20.5
153	6.7	-	10.8	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	19.0
154	6.7	-	10.8	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	19.0
162	6.8	-	10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.7
163	6.8	-	10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.7
205	-	-	7.3	-	3.2	-	-	-	-	-	-	7.3	-	-	-	-	-	-	-	-	-	17.7
203	-	0.9	3.6	0.9	-	-	-	-	-	3.6	-	1.8	2.7	-	-	-	-	-	3.6	-	-	17.2
204	-	0.9	3.6	0.9	-	-	-	-	-	3.6	-	1.8	2.7	-	-	-	-	-	3.6	-	-	17.2
206	-	-	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.0
242	6.4	-	6.4	-	-	0.9	-	-	-	-	-	0.9	-	-	-	-	-	-	-	-	-	14.5
54	-	-	-	-	-	-	-	-	-	-	-	14.2	-	-	-	-	-	-	-	-	-	14.2
55	-	-	-	-	-	-	-	-	-	-	-	14.2	-	-	-	-	-	-	-	-	-	14.2
56	-	-	-	-	-	-	-	-	-	-	-	14.2	-	-	-	-	-	-	-	-	-	14.2

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

Observation number	Bass	Brill	Cod	Dab	Dover sole	Flounder	Grey mullet	Haddock	Herring	Mackerel	Mixed fish	Plaice	Pollack	Red gurnard	Saithe	Salmon	Sea trout	Squid	Thornback ray	Turbot	Whiting	Total
129	4.3	-	6.0	-	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	0.7	-	-	13.7
130	4.3	-	6.0	-	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	0.7	-	-	13.7
209	-	-	4.1	-	-	-	-	-	-	-	-	9.1	-	-	-	-	-	-	-	-	-	13.2
210	-	-	4.1	-	-	-	-	-	-	-	-	9.1	-	-	-	-	-	-	-	-	-	13.2
211	-	-	4.1	-	-	-	-	-	-	-	-	9.1	-	-	-	-	-	-	-	-	-	13.2
131	4.3	-	6.0	-	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-	-	-	13.0
132	4.3	-	6.0	-	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-	-	-	13.0
44	-	1.4	4.1	-	2.3	-	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	11.8
45	-	1.4	4.1	-	2.3	-	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	11.8
46	-	1.4	4.1	-	2.3	-	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	11.8
94	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	2.6	-	10.5
95	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	2.6	-	10.5
268	2.8	-	3.9	-	-	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	-	-	10.3
282	7.7	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.3
184	-	-	3.6	1.8	-	-	-	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	9.1
185	-	-	3.6	1.8	-	-	-	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	9.1
186	-	-	3.6	1.8	-	-	-	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	9.1
202	-	-	-	-	-	-	-	-	-	2.7	-	5.4	-	-	-	-	-	-	-	-	-	8.2
231	3.6	-	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2
236	-	-	4.1	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2
259	1.7	-	2.3	-	-	-	-	-	-	2.2	-	1.6	-	-	-	-	-	-	-	-	-	7.7
260	1.7	-	2.3	-	-	-	-	-	-	2.2	-	1.6	-	-	-	-	-	-	-	-	-	7.7
261	1.7	-	2.3	-	-	-	-	-	-	2.2	-	1.6	-	-	-	-	-	-	-	-	-	7.7
262	1.7	-	2.3	-	-	-	-	-	-	2.2	-	1.6	-	-	-	-	-	-	-	-	-	7.7
263	1.7	-	2.3	-	-	-	-	-	-	2.2	-	1.6	-	-	-	-	-	-	-	-	-	7.7
207	-	-	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5
208	-	-	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5
155	2.3	-	2.3	0.9	-	0.5	-	-	-	-	-	1.4	-	-	-	-	-	-	-	-	-	7.3
156	2.3	-	2.3	0.9	-	0.5	-	-	-	-	-	1.4	-	-	-	-	-	-	-	-	-	7.3
182	0.9	-	0.9	-	-	-	-	-	-	0.9	-	0.9	0.9	-	-	1.4	1.4	-	-	-	-	7.3
183	0.9	-	0.9	-	-	-	-	-	-	0.9	-	0.9	0.9	-	-	1.4	1.4	-	-	-	-	7.3
253	-	-	1.3	-	-	-	-	0.8	-	-	-	0.9	-	-	-	2.3	1.9	-	-	-	-	7.2
254	-	-	1.3	-	-	-	-	0.8	-	-	-	0.9	-	-	-	2.3	1.9	-	-	-	-	7.2

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

Observation number	Bass	Brill	Cod	Dab	Dover sole	Flounder	Grey mullet	Haddock	Herring	Mackerel	Mixed fish	Plaice	Pollack	Red gurnard	Saithe	Salmon	Sea trout	Squid	Thornback ray	Turbot	Whiting	Total
266	1.9	-	2.6	-	-	-	-	-	-	2.4	-	-	-	-	-	-	-	-	-	-	-	6.9
169	1.8	-	1.8	-	-	-	-	-	-	1.8	-	1.4	-	-	-	-	-	-	-	-	-	6.8
170	1.8	-	1.8	-	-	-	-	-	-	1.8	-	1.4	-	-	-	-	-	-	-	-	-	6.8
63	-	-	3.0	-	-	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-	-	-	6.5
64	-	-	3.0	-	-	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-	-	-	6.5
312	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9
313	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9
314	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9
159	1.8	-	1.8	-	-	-	-	-	-	-	-	0.2	0.9	-	0.9	-	-	-	-	-	-	5.7
160	1.8	-	1.8	-	-	-	-	-	-	-	-	0.2	0.9	-	0.9	-	-	-	-	-	-	5.7
161	1.8	-	1.8	-	-	-	-	-	-	-	-	0.2	0.9	-	0.9	-	-	-	-	-	-	5.7
65	-	-	1.3	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	1.7	5.2
66	-	-	1.3	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	1.7	5.2
243	1.6	-	1.6	-	-	0.2	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	3.6
96	-	-	-	-	-	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-	-	-	3.5
97	-	-	-	-	-	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-	-	-	3.5
285	-	-	1.7	-	-	-	-	-	-	-	-	-	1.7	-	-	-	-	-	-	-	-	3.4
286	-	-	1.7	-	-	-	-	-	-	-	-	-	1.7	-	-	-	-	-	-	-	-	3.4
61	-	-	1.0	-	-	-	-	-	-	1.0	-	-	1.0	-	-	-	-	-	-	-	-	3.0
62	-	-	1.0	-	-	-	-	-	-	1.0	-	-	1.0	-	-	-	-	-	-	-	-	3.0
229	-	-	1.4	-	-	-	-	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	2.0
230	-	-	1.4	-	-	-	-	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	2.0
89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	1.5
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	1.5
91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	1.5
127	-	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	-	-	-	1.1
214	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	0.5
215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish based on the 20 high-rate adult consumers is 36.8 kg y^{-1}

The observed 97.5th percentile rate based on 94 observations is 57.8 kg y^{-1}

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

Observation number	Brown crab	Brown shrimp	Common lobster	Common prawn	*Nephrops*	Total
138	**17.2**	**14.3**	**1.7**	**19.7**	**-**	**53.0**
235	**15.4**	**-**	**7.3**	**-**	**25.9**	**48.6**
71	**25.0**	**-**	**-**	**-**	**22.9**	**47.9**
72	**25.0**	**-**	**-**	**-**	**22.9**	**47.9**
209	**14.3**	**-**	**14.6**	**-**	**0.4**	**29.4**
210	**14.3**	**-**	**14.6**	**-**	**0.4**	**29.4**
211	**14.3**	**-**	**14.6**	**-**	**0.4**	**29.4**
135	**11.8**	**-**	**11.8**	**-**	**-**	**23.6**
54	**-**	**-**	**-**	**-**	**21.3**	**21.3**
55	**-**	**-**	**-**	**-**	**21.3**	**21.3**
56	**-**	**-**	**-**	**-**	**21.3**	**21.3**
164	**8.8**	**-**	**11.2**	**-**	**-**	**20.0**
44	**-**	**-**	**-**	**-**	**19.5**	**19.5**
45	**-**	**-**	**-**	**-**	**19.5**	**19.5**
46	**-**	**-**	**-**	**-**	**19.5**	**19.5**
205	**7.8**	**-**	**9.9**	**-**	**-**	**17.7**
49	-	-	-	-	15.0	15.0
234	1.0	-	0.6	-	11.6	13.2
339	4.8	-	3.8	3.7	-	12.3
312	3.6	-	5.6	0.9	-	10.0
313	3.6	-	5.6	0.9	-	10.0
314	3.6	-	5.6	0.9	-	10.0
133	3.6	-	5.6	-	-	9.2
134	3.6	-	5.6	-	-	9.2
202	6.6	-	-	-	-	6.6
184	-	-	-	-	5.9	5.9
185	-	-	-	-	5.9	5.9
186	-	-	-	-	5.9	5.9
240	-	-	-	-	5.9	5.9
259	3.0	-	2.2	-	-	5.2
260	3.0	-	2.2	-	-	5.2
129	3.3	-	1.7	-	-	5.0
130	3.3	-	1.7	-	-	5.0
131	3.3	-	1.7	-	-	5.0
132	3.3	-	1.7	-	-	5.0
169	2.0	-	2.0	-	-	4.1
170	2.0	-	2.0	-	-	4.1
203	1.4	-	2.2	-	-	3.5
204	1.4	-	2.2	-	-	3.5
153	3.3	-	-	-	-	3.3
154	3.3	-	-	-	-	3.3
187	1.0	-	2.0	-	-	3.0
253	0.7	-	0.9	1.2	-	2.8
254	0.7	-	0.9	1.2	-	2.8
236	0.2	-	-	-	2.3	2.5
188	1.0	-	1.0	-	-	2.0
125	-	-	0.3	1.6	-	1.9
126	-	-	0.3	1.6	-	1.9
140	-	-	1.7	-	-	1.7
51	-	-	-	-	1.7	1.7
92	-	-	-	-	1.5	1.5
48	-	-	-	-	1.2	1.2
159	0.9	-	0.2	-	-	1.1
160	0.9	-	0.2	-	-	1.1
161	0.9	-	0.2	-	-	1.1

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

Observation number	Brown crab	Brown shrimp	Common lobster	Common prawn	*Nephrops*	Total
261	0.5	-	0.4	-	-	0.9
262	0.5	-	0.4	-	-	0.9
263	0.5	-	0.4	-	-	0.9
229	0.5	-	-	-	-	0.5
230	0.5	-	-	-	-	0.5
231	0.3	-	0.2	-	-	0.5
232	0.3	-	0.2	-	-	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of crustaceans based on the 16 high-rate adult consumers is 29.3 kg y^{-1}

The observed 97.5th percentile rate based on 62 observations is 48.2 kg y^{-1}

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

Observation number	Cockle	Limpet	Mussel	Razor shell	Winkle	Total
317	**-**	**1.0**	**-**	**-**	**11.8**	**12.8**
235	**5.9**	**-**	**5.9**	**-**	**-**	**11.8**
138	**-**	**-**	**1.2**	**-**	**6.0**	**7.2**
202	**-**	**-**	**-**	**-**	**4.4**	**4.4**
187	-	-	1.0	3.0	-	4.0
164	-	-	1.4	-	1.4	2.7
162	0.5	-	0.5	-	1.4	2.3
163	0.5	-	0.5	-	1.4	2.3
129	-	-	-	-	2.0	2.0
318	-	-	-	-	1.3	1.3
319	-	-	-	-	1.3	1.3
139	-	-	1.2	-	-	1.2
188	-	-	-	1.0	-	1.0
209	0.3	-	-	-	0.5	0.8
234	0.3	-	0.3	-	-	0.7
121	-	-	0.2	-	0.3	0.5
153	-	-	0.5	-	-	0.5
154	-	-	0.5	-	-	0.5
159	-	-	0.2	-	0.2	0.5
160	-	-	0.2	-	0.2	0.5
161	-	-	0.2	-	0.2	0.5
231	0.5	-	-	-	-	0.5
232	0.5	-	-	-	-	0.5
316	-	-	-	-	0.4	0.4
210	0.3	-	-	-	-	0.3
182	-	-	-	0.2	-	0.2
183	-	-	-	0.2	-	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of molluscs based on the 4 high-rate adult consumers is 9.1 kg y^{-1}

The observed 97.5th percentile rate based on 27 observations is 12.2 kg y^{-1}

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

Observation number	Canada goose	Goose (unspecified species)	Greylag goose	Mallard	Snipe	Teal	Wigeon	Total
340	**5.6**	**-**	**8.8**	**1.1**	**-**	**0.4**	**0.9**	**16.8**
203	**-**	**8.8**	**-**	**2.7**	**-**	**-**	**-**	**11.5**
312	0.9	-	1.4	0.6	-	-	-	2.8
313	0.9	-	1.4	0.6	-	-	-	2.8
314	0.9	-	1.4	0.6	-	-	-	2.8
339	-	-	-	2.0	0.1	-	-	2.1
115	-	-	-	1.4	-	-	-	1.4
116	-	-	-	1.4	-	-	-	1.4
390	-	-	-	0.3	-	-	-	0.3
391	-	-	-	0.3	-	-	-	0.3
392	-	-	-	0.3	-	-	-	0.3
393	-	-	-	0.3	-	-	-	0.3
394	-	-	-	0.3	-	-	-	0.3
395	-	-	-	0.3	-	-	-	0.3

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wildfowl based on the 2 high-rate adult consumers is 14.2 kg y^{-1}

The observed 97.5th percentile rate based on 14 observations is 15.1 kg y^{-1}

Table 7. Adults' consumption rates of salt marsh grazed sheep meat from the LLWR aquatic survey area (kg y^{-1})

Observation number	Salt marsh grazed lamb
253	**1.9**
254	**1.9**
255	**1.9**
256	**1.9**
257	**1.9**
258	**1.9**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of salt marsh grazed sheep meat based on the 6 high-rate adult consumers is 1.9 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 1.9 kg y^{-1}

Table 8. Children's and infants' consumption rates of fish from the LLWR aquatic survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Bass	Cod	Dab	Flounder	Grey mullet	Haddock	Mackerel	Plaice	Whiting	Total
238	**13**	**-**	**4.1**	**-**	**-**	**-**	**4.1**	**-**	**-**	**-**	**8.2**
315	**15**	**-**	**5.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**5.9**
68	**8**	**-**	**1.3**	**-**	**-**	**-**	**-**	**2.2**	**-**	**1.7**	**5.2**
69	**10**	**-**	**1.3**	**-**	**-**	**-**	**-**	**2.2**	**-**	**1.7**	**5.2**
189	11	-	1.0	-	-	1.0	-	-	-	-	2.0
190	10	-	1.0	-	-	1.0	-	-	-	-	2.0
191	9	-	1.0	-	-	1.0	-	-	-	-	2.0
192	9	-	1.0	-	-	1.0	-	-	-	-	2.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish for the child age group based upon the 4 high-rate consumers is 6.1 kg y^{-1}

The observed 97.5th percentile rate based on 8 observations is 7.8 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Bass	Cod	Dab	Flounder	Grey mullet	Haddock	Mackerel	Plaice	Whiting	Total
157	**5**	**1.1**	**1.1**	**0.5**	**0.2**	**-**	**-**	**-**	**0.7**	**-**	**3.6**
158	**3**	**1.1**	**1.1**	**0.5**	**0.2**	**-**	**-**	**-**	**0.7**	**-**	**3.6**
67	**5**	**-**	**0.7**	**-**	**-**	**-**	**-**	**1.1**	**-**	**0.9**	**2.6**
193	4	-	0.5	-	-	0.5	-	-	-	-	1.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish for the infant age group based upon the 3 high-rate consumers is 3.3 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 3.6 kg y^{-1}

Table 9. Children's consumption rates of crustaceans from the LLWR aquatic survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Brown crab	Common lobster	Common prawn	*Nephrops*	Total
315	**15**	**3.6**	**5.6**	**0.9**	**-**	**10.0**
238	13	0.2	-	-	2.3	2.5

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of crustaceans for the child age group based upon the only high-rate consumer is 10.0 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 9.8 kg y^{-1}

Table 10. Children's consumption rates of molluscs from the LLWR aquatic survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Razor shell
190	**10**	**0.1**
191	**9**	**0.1**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of molluscs for the child age group based upon the 2 high-rate consumers is 0.1 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 0.1 kg y^{-1}

Table 11. Children's consumption rates of wildfowl from the LLWR aquatic survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Canada goose	Greylag goose	Mallard	Total
315	**15**	**0.9**	**1.4**	**0.6**	**2.8**

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of wildfowl for the child age group based upon the only high-rate consumer is 2.8 kg y^{-1}

The observed 97.5th percentile rate is not applicable for 1 observation

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

Observation number	Location	Activity	Mud	Mud and sand	Mud, sand and stones	Rock	Salt marsh	Sand	Sand and stones
340	**Newbiggin Marsh and Carleton Marsh**	**Wildfowling**	**96**	-	-	-	-	-	-
	Newbiggin Marsh and Carleton Marsh	Dog walking	-	-	-	-	78	-	-
401	**River Irt**	**Wildfowling**	**63**	-	-	-	-	-	-
402	**River Irt**	**Wildfowling**	**63**	-	-	-	-	-	-
403	**River Irt**	**Wildfowling**	**63**	-	-	-	-	-	-
404	**River Irt**	**Wildfowling**	**63**	-	-	-	-	-	-
316	**Whitehaven Outer Harbour**	**Bait digging**	-	**234**	-	-	-	-	-
	Braystones and Eskmeals	**Bait digging and walking**	-	-	-	-	-	**843**	-
	Braystones	**Angling**	-	-	-	-	-		-
	Nethertown	Collecting winkles	-	-	-	-	-	-	154
	Coulderton	Collecting limpets	-	-	-	-	-	-	
164	**Whitehaven Outer Harbour and Eskmeals**	**Bait digging**	-	**208**	-	-	-	-	-
	Parton and St Bees Head	Angling	-	-	-	100	-	-	-
	Parton to Drigg	**Angling**	-	-	-	-	-	-	**1398**
	Parton	**Dog walking, collecting mussels and collecting winkles**	-	-	-	-	-	-	
171	**Whitehaven Outer Harbour**	**Bait digging**	-	**200**	-	-	-	-	-
	Parton and St Bees Head	Angling	-	-	-	40	-	-	-
	Parton to Tarn Bay	Angling	-	-	-	-	-	-	220
162	**Whitehaven Outer Harbour**	**Bait digging**	-	**164**	-	-	-	-	-
	Ravenglass	**Collecting mussels and cockles**	-		-	-	-	-	-
	St Bees Head	**Angling**	-	-	-	**214**	-	-	-
	Parton to Drigg	Angling	-	-	-	-	-	-	419
	Barrow Mouth	Collecting winkles	-	-	-	-	-	-	
266	**Whitehaven Outer Harbour**	**Bait digging**	-	**156**	-	-	-	-	-
	Whitehaven	Angling	-	-	-	48	-	-	-
	Drigg and St Bees	Angling	-	-	-	-	-	156	-
267	**Whitehaven Outer Harbour**	**Bait digging**	-	**104**	-	-	-	-	-
	Parton and Whitehaven	**Angling**	-	-	-	**156**	-	-	-
	Drigg and St Bees	Angling	-	-	-	-	-	312	-
268	**Whitehaven Outer Harbour**	**Bait digging**	-	**104**	-	-	-	-	-
	Parton and Whitehaven	**Angling**	-	-	-	**156**	-	-	-
	Drigg and St Bees	Angling	-	-	-	-	-	312	-
242	**Ravenglass**	**Bait digging**	-	**80**	-	-	-	-	-
	Ravenglass	Collecting mussels	-	-	20	-	-	-	-
	Drigg	Bait digging	-	-	-	-	-	100	-
	St Bees to Drigg	**Angling**	-	-	-	-	-	-	**476**
	Nethertown	**Collecting peeler crabs**	-	-	-	-	-	-	

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

Observation number	Location	Activity	Mud	Mud and sand	Mud, sand and stones	Rock	Salt marsh	Sand	Sand and stones
259	Whitehaven Outer Harbour	Bait digging	-	65	-	-	-	-	-
	Barrow Mouth	**Collecting crabs**	-	-	-	**260**	-	-	-
	Drigg and St Bees	**Angling**	-	-	-	-	-	**611**	-
	St Bees, Nethertown and Drigg	**Bait digging**	-	-	-	-	-		-
264	Whitehaven Outer Harbour	Bait digging	-	65	-	-	-	-	-
	Barrow Mouth	**Collecting crabs**	-	-	-	**260**	-	-	-
	Drigg and St Bees	**Angling**	-	-	-	-	-	**611**	-
	St Bees, Nethertown and Drigg	**Bait digging**	-	-	-	-	-		-
265	Whitehaven Outer Harbour	Bait digging	-	65	-	-	-	-	-
	Drigg and St Bees	**Angling**	-	-	-	-	-	**611**	-
	St Bees, Nethertown and Drigg	**Bait digging**	-	-	-	-	-		-
169	Whitehaven Outer Harbour	Bait digging	-	60	-	-	-	-	-
	Parton and St Bees Head	Angling	-	-	-	30	-	-	-
	Parton to Tarn Bay	Angling	-	-	-	-	-	-	120
234	Whitehaven Outer Harbour to Ravenglass	Bait digging	-	51	-	-	-	-	-
	Braystones and Sellafield	**Setting nets**	-	-	-	-	-	**360**	-
	Parton to Drigg	**Collecting winkles**	-	-	-	-	-	-	**927**
	St Bees to Drigg	**Angling**	-	-	-	-	-	-	
153	Whitehaven Outer Harbour	Bait digging	-	38	-	-	-	-	-
	Parton and St Bees Head	**Angling**	-	-	-	**150**	-	-	-
	Parton to Drigg	**Angling**	-	-	-	-	-	-	**600**
138	Ravenglass	Collecting mussels	-	12	-	-	-	-	-
	Braystones	**Setting nets and bait digging**	-	-	-	-	-	**1026**	-
	Drigg	**Setting pots on the shore**	-	-	-	-	-		-
	Parton, Nethertown, Braystones and Coulderton	Angling	-	-	-	-	-	-	231
	Nethertown	Collecting winkles	-	-	-	-	-	-	
209	Ravenglass	Collecting cockles	-	4	-	-	-	-	-
	Whitehaven South Beach	Collecting winkles	-	-	-	-	-	-	2
205	**Ravenglass**	**Walking and boat maintenance**	-	-	**1095**	-	-	-	-
312	Ravenglass	Boat maintenance	-	-	330	-	-	-	-
	Ravenglass Estuary	Wildfowling	-	-	-	-	42	-	-
314	Ravenglass	Boat maintenance	-	-	330	-	-	-	-
	Ravenglass Estuary	Wildfowling	-	-	-	-	42	-	-
151	Lower reaches of River Ehen	Angling	-	-	135	-	-	-	-
	Braystones	Walking	-	-	-	-	-	90	-
155	Ravenglass	Collecting crabs	-	-	38	-	-	-	-
	Seascale	Dog walking	-	-	-	-	-	300	-
	Drigg	Bait digging	-	-	-	-	-		-
	Seascale	**Angling**	-	-	-	-	-	-	**580**

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

Observation number	Location	Activity	Mud	Mud and sand	Mud, sand and stones	Rock	Salt marsh	Sand	Sand and stones
182	River Ehen	Angling	-	-	16	-	-	-	-
	Nethertown	Collecting razor shells	-	-	-	-	-	2	-
	Parton to Tarn Bay	Riding a quad bike	-	-	-	-	-	-	416
	Saltom Bay, Nethertown and Ravenglass	Angling	-	-	-	-	-	-	
98	**Parton and Saltom Bay**	**Angling**	-	-	-	**400**	-	-	-
	Whitehaven Outer Harbour	Bait digging	-	-	-	**-**	-	46	-
202	Kokoarrah Scar	Hooking for crabs	-	-	-	12	-	-	-
	Drigg	Collecting winkles	-	-	-	-	-	-	140
	Nethertown	Beachcombing	-	-	-	-	-	-	
159	Kokoarrah Scar	Hooking for crabs	-	-	-	6	-	-	-
	Seascale	Dog walking	-	-	-	-	-	277	-
	Drigg	Bait digging	-	-	-	-	-		-
	Seascale	Angling	-	-	-	-	-	-	162
	Drigg	Collecting winkles and mussels	-	-	-	-	-	-	
253	**Saltcoats**	**Tending livestock**	-	-	-	-	**312**	-	-
255	**Saltcoats**	**Tending livestock**	-	-	-	-	**312**	-	-
382	Eskmeals Nature Reserve	Walking	-	-	-	-	52	156	-
339	Ravenglass Estuary	Walking	-	-	-	-	4	-	-
241	**Braystones**	**Setting nets**	-	-	-	-	-	**875**	-
197	**Seascale to Drigg**	**Dog walking**	-	-	-	-	-	**788**	-
196	**Seascale to Drigg**	**Dog walking**	-	-	-	-	-	**730**	-
229	**Drigg**	**Dog walking**	-	-	-	-	-	**639**	-
324	**Drigg**	**Dog walking**	-	-	-	-	-	**548**	-
179	**Seascale**	**Dog walking**	-	-	-	-	-	**548**	-
195	**Seascale to Drigg**	**Dog walking**	-	-	-	-	-	**548**	-
194	**Seascale to Drigg**	**Dog walking**	-	-	-	-	-	**520**	-
283	**Drigg**	**Dog walking**	-	-	-	-	-	**456**	-
180	**Braystones**	**Dog walking**	-	-	-	-	-	**400**	-
	Sellafield	Dog walking	-	-	-	-	-	-	330
181	**Braystones**	**Dog walking**	-	-	-	-	-	**400**	-
	Sellafield	Dog walking	-	-	-	-	-	-	330
342	**Seascale**	**Playing and dog walking**	-	-	-	-	-	**395**	-
269	**Eskmeals**	**Dog walking**	-	-	-	-	-	**365**	-
347	**Braystones to Sellafield**	**Dog walking**	-	-	-	-	-	**365**	-
313	**Seascale to Drigg**	**Dog walking**	-	-	-	-	-	**365**	-
198	**Seascale to Drigg**	**Dog walking**	-	-	-	-	-	**365**	-
240	**Braystones and Sellafield**	**Setting nets**	-	-	-	-	-	**360**	-
	Parton to Drigg	**Collecting winkles**	-	-	-	-	-	-	**791**

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

Observation number	Location	Activity	Mud	Mud and sand	Mud, sand and stones	Rock	Salt marsh	Sand	Sand and stones
129	Whitehaven Outer Harbour	Bait digging	-	-	-	-	-	309	-
	Drigg and Ravenglass	Angling	-	-	-	-	-		-
	St Bees	Collecting winkles	-	-	-	-	-		-
	Parton	Dog walking, setting pots on the shore and angling	-	-	-	-	-	-	451
86	St Bees	Dog walking	-	-	-	-	-	300	-
187	Braystones	Collecting razor shells, bait digging, playing and walking	-	-	-	-	-	260	-
	Braystones	Collecting seaweed and crabs	-	-	-	-	-	-	214
	Nethertown, Braystones and Sellafield	Angling	-	-	-	-	-	-	
	Braystones and Sellafield	Beachcombing	-	-	-	-	-	-	
156	Seascale	Dog walking	-	-	-	-	-	250	-
199	Seascale to Drigg	Dog walking	-	-	-	-	-	243	-
271	Seascale and Drigg	Dog walking	-	-	-	-	-	240	-
272	Seascale and Drigg	Dog walking	-	-	-	-	-	240	-
284	Eskmeals	Dog walking	-	-	-	-	-	228	-
35	St Bees	Dog walking	-	-	-	-	-	225	-
235	Braystones	Setting nets and walking	-	-	-	-	-	196	-
	St Bees to Drigg	Angling	-	-	-	-	-	-	68
270	Eskmeals	Dog walking	-	-	-	-	-	188	-
346	Seascale	Dog walking	-	-	-	-	-	183	-
348	Seascale	Dog walking	-	-	-	-	-	183	-
282	Drigg	Angling	-	-	-	-	-	182	-
	Nethertown and Drigg	Bait digging	-	-	-	-	-		-
	Nethertown	Angling	-	-	-	-	-	-	83
293	Drigg	Dog walking	-	-	-	-	-	175	-
294	Drigg	Dog walking	-	-	-	-	-	175	-
200	St Bees to Braystones	Dog walking	-	-	-	-	-	150	46
201	St Bees to Braystones	Dog walking	-	-	-	-	-	150	46
74	Whitehaven Outer Harbour	Dog walking	-	-	-	-	-	150	-
335	Seascale and Drigg	Walking	-	-	-	-	-	150	-
336	Seascale and Drigg	Walking	-	-	-	-	-	150	-
236	Braystones	Playing	-	-	-	-	-	148	-
	St Bees to Drigg	Angling	-	-	-	-	-	-	216
	Parton to Drigg	Collecting winkles	-	-	-	-	-	-	
125	St Bees, Coulderton, Nethertown and Ravenglass	Walking	-	-	-	-	-	134	-
	Parton	Walking	-	-	-	-	-	-	52
36	St Bees	Dog walking	-	-	-	-	-	130	-
37	St Bees	Dog walking	-	-	-	-	-	130	-

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

Observation number	Location	Activity	Mud	Mud and sand	Mud, sand and stones	Rock	Salt marsh	Sand	Sand and stones
233	Drigg	Walking	-	-	-	-	-	122	-
175	Seascale	Playing	-	-	-	-	-	120	-
176	Seascale	Playing	-	-	-	-	-	120	-
42	St Bees	Dog walking	-	-	-	-	-	117	-
73	Whitehaven Outer Harbour	Dog walking	-	-	-	-	-	100	-
232	Drigg	Dog walking	-	-	-	-	-	100	-
152	Braystones	Walking	-	-	-	-	-	90	-
172	Seascale	Dog walking	-	-	-	-	-	90	-
131	Whitehaven Outer Harbour	Bait digging	-	-	-	-	-	88	-
	Parton	Angling	-	-	-	-	-	-	188
275	Drigg	Dog walking	-	-	-	-	-	78	-
276	Drigg	Dog walking	-	-	-	-	-	78	-
277	Drigg	Dog walking	-	-	-	-	-	78	-
142	Drigg	Horse riding	-	-	-	-	-	75	-
307	Drigg	Dog walking	-	-	-	-	-	65	-
308	Drigg	Dog walking	-	-	-	-	-	65	-
136	Drigg	Dog walking	-	-	-	-	-	63	-
137	Drigg	Dog walking	-	-	-	-	-	63	-
278	Seascale and Drigg	Playing	-	-	-	-	-	60	-
279	Seascale and Drigg	Playing	-	-	-	-	-	60	-
378	Seascale to Drigg	Walking	-	-	-	-	-	52	-
379	Seascale to Drigg	Walking	-	-	-	-	-	52	-
188	Braystones	Playing and walking	-	-	-	-	-	48	-
285	Seascale and Drigg	Walking	-	-	-	-	-	40	-
286	Seascale and Drigg	Walking	-	-	-	-	-	40	-
216	Drigg	Walking	-	-	-	-	-	36	-
217	Drigg	Walking	-	-	-	-	-	36	-
218	Drigg	Walking	-	-	-	-	-	36	-
221	Drigg	Walking	-	-	-	-	-	36	-
222	Drigg	Walking	-	-	-	-	-	36	-
223	Drigg	Walking	-	-	-	-	-	36	-
81	St Bees	Playing	-	-	-	-	-	35	-
82	St Bees	Playing	-	-	-	-	-	35	-
38	St Bees	Walking	-	-	-	-	-	30	-
39	St Bees	Walking	-	-	-	-	-	30	-
302	Drigg	Walking	-	-	-	-	-	30	-
343	Seascale	Playing	-	-	-	-	-	30	-
83	St Bees	Playing	-	-	-	-	-	30	-
300	Drigg	Walking	-	-	-	-	-	26	-

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

Observation number	Location	Activity	Mud	Mud and sand	Mud, sand and stones	Rock	Salt marsh	Sand	Sand and stones
301	Drigg	Walking	-	-	-	-	-	26	-
375	Seascale and Drigg	Walking	-	-	-	-	-	24	-
376	Seascale to Drigg	Walking	-	-	-	-	-	24	-
75	Whitehaven Outer Harbour	Playing	-	-	-	-	-	16	-
76	Whitehaven Outer Harbour	Playing	-	-	-	-	-	16	-
2	Seascale	Playing	-	-	-	-	-	15	-
104	Seascale to Drigg	Horse riding	-	-	-	-	-	12	-
309	Seascale	Playing	-	-	-	-	-	9	-
310	Seascale	Playing	-	-	-	-	-	9	-
328	Drigg	Dog walking	-	-	-	-	-	9	-
329	Drigg	Dog walking	-	-	-	-	-	9	-
214	Drigg	Walking	-	-	-	-	-	4	-
327	Drigg	Walking	-	-	-	-	-	4	-
203	Coulderton	Dog walking	-	-	-	-	-	-	364
88	Whitehaven North Beach	Dog walking	-	-	-	-	-	-	150
87	Whitehaven North Beach	Dog walking	-	-	-	-	-	-	150
61	Parton	Angling	-	-	-	-	-	-	30
121	Drigg	Collecting mussels and winkles	-	-	-	-	-	-	3

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over mud based on 5 high-rate observations is 70 h y^{-1}

The observed 97.5th percentile rate based on 5 observations for mud is 93 h y^{-1}

The mean intertidal occupancy rate over mud and sand based on 8 high-rate observations is 156 h y^{-1}

The observed 97.5th percentile rate based on 16 observations for mud and sand is 224 h y^{-1}

The mean intertidal occupancy rate over mud, sand and stones based on 1 observation is 1095 h y^{-1}

The observed 97.5th percentile rate based on 7 observations for mud, sand and stones is 980 h y^{-1}

The mean intertidal occupancy rate over rock based on 7 high-rate observations is 228 h y^{-1}

The observed 97.5th percentile rate based on 13 observations for rock is 358 h y^{-1}

The mean intertidal occupancy rate over salt marsh based on 2 high-rate observations is 312 h y^{-1}

The observed 97.5th percentile rate based on 7 observations for salt marsh is 312 h y^{-1}

The mean intertidal occupancy rate over sand based on 23 high-rate observations is 553 h y^{-1}

The observed 97.5th percentile rate based on 109 observations for sand is 805 h y^{-1}

The mean intertidal occupancy rate over sand and stones based on 6 high-rate observations is 795 h y^{-1}

The observed 97.5th percentile rate based on 31 observations for sand and stones is 1045 h y^{-1}

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

Child age group (6 - 15 years old)

Observation number	Age	Location	Activity	Sand	Sand and stones
273	**10**	**Seascale and Drigg**	**Dog walking**	**240**	-
274	**13**	**Seascale and Drigg**	**Dog walking**	**240**	-
237	**14**	**Braystones**	**Playing**	**148**	-
		St Bees to Drigg	Angling	-	136
238	**13**	**Braystones**	**Playing**	**148**	-
		St Bees to Drigg	**Angling**	-	**216**
		Parton to Drigg	**Collecting winkles**	-	
239	**9**	**Braystones**	**Playing**	**148**	-
		St Bees to Drigg	Angling	-	136
177	**6**	**Seascale**	**Playing**	**120**	-
43	**10**	**St Bees**	**Dog walking**	**117**	-
173	**10**	**Seascale**	**Playing**	**90**	-
174	**6**	**Seascale**	**Playing**	**90**	-
144	9	Drigg	Horse riding	75	-
145	11	Drigg	Horse riding	75	-
280	8	Seascale and Drigg	Playing	60	-
219	9	Drigg	Playing	36	-
84	14	St Bees	Playing	30	-
40	9	St Bees	Playing	30	-
41	7	St Bees	Playing	30	-
190	10	Braystones	Playing	24	-
191	9	Braystones	Playing	24	-
189	11	Braystones	Playing	18	-
192	9	Braystones	Playing	18	-
78	11	Whitehaven Outer Harbour	Playing	16	-
77	10	Whitehaven Outer Harbour	Playing	16	-
165	**11**	**Parton**	**Playing**	-	**546**
166	**6**	**Parton**	**Playing**	-	**546**
167	**12**	**Parton**	**Playing**	-	**546**
168	**14**	**Parton**	**Playing**	-	**546**

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over sand based on 9 high-rate observations is 149 h y^{-1}

The observed 97.5th percentile rate based on 22 observations for sand is 240 h y^{-1}

The mean intertidal occupancy rate over sand and stones based on 5 high-rate observations is 480 h y^{-1}

The observed 97.5th percentile rate based on 7 observations for sand and stones is 546 h y^{-1}

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

Infant age group (0 - 5 years old)

Observation number	Age	Location	Activity	Sand
157	**5**	**Seascale**	**Playing**	**250**
158	**3**	**Seascale**	**Playing**	**250**
178	**4**	**Seascale**	**Playing**	**120**
281	5	Seascale and Drigg	Playing	60
220	0.2	Drigg	Playing	36
85	2	St Bees	Playing	30
344	5	Seascale	Playing	30
345	1	Seascale	Playing	30
193	4	Braystones	Playing	18
3	3	Seascale	Playing	15
4	2	Seascale	Playing	15
5	2	Seascale	Playing	15

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over sand based on 3 high-rate observations is 207 h y^{-1}

The observed 97.5th percentile rate based on 12 observations for sand is 250 h y^{-1}

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

Location	National Grid Reference	Substrate	Gamma dose rate at 1 metre[a]
Parton	NX 977 206	Sand and stones	0.114
Whitehaven North Beach	NX 972 187	Sand and stones	0.094
Whitehaven Outer Harbour	NX 969 183	Sand	0.099
St Bees	NX 959 116	Sand	0.068
Coulderton	NX 981 084	Sand	0.059
Coulderton	NX 980 084	Sand and stones	0.084
Coulderton	NX 981 085	Stones	0.104
Nethertown	NX 989 072	Stones	0.101
Braystones	NY 000 058	Sand	0.064
Braystones	NX 999 059	Sand and stones	0.097
Sellafield	NY 015 038	Sand and stones	0.085
Sellafield (100m south of the pipeline)	NY 019 033	Sand and stones	0.090
Seascale	NY 035 011	Sand	0.071
Drigg	SD 047 984	Sand	0.062
Drigg Stream	SD 064 982	Mud	0.110
Saltcoats	SD 079 968	Mud	0.097
Ravenglass	SD 083 961	Sand	0.079
Waberthwaite Ford	SD 099 950	Salt marsh	0.120
Eskmeals Viaduct	SD 087 942	Salt marsh	0.130
Eskmeals Viaduct	SD 087 942	Salt marsh	0.088
Eskmeals	SD 079 907	Sand	0.066

Notes

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

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

Observation number	Location	Activity	Fishing gear	Sediment
312	**Sellafield to Tarn Bay**	**Handling pots**	**1524**	-
	Ravenglass Estuary	Wildfowling	-	42
314	**Sellafield to Tarn Bay**	**Handling pots**	**1524**	-
	Ravenglass Estuary	Wildfowling	-	42
138	**Parton, Seamill, Nethertown and Braystones**	**Handling nets**	**1290**	-
	Drigg	**Handling pots**		
	Braystones	Bait digging	-	69
	Nethertown	Collecting winkles	-	
	Ravenglass	Collecting mussels	-	
241	**Braystones**	**Handling nets**	**875**	-
209	**Parton to Nethertown**	**Handling pots and nets**	**740**	-
	Ravenglass	Collecting cockles	-	6
	Whitehaven South Beach	Collecting winkles	-	
206	Southern part of the survey area	Handling pots	450	-
139	Nethertown, Parton and Seamill	Handling nets	398	-
234	Braystones and Sellafield	Handling nets	360	-
	Parton to Drigg	**Collecting winkles**	-	**842**
	Whitehaven Outer Harbour to Ravenglass	**Bait digging**	-	
240	Braystones and Sellafield	Handling nets	360	-
	Parton to Drigg	**Collecting winkles**	-	**791**
205	Southern part of the survey area	Handling pots	320	-
44	St Bees to Ravenglass	Handling trawl gear	300	-
47	St Bees to Ravenglass	Handling trawl gear	300	-
70	Parton to Tarn Bay	Handling trawl gear	263	-
71	Parton to Tarn Bay	Handling trawl gear	263	-
48	St Bees to Whitehaven	Handling trawl gear	225	-
50	St Bees to Whitehaven	Handling trawl gear	225	-
53	Parton to Tarn Bay	Handling trawl gear	197	-
54	Parton to Tarn Bay	Handling trawl gear	197	-
55	Parton to Tarn Bay	Handling trawl gear	197	-
56	Parton to Tarn Bay	Handling trawl gear	197	-
51	Parton to Tarn Bay	Handling trawl gear	175	-
52	Parton to Tarn Bay	Handling trawl gear	175	-
184	In the survey area	Handling trawl gear	156	-
185	In the survey area	Handling trawl gear	156	-

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

Observation number	Location	Activity	Fishing gear	Sediment
186	In the survey area	Handling trawl gear	156	-
93	Parton to Tarn Bay	Handling trawl gear	84	-
94	Parton to Tarn Bay	Handling trawl gear	84	-
129	Parton	Handling pots	80	-
	St Bees	Collecting winkles	-	93
	Whitehaven Outer Harbour	Bait digging	-	
164	Off Parton	Handling pots	65	-
	Parton	Collecting mussels and winkles	-	232
	Whitehaven Outer Harbour and Eskmeals	Bait digging	-	
89	Parton to Tarn Bay	Handling trawl gear	53	-
90	Parton to Tarn Bay	Handling trawl gear	53	-
91	Parton to Tarn Bay	Handling trawl gear	53	-
92	Parton to Tarn Bay	Handling trawl gear	53	-
235	Braystones	Handling nets	48	-
203	Coulderton	Handling pots	20	-
316	**Braystones, Eskmeals and Whitehaven Outer Harbour**	**Bait digging**	-	**856**
	Nethertown	**Collecting winkles**	-	
	Coulderton	**Collecting limpets**	-	
259	**Barrow Mouth**	**Collecting crabs**	-	**520**
	St Bees, Nethertown, Drigg and Whitehaven Outer Harbour	**Bait digging**	-	
264	**Barrow Mouth**	**Collecting crabs**	-	**520**
	St Bees, Nethertown, Drigg and Whitehaven Outer Harbour	**Bait digging**	-	
242	Drigg and Ravenglass	Bait digging	-	260
	Nethertown	Collecting crabs	-	
	Ravenglass	Collecting mussels	-	
265	St Bees, Nethertown, Drigg and Whitehaven Outer Harbour	Bait digging	-	260
171	Whitehaven Outer Harbour	Bait digging	-	200
162	Whitehaven Outer Harbour	Bait digging	-	173
	Barrow Mouth	Collecting winkles	-	
	Ravenglass	Collecting mussels and cockles	-	
266	Whitehaven Outer Harbour	Bait digging	-	156
187	Braystones	Bait digging and collecting crabs, razor shells and seaweed	-	154

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

Observation number	Location	Activity	Fishing gear	Sediment
155	Drigg	Bait digging	-	138
	Ravenglass	Collecting crabs	-	
267	Whitehaven Outer Harbour	Bait digging	-	104
268	Whitehaven Outer Harbour	Bait digging	-	104
282	Nethertown and Drigg	Bait digging	-	99
340	Newbiggin Marsh and Carleton Marsh	Wildfowling	-	96
131	Whitehaven Outer Harbour	Bait digging	-	88
236	Parton to Drigg	Collecting winkles	-	80
401	River Irt	Wildfowling	-	63
402	River Irt	Wildfowling	-	63
403	River Irt	Wildfowling	-	63
404	River Irt	Wildfowling	-	63
169	Whitehaven Outer Harbour	Bait digging	-	60
159	Drigg	Bait digging and collecting mussels and winkles	-	58
98	Whitehaven Outer Harbour	Bait digging	-	46
153	Whitehaven Outer Harbour	Bait digging	-	38
202	Drigg	Collecting winkles	-	10
121	Drigg	Collecting mussels and winkles	-	3
182	Nethertown	Collecting razor shells	-	2

Notes

Emboldened observations are the high-rate individuals

The mean fishing gear handling rate based on 5 high-rate observations is 1191 h y^{-1}

The observed 97.5th percentile rate based on 35 observations for fishing gear is 1524 h y^{-1}

The mean sediment handling rate based on 5 high-rate observations is 706 h y^{-1}

The observed 97.5th percentile rate based on 35 observations for sediment is 844 h y^{-1}

Table 16. Children's handling rates of sediment in the LLWR aquatic survey area (h y^{-1})

Observation number	Age	Location	Activity	Sediment
Child age group (6 - 15 years old)				
238	**13**	**Parton to Drigg**	**Collecting winkles**	**80**

Notes

The emboldened observation is the high-rate individual

The mean sediment handling rate based on the only high-rate observation is 80 h y^{-1}

The observed 97.5th percentile rate is not applicable for 1 observation

Table 17. Adults' occupancy rates in and on water in the LLWR aquatic survey area (h y^{-1})

Observation number	Location	Activity	In water	On water
79	St Bees	Kitesurfing	20	-
80	St Bees	Kitesurfing	20	-
57	Whitehaven	Diving	13	-
	Whitehaven	Working on a boat	-	130
58	Whitehaven	Diving	13	
	Whitehaven	Working on a boat	-	130
59	Whitehaven	Diving	13	-
	Whitehaven	Working on a boat	-	130
60	Whitehaven	Diving	13	-
	Whitehaven	Working on a boat	-	130
83	St Bees	Swimming	5	-
44	St Bees to Ravenglass	Trawling	-	2000
47	St Bees to Ravenglass	Trawling	-	2000
312	Sellafield to Tarn Bay	Potting	-	1920
314	Sellafield to Tarn Bay	Potting	-	1920
48	St Bees to Whitehaven	Trawling	-	1800
50	St Bees to Whitehaven	Trawling	-	1800
70	Parton to Tarn Bay	Trawling	-	1750
71	Parton to Tarn Bay	Trawling	-	1750
53	Parton to Tarn Bay	Trawling	-	1519
54	Parton to Tarn Bay	Trawling	-	1519
55	Parton to Tarn Bay	Trawling	-	1519
56	Parton to Tarn Bay	Trawling	-	1519
184	In the survey area	Trawling	-	1248
185	In the survey area	Trawling	-	1248
186	In the survey area	Trawling	-	1248
51	Parton to Tarn Bay	Trawling	-	1200
52	Parton to Tarn Bay	Trawling	-	1200
209	Parton to Nethertown	Netting and potting	-	1000
93	Parton to Tarn Bay	Trawling	-	630
94	Parton to Tarn Bay	Trawling	-	630
205	Southern part of the survey area	Potting	-	540
206	Southern part of the survey area	Potting	-	540
164	Off Parton	Angling and potting	-	455
89	Parton to Tarn Bay	Trawling	-	450
90	Parton to Tarn Bay	Trawling	-	450
91	Parton to Tarn Bay	Trawling	-	450
92	Parton to Tarn Bay	Trawling	-	450
139	Parton, St Bees and Nethertown	Push netting	-	398
138	Parton, St Bees and Nethertown	Push netting	-	282
129	Parton	Angling	-	188
131	Parton	Angling	-	188
203	Off Coulderton	Angling and potting	-	80
159	Seascale	Angling	-	52
286	Off Tarn Bay	Angling	-	21
133	Off Whitehaven	Angling	-	12

Table 18. Children's and infants' occupancy rates in and on water in the LLWR aquatic survey area (h y^{-1})

Observation number	Age	Location	Activity	In water	On water
Child age group (6 - 15 years old)					
84	14	St Bees	Swimming	5	-
Infant age group (0 - 5 years old)					
85	2	St Bees	Paddling	-	5

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

Observation number	Artichoke	Broccoli	Brussel sprout	Cabbage	Cauliflower	Courgette	Cucumber	Herbs	Kale	Lettuce	Marrow	Pak choi	Spinach	Total
293	**-**	**7.5**	**-**	**6.1**	**3.7**	**9.2**	**-**	**-**	**-**	**3.0**	**-**	**-**	**3.4**	**32.9**
294	**-**	**7.5**	**-**	**6.1**	**3.7**	**9.2**	**-**	**-**	**-**	**3.0**	**-**	**-**	**3.4**	**32.9**
369	**-**	**-**	**13.0**	**13.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**26.0**
370	**-**	**-**	**13.0**	**13.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**26.0**
378	**-**	**7.5**	**-**	**-**	**-**	**-**	**12.8**	**-**	**-**	**1.8**	**-**	**-**	**-**	**22.0**
379	**-**	**7.5**	**-**	**-**	**-**	**-**	**12.8**	**-**	**-**	**1.8**	**-**	**-**	**-**	**22.0**
233	**-**	**-**	**-**	**6.1**	**3.7**	**7.4**	**-**	**-**	**-**	**3.0**	**-**	**-**	**-**	**20.2**
285	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**8.9**	**6.8**	**1.5**	**18.9**
286	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**8.9**	**6.8**	**1.5**	**18.9**
381	**-**	**-**	**6.8**	**9.1**	**2.8**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**18.8**
104	**3.6**	**-**	**-**	**-**	**-**	**10.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.8**
105	**3.6**	**-**	**-**	**-**	**-**	**10.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.8**
106	**3.6**	**-**	**-**	**-**	**-**	**10.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.8**
107	**3.6**	**-**	**-**	**-**	**-**	**10.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.8**
212	**-**	**-**	**-**	**13.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.6**
213	**-**	**-**	**-**	**13.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.6**
371	**-**	**-**	**6.5**	**6.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.0**
383	**-**	**-**	**-**	**11.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11.9**
384	**-**	**-**	**-**	**11.9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11.9**
231	-	-	6.8	-	-	3.7	-	-	-	-	-	-	-	10.5
232	-	-	6.8	-	-	3.7	-	-	-	-	-	-	-	10.5
216	-	-	-	-	1.0	-	6.8	-	1.7	-	-	-	-	9.5
217	-	-	-	-	1.0	-	6.8	-	1.7	-	-	-	-	9.5
218	-	-	-	-	1.0	-	6.8	-	1.7	-	-	-	-	9.5
115	-	-	-	5.1	4.1	-	-	-	-	-	-	-	-	9.2
116	-	-	-	5.1	4.1	-	-	-	-	-	-	-	-	9.2
375	-	-	-	2.3	-	2.3	-	-	0.5	2.9	-	-	0.7	8.6
376	-	-	-	2.3	-	2.3	-	-	0.5	2.9	-	-	0.7	8.6
112	-	-	-	2.0	-	-	5.7	-	-	-	-	-	-	7.7
113	-	-	-	2.0	-	-	5.7	-	-	-	-	-	-	7.7
114	-	-	-	2.0	-	-	5.7	-	-	-	-	-	-	7.7
380	-	-	-	-	-	7.4	-	-	-	-	-	-	-	7.4
290	-	-	-	-	-	5.1	-	0.7	-	0.8	-	-	-	6.5
291	-	-	-	-	-	5.1	-	0.7	-	0.8	-	-	-	6.5
399	-	-	-	-	5.7	-	-	-	-	-	-	-	-	5.7
400	-	-	-	-	5.7	-	-	-	-	-	-	-	-	5.7
136	-	-	-	1.4	4.1	-	-	-	-	-	-	-	-	5.4

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

Observation number	Artichoke	Broccoli	Brussel sprout	Cabbage	Cauliflower	Courgette	Cucumber	Herbs	Kale	Lettuce	Marrow	Pak choi	Spinach	Total
137	-	-	-	1.4	4.1	-	-	-	-	-	-	-	-	5.4
385	-	-	-	3.0	-	-	-	-	-	-	-	-	-	3.0
386	-	-	-	3.0	-	-	-	-	-	-	-	-	-	3.0
349	-	-	-	2.7	-	-	-	-	-	-	-	-	-	2.7
350	-	-	-	2.7	-	-	-	-	-	-	-	-	-	2.7
351	-	-	-	2.7	-	-	-	-	-	-	-	-	-	2.7
352	-	-	-	2.7	-	-	-	-	-	-	-	-	-	2.7
353	-	-	-	2.7	-	-	-	-	-	-	-	-	-	2.7
354	-	-	-	2.7	-	-	-	-	-	-	-	-	-	2.7
355	-	-	-	2.7	-	-	-	-	-	-	-	-	-	2.7
356	-	-	-	2.7	-	-	-	-	-	-	-	-	-	2.7
357	-	-	-	2.7	-	-	-	-	-	-	-	-	-	2.7
387	-	-	-	-	-	2.7	-	-	-	-	-	-	-	2.7
388	-	-	-	-	-	2.7	-	-	-	-	-	-	-	2.7
142	-	-	-	1.7	-	-	-	-	-	0.4	-	-	-	2.1
143	-	-	-	1.7	-	-	-	-	-	0.4	-	-	-	2.1
146	-	-	-	1.7	-	-	-	-	-	0.4	-	-	-	2.1
121	-	-	-	-	2.0	-	-	-	-	-	-	-	-	2.0
122	-	-	-	-	2.0	-	-	-	-	-	-	-	-	2.0
307	-	-	-	-	-	-	-	1.7	-	-	-	-	-	1.7
308	-	-	-	-	-	-	-	1.7	-	-	-	-	-	1.7
322	-	-	-	-	-	-	1.7	-	-	-	-	-	-	1.7
323	-	-	-	-	-	-	1.7	-	-	-	-	-	-	1.7
229	-	-	-	-	-	-	-	-	-	1.5	-	-	-	1.5
230	-	-	-	-	-	-	-	-	-	1.5	-	-	-	1.5
300	-	-	-	-	-	-	-	0.5	-	-	-	-	-	0.5
301	-	-	-	-	-	-	-	0.5	-	-	-	-	-	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables based on the 19 high-rate adult consumers is 18.8 kg y^{-1}

The observed 97.5th percentile rate based on 64 observations is 28.9 kg y^{-1}

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

Observation number	Broad bean	French bean	Mange tout	Pea	Runner bean	Sweetcorn	Tomato	Total
378	**1.2**	**-**	**2.7**	**-**	**12.2**	**-**	**10.8**	**27.0**
379	**1.2**	**-**	**2.7**	**-**	**12.2**	**-**	**10.8**	**27.0**
216	**1.2**	**-**	**-**	**1.2**	**3.6**	**-**	**19.2**	**25.2**
217	**1.2**	**-**	**-**	**1.2**	**3.6**	**-**	**19.2**	**25.2**
218	**1.2**	**-**	**-**	**1.2**	**3.6**	**-**	**19.2**	**25.2**
229	**-**	**-**	**-**	**-**	**6.8**	**-**	**10.8**	**17.6**
230	**-**	**-**	**-**	**-**	**6.8**	**-**	**10.8**	**17.6**
285	**2.0**	**1.6**	**-**	**-**	**6.1**	**-**	**5.7**	**15.5**
286	**2.0**	**1.6**	**-**	**-**	**6.1**	**-**	**5.7**	**15.5**
233	**-**	**-**	**-**	**-**	**6.8**	**-**	**7.2**	**14.0**
231	**-**	**2.7**	**-**	**3.4**	**-**	**-**	**7.2**	**13.3**
232	**-**	**2.7**	**-**	**3.4**	**-**	**-**	**7.2**	**13.3**
112	**-**	**1.2**	**-**	**-**	**4.5**	**0.8**	**6.0**	**12.5**
113	**-**	**1.2**	**-**	**-**	**4.5**	**0.8**	**6.0**	**12.5**
114	**-**	**1.2**	**-**	**-**	**4.5**	**0.8**	**6.0**	**12.5**
104	-	-	-	-	6.8	-	-	6.8
105	-	-	-	-	6.8	-	-	6.8
106	-	-	-	-	6.8	-	-	6.8
107	-	-	-	-	6.8	-	-	6.8
383	-	-	-	-	-	-	6.5	6.5
384	-	-	-	-	-	-	6.5	6.5
300	-	-	-	-	3.6	-	1.8	5.4
301	-	-	-	-	3.6	-	1.8	5.4
359	-	-	-	5.0	-	-	-	5.0
360	-	-	-	5.0	-	-	-	5.0
361	-	-	-	5.0	-	-	-	5.0
362	-	-	-	5.0	-	-	-	5.0
363	-	-	-	5.0	-	-	-	5.0
364	-	-	-	5.0	-	-	-	5.0
212	-	-	-	-	-	-	5.0	5.0
213	-	-	-	-	-	-	5.0	5.0
387	-	-	-	-	-	-	4.6	4.6
388	-	-	-	-	-	-	4.6	4.6
307	-	-	-	-	-	-	3.6	3.6
308	-	-	-	-	-	-	3.6	3.6

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

Observation number	Broad bean	French bean	Mange tout	Pea	Runner bean	Sweetcorn	Tomato	Total
380	-	-	-	0.5	3.1	-	-	3.6
322	-	-	-	-	-	-	1.8	1.8
323	-	-	-	-	-	-	1.8	1.8
385	-	-	-	-	-	-	1.6	1.6
386	-	-	-	-	-	-	1.6	1.6
376	1.1	-	-	-	-	-	-	1.1
377	1.1	-	-	-	-	-	-	1.1
293	-	-	-	-	-	-	0.5	0.5
294	-	-	-	-	-	-	0.5	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables based on the 15 high-rate adult consumers is 18.3 kg y^{-1}

The observed 97.5th percentile rate based on 44 observations is 26.9 kg y^{-1}

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

Observation number	Beetroot	Carrot	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Spring onion	Swede	Turnip	Total
293	**8.2**	**6.8**	**-**	**1.3**	**-**	**18.0**	**-**	**-**	**-**	**13.6**	**5.4**	**53.3**
294	**8.2**	**6.8**	**-**	**1.3**	**-**	**18.0**	**-**	**-**	**-**	**13.6**	**5.4**	**53.3**
396	**16.7**	**16.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**16.7**	**-**	**50.0**
397	**16.7**	**16.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**16.7**	**-**	**50.0**
398	**16.7**	**16.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**16.7**	**-**	**50.0**
231	**-**	**3.4**	**0.3**	**-**	**10.0**	**11.0**	**2.7**	**-**	**-**	**-**	**4.1**	**31.4**
232	**-**	**3.4**	**0.3**	**-**	**10.0**	**11.0**	**2.7**	**-**	**-**	**-**	**4.1**	**31.4**
212	**6.8**	**13.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**6.8**	**27.2**
213	**6.8**	**13.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**6.8**	**27.2**
369	**-**	**13.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.0**	**-**	**26.0**
370	**-**	**13.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.0**	**-**	**26.0**
381	**12.3**	**6.8**	**-**	**-**	**3.4**	**2.7**	**-**	**-**	**-**	**-**	**-**	**25.1**
399	**5.7**	**5.7**	**-**	**-**	**5.7**	**5.7**	**-**	**-**	**-**	**-**	**-**	**22.7**
400	**5.7**	**5.7**	**-**	**-**	**5.7**	**5.7**	**-**	**-**	**-**	**-**	**-**	**22.7**
383	**-**	**5.8**	**-**	**-**	**-**	**13.8**	**-**	**-**	**-**	**-**	**-**	**19.6**
384	**-**	**5.8**	**-**	**-**	**-**	**13.8**	**-**	**-**	**-**	**-**	**-**	**19.6**
115	-	5.9	-	-	-	9.1	-	-	-	-	-	15.0
116	-	5.9	-	-	-	9.1	-	-	-	-	-	15.0
311	-	-	-	-	14.0	-	-	-	-	-	-	14.0
359	-	5.0	-	-	-	-	-	-	-	-	8.1	13.1
360	-	5.0	-	-	-	-	-	-	-	-	8.1	13.1
361	-	5.0	-	-	-	-	-	-	-	-	8.1	13.1
362	-	5.0	-	-	-	-	-	-	-	-	8.1	13.1
363	-	5.0	-	-	-	-	-	-	-	-	8.1	13.1
364	-	5.0	-	-	-	-	-	-	-	-	8.1	13.1
371	-	6.5	-	-	-	-	-	-	-	6.5	-	13.0
285	3.7	-	-	-	4.1	1.6	1.6	-	0.9	-	-	11.9
286	3.7	-	-	-	4.1	1.6	1.6	-	0.9	-	-	11.9
378	-	5.4	-	-	-	4.3	2.2	-	-	-	-	11.9
379	-	5.4	-	-	-	4.3	2.2	-	-	-	-	11.9
32	-	9.0	-	-	-	-	-	-	-	-	-	9.0
33	-	9.0	-	-	-	-	-	-	-	-	-	9.0
34	-	9.0	-	-	-	-	-	-	-	-	-	9.0
233	-	4.5	-	-	-	3.6	-	-	-	-	-	8.1
375	1.1	-	-	-	4.5	-	1.2	0.2	-	-	-	7.1

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

Observation number	Beetroot	Carrot	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Spring onion	Swede	Turnip	Total
376	1.1	-	-	-	4.5	-	1.2	0.2	-	-	-	7.1
142	0.6	2.7	-	-	-	2.2	0.5	-	-	-	0.8	6.8
143	0.6	2.7	-	-	-	2.2	0.5	-	-	-	0.8	6.8
146	0.6	2.7	-	-	-	2.2	0.5	-	-	-	0.8	6.8
287	3.3	3.3	-	-	-	-	-	-	-	-	-	6.7
288	3.3	3.3	-	-	-	-	-	-	-	-	-	6.7
289	3.3	3.3	-	-	-	-	-	-	-	-	-	6.7
121	1.2	3.6	-	-	-	1.8	-	-	-	-	-	6.6
122	1.2	3.6	-	-	-	1.8	-	-	-	-	-	6.6
349	-	2.7	-	-	-	-	-	-	-	-	2.7	5.4
350	-	2.7	-	-	-	-	-	-	-	-	2.7	5.4
351	-	2.7	-	-	-	-	-	-	-	-	2.7	5.4
352	-	2.7	-	-	-	-	-	-	-	-	2.7	5.4
353	-	2.7	-	-	-	-	-	-	-	-	2.7	5.4
354	-	2.7	-	-	-	-	-	-	-	-	2.7	5.4
355	-	2.7	-	-	-	-	-	-	-	-	2.7	5.4
356	-	2.7	-	-	-	-	-	-	-	-	2.7	5.4
357	-	2.7	-	-	-	-	-	-	-	-	2.7	5.4
385	-	1.4	-	-	-	3.5	-	-	-	-	-	4.9
386	-	1.4	-	-	-	3.5	-	-	-	-	-	4.9
112	1.5	-	-	-	1.5	1.2	-	-	-	-	-	4.2
113	1.5	-	-	-	1.5	1.2	-	-	-	-	-	4.2
114	1.5	-	-	-	1.5	1.2	-	-	-	-	-	4.2
387	-	-	-	-	4.1	-	-	-	-	-	-	4.1
388	-	-	-	-	4.1	-	-	-	-	-	-	4.1
290	2.1	1.1	-	-	-	-	-	-	0.5	-	-	3.7
291	2.1	1.1	-	-	-	-	-	-	0.5	-	-	3.7
136	-	1.8	-	-	-	-	-	-	-	1.8	-	3.6
137	-	1.8	-	-	-	-	-	-	-	1.8	-	3.6
104	-	-	-	-	-	3.6	-	-	-	-	-	3.6
105	-	-	-	-	-	3.6	-	-	-	-	-	3.6
106	-	-	-	-	-	3.6	-	-	-	-	-	3.6
107	-	-	-	-	-	3.6	-	-	-	-	-	3.6
322	-	-	-	-	-	3.2	-	-	-	-	-	3.2
323	-	-	-	-	-	3.2	-	-	-	-	-	3.2

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

Observation number	Beetroot	Carrot	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Spring onion	Swede	Turnip	Total
300	-	-	-	-	3.0	-	-	-	-	-	-	3.0
301	-	-	-	-	3.0	-	-	-	-	-	-	3.0
216	-	1.2	-	0.4	-	1.0	-	-	-	-	-	2.5
217	-	1.2	-	0.4	-	1.0	-	-	-	-	-	2.5
218	-	1.2	-	0.4	-	1.0	-	-	-	-	-	2.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables based on the 16 high-rate adult consumers is 33.5 kg y^{-1}

The observed 97.5th percentile rate based on 75 observations is 50.5 kg y^{-1}

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

Observation number	Potato
1	**131.6**
2	**131.6**
6	**131.6**
7	**131.6**
8	**131.6**
10	**131.6**
11	**131.6**
387	**130.9**
388	**130.9**
396	**100.0**
397	**100.0**
398	**100.0**
293	**91.0**
294	**91.0**
305	**78.0**
306	**78.0**
369	**75.0**
370	**75.0**
371	**75.0**
322	**72.0**
323	**72.0**
290	**65.0**
291	**65.0**
136	**62.5**
137	**62.5**
212	**60.8**
213	**60.8**
300	**47.2**
301	**47.2**
327	36.0
383	34.9
384	34.9
359	34.1
360	34.1
361	34.1
362	34.1
363	34.1
364	34.1
216	33.3
217	33.3
218	33.3
121	31.8
122	31.8
381	27.3
378	25.0
379	25.0
229	24.2
230	24.2
231	22.7
232	22.7
349	20.8
350	20.8
351	20.8
352	20.8
353	20.8

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

Observation number	Potato
354	20.8
355	20.8
356	20.8
357	20.8
287	20.0
288	20.0
289	20.0
32	18.2
33	18.2
34	18.2
233	18.2
365	13.0
366	13.0
367	13.0
368	13.0
142	10.9
143	10.9
146	10.9
115	9.1
116	9.1
385	8.7
386	8.7
375	6.8
376	6.8
224	5.4
225	5.4
226	5.4
227	5.4
285	4.1
286	4.1
112	3.0
113	3.0
114	3.0
246	3.0
247	3.0
380	2.7
248	1.2
249	1.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato based on the 29 high-rate adult consumers is 91.8 kg y^{-1}

The observed 97.5th percentile rate based on 93 observations is 131.6 kg y^{-1}

Table 23. Adults' consumption rates of domestic fruit from the LLWR terrestrial survey area (kg y^{-1})

Observation number	Apple	Blackcurrant	Blueberry	Cherry	Damson	Fig	Gooseberry	Loganberry	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	Tayberry	Total
121	**25.0**	**5.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3.4**	**4.5**	**-**	**4.1**	**-**	**42.7**
122	**25.0**	**5.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3.4**	**4.5**	**-**	**4.1**	**-**	**42.7**
375	**2.3**	**4.5**	**1.7**	**-**	**9.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11.3**	**0.7**	**-**	**29.6**
376	**2.3**	**4.5**	**1.7**	**-**	**9.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11.3**	**0.7**	**-**	**29.6**
378	**6.3**	**0.5**	**1.7**	**-**	**4.5**	**-**	**-**	**-**	**1.0**	**-**	**0.3**	**7.0**	**-**	**-**	**-**	**21.2**
379	**6.3**	**0.5**	**1.7**	**-**	**4.5**	**-**	**-**	**-**	**1.0**	**-**	**0.3**	**7.0**	**-**	**-**	**-**	**21.2**
399	**15.0**	**1.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.1**	**-**	**-**	**-**	**-**	**17.3**
400	**15.0**	**1.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.1**	**-**	**-**	**-**	**-**	**17.3**
383	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4.6**	**12.4**	**-**	**17.0**
384	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4.6**	**12.4**	**-**	**17.0**
142	**-**	**-**	**-**	**-**	**-**	**-**	**0.8**	**-**	**-**	**-**	**2.7**	**-**	**9.2**	**2.7**	**-**	**15.5**
143	**-**	**-**	**-**	**-**	**-**	**-**	**0.8**	**-**	**-**	**-**	**2.7**	**-**	**9.2**	**2.7**	**-**	**15.5**
146	**-**	**-**	**-**	**-**	**-**	**-**	**0.8**	**-**	**-**	**-**	**2.7**	**-**	**9.2**	**2.7**	**-**	**15.5**
380	**15.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**15.0**
303	2.3	-	-	-	-	-	0.5	-	-	9.1	-	-	-	2.3	-	14.1
231	-	1.4	0.5	-	-	0.5	1.4	-	-	-	1.4	-	2.3	4.5	0.5	12.3
232	-	1.4	0.5	-	-	0.5	1.4	-	-	-	1.4	-	2.3	4.5	0.5	12.3
396	8.3	-	-	-	3.3	-	-	-	-	-	-	-	-	-	-	11.7
397	8.3	-	-	-	3.3	-	-	-	-	-	-	-	-	-	-	11.7
398	8.3	-	-	-	3.3	-	-	-	-	-	-	-	-	-	-	11.7
293	2.5	-	-	0.5	-	-	0.1	-	0.5	-	0.7	0.2	1.4	3.6	-	9.5
294	2.5	-	-	0.5	-	-	0.1	-	0.5	-	0.7	0.2	1.4	3.6	-	9.5
322	3.2	-	-	-	-	-	-	-	-	3.2	-	-	1.8	-	-	8.2
323	3.2	-	-	-	-	-	-	-	-	3.2	-	-	1.8	-	-	8.2
108	5.0	-	-	-	-	-	-	-	-	2.5	-	-	-	-	-	7.5
109	5.0	-	-	-	-	-	-	-	-	2.5	-	-	-	-	-	7.5
104	5.0	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	7.3
105	5.0	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	7.3
106	5.0	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	7.3
107	5.0	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	7.3
216	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	-	7.3
217	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	-	7.3
218	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	-	7.3
387	-	1.6	-	-	-	-	-	-	-	-	1.4	-	-	3.5	-	6.4
388	-	1.6	-	-	-	-	-	-	-	-	1.4	-	-	3.5	-	6.4
311	-	1.6	-	-	-	-	1.6	-	-	-	-	1.6	-	-	-	4.8
307	1.0	-	-	-	-	-	-	0.2	0.5	2.8	-	-	-	-	-	4.5
308	1.0	-	-	-	-	-	-	0.2	0.5	2.8	-	-	-	-	-	4.5
385	-	-	-	-	-	-	-	-	-	-	-	-	1.2	3.1	-	4.2
386	-	-	-	-	-	-	-	-	-	-	-	-	1.2	3.1	-	4.2

Table 23. Adults' consumption rates of domestic fruit from the LLWR terrestrial survey area (kg y^{-1})

Observation number	Apple	Blackcurrant	Blueberry	Cherry	Damson	Fig	Gooseberry	Loganberry	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	Tayberry	Total
285	-	-	-	-	-	-	-	-	-	-	0.9	-	2.1	-	-	3.0
286	-	-	-	-	-	-	-	-	-	-	0.9	-	2.1	-	-	3.0
224	1.5	0.7	-	-	-	-	0.7	-	-	-	-	-	-	-	-	2.9
225	1.5	0.7	-	-	-	-	0.7	-	-	-	-	-	-	-	-	2.9
226	1.5	0.7	-	-	-	-	0.7	-	-	-	-	-	-	-	-	2.9
227	1.5	0.7	-	-	-	-	0.7	-	-	-	-	-	-	-	-	2.9
290	0.3	-	-	-	2.3	-	-	-	-	-	-	-	-	-	-	2.6
291	0.3	-	-	-	2.3	-	-	-	-	-	-	-	-	-	-	2.6
244	-	-	-	-	-	-	-	-	-	2.5	-	-	-	-	-	2.5
245	-	-	-	-	-	-	-	-	-	2.5	-	-	-	-	-	2.5
339	0.5	-	-	-	0.5	-	-	-	0.5	0.5	-	-	-	-	-	1.8
309	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
310	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
1	-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-	1.0
2	-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-	1.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit based on the 14 high-rate adult consumers is 22.6 kg y^{-1}

The observed 97.5th percentile rate based on 55 observations is 38.1 kg y^{-1}

Table 24. Adults' consumption rates of milk from the LLWR terrestrial survey area (l y^{-1})

Observation number	Cows' milk
365	**414.8**
366	**414.8**
367	**414.8**
368	**414.8**
108	**365.0**
109	**365.0**
390	**365.0**
391	**365.0**
392	**365.0**
393	**365.0**
394	**365.0**
395	**365.0**
121	**259.3**
122	**259.3**
112	**243.3**
113	**243.3**
114	**243.3**
25	**219.0**
26	**219.0**
27	**219.0**
233	**195.5**
19	**182.5**
20	**182.5**
30	**182.5**
31	**182.5**
104	**182.5**
105	**182.5**
106	**182.5**
107	**182.5**
369	**182.5**
370	**182.5**
371	**182.5**
229	**170.5**
230	**170.5**
383	**147.8**
384	**147.8**
248	**146.0**
249	**146.0**
142	124.5
143	124.5
146	124.5
246	114.1
247	114.1
349	103.7
350	103.7
351	103.7
352	103.7
353	103.7
354	103.7
355	103.7
356	103.7
357	103.7
311	100.0
32	69.0
33	69.0

Table 24. Adults' consumption rates of milk from the LLWR terrestrial survey area (l y^{-1})

Observation number	Cows' milk
34	69.0
216	59.4
217	59.4
218	59.4
320	14.8
321	14.8

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk based on the 38 high-rate adult consumers is 253.1 l y^{-1}

The observed 97.5th percentile rate based on 61 observations is 414.8 l y^{-1}

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

Observation number	Beef
121	**71.0**
122	**71.0**
123	**71.0**
124	**71.0**
341	**71.0**
320	**66.2**
321	**66.2**
214	**63.1**
215	**63.1**
246	**47.3**
247	**47.3**
115	**31.5**
116	**31.5**
117	**31.5**
118	**31.5**
119	**31.5**
120	**31.5**
1	**24.9**
2	**24.9**
6	**24.9**
7	**24.9**
8	**24.9**
10	**24.9**
11	**24.9**
248	18.9
249	18.9
12	15.6
13	15.6
14	15.6
15	15.6
349	13.2
350	13.2
351	13.2
352	13.2
353	13.2
354	13.2
355	13.2
356	13.2
357	13.2
381	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of cattle meat based on the 24 high-rate adult consumers is 44.6 kg y^{-1}

The observed 97.5th percentile rate based on 40 observations is 71.0 kg y^{-1}

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

Observation number	Pork
115	**25.3**
116	**25.3**
117	**25.3**
118	**25.3**
119	**25.3**
120	**25.3**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of pig meat based on the 6 high-rate adult consumers is 25.3 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 25.3 kg y^{-1}

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

Observation number	Lamb
320	**23.7**
321	**23.7**
214	**18.8**
215	**18.8**
12	**17.0**
13	**17.0**
14	**17.0**
15	**17.0**
110	**11.3**
111	**11.3**
341	**11.3**
373	**11.3**
374	**11.3**
383	**11.3**
384	**11.3**
369	**8.5**
370	**8.5**
371	**8.5**
115	5.7
116	5.7
117	5.7
118	5.7
119	5.7
120	5.7
121	5.7
122	5.7
123	5.7
124	5.7
246	5.7
247	5.7
378	5.7
379	5.7
380	5.7
1	3.0
2	3.0
6	3.0
7	3.0
8	3.0
10	3.0
11	3.0
248	2.3
249	2.3
349	2.3
350	2.3
351	2.3
352	2.3
353	2.3
354	2.3
355	2.3
356	2.3
357	2.3
381	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sheep meat based on the 18 high-rate adult consumers is 14.3 kg y^{-1}

The observed 97.5th percentile rate based on 52 observations is 22.4 kg y^{-1}

Table 28. Adults' consumption rates of poultry from the LLWR terrestrial survey area (kg y^{-1})

Observation number	Goose	Pheasant	Pigeon	Turkey	Woodcock	Total
339	**-**	**43.2**	**2.3**	**-**	**1.7**	**47.2**
121	1.1	1.4	-	0.9	-	3.3
122	1.1	1.4	-	0.9	-	3.3
340	-	2.7	-	-	-	2.7
123	1.1	-	-	0.9	-	2.0
124	1.1	-	-	0.9	-	2.0
115	-	1.4	0.3	-	-	1.7
116	-	1.4	0.3	-	-	1.7
390	-	1.5	-	-	-	1.5
391	-	1.5	-	-	-	1.5
392	-	1.5	-	-	-	1.5
393	-	1.5	-	-	-	1.5
394	-	1.5	-	-	-	1.5
395	-	1.5	-	-	-	1.5
378	-	1.4	-	-	-	1.4
379	-	1.4	-	-	-	1.4
341	-	0.9	-	-	-	0.9
104	-	0.7	-	-	-	0.7
105	-	0.7	-	-	-	0.7
106	-	0.7	-	-	-	0.7
107	-	0.7	-	-	-	0.7
248	-	0.7	-	-	-	0.7
249	-	0.7	-	-	-	0.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of poultry based on the only high-rate adult consumer is 47.2 kg y^{-1}

The observed 97.5th percentile rate based on 23 observations is 23.1 kg y^{-1}

Table 29. Adults' consumption rates of eggs from the LLWR terrestrial survey area (kg y^{-1})

Observation number	Chicken egg	Duck egg	Total
341	**41.6**	**-**	**41.6**
399	**13.3**	**26.4**	**39.8**
400	**13.3**	**26.4**	**39.8**
128	**35.6**	**-**	**35.6**
339	**35.6**	**-**	**35.6**
378	**35.6**	**-**	**35.6**
379	**35.6**	**-**	**35.6**
108	**-**	**33.9**	**33.9**
109	**-**	**33.9**	**33.9**
294	**25.3**	**-**	**25.3**
1	**20.8**	**-**	**20.8**
2	**20.8**	**-**	**20.8**
6	**20.8**	**-**	**20.8**
229	**17.8**	**-**	**17.8**
230	**17.8**	**-**	**17.8**
303	**17.8**	**-**	**17.8**
327	**17.8**	**-**	**17.8**
231	**17.1**	**-**	**17.1**
232	**17.1**	**-**	**17.1**
335	**17.1**	**-**	**17.1**
336	**17.1**	**-**	**17.1**
12	**16.4**	**-**	**16.4**
13	**16.4**	**-**	**16.4**
14	**16.4**	**-**	**16.4**
15	**16.4**	**-**	**16.4**
387	**15.7**	**-**	**15.7**
388	**15.7**	**-**	**15.7**
311	**15.0**	**-**	**15.0**
253	11.9	-	11.9
254	11.9	-	11.9
255	11.9	-	11.9
256	11.9	-	11.9
257	11.9	-	11.9
258	11.9	-	11.9
304	8.9	-	8.9
375	8.9	-	8.9
376	8.9	-	8.9
396	8.9	-	8.9
397	8.9	-	8.9
398	8.9	-	8.9
16	8.2	-	8.2
17	8.2	-	8.2
18	8.2	-	8.2
285	7.5	-	7.5
286	7.5	-	7.5
142	7.1	-	7.1
143	7.1	-	7.1
146	7.1	-	7.1
121	6.8	-	6.8
122	6.8	-	6.8
224	6.8	-	6.8
225	6.8	-	6.8
226	6.8	-	6.8
227	6.8	-	6.8
290	5.9	-	5.9

Table 29. Adults' consumption rates of eggs from the LLWR terrestrial survey area (kg y^{-1})

Observation number	Chicken egg	Duck egg	Total
291	5.9	-	5.9
216	4.5	-	4.5
217	4.5	-	4.5
218	4.5	-	4.5
309	4.1	-	4.1
310	4.1	-	4.1
104	3.4	-	3.4
105	3.4	-	3.4
106	3.4	-	3.4
107	3.4	-	3.4
293	2.9	-	2.9
380	0.3	-	0.3

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs based on the 28 high-rate adult consumers is 23.9 kg y^{-1}

The observed 97.5th percentile rate based on 67 observations is 39.8 kg y^{-1}

Table 30. Adults' consumption rates of wild/free foods from the LLWR terrestrial survey area (kg y^{-1})

Observation number	Blackberry	Crab apple	Elderberry	Elderflower	Hazel nut	Rosehip	Sloe	Total
303	**4.5**	**-**	**-**	**-**	**-**	**-**	**-**	**4.5**
12	**0.5**	**-**	**-**	**-**	**-**	**-**	**3.4**	**3.9**
13	**0.5**	**-**	**-**	**-**	**-**	**-**	**3.4**	**3.9**
112	**0.3**	**3.0**	**-**	**-**	**-**	**-**	**-**	**3.3**
113	**0.3**	**3.0**	**-**	**-**	**-**	**-**	**-**	**3.3**
114	**0.3**	**3.0**	**-**	**-**	**-**	**-**	**-**	**3.3**
339	**-**	**-**	**0.5**	**0.5**	**-**	**0.5**	**1.1**	**2.5**
290	**2.3**	**-**	**-**	**-**	**-**	**-**	**-**	**2.3**
291	**2.3**	**-**	**-**	**-**	**-**	**-**	**-**	**2.3**
253	**1.1**	**-**	**-**	**-**	**-**	**-**	**1.0**	**2.1**
254	**1.1**	**-**	**-**	**-**	**-**	**-**	**1.0**	**2.1**
255	**1.1**	**-**	**-**	**-**	**-**	**-**	**1.0**	**2.1**
256	**1.1**	**-**	**-**	**-**	**-**	**-**	**1.0**	**2.1**
257	**1.1**	**-**	**-**	**-**	**-**	**-**	**1.0**	**2.1**
258	**1.1**	**-**	**-**	**-**	**-**	**-**	**1.0**	**2.1**
1	**2.0**	**-**	**-**	**-**	**-**	**-**	**-**	**2.0**
2	**2.0**	**-**	**-**	**-**	**-**	**-**	**-**	**2.0**
121	**1.5**	**-**	**-**	**-**	**-**	**-**	**0.5**	**2.0**
122	**1.5**	**-**	**-**	**-**	**-**	**-**	**0.5**	**2.0**
246	**2.0**	**-**	**-**	**-**	**-**	**-**	**-**	**2.0**
247	**2.0**	**-**	**-**	**-**	**-**	**-**	**-**	**2.0**
396	1.5	-	-	-	-	-	-	1.5
397	1.5	-	-	-	-	-	-	1.5
398	1.5	-	-	-	-	-	-	1.5
378	-	-	-	0.7	-	-	0.7	1.4
379	-	-	-	0.7	-	-	0.7	1.4
376	0.6	-	-	0.1	-	-	0.6	1.2
328	1.1	-	-	-	-	-	-	1.1
329	1.1	-	-	-	-	-	-	1.1
375	0.6	-	-	-	-	-	0.6	1.1
322	0.9	-	-	-	-	-	-	0.9
323	0.9	-	-	-	-	-	-	0.9
104	-	-	-	-	-	-	0.8	0.8
105	-	-	-	-	-	-	0.8	0.8
106	-	-	-	-	-	-	0.8	0.8
107	-	-	-	-	-	-	0.8	0.8
369	0.8	-	-	-	-	-	-	0.8
370	0.8	-	-	-	-	-	-	0.8
371	0.8	-	-	-	-	-	-	0.8
30	0.7	-	-	-	-	-	-	0.7
31	0.7	-	-	-	-	-	-	0.7
110	0.7	-	-	-	-	-	-	0.7
111	0.7	-	-	-	-	-	-	0.7
293	0.7	-	-	-	-	-	-	0.7
294	0.7	-	-	-	-	-	-	0.7
399	-	-	-	-	-	-	0.6	0.6
400	-	-	-	-	-	-	0.6	0.6
244	0.2	-	-	-	0.2	-	-	0.5
245	0.2	-	-	-	0.2	-	-	0.5
16	0.4	-	-	-	-	-	-	0.4
17	0.4	-	-	-	-	-	-	0.4
18	0.4	-	-	-	-	-	-	0.4
380	-	-	-	-	-	-	0.3	0.3

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild/free foods based on the 21 high-rate adult consumers is 2.6 kg y^{-1}

The observed 97.5th percentile rate based on 53 observations is 3.9 kg y^{-1}

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

Observation number	Honey
378	**0.5**
379	**0.5**
104	**0.2**
105	**0.2**
106	**0.2**
107	**0.2**
108	**0.2**
109	**0.2**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of honey based on the 8 high-rate adult consumers is 0.3 kg y^{-1}

The observed 97.5th percentile rate based on 8 observations is 0.5 kg y^{-1}

Table 32. Adults' consumption rates of wild fungi from the LLWR terrestrial survey area (kg y^{-1})

Observation number	Mushrooms
339	**6.4**
375	1.2
376	1.2
290	1.0
291	1.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild fungi based on the only high-rate adult consumer is 6.4 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 5.8 kg y^{-1}

Table 33. Adults' consumption rates of venison from the LLWR terrestrial survey area (kg y^{-1})

Observation number	Venison
339	**12.0**
399	**5.0**
400	**5.0**
378	3.4
379	3.4
340	1.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of venison based on the 3 high-rate adult consumers is 7.3 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 11.1 kg y^{-1}

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

Child age group (6 - 15 years old)

Observation number	Age	Brussel sprout	Cabbage	Cauliflower	Courgette	Cucumber	Kale	Lettuce	Total
372	**13**	**6.5**	**6.5**	**-**	**-**	**-**	**-**	**-**	**13.0**
219	**9**	**-**	**-**	**0.7**	**-**	**5.1**	**1.3**	**-**	**7.1**
358	15	-	2.7	-	-	-	-	-	2.7
144	9	-	1.7	-	-	-	-	0.4	2.1
145	11	-	1.7	-	-	-	-	0.4	2.1
389	6	-	-	-	2.0	-	-	-	2.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for the child age group based upon the 2 high-rate consumers is 10.1 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 12.3 kg y^{-1}

Table 35. Children's consumption rates of other vegetables from the LLWR terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Broad bean	Pea	Runner bean	Tomato	Total
219	**9**	**0.9**	**0.9**	**2.7**	**9.6**	**14.1**
389	6	-	-	-	3.4	3.4

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of other vegetables for the child age group based upon the only high-rate consumer is 14.1 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 13.9 kg y^{-1}

Table 36. Children's consumption rates of root vegetables from the LLWR terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Beetroot	Carrot	Garlic	Leek	Onion	Parsnip	Swede	Turnip	Total
372	**13**	**-**	**6.5**	**-**	**-**	**-**	**-**	**6.5**	**-**	**13.0**
144	**9**	**0.6**	**2.7**	**-**	**-**	**2.2**	**0.5**	**-**	**0.8**	**6.8**
145	**11**	**0.6**	**2.7**	**-**	**-**	**2.2**	**0.5**	**-**	**0.8**	**6.8**
358	**15**	**-**	**2.7**	**-**	**-**	**-**	**-**	**-**	**2.7**	**5.4**
389	6	-	-	-	3.1	-	-	-	-	3.1
219	9	-	0.9	0.3	-	0.7	-	-	-	1.9

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables for the child age group based upon the 4 high-rate consumers is 8.0 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 12.2 kg y^{-1}

Table 37. Children's and infants' consumption rates of potato from the LLWR terrestrial area area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Potato
372	**13**	**75.0**
389	**6**	**65.5**
219	9	25.0
358	15	20.8
144	9	10.9
145	11	10.9
228	14	5.4
250	13	1.2
251	11	1.2
252	11	1.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato for the child age group based upon the 2 high-rate consumers is 70.2 kg y^{-1}

The observed 97.5th percentile rate based on 10 observations is 72.9 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Potato
3	**3**	**19.7**
4	**2**	**19.7**
5	**2**	**19.7**
9	**3**	**19.7**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato for the infant age group based upon the 4 high-rate consumers is 19.7 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 19.7 kg y^{-1}

Table 38. Children's consumption rates of domestic fruit from the LLWR terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Apple	Blackcurrant	Gooseberry	Raspberry	Rhubarb	Strawberry	Total
144	**9**	**-**	**-**	**0.8**	**2.7**	**9.2**	**2.7**	**15.5**
145	**11**	**-**	**-**	**0.8**	**2.7**	**9.2**	**2.7**	**15.5**
219	**9**	**-**	**-**	**-**	**-**	**-**	**5.4**	**5.4**
389	6	-	1.2	-	1.0	-	2.6	4.8
228	14	1.5	0.7	0.7	-	-	-	2.9

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for the child age group based upon the 3 high-rate consumers is 12.1 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 15.5 kg y^{-1}

Table 39. Children's and infants' consumption rates of milk from the LLWR terrestrial survey area (l y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Milk
28	**11**	**219.0**
29	**6**	**219.0**
372	**13**	**182.5**
250	**13**	**146.0**
251	**11**	**146.0**
252	**11**	**146.0**
144	**9**	**124.5**
145	**11**	**124.5**
358	**15**	**103.7**
219	9	44.6

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk for the child age group based upon the 9 high-rate consumers is 156.8 l y^{-1}

The observed 97.5th percentile rate based on 10 observations is 219.0 l y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Milk
21	**3**	**182.5**
22	**5**	**182.5**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk for the infant age group based upon the 2 high-rate consumers is 182.5 l y^{-1}

The observed 97.5th percentile rate based on 2 observations is 182.5 l y^{-1}

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

Child age group (6 - 15 year olds)

Observation number	Age	Beef
250	**13**	**18.9**
251	**11**	**18.9**
252	**11**	**18.9**
358	**15**	**13.2**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of cattle meat for the child age group based upon the 4 high-rate consumers is 17.5 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 18.9 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Beef
3	**3**	**3.7**
4	**2**	**3.7**
5	**2**	**3.7**
9	**3**	**3.7**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of cattle meat for the infant age group based upon the 4 high-rate consumers is 3.7 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 3.7 kg y^{-1}

Table 41. Children's and infants' consumption rates of sheep meat from the LLWR terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Lamb
372	**13**	**8.5**
358	15	2.3
250	13	2.3
251	11	2.3
252	11	2.3

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of sheep meat for the child age group based upon the only high-rate consumer is 8.5 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 7.9 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Lamb
3	**3**	**0.4**
4	**2**	**0.4**
5	**2**	**0.4**
9	**3**	**0.4**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sheep meat for the infant age group based upon the 4 high-rate consumers is 0.4 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 0.4 kg y^{-1}

Table 42. Children's and infants' consumption rates of eggs from the LLWR terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Chicken egg
389	**6**	**7.8**
144	**9**	**7.1**
145	**11**	**7.1**
228	**14**	**6.8**
219	**9**	**3.4**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for the child age group based upon the 5 high-rate consumers is 6.5 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 7.8 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Chicken egg
3	**3**	**5.9**
4	**2**	**5.9**
5	**2**	**5.9**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for the infant age group based upon the 3 high-rate consumers is 5.9 kg y^{-1}

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

Table 43. Children's and infants' consumption rates of wild/free foods from the LLWR terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Blackberry
372	13	0.8

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of wild/free foods for the child age group based upon the only high-rate consumer is 0.8 kg y^{-1}

The observed 97.5th percentile rate is not applicable for 1 observation

Infant age group (0 - 5 years old)

Observation number	Age	Blackberry
3	3	2.0
4	2	2.0
5	2	2.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild/free foods for the infant age group based upon the 3 high-rate consumers is 2.0 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 2.0 kg y^{-1}

Table 44. Percentage contribution each food type makes to its terrestrial food group for adults

Green vegetables	
Cabbage	30.08 %
Courgette	17.85 %
Cucumber	11.72 %
Brussel sprout	9.37 %
Cauliflower	8.63 %
Broccoli	5.29 %
Lettuce	4.28 %
Marrow	3.15 %
Artichoke	2.57 %
Pak choi	2.39 %
Spinach	1.98 %
Herbs	1.62 %
Kale	1.07 %
Other vegetables	
Tomato	51.26 %
Runner bean	30.13 %
Pea	10.39 %
Broad bean	3.16 %
French bean	3.10 %
Mangetout	1.38 %
Sweetcorn	0.58 %
Root vegetables	
Carrot	32.21 %
Onion	18.69 %
Beetroot	14.33 %
Swede	11.93 %
Turnip	11.35 %
Leek	8.90 %
Parsnip	1.79 %
Garlic	0.39 %
Spring onion	0.29 %
Fennel	0.06 %
Radish	0.05 %
Potato	
Potato	100.00 %
Domestic fruit	
Apple	34.30 %
Strawberry	17.08 %
Rhubarb	15.33 %
Damson	7.51 %
Blackcurrant	6.04 %
Plum	5.62 %
Raspberry	4.72 %
Redcurrant	4.47 %
Gooseberry	2.20 %
Blueberry	1.36 %
Pear	0.78 %
Fig	0.18 %
Cherry	0.18 %
Tayberry	0.16 %
Loganberry	0.08 %
Milk	
Cows' milk	100.00 %
Cattle meat	
Beef	100.00 %
Pig meat	
Pork	100.00 %
Sheep meat	
Lamb	100.00 %
Poultry	
Pheasant	84.37 %
Goose	5.46 %
Turkey	4.35 %
Pigeon	3.71 %
Woodcock	2.11 %
Eggs	
Chicken egg	87.26 %
Duck egg	12.74 %
Wild/free foods	
Blackberry	57.23 %
Sloe	27.44 %
Crab apple	11.27 %
Elderflower	2.36 %
Hazel nut	0.56 %
Rosehip	0.56 %
Elderberry	0.56 %
Honey	
Honey	100.00 %
Wild fungi	
Mushrooms	100.00 %
Venison	
Venison	100.00 %

Notes

Food types in emboldened italics were monitored by FSA in 2011 (EA, FSA, NIEA and SEPA, 2012). Duck was also monitored.

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

Table 45. Direct radiation occupancy rates for adults, children and infants in the LLWR area (h y^{-1})

Observation Number	Sex	Age (years)	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
0 to 0.25 km zone						
288	M	72	Residing	8156	416	8572
290	F	63	Residing	7876	624	8500
287	F	72	Residing	8004	402	8406
213	M	80	Residing	5880	2520	8400
305	F	76	Residing	7687	532	8219
212	F	78	Residing	7246	938	8184
150	F	57	Residing	7674	350	8024
285	F	74	Residing	7675	231	7906
286	M	75	Residing	7675	231	7906
291	M	66	Residing	6504	1056	7560
293	F	U	Residing	6986	518	7504
294	M	U	Residing	6986	518	7504
149	M	60	Residing	6449	1050	7499
322	M	64	Residing	6144	1344	7488
323	F	64	Residing	6144	1344	7488
337	F	64	Residing	6940	416	7356
300	F	68	Residing	5569	1001	6570
301	M	72	Residing	5569	1001	6570
308	M	58	Residing	6201	260	6461
307	F	53	Residing	6186	260	6446
289	F	38	Residing	5907	204	6111
136	F	56	Residing	4964	1080	6044
327	F	U	Residing	5110	730	5840
137	M	60	Residing	4466	1080	5546
338	M	66	Residing	4722	234	4956
306	M	46	Residing	4506	156	4662
141	M	U	Working	1513	132	1645
295	F	13	Visiting	1210	133	1343
296	F	11	Visiting	1210	133	1343
302	M	50	Visiting	749	480	1229
297	M	U	Visiting	270	18	288
298	F	U	Visiting	270	18	288
299	F	1	Visiting	270	18	288
292	M	U	Visiting	138	6	144
>0.25 to 0.5 km zone						
230	F	77	Residing	7926	730	8656
229	M	77	Residing	6844	1760	8604
214	F	65	Residing and farming	5178	3400	8578
147	F	64	Residing	7502	730	8232
303	F	72	Residing	8095	86	8181
148	M	58	Residing	6978	1095	8073
304	M	74	Residing	6376	1271	7647
233	F	76	Residing	6236	1138	7374
111	F	56	Residing and farming	6275	913	7188
218	F	36	Residing	6408	294	6702
110	M	57	Residing and farming	5262	1350	6612
219	M	9	Residing	5496	840	6336
335	M	U	Residing	5004	875	5879
336	F	U	Residing	5004	875	5879
216	F	30	Residing	5099	511	5610
220	M	0.2	Residing	5099	511	5610
227	M	18	Residing	4896	672	5568
228	M	14	Residing	4512	1056	5568
225	M	47	Residing	4849	700	5549

Table 45. Direct radiation occupancy rates for adults, children and infants in the LLWR area (h y^{-1})

Observation Number	Sex	Age (years)	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
226	M	21	Residing	4849	700	5549
224	F	54	Residing	4599	700	5299
217	M	24	Residing	4483	686	5169
215	M	81	Farming	1710	3400	5110
328	M	70	Residing	2056	924	2980
329	F	74	Residing	2056	924	2980
221	M	64	Visiting	1274	490	1764
222	F	60	Visiting	1274	490	1764
223	M	54	Visiting	1470	294	1764
330	M	47	Visiting	1144	104	1248
331	F	40	Visiting	1144	104	1248
332	M	8	Visiting	1144	104	1248
333	M	6	Visiting	1144	104	1248
334	M	2	Visiting	1144	104	1248
25	M	U	Farming	-	183	183
30	M	U	Farming	-	183	183
>0.5 to 1 km zone						
231	M	74	Residing	7074	1150	8224
232	F	72	Residing	7074	1150	8224
112	M	62	Residing and farming	3821	4200	8021
113	M	25	Residing and farming	3821	4200	8021
114	F	55	Residing and farming	3821	4200	8021
142	F	U	Residing and working	6429	1575	8004
325	M	75	Residing	7452	351	7803
128	F	77	Residing	6940	674	7614
326	F	76	Residing	6613	878	7491
311	M	82	Residing	6492	924	7416
310	F	76	Residing	7112	213	7325
144	F	9	Residing	5836	900	6736
145	F	11	Residing	5836	900	6736
143	M	U	Residing	5674	875	6549
309	M	77	Residing	5789	213	6002
122	M	U	Farming	-	183	183
123	M	U	Farming	-	183	183
19	M	U	Farming	-	180	180
23	M	U	Farming	-	180	180
24	M	U	Farming	-	180	180
234	M	65	Shellfish collecting	-	75	75
159	M	50	Angling and bait digging	-	40	40
240	M	29	Shellfish collecting	-	30	30
202	M	77	Shellfish collecting and beachcombing	-	20	20
236	M	17	Shellfish collecting and angling	-	20	20
237	M	14	Angling	-	20	20
238	M	13	Shellfish collecting and angling	-	20	20
239	F	9	Angling and playing	-	20	20
235	F	61	Angling	-	12	12

Notes

U - Unknown

Table 46. Analysis of direct radiation occupancy rates for adults, children and infants in the LLWR area

Number of hours	Number of observations
0 - 0.25 km zone	
>8000 to 8760	7
>7000 to 8000	9
>6000 to 7000	6
>5000 to 6000	2
>4000 to 5000	2
>3000 to 4000	0
>2000 to 3000	0
>1000 to 2000	4
0 to 1000	4
0 to 8760	**34**
>0.25 - 0.5 km zone	
>8000 to 8760	6
>7000 to 8000	3
>6000 to 7000	3
>5000 to 6000	11
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	2
>1000 to 2000	8
0 to 1000	2
0 to 8760	**35**
>0.5 - 1 km zone	
>8000 to 8760	6
>7000 to 8000	5
>6000 to 7000	4
>5000 to 6000	0
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	0
>1000 to 2000	0
0 to 1000	14
0 to 8760	**29**

Table 47. Gamma dose rate measurements for the LLWR direct radiation survey (μGy h^{-1})

Residences

Location	Indoor substrate	Indoor gamma dose rate at 1 metre[a]	Outdoor substrate	Outdoor gamma dose rate at 1 metre[a]
Residence 1	-	-	Grass	0.079
Residence 2	Concrete	0.098	Grass	0.082
Residence 3	Wood	0.070	Grass	0.069
Residence 4	Wood	0.108	Grass	0.082
Residence 5	-	-	Concrete	0.063
Residence 6	Wood	0.083	Grass	0.072
Residence 7	Concrete	0.077	Grass	0.067
Residence 8	Wood	0.107	Grass	0.067
Residence 9	Concrete	0.091	Grass	0.062
Residence 10	Wood	0.105	Grass	0.064
Residence 11	Concrete	0.105	Concrete	0.067
Residence 12	Concrete	0.089	Grass	0.067
Residence 13	Concrete	0.102	Grass	0.066
Residence 14	Wood	0.099	Grass	0.064
Residence 15	Concrete	0.111	Grass	0.068
Residence 16	-	-	Concrete	0.090
Residence 17	Concrete	0.087	Grass	0.087
Residence 18	Wood	0.109	Grass	0.093
Residence 19	-	-	Stones	0.092
Residence 20	Concrete	0.091	Grass	0.080
Residence 21	Wood	0.111	Grass	0.071
Residence 22	Wood	0.110	Grass	0.075
Residence 23	Wood	0.114	Grass	0.078
Residence 24	Concrete	0.074	Grass	0.081
Residence 25	Concrete	0.087	Grass	0.072
Residence 26	-	-	Grass	0.063
Residence 27	Concrete	0.132	Grass	0.080
Residence 28	Concrete	0.131	Grass	0.076
Residence 29	Concrete	0.116	Grass	0.076
Residence 30	Wood	0.110	Grass	0.075

Notes

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

Backgrounds

	Location	NGR	Substrate	Background gamma dose rate at 1 metre
Background 1	Eskmeals	SD 086 906	Grass	0.077
Background 2	Bolton Head Park	NY 089 042	Grass	0.067
Background 3	Santon Bridge	NY 115 013	Grass	0.081

Table 48. Combinations of adult pathways for consideration in dose assessments in the LLWR area

Combination number	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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		x		x		x	x									x							
2						x		x	x	x	x	x		x	x	x	x																x
3						x	x	x	x		x						x															x	x
4	x	x	x																			x				x	x	x	x		x		
5																														x	x		
6																										x				x			
7	x	x	x																					x		x	x		x		x		x
8						x	x	x		x	x	x			x	x	x	x								x			x				
9														x			x															x	x
10				x		x		x	x			x	x	x	x																		
11			x			x		x	x	x	x	x		x	x	x	x										x		x				
12						x	x	x	x	x	x					x										x						x	x
13	x		x																				x			x	x		x				
14	x	x	x																			x		x			x		x		x		
15	x	x		x																							x	x			x		
16	x	x		x																			x		x			x	x		x		
17	x											x		x												x					x	x
18	x	x				x	x		x		x					x										x					x	x
19	x	x	x			x	x	x	x	x						x										x					x	x
20	x	x	x																			x				x	x	x	x				x
21	x																					x	x			x	x		x				
22	x	x			x											x	x								x								
23	x	x																				x		x		x			x				
24	x					x	x	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	x									x						x	x
27	x	x		x																						x							
28	x	x		x						x					x	x	x		x	x					x								
29				x											x					x	x				x				x				
30						x	x	x	x	x						x	x		x							x							
31						x	x	x	x	x				x	x	x	x	x		x						x							
32																									x	x							
33						x	x	x	x	x	x			x																			
34				x							x				x																		

Notes

The food groups and external exposure 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: potato, domestic fruit, cattle meat, sheep meat, eggs, wild/free foods and intertidal occupancy over sand.

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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	M	U	-	-	-	-	-	-	-	-	**131.6**	1.0	-	**24.9**	-	3.0	-	**20.8**	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	F	U	-	-	-	-	-	-	-	-	**131.6**	1.0	-	**24.9**	-	3.0	-	**20.8**	**2.0**	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-
6	M	U	-	-	-	-	-	-	-	-	**131.6**	-	-	**24.9**	-	3.0	-	**20.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	M	U	-	-	-	-	-	-	-	-	**131.6**	-	-	**24.9**	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	F	U	-	-	-	-	-	-	-	-	**131.6**	-	-	**24.9**	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	M	U	-	-	-	-	-	-	-	-	**131.6**	-	-	**24.9**	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	F	U	-	-	-	-	-	-	-	-	**131.6**	-	-	**24.9**	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	F	U	-	-	-	-	-	-	-	-	-	-	-	15.6	-	**17.0**	-	**16.4**	**3.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	M	U	-	-	-	-	-	-	-	-	-	-	-	15.6	-	**17.0**	-	**16.4**	**3.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	M	U	-	-	-	-	-	-	-	-	-	-	-	15.6	-	**17.0**	-	**16.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	M	U	-	-	-	-	-	-	-	-	-	-	-	15.6	-	**17.0**	-	**16.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	M	U	-	-	-	-	-	-	-	-	-	-	**182.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180
20	F	U	-	-	-	-	-	-	-	-	-	-	**182.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180
24	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180
25	M	U	-	-	-	-	-	-	-	-	-	-	**219.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183
26	F	U	-	-	-	-	-	-	-	-	-	-	**219.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	M	16	-	-	-	-	-	-	-	-	-	-	**219.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	M	U	-	-	-	-	-	-	-	-	-	-	**182.5**	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183
31	F	U	-	-	-	-	-	-	-	-	-	-	**182.5**	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	M	U	-	-	-	-	-	-	-	9.0	18.2	-	69.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	F	U	-	-	-	-	-	-	-	9.0	18.2	-	69.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	M	U	-	-	-	-	-	-	-	9.0	18.2	-	69.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	-	-	-	-	-	-	-
36	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	-	-	-	-	-	-	-
37	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	-	-	-	-	-	-	-
38	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-
39	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-
42	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117	-	-	-	-	-	-	-
44	M	U	11.8	**19.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	2000	-	-
45	F	U	11.8	**19.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
46	M	U	11.8	**19.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	2000	-	-
48	M	U	**59.9**	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	-	-	1800	-	-
49	F	U	-	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	-	-	1800	-	-
51	M	U	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	175	-	-	1200	-	-
52	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	175	-	-	1200	-	-
53	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	197	-	-	1519	-	-
54	M	U	14.2	**21.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	197	-	-	1519	-	-
55	M	U	14.2	**21.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	197	-	-	1519	-	-
56	M	U	14.2	**21.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	197	-	-	1519	-	-
57	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	130	-	-
58	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	130	-	-
59	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	130	-	-
60	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	130	-	-
61	M	U	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-
62	F	U	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	M	21	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	M	21	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	M	U	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	F	U	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	263	-	-	1750	-	-
71	M	U	-	**47.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	263	-	-	1750	-	-
72	F	U	-	**47.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-
74	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-	-
75	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-	-
76	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-	-
79	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-
80	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-
81	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-	-	-	-	-	-
82	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-	-	-	-	-	-
83	M	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	5	-	-	-
86	F	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
87	M	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-
88	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-
89	M	U	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	-	-	450	-	-
90	M	U	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	-	-	450	-	-
91	M	U	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	-	-	450	-	-
92	M	U	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	-	-	450	-	-
93	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	-	-	630	-	-
94	M	U	10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	-	-	630	-	-
95	F	U	10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
96	M	U	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
97	F	U	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
98	M	28	**26.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**400**	-	46	-	-	46	-	-	-	-
99	F	28	**26.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	M	55	**26.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
101	F	56	**26.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
102	M	61	**26.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
103	F	63	**26.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
104	F	U	-	-	-	-	-	**13.8**	6.8	3.6	-	7.3	**182.5**	-	-	-	0.7	3.4	0.8	**0.2**	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-
105	M	U	-	-	-	-	-	**13.8**	6.8	3.6	-	7.3	**182.5**	-	-	-	0.7	3.4	0.8	**0.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
106	M	U	-	-	-	-	-	**13.8**	6.8	3.6	-	7.3	**182.5**	-	-	-	0.7	3.4	0.8	**0.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
107	M	U	-	-	-	-	-	**13.8**	6.8	3.6	-	7.3	**182.5**	-	-	-	0.7	3.4	0.8	**0.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108	M	U	-	-	-	-	-	-	-	-	-	7.5	**365.0**	-	-	-	-	**33.9**	-	**0.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
109	F	U	-	-	-	-	-	-	-	-	-	7.5	**365.0**	-	-	-	-	**33.9**	-	**0.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
110	M	57	-	-	-	-	-	-	-	-	-	-	-	-	-	**11.3**	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5262	1350
111	F	56	-	-	-	-	-	-	-	-	-	-	-	-	-	**11.3**	-	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6275	913
112	M	62	-	-	-	-	-	7.7	**12.5**	4.2	3.0	-	**243.3**	-	-	-	-	-	**3.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3821	4200
113	M	25	-	-	-	-	-	7.7	**12.5**	4.2	3.0	-	**243.3**	-	-	-	-	-	**3.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3821	4200
114	F	55	-	-	-	-	-	7.7	**12.5**	4.2	3.0	-	**243.3**	-	-	-	-	-	**3.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3821	4200
115	M	U	-	-	-	1.4	-	9.2	-	15.0	9.1	-	-	**31.5**	**25.3**	5.7	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
116	M	U	-	-	-	1.4	-	9.2	-	15.0	9.1	-	-	**31.5**	**25.3**	5.7	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
117	F	U	-	-	-	-	-	-	-	-	-	-	-	**31.5**	**25.3**	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
118	M	U	-	-	-	-	-	-	-	-	-	-	-	**31.5**	**25.3**	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
119	M	U	-	-	-	-	-	-	-	-	-	-	-	**31.5**	**25.3**	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	M	U	-	-	-	-	-	-	-	-	-	-	-	**31.5**	**25.3**	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
121	F	U	-	-	0.5	-	-	2.0	-	6.6	31.8	**42.7**	**259.3**	**71.0**	-	5.7	3.3	6.8	**2.0**	-	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-	-
122	M	U	-	-	-	-	-	2.0	-	6.6	31.8	**42.7**	**259.3**	**71.0**	-	5.7	3.3	6.8	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183
123	M	U	-	-	-	-	-	-	-	-	-	-	-	**71.0**	-	5.7	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183
124	F	U	-	-	-	-	-	-	-	-	-	-	-	**71.0**	-	5.7	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
125	M	71	**23.8**	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	134	52	-	-	-	-	-	-
126	F	68	**23.8**	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
127	F	U	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
128	F	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**35.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6940	674
129	M	76	13.7	5.0	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	309	451	80	93	-	188	-	-
130	F	74	13.7	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
131	M	54	13.0	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	188	-	88	-	188	-	-
132	F	52	13.0	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
133	M	73	**57.8**	9.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-
134	F	74	**57.8**	9.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
135	F	43	-	**23.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
136	F	56	-	-	-	-	-	5.4	-	3.6	**62.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	-	-	-	-	-	4964	1080
137	M	60	-	-	-	-	-	5.4	-	3.6	**62.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	-	-	-	-	-	4466	1080
138	M	U	**38.1**	**53.0**	**7.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	**1026**	231	**1290**	69	-	282	-	-
139	M	U	**23.6**	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	398	-	-	398	-	-
140	F	U	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
141	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1513	132	
142	F	U	-	-	-	-	-	2.1	-	6.8	10.9	**15.5**	124.5	-	-	-	-	7.1	-	-	-	-	-	-	-	-	-	75	-	-	-	-	-	6429	1575
143	M	U	-	-	-	-	-	2.1	-	6.8	10.9	**15.5**	124.5	-	-	-	-	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5674	875
146	M	U	-	-	-	-	-	2.1	-	6.8	10.9	**15.5**	124.5	-	-	-	-	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
147	F	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7502	730	
148	M	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6978	1095	
149	M	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6449	1050	
150	F	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7674	350	
151	M	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135	-	-	90	-	-	-	-	-	-	-
152	F	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-
153	M	61	19.0	3.3	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	-	**150**	-	-	**600**	-	38	-	-	-	-
154	F	62	19.0	3.3	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
155	M	34	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	-	-	300	**580**	-	138	-	-	-	-
156	F	36	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
159	M	50	5.7	1.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	277	162	-	58	-	52	-	40
160	F	48	5.7	1.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
161	M	19	5.7	1.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
162	M	62	17.7	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**164**	-	**214**	-	-	419	-	173	-	-	-	-
163	F	59	17.7	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
164	M	67	**34.5**	**20.0**	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**208**	-	100	-	-	**1398**	65	232	-	455	-	-
169	M	45	6.8	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	30	-	-	120	-	60	-	-	-	-
170	F	44	6.8	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
171	M	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**200**	-	40	-	-	220	-	200	-	-	-	-
172	M	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-
175	M	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-	-	-	-	-
176	F	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-	-	-	-	-
179	F	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**548**	-	-	-	-	-	-	-
180	F	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**400**	330	-	-	-	-	-	-
181	F	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**400**	330	-	-	-	-	-	-
182	M	32	7.3	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	2	416	-	2	-	-	-	-
183	F	36	7.3	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
184	M	U	9.1	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	1248	-	-
185	M	U	9.1	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	1248	-	-
186	M	U	9.1	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	1248	-	-
187	M	58	**41.0**	3.0	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	214	-	154	-	-	-	-
188	F	57	20.5	2.0	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-	-
194	F	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**520**	-	-	-	-	-	-	-
195	M	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**548**	-	-	-	-	-	-	-
196	F	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**730**	-	-	-	-	-	-	-
197	M	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**788**	-	-	-	-	-	-	-
198	F	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-
199	M	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	243	-	-	-	-	-	-	-
200	M	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	46	-	-	-	-	-	-
201	F	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	46	-	-	-	-	-	-
202	M	77	8.2	6.6	**4.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	140	-	10	-	-	-	20
203	M	65	17.2	3.5	-	**11.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	364	20	-	-	80	-	-
204	F	52	17.2	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
205	M	81	17.7	**17.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1095**	-	-	-	-	320	-	-	540	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
206	M	U	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450	-	-	540	-	-
207	F	U	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
208	F	U	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
209	M	48	13.2	**29.4**	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	2	**740**	6	-	1000	-	-
210	F	48	13.2	**29.4**	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
211	F	18	13.2	**29.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
212	F	78	-	-	-	-	-	**13.6**	5.0	**27.2**	**60.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7246	938
213	M	80	-	-	-	-	-	**13.6**	5.0	**27.2**	**60.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5880	2520
214	F	65	0.5	-	-	-	-	-	-	-	-	-	-	**63.1**	-	**18.8**	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	5178	3400
215	M	81	0.5	-	-	-	-	-	-	-	-	-	-	**63.1**	-	**18.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1710	3400
216	F	30	-	-	-	-	-	9.5	**25.2**	2.5	33.3	7.3	59.4	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	36	-	-	-	-	5099	511
217	M	24	-	-	-	-	-	9.5	**25.2**	2.5	33.3	7.3	59.4	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	36	-	-	-	-	4483	686
218	F	36	-	-	-	-	-	9.5	**25.2**	2.5	33.3	7.3	59.4	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	36	-	-	-	-	6408	294
221	M	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	-	-	-	1274	490
222	F	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	-	-	-	1274	490
223	M	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	-	-	-	1470	294
224	F	54	-	-	-	-	-	-	-	-	5.4	2.9	-	-	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4599	700
225	M	47	-	-	-	-	-	-	-	-	5.4	2.9	-	-	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4849	700
226	M	21	-	-	-	-	-	-	-	-	5.4	2.9	-	-	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4849	700
227	M	18	-	-	-	-	-	-	-	-	5.4	2.9	-	-	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4896	672
229	M	77	2.0	0.5	-	-	-	1.5	**17.6**	-	24.2	-	**170.5**	-	-	-	-	**17.8**	-	-	-	-	-	-	-	-	-	**639**	-	-	-	-	6844	1760
230	F	77	2.0	0.5	-	-	-	1.5	**17.6**	-	24.2	-	**170.5**	-	-	-	-	**17.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7926	730
231	M	74	8.2	0.5	0.5	-	-	10.5	**13.3**	**31.4**	22.7	12.3	-	-	-	-	-	**17.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7074	1150
232	F	72	**34.0**	0.5	0.5	-	-	10.5	**13.3**	**31.4**	22.7	12.3	-	-	-	-	-	**17.1**	-	-	-	-	-	-	-	-	-	100	-	-	-	-	7074	1150
233	F	76	-	-	-	-	-	**20.2**	**14.0**	8.1	18.2	-	**195.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-	-	6236	1138
234	M	65	**46.7**	13.2	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	-	-	-	**360**	**927**	360	**842**	-	-	-	75
235	F	61	**64.5**	**48.6**	**11.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	196	68	48	-	-	-	-	12
236	M	16	8.2	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	148	216	-	80	-	-	-	20
240	M	29	**27.2**	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**360**	**791**	360	**791**	-	-	-	30
241	M	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**875**	-	**875**	-	-	-	-	-
242	M	U	14.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**80**	20	-	-	100	**476**	-	260	-	-	-	-
243	F	U	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
244	F	U	-	-	-	-	-	-	-	-	-	2.5	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
245	M	U	-	-	-	-	-	-	-	-	-	2.5	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
246	M	U	-	-	-	-	-	-	-	-	3.0	-	114.1	**47.3**	-	5.7	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
247	F	U	-	-	-	-	-	-	-	-	3.0	-	114.1	**47.3**	-	5.7	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
248	M	U	-	-	-	-	-	-	-	-	1.2	-	**146.0**	18.9	-	2.3	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
249	F	U	-	-	-	-	-	-	-	-	1.2	-	**146.0**	18.9	-	2.3	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
253	M	54	7.2	2.8	-	-	**1.9**	-	-	-	-	-	-	-	-	-	-	11.9	**2.1**	-	-	-	-	-	-	-	**312**	-	-	-	-	-	-	-	-
254	F	51	7.2	2.8	-	-	**1.9**	-	-	-	-	-	-	-	-	-	-	11.9	**2.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
255	M	31	-	-	-	-	**1.9**	-	-	-	-	-	-	-	-	-	-	11.9	**2.1**	-	-	-	-	-	-	-	**312**	-	-	-	-	-	-	-	-
256	F	U	-	-	-	-	**1.9**	-	-	-	-	-	-	-	-	-	-	11.9	**2.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
257	F	23	-	-	-	-	**1.9**	-	-	-	-	-	-	-	-	-	-	11.9	**2.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
258	F	21	-	-	-	-	**1.9**	-	-	-	-	-	-	-	-	-	-	11.9	**2.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
259	M	45	7.7	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	-	**260**	-	**611**	-	-	**520**	-	-	-	-
260	F	47	7.7	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
261	F	26	7.7	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
262	F	22	7.7	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
263	M	28	7.7	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
264	M	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	-	**260**	-	**611**	-	-	**520**	-	-	-	-
265	M	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	-	-	-	**611**	-	-	260	-	-	-	-
266	M	66	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**156**	-	48	-	156	-	-	156	-	-	-	-
267	M	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**104**	-	**156**	-	312	-	-	104	-	-	-	-
268	M	49	10.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**104**	-	**156**	-	312	-	-	104	-	-	-	-
269	M	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-
270	F	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188	-	-	-	-	-	-	-
271	M	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-	-	-	-	-	-
272	F	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-	-	-	-	-	-
275	F	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-
276	F	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-
277	F	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-
278	M	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-
279	F	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-
282	M	52	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	83	-	99	-	-	-	-
283	M	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**456**	-	-	-	-	-	-	-
284	F	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	228	-	-	-	-	-	-	-
285	F	74	3.4	-	-	-	-	**18.9**	**15.5**	11.9	4.1	3.0	-	-	-	-	-	7.5	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	7675	231
286	M	75	3.4	-	-	-	-	**18.9**	**15.5**	11.9	4.1	3.0	-	-	-	-	-	7.5	-	-	-	-	-	-	-	-	-	40	-	-	-	-	21	7675	231

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
287	F	72	-	-	-	-	-	-	-	6.7	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8004	402
288	M	72	-	-	-	-	-	-	-	6.7	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8156	416
289	F	38	-	-	-	-	-	-	-	6.7	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5907	204
290	F	63	-	-	-	-	-	6.5	-	3.7	**65.0**	2.6	-	-	-	-	-	5.9	**2.3**	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	7876	624
291	M	66	-	-	-	-	-	6.5	-	3.7	**65.0**	2.6	-	-	-	-	-	5.9	**2.3**	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	6504	1056
292	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	6
293	F	U	-	-	-	-	-	**32.9**	0.5	**53.3**	**91.0**	9.5	-	-	-	-	-	2.9	0.7	-	-	-	-	-	-	-	-	175	-	-	-	-	-	6986	518
294	M	U	-	-	-	-	-	**32.9**	0.5	**53.3**	**91.0**	9.5	-	-	-	-	-	**25.3**	0.7	-	-	-	-	-	-	-	-	175	-	-	-	-	-	6986	518
297	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	18
298	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	18
300	F	68	-	-	-	-	-	0.5	5.4	3.0	**47.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	-	-	-	-	-	5569	1001
301	M	72	-	-	-	-	-	0.5	5.4	3.0	**47.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	-	-	-	-	-	5569	1001
302	M	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	749	480
303	F	72	-	-	-	-	-	-	-	-	-	14.1	-	-	-	-	-	**17.8**	**4.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8095	86
304	M	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6376	1271
305	F	76	-	-	-	-	-	-	-	-	**78.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7687	532
306	M	46	-	-	-	-	-	-	-	-	**78.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4506	156
307	F	53	-	-	-	-	-	1.7	3.6	-	-	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	-	-	-	-	-	6186	260
308	M	58	-	-	-	-	-	1.7	3.6	-	-	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	-	-	-	-	-	6201	260
309	M	77	-	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	5789	213
310	F	76	-	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	7112	213
311	M	82	-	-	-	-	-	-	-	14.0	-	4.8	100.0	-	-	-	-	**15.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6492	924
312	M	53	5.9	10.0	-	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330	-	42	-	-	**1524**	42	-	1920	-	-
313	F	50	5.9	10.0	-	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-
314	M	17	5.9	10.0	-	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330	-	42	-	-	**1524**	42	-	1920	-	-
316	M	U	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**234**	-	-	-	**843**	154	-	**856**	-	-	-	-
317	F	U	-	-	**12.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
318	F	U	-	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
319	M	U	-	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
320	M	U	-	-	-	-	-	-	-	-	-	-	14.8	**66.2**	-	**23.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
321	M	U	-	-	-	-	-	-	-	-	-	-	14.8	**66.2**	-	**23.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
322	M	64	-	-	-	-	-	1.7	1.8	3.2	**72.0**	8.2	-	-	-	-	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6144	1344
323	F	64	-	-	-	-	-	1.7	1.8	3.2	**72.0**	8.2	-	-	-	-	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6144	1344
324	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**548**	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
325	M	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7452	351
326	F	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6613	878
327	F	U	-	-	-	-	-	-	-	-	36.0	-	-	-	-	-	-	**17.8**	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	5110	730
328	M	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	9	-	-	-	-	-	2056	924
329	F	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	9	-	-	-	-	-	2056	924
330	M	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1144	104
331	F	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1144	104
335	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**17.1**	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	5004	875
336	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**17.1**	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	5004	875
337	F	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6940	416
338	M	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4722	234
339	M	U	**41.5**	12.3	-	2.1	-	-	-	-	-	1.8	-	-	-	-	**47.2**	**35.6**	**2.5**	-	**6.4**	**12.0**	-	-	-	-	4	-	-	-	-	-	-	-	-
340	M	69	-	-	-	**16.8**	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	1.1	**96**	-	-	-	78	-	-	-	96	-	-	-	-
341	M	U	-	-	-	-	-	-	-	-	-	-	-	**71.0**	-	**11.3**	0.9	**41.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
342	M	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**395**	-	-	-	-	-	-	-
343	F	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-
346	F	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-	-	-	-	-
347	M	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-
348	M	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-	-	-	-	-
349	M	50	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350	F	49	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
351	F	21	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
352	F	20	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
353	F	16	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
354	M	47	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
355	F	47	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
356	M	18	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
357	M	17	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
359	M	U	-	-	-	-	-	-	5.0	13.1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
360	F	U	-	-	-	-	-	-	5.0	13.1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
361	M	U	-	-	-	-	-	-	5.0	13.1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
362	F	U	-	-	-	-	-	-	5.0	13.1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
363	M	U	-	-	-	-	-	-	5.0	13.1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
364	F	U	-	-	-	-	-	-	5.0	13.1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
365	M	U	-	-	-	-	-	-	-	-	13.0	-	**414.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
366	M	U	-	-	-	-	-	-	-	-	13.0	-	**414.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
367	F	U	-	-	-	-	-	-	-	-	13.0	-	**414.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
368	F	U	-	-	-	-	-	-	-	-	13.0	-	**414.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
369	M	52	-	-	-	-	-	**26.0**	-	**26.0**	**75.0**	-	**182.5**	-	-	**8.5**	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
370	F	46	-	-	-	-	-	**26.0**	-	**26.0**	**75.0**	-	**182.5**	-	-	**8.5**	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
371	F	17	-	-	-	-	-	**13.0**	-	13.0	**75.0**	-	**182.5**	-	-	**8.5**	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
373	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	**11.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
374	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	**11.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
375	F	U	-	-	-	-	-	8.6	-	7.1	6.8	**29.6**	-	-	-	-	-	8.9	1.1	-	1.2	-	-	-	-	-	-	24	-	-	-	-	-	-	-
376	M	U	-	-	-	-	-	8.6	1.1	7.1	6.8	**29.6**	-	-	-	-	-	8.9	1.2	-	1.2	-	-	-	-	-	-	24	-	-	-	-	-	-	-
377	M	25	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
378	F	66	-	-	-	-	-	**22.0**	**27.0**	11.9	25.0	**21.2**	-	-	-	5.7	1.4	**35.6**	1.4	**0.5**	-	3.4	-	-	-	-	-	52	-	-	-	-	-	-	-
379	M	U	-	-	-	-	-	**22.0**	**27.0**	11.9	25.0	**21.2**	-	-	-	5.7	1.4	**35.6**	1.4	**0.5**	-	3.4	-	-	-	-	-	52	-	-	-	-	-	-	-
380	F	U	-	-	-	-	-	7.4	3.6	-	2.7	**15.0**	-	-	-	5.7	-	0.3	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
381	M	U	-	-	-	-	-	**18.8**	-	**25.1**	27.3	-	-	0.5	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
382	M	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	156	-	-	-	-	-	-	-
383	M	U	-	-	-	-	-	**11.9**	6.5	**19.6**	34.9	**17.0**	**147.8**	-	-	**11.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
384	F	U	-	-	-	-	-	**11.9**	6.5	**19.6**	34.9	**17.0**	**147.8**	-	-	**11.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
385	M	U	-	-	-	-	-	3.0	1.6	4.9	8.7	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
386	F	U	-	-	-	-	-	3.0	1.6	4.9	8.7	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
387	F	29	-	-	-	-	-	2.7	4.6	4.1	**130.9**	6.4	-	-	-	-	-	**15.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
388	M	35	-	-	-	-	-	2.7	4.6	4.1	**130.9**	6.4	-	-	-	-	-	**15.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
390	M	U	-	-	-	0.3	-	-	-	-	-	-	**365.0**	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
391	F	U	-	-	-	0.3	-	-	-	-	-	-	**365.0**	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
392	M	U	-	-	-	0.3	-	-	-	-	-	-	**365.0**	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
393	F	U	-	-	-	0.3	-	-	-	-	-	-	**365.0**	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
394	M	U	-	-	-	0.3	-	-	-	-	-	-	**365.0**	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
395	F	U	-	-	-	0.3	-	-	-	-	-	-	**365.0**	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
396	M	45	-	-	-	-	-	-	-	**50.0**	**100.0**	11.7	-	-	-	-	-	8.9	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
397	F	74	-	-	-	-	-	-	-	**50.0**	**100.0**	11.7	-	-	-	-	-	8.9	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
398	M	74	-	-	-	-	-	-	-	**50.0**	**100.0**	11.7	-	-	-	-	-	8.9	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
399	M	69	-	-	-	-	-	5.7	-	**22.7**	-	**17.3**	-	-	-	-	-	**39.8**	0.6	-	-	**5.0**	-	-	-	-	-	-	-	-	-	-	-	-	-
400	F	45	-	-	-	-	-	5.7	-	**22.7**	-	**17.3**	-	-	-	-	-	**39.8**	0.6	-	-	**5.0**	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	Intertidal occupancy over rock	Intertidal occupancy over salt marsh	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
401	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**63**	-	-	-	-	-	-	-	63	-	-	-	-
402	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**63**	-	-	-	-	-	-	-	63	-	-	-	-
403	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**63**	-	-	-	-	-	-	-	63	-	-	-	-
404	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**63**	-	-	-	-	-	-	-	63	-	-	-	-

Notes

Emboldened observations are the high-rate individuals

U - Unknown

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Eggs	Wild/free foods	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
Child age group (6 - 15 years old)																							
28	F	11	-	-	-	-	-	-	-	-	-	**219.0**	-	-	-	-	-	-	-	-	-	-	-
29	M	6	-	-	-	-	-	-	-	-	-	**219.0**	-	-	-	-	-	-	-	-	-	-	-
40	F	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-
41	F	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-
43	F	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**117**	-	-	-	-	-	-
68	M	8	**5.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	F	10	**5.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77	M	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-
78	M	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-
84	M	14	-	-	-	-	-	-	-	**-**	-	-	**-**	-	-	-	30	-	-	5	-	-	-
144	F	9	-	-	-	-	2.1	-	**6.8**	10.9	**15.5**	**124.5**	-	-	**7.1**	-	75	-	-	-	-	5836	900
145	F	11	-	-	-	-	2.1	-	**6.8**	10.9	**15.5**	**124.5**	-	-	**7.1**	-	75	-	-	-	-	5836	900
165	M	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**546**	-	-	-	-	-
166	F	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**546**	-	-	-	-	-
167	F	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**546**	-	-	-	-	-
168	F	14	-	-	-	-	-	-	-	**-**	-	-	**-**	-	-	-	-	**546**	-	-	-	-	-
173	M	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**90**	-	-	-	-	-	-
174	M	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**90**	-	-	-	-	-	-
177	F	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**120**	-	-	-	-	-	-
189	F	11	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	-
190	F	10	2.0	-	**0.1**	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-	-
191	F	9	2.0	-	**0.1**	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-	-
192	M	9	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Eggs	Wild/free foods	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
219	M	9	-	-	-	-	**7.1**	**14.1**	1.9	25.0	**5.4**	44.6	-	-	**3.4**	-	36	-	-	-	-	5496	840
228	M	14	-	-	-	-	-	-	-	5.4	2.9	-	**-**	-	**6.8**	-	-	-	-	-	-	4512	1056
237	M	14	-	-	-	-	-	-	-	**-**	-	-	**-**	-	-	-	**148**	136	-	-	-	-	20
238	M	13	**8.2**	2.5	-	-	-	-	-	-	-	-	-	-	**-**	-	**148**	**216**	**80**	-	-	-	20
239	F	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**148**	136	-	-	-	-	20
250	F	13	-	-	-	-	-	-	-	1.2	-	**146.0**	18.9	2.3	**-**	-	-	**-**	**-**	-	-	-	-
251	F	11	-	-	-	-	-	-	-	1.2	-	**146.0**	**18.9**	2.3	-	-	-	-	-	-	-	-	-
252	F	11	-	-	-	-	-	-	-	1.2	-	**146.0**	**18.9**	2.3	-	-	-	-	-	-	-	-	-
273	M	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**240**	-	-	-	-	-	-
274	F	13	-	-	-	-	-	-	-	-	-	-	-	-	**-**	-	**240**	**-**	-	-	-	-	-
280	M	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-
295	F	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1210	133
296	F	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1210	133
315	M	15	**5.9**	**10.0**	-	**2.8**	-	-	-	**-**	-	-	**-**	-	-	-	-	**-**	**-**	-	-	-	-
332	M	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1144	104
333	M	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1144	104
358	F	15	-	-	-	-	2.7	-	**5.4**	20.8	-	**103.7**	**13.2**	2.3	-	-	-	**-**	-	-	-	-	-
372	F	13	-	-	-	-	**13.0**	-	**13.0**	**75.0**	-	**182.5**	-	**8.5**	-	**0.8**	-	-	-	-	-	-	-
389	F	6	-	-	-	-	2.0	3.4	3.1	**65.5**	4.8	-	-	-	**7.8**	-	-	-	-	-	-	-	-
Infant age group (0 - 5 years old)																							
3	M	3	-	-	-	-	-	-	-	**19.7**	-	-	**3.7**	**0.4**	**5.9**	**2.0**	15	-	-	-	-	-	-
4	M	2	-	-	-	-	-	-	-	**19.7**	-	-	**3.7**	**0.4**	**5.9**	**2.0**	15	-	-	-	-	-	-
5	M	2	-	-	-	-	-	-	-	**19.7**	-	-	**3.7**	**0.4**	**5.9**	**2.0**	15	-	-	-	-	-	-
9	F	3	-	-	-	-	-	-	-	**19.7**	-	-	**3.7**	**0.4**	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Eggs	Wild/free foods	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	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
21	F	3	-	-	-	-	-	-	-	-	-	**182.5**	-	-	-	-	-	-	-	-	-	-	-
22	F	5	-	-	-	-	-	-	-	-	-	**182.5**	-	-	-	-	-	-	-	-	-	-	-
67	F	5	**2.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85	F	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	5	-	-
157	F	5	**3.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	**250**	-	-	-	-	-	-
158	F	3	**3.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	**250**	-	-	-	-	-	-
178	F	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**120**	-	-	-	-	-	-
193	F	4	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	-
220	M	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	-	-	-	5099	511
281	F	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-
299	F	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	18
334	M	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1144	104
344	M	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-
345	F	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-

Notes

U - Unknown

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 occupancy rate
None identified	None identified	Not applicable

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

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

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[a] in the LLWR area, for use in foetal dose assessments

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
2	F	U	-	-	-	-	-	-	-	-	131.6	1.0	-	24.9	-	3.0	-	20.8	2.0	-	-	15	-	-	-
8	F	U	-	-	-	-	-	-	-	-	131.6	-	-	24.9	-	3.0	-	-	-	-	-	-	-	-	-
11	F	U	-	-	-	-	-	-	-	-	131.6	-	-	24.9	-	3.0	-	-	-	-	-	-	-	-	-
12	F	U	-	-	-	-	-	-	-	-	-	-	-	15.6	-	17.0	-	16.4	3.9	-	-	-	-	-	-
17	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	0.4	-	-	-	-	-	-
20	F	U	-	-	-	-	-	-	-	-	-	-	182.5	-	-	-	-	-	-	-	-	-	-	-	-
26	F	U	-	-	-	-	-	-	-	-	-	-	219.0	-	-	-	-	-	-	-	-	-	-	-	-
31	F	U	-	-	-	-	-	-	-	-	-	-	182.5	-	-	-	-	-	0.7	-	-	-	-	-	-
33	F	U	-	-	-	-	-	-	-	9.0	18.2	-	69.0	-	-	-	-	-	-	-	-	-	-	-	-
37	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	-	-	-
39	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
42	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117	-	-	-
45	F	U	11.8	19.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	F	U	-	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	F	U	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	F	U	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	F	U	-	47.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
75	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-
76	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-
81	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-	-
95	F	U	10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
97	F	U	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
99	F	28	26.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
104	F	U	-	-	-	-	-	13.8	6.8	3.6	-	7.3	182.5	-	-	-	0.7	3.4	0.8	0.2	-	12	-	-	-
109	F	U	-	-	-	-	-	-	-	-	-	7.5	365.0	-	-	-	-	33.9	-	0.2	-	-	-	-	-
117	F	U	-	-	-	-	-	-	-	-	-	-	-	31.5	25.3	5.7	-	-	-	-	-	-	-	-	-
121	F	U	-	-	0.5	-	-	2.0	-	6.6	31.8	42.7	259.3	71.0	-	5.7	3.3	6.8	2.0	-	-	-	3	-	-
124	F	U	-	-	-	-	-	-	-	-	-	-	-	71.0	-	5.7	2.0	-	-	-	-	-	-	-	-
127	F	U	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
135	F	43	-	23.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140	F	U	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
142	F	U	-	-	-	-	-	2.1	-	6.8	10.9	15.5	124.5	-	-	-	-	7.1	-	-	-	75	-	6429	1575
156	F	36	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
170	F	44	6.8	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
176	F	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-
181	F	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	330	-	-
183	F	36	7.3	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
194	F	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	520	-	-	-
196	F	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730	-	-	-
198	F	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	365	-	-	-
201	F	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	46	-	-
207	F	U	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
208	F	U	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
211	F	18	13.2	29.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
216	F	30	-	-	-	-	-	9.5	25.2	2.5	33.3	7.3	59.4	-	-	-	-	4.5	-	-	-	36	-	5099	511
218	F	36	-	-	-	-	-	9.5	25.2	2.5	33.3	7.3	59.4	-	-	-	-	4.5	-	-	-	36	-	6408	294
243	F	U	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
244	F	U	-	-	-	-	-	-	-	-	-	2.5	-	-	-	-	-	-	0.5	-	-	-	-	-	-
247	F	U	-	-	-	-	-	-	-	-	3.0	-	114.1	47.3	-	5.7	-	-	2.0	-	-	-	-	-	-
249	F	U	-	-	-	-	-	-	-	-	1.2	-	146.0	18.9	-	2.3	0.7	-	-	-	-	-	-	-	-
256	F	U	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	11.9	2.1	-	-	-	-	-	-
257	F	23	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	11.9	2.1	-	-	-	-	-	-
258	F	21	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	11.9	2.1	-	-	-	-	-	-
261	F	26	7.7	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
262	F	22	7.7	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
272	F	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-	-
275	F	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-
276	F	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-
277	F	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-
279	F	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-
284	F	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	228	-	-	-
289	F	38	-	-	-	-	-	-	-	6.7	20.0	-	-	-	-	-	-	-	-	-	-	-	-	5907	204
293	F	U	-	-	-	-	-	32.9	0.5	53.3	91.0	9.5	-	-	-	-	-	2.9	0.7	-	-	175	-	6986	518

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Wildfowl	Salt marsh grazed sheep meat	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
298	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	18
317	F	U	-	-	12.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
318	F	U	-	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
324	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	548	-	-	-
327	F	U	-	-	-	-	-	-	-	-	36.0	-	-	-	-	-	-	17.8	-	-	-	4	-	5110	730
331	F	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1144	104
336	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.1	-	-	-	150	-	5004	875
343	F	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
346	F	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-
351	F	21	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-
352	F	20	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-
353	F	16	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-
358	F	15	-	-	-	-	-	2.7	-	5.4	20.8	-	103.7	13.2	-	2.3	-	-	-	-	-	-	-	-	-
360	F	U	-	-	-	-	-	-	5.0	13.1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
362	F	U	-	-	-	-	-	-	5.0	13.1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
364	F	U	-	-	-	-	-	-	5.0	13.1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
367	F	U	-	-	-	-	-	-	-	-	13.0	-	414.8	-	-	-	-	-	-	-	-	-	-	-	-
368	F	U	-	-	-	-	-	-	-	-	13.0	-	414.8	-	-	-	-	-	-	-	-	-	-	-	-
371	F	17	-	-	-	-	-	13.0	-	13.0	75.0	-	182.5	-	-	8.5	-	-	0.8	-	-	-	-	-	-
374	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	11.3	-	-	-	-	-	-	-	-	-
375	F	U	-	-	-	-	-	8.6	-	7.1	6.8	29.6	-	-	-	-	-	8.9	1.1	-	1.2	24	-	-	-
380	F	U	-	-	-	-	-	7.4	3.6	-	2.7	15.0	-	-	-	5.7	-	0.3	0.3	-	-	-	-	-	-
384	F	U	-	-	-	-	-	11.9	6.5	19.6	34.9	17.0	147.8	-	-	11.3	-	-	-	-	-	-	-	-	-
386	F	U	-	-	-	-	-	3.0	1.6	4.9	8.7	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-
387	F	29	-	-	-	-	-	2.7	4.6	4.1	130.9	6.4	-	-	-	-	-	15.7	-	-	-	-	-	-	-
391	F	U	-	-	-	0.3	-	-	-	-	-	-	365.0	-	-	-	1.5	-	-	-	-	-	-	-	-
393	F	U	-	-	-	0.3	-	-	-	-	-	-	365.0	-	-	-	1.5	-	-	-	-	-	-	-	-
395	F	U	-	-	-	0.3	-	-	-	-	-	-	365.0	-	-	-	1.5	-	-	-	-	-	-	-	-

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 LLWR area

Profile Name	Number of individuals	Pathway Name: Crustacea	Direct[a]	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Salt marsh	Gamma ext - Sediment[b]	Honey	Meat - Cow	Meat - Game[c]	Meat - Pig	Meat - Poultry	Meat - Salt marsh grazed sheep	Meat - Sheep	Meat - Wildfowl	Milk	Molluscs	Mushrooms	Occupancy IN water	Occupancy ON water	Plume (IN; 0-0.25km)[d]	Plume (MID; >0.25-0.5km)[d]	Plume (OUT; >0.5-1.1km)[d]	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
		kg	-	kg	kg	kg	kg	h	h	kg	kg	kg	kg	kg	kg	kg	kg	l	kg	kg	h	h	h	h	h	kg	kg	kg	kg
Crustacean consumers	**16**	29.3	-	-	17.0	-	-	-	270	-	-	-	-	-	-	-	-	-	1.4	-	-	660	-	-	<1	-	-	-	-
Occupants for direct radiation	**78**	0.03	1.00	4.2	0.69	2.7	0.37	-	29	-	3.4	-	-	0.07	-	0.92	-	33.8	0.01	0.03	-	<1	2430	1920	1280	3.4	3.2	17.4	4.6
Egg consumers	**28**	0.51	0.39	23.9	3.1	5.8	0.83	<1	48	0.05	7.4	1.0	-	1.8	-	3.5	0.07	41.8	0.03	0.23	-	-	480	1330	1120	4.2	4.5	33.1	7.4
Sea fish consumers	**20**	9.0	0.05	2.6	36.8	0.71	0.12	<1	320	-	-	0.60	-	2.4	-	-	0.10	-	1.4	0.32	-	150	-	-	420	0.53	0.66	1.1	1.6
Domestic fruit consumers	**14**	-	0.21	14.6	-	22.6	0.75	-	16	0.06	10.1	1.2	-	0.67	-	3.6	-	84.8	0.04	0.18	-	-	-	-	1050	8.2	5.1	16.6	11.2
Wild fruit and nut consumers	**21**	0.85	0.33	10.7	2.7	5.2	2.6	30	<1	-	15.1	0.57	-	2.6	0.54	3.0	0.10	70.3	0.02	0.40	-	-	760	390	1150	1.9	1.8	22.5	1.6
Occupants for exposure - Salt marsh	**2**	1.4	-	11.9	3.6	-	2.1	310	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Occupants for exposure - Sediment	**23**	5.4	0.04	0.77	10.7	-	-	-	840	-	-	-	-	-	-	-	-	7.4	0.68	-	-	64	-	370	5	0.07	0.77	1.1	-
Honey consumers	**8**	-	-	19.1	-	10.8	0.74	-	15	0.28	-	0.85	-	0.68	-	1.4	-	182.5	-	-	-	-	-	-	-	12.4	10.2	6.3	4.8
Cattle meat consumers	**24**	-	0.17	4.9	0.04	3.6	0.50	-	<1	-	44.6	-	6.3	0.62	-	7.7	0.11	32.3	0.02	-	-	-	-	570	15	0.94	-	42.0	1.8
Game meat consumers	**3**	4.1	-	38.4	13.8	12.1	1.2	1	-	-	-	7.3	-	15.7	-	-	0.70	-	-	2.1	-	-	-	-	-	3.8	-	-	15.1
Pork meat consumers	**6**	-	-	-	-	-	-	-	-	-	31.5	-	25.3	0.57	-	5.7	0.45	-	-	-	-	-	-	-	-	3.1	-	3.0	5.0
Poultry meat consumers	**1**	12.3	-	35.6	41.5	1.8	2.5	4	-	-	-	12.0	-	47.2	-	-	2.1	-	-	6.4	-	-	-	-	-	-	-	-	-
Salt marsh grazed sheep consumers	**6**	0.93	-	11.9	2.4	-	2.1	100	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep meat consumers	**18**	-	0.22	6.0	0.05	1.9	0.64	-	<1	-	21.8	-	-	0.05	-	14.3	-	48.5	-	-	-	-	-	1530	-	4.9	0.72	16.4	5.8
Wildfowl consumers	**2**	1.8	-	-	8.6	-	-	39	230	-	-	0.57	-	1.4	-	-	14.2	-	-	-	-	40	-	-	-	-	-	-	-
Milk consumers	**38**	0.03	0.26	3.4	0.10	4.3	0.55	-	20	0.04	4.7	-	-	0.52	-	1.7	0.05	253.1	0.01	-	-	-	-	660	640	5.1	3.3	12.9	4.0
Mollusc consumers	**4**	27.0	-	-	27.7	-	-	-	420	-	-	-	-	-	-	-	-	-	9.1	-	-	71	-	-	8	-	-	-	-
Mushroom consumers	**1**	12.3	-	35.6	41.5	1.8	2.5	4	-	-	-	12.0	-	47.2	-	-	2.1	-	-	6.4	-	-	-	-	-	-	-	-	-
Occupancy IN water	**6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	87	-	-	-	-	-	-	-
Occupancy ON water	**18**	11.2	-	-	9.2	-	-	5	37	-	-	-	-	-	-	-	0.31	-	0.05	-	-	1560	-	-	-	-	-	-	-
Occupants for plume pathways (inner area)	**26**	-	1.00	2.8	0.26	2.1	0.30	-	29	-	-	-	-	-	-	-	-	-	-	0.08	-	<1	7140	-	-	6.2	2.4	40.7	8.9
Occupants for plume pathways (mid area)	**22**	0.05	1.00	6.2	0.22	2.2	0.37	-	54	-	5.7	-	-	-	-	2.7	-	32.5	-	-	-	-	-	6430	-	2.4	5.7	8.6	0.71
Occupants for plume pathways (outer area)	**13**	0.08	1.00	8.3	3.2	4.9	0.77	-	15	-	-	-	-	-	-	-	-	83.0	0.07	-	-	-	-	-	7590	3.7	4.9	5.9	7.9
Green vegetable consumers	**19**	-	0.37	6.7	0.36	6.9	0.51	-	35	0.10	0.03	0.36	-	0.28	-	3.1	-	93.1	-	-	-	1	2490	390	-	18.8	7.9	37.0	19.0
Other domestic vegetable consumers	**15**	0.14	0.87	11.3	3.5	6.3	0.85	-	77	0.06	-	0.45	-	0.18	-	0.75	-	96.3	0.06	-	-	1	1050	2810	2700	11.9	18.3	18.6	9.2
Potato consumers	**29**	-	0.48	5.5	-	3.1	0.64	-	19	-	6.0	-	-	-	-	1.6	-	18.9	-	0.07	-	-	3460	-	-	6.6	1.2	91.8	14.2
Root vegetable consumers	**16**	0.06	0.38	10.5	2.6	9.2	0.54	-	28	-	0.03	0.63	-	-	-	2.5	-	41.3	0.06	-	-	-	1970	-	1030	13.8	3.1	56.0	33.5

Notes

[a]Expressed as the proportion of the profile members who are exposed to direct radiation

[b]Gamma ext - sediment includes occupancy over mud; over mud and sand; over mud, sand and stones; over sand: over sand and stones.

[c]Game meat includes venison

[d]Plume times are the sums of individuals' indoor and outdoor times

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 LLWR area

Profile Name	Number of individuals	Pathway Name: Crustacea	Direct[a]	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sediment[b]	Meat - Cow	Meat - Sheep	Meat - Wildfowl	Milk	Mollusca	Occupancy IN water	Plume (IN; 0-0.25km)[c]	Plume (MID; >0.25-0.5km)[c]	Plume (OUT; 0.5-1km)[c]	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
			-	kg	kg	kg	kg	h	kg	kg	kg	l	kg	h	h	h	h	kg	kg	kg	kg
Crustacean consumers	**1**	10.0	-	-	5.9	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-	-
Occupants for direct radiation	**8**	-	1.00	3.1	-	4.9	-	23	-	-	-	36.7	-	-	340	1800	1680	1.4	1.8	6.5	1.9
Egg consumers	**5**	-	0.80	6.5	-	8.8	-	37	-	-	-	58.7	-	-	-	2380	2690	2.7	3.5	23.5	3.7
Sea fish consumers	**4**	3.1	-	-	6.1	-	-	91	-	-	0.70	-	-	-	-	-	5	-	-	-	-
Domestic fruit consumers	**3**	-	1.00	5.9	-	12.1	-	62	-	-	-	97.8	-	-	-	2110	4490	3.8	4.7	15.6	5.1
Wild fruit and nut consumers	**1**	-	-	-	-	-	0.79	-	-	8.5	-	182.5	-	-	-	-	-	13.0	-	75.0	13.0
Occupants for exposure - sediment	**9**	0.28	-	-	0.91	-	-	400	-	-	-	-	-	-	-	-	7	-	-	-	-
Cattle meat consumers	**4**	-	-	-	-	-	-	-	17.5	2.3	-	135.4	-	-	-	-	-	0.68	-	6.1	1.4
Sheep meat consumers	**1**	-	-	-	-	-	0.79	-	-	8.5	-	182.5	-	-	-	-	-	13.0	-	75.0	13.0
Wildfowl consumers	**1**	10.0	-	-	5.9	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-	-
Milk consumers	**9**	-	0.22	1.6	-	3.4	0.09	17	7.8	1.9	-	156.8	-	-	-	-	1500	2.2	-	13.5	3.5
Mollusc consumers	**2**	-	-	-	2.0	-	-	24	-	-	-	-	0.12	-	-	-	-	-	-	-	-
Occupancy IN water	**1**	-	-	-	-	-	-	30	-	-	-	-	-	5	-	-	-	-	-	-	-
Occupants for plume pathways (inner area)	**2**	-	1.00	-	-	-	-	-	-	-	-	-	-	-	1340	-	-	-	-	-	-
Occupants for plume pathways (mid area)	**2**	-	1.00	5.1	-	4.2	-	18	-	-	-	22.3	-	-	-	5950	-	3.6	7.1	15.2	0.94
Occupants for plume pathways (outer area)	**2**	-	1.00	7.1	-	15.5	-	75	-	-	-	124.5	-	-	-	-	6740	2.1	-	10.9	6.8
Green vegetable consumers	**2**	-	0.50	1.7	-	2.7	0.40	18	-	4.2	-	113.5	-	-	-	3170	-	10.1	7.1	50.0	7.4
Other domestic vegetable consumers	**1**	-	1.00	3.4	-	5.4	-	36	-	-	-	44.6	-	-	-	6340	-	7.1	14.1	25.0	1.9
Potato consumers	**2**	-	-	3.9	-	2.4	0.40	-	-	4.2	-	91.3	-	-	-	-	-	7.5	1.7	70.2	8.0
Root vegetable consumers	**4**	-	0.50	3.6	-	7.7	0.20	38	3.3	2.7	-	133.8	-	-	-	-	3370	5.0	-	29.4	8.0

Notes

[a]Expressed as the proportion of the profile members who are exposed to direct radiation

[b]Gamma ext - sediment includes occupancy over sand; over sand and stones.

[c]Plume times are the sums of individuals' indoor and outdoor times

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 LLWR area

Profile Name	Number of individuals	Pathway Name											
		Direct[a]	Eggs	Fish - Sea	Fruit and nuts - Wild	Gamma ext - Sediments	Meat - Cow	Meat - Sheep	Milk	Occupancy ON water	Plume (IN; 0-0.25km)[b]	Plume (MID; >0.25-0.5km)[b]	Vegetables - Potatoes
		-	kg	kg	kg	kg	kg	kg	l	h	h	h	kg
Occupants for direct radiation	**3**	1.00	-	-	-	12	-	-	-	-	96	2290	-
Egg consumers	**3**	-	5.9	-	2.0	15	3.7	0.45	-	-	-	-	19.7
Sea fish consumers	**3**	-	-	3.3	-	170	-	-	-	-	-	-	-
Wild fruit and nut consumers	**3**	-	5.9	-	2.0	15	3.7	0.45	-	-	-	-	19.7
Occupants over sediment	**3**	-	-	2.4	-	210	-	-	-	-	-	-	-
Cattle meat consumers	**4**	-	4.4	-	1.5	11	3.7	0.45	-	-	-	-	19.7
Sheep meat consumers	**4**	-	4.4	-	1.5	11	3.7	0.45	-	-	-	-	19.7
Milk consumers	**2**	-	-	-	-	-	-	-	182.5	-	-	-	-
Occupancy ON water	**1**	-	-	-	-	30	-	-	-	5	-	-	-
Occupants for plume pathways (inner area)	**1**	1.00	-	-	-	-	-	-	-	-	290	-	-
Occupants for plume pathways (mid area)	**1**	1.00	-	-	-	36	-	-	-	-	-	5610	-
Potato consumers	**4**	-	4.4	-	1.5	11	3.7	0.45	-	-	-	-	19.7

Notes

[a]Expressed as the proportion of the profile members who are exposed to direct radiation

[b]Plume times are the sums of individuals' indoor and outdoor times

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

Annex 9. Summary of profiles for women of childbearing age in the LLWR area, for use in foetal dose assessments

Profile Name	Number of individuals	Pathway Name: Crustacea	Direct[a]	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sediment[b]	Honey	Meat - Cow	Meat - Pig	Meat - Poultry	Meat - Salt marsh grazed sheep	Meat - Sheep	Meat - Wildfowl	Milk	Molluscs	Mushrooms	Plume (IN; 0-0.25km)[c]	Plume (MID; >0.25-0.5km)[c]	Plume (OUT; >0.5-1.1km)[c]	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
		kg	-	kg	kg	kg	kg	h	kg	kg	kg	kg	kg	kg	kg	l	kg	kg	h	h	h	kg	kg	kg	kg
Crustacean consumers	4	30.1	-	-	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Occupants for direct radiation	9	-	1.00	6.0	-	4.4	0.08	53	-	-	-	-	-	-	-	27.0	-	-	2190	2160	890	6.0	5.7	25.0	8.0
Egg consumers	9	-	0.22	17.5	-	1.7	1.3	19	0.03	4.5	-	-	0.63	2.2	-	40.6	-	-	650	650	-	0.30	0.51	33.2	0.45
Sea fish consumers	4	12.2	-	-	15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Domestic fruit consumers	5	-	0.20	4.6	-	23.9	0.69	20	-	14.2	-	0.67	-	4.5	-	106.3	0.10	0.25	-	-	1600	6.4	2.0	17.4	8.0
Wild fruit and nut consumers	7	-	-	11.4	-	6.2	2.3	3	-	22.7	-	0.48	0.81	4.5	-	53.3	0.07	-	-	-	-	0.29	-	23.8	0.95
Occupants for exposure - sediment	6	-	-	-	1.2	-	-	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Honey consumers	2	-	-	18.7	-	7.4	0.40	6	0.23	-	-	0.34	-	-	-	273.8	-	-	-	-	-	6.9	3.4	-	1.8
Cattle meat consumers	7	-	-	3.9	-	6.2	0.86	3	-	42.2	3.6	0.76	-	4.5	-	53.3	0.07	-	-	-	-	0.29	-	61.4	0.95
Pork meat consumers	1	-	-	-	-	-	-	-	-	31.5	25.3	-	-	5.7	-	-	-	-	-	-	-	-	-	-	-
Poultry meat consumers	5	-	-	1.4	-	8.5	0.40	<1	-	28.4	-	2.0	-	2.3	0.18	270.9	0.10	-	-	-	-	0.41	-	6.4	1.3
Salt marsh grazed sheep consumers	3	-	-	11.9	-	-	2.1	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-
Sheep meat consumers	9	-	-	2.6	-	8.3	1.0	<1	-	26.3	2.8	0.59	-	8.5	-	78.2	0.06	-	-	-	-	3.8	1.1	16.4	4.4
Wildfowl consumers	3	-	-	-	-	-	-	-	-	-	-	1.5	-	-	0.30	365.0	-	-	-	-	-	-	-	-	-
Milk consumers	14	-	-	3.2	-	5.3	0.30	1	0.03	6.4	-	0.66	-	2.0	0.06	270.8	0.04	-	-	-	-	2.9	0.95	12.1	3.1
Mollusc consumers	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.8	-	-	-	-	-	-	-	-
Mushroom consumers	1	-	-	8.9	-	29.6	1.1	24	-	-	-	-	-	-	-	-	-	1.2	-	-	-	8.6	-	6.8	7.1
Occupants for plume pathways (inner area)	3	-	1.00	6.9	-	3.2	0.23	60	-	-	-	-	-	-	-	-	-	-	6490	-	-	11.0	0.15	49.0	20.0
Occupants for plume pathways (mid area)	3	-	1.00	8.7	-	4.8	-	74	-	-	-	-	-	-	-	39.6	-	-	-	6060	-	6.3	16.8	22.2	1.7
Occupants for plume pathways (outer area)	1	-	1.00	7.1	-	15.5	-	75	-	-	-	-	-	-	-	124.5	-	-	-	-	8000	2.1	-	10.9	6.8
Green vegetable consumers	4	-	0.25	1.6	-	8.4	0.57	47	0.06	-	-	0.17	-	4.9	-	128.2	-	-	1880	-	-	17.9	3.4	50.2	22.4
Other domestic vegetable consumers	2	-	1.00	4.5	-	7.3	-	36	-	-	-	-	-	-	-	59.4	-	-	-	6160	-	9.5	25.2	33.3	2.5
Potato consumers	6	-	0.17	6.6	-	2.8	0.58	32	-	12.4	-	-	-	2.9	-	30.4	-	-	1250	-	-	8.1	0.84	115.3	11.7
Root vegetable consumers	2	-	0.50	1.4	-	13.2	0.34	88	-	-	-	-	-	5.7	-	73.9	-	-	3750	-	-	22.4	3.5	63.0	36.4

Notes

[a]Expressed as the proportion of the profile members who are exposed to direct radiation

[b]Gamma ext - sediment includes occupancy over sand; over sand and stones.

[c]Plume times are the sums of individuals' indoor and outdoor times

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

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Head office
Centre for Environment,
Fisheries & Aquaculture Science
Pakefield Road, Lowestoft,
Suffolk NR33 0HT UK

Tel +44 (0) 1502 56 2244
Fax +44 (0) 1502 51 3865
Web www.cefas.defra.gov.uk

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