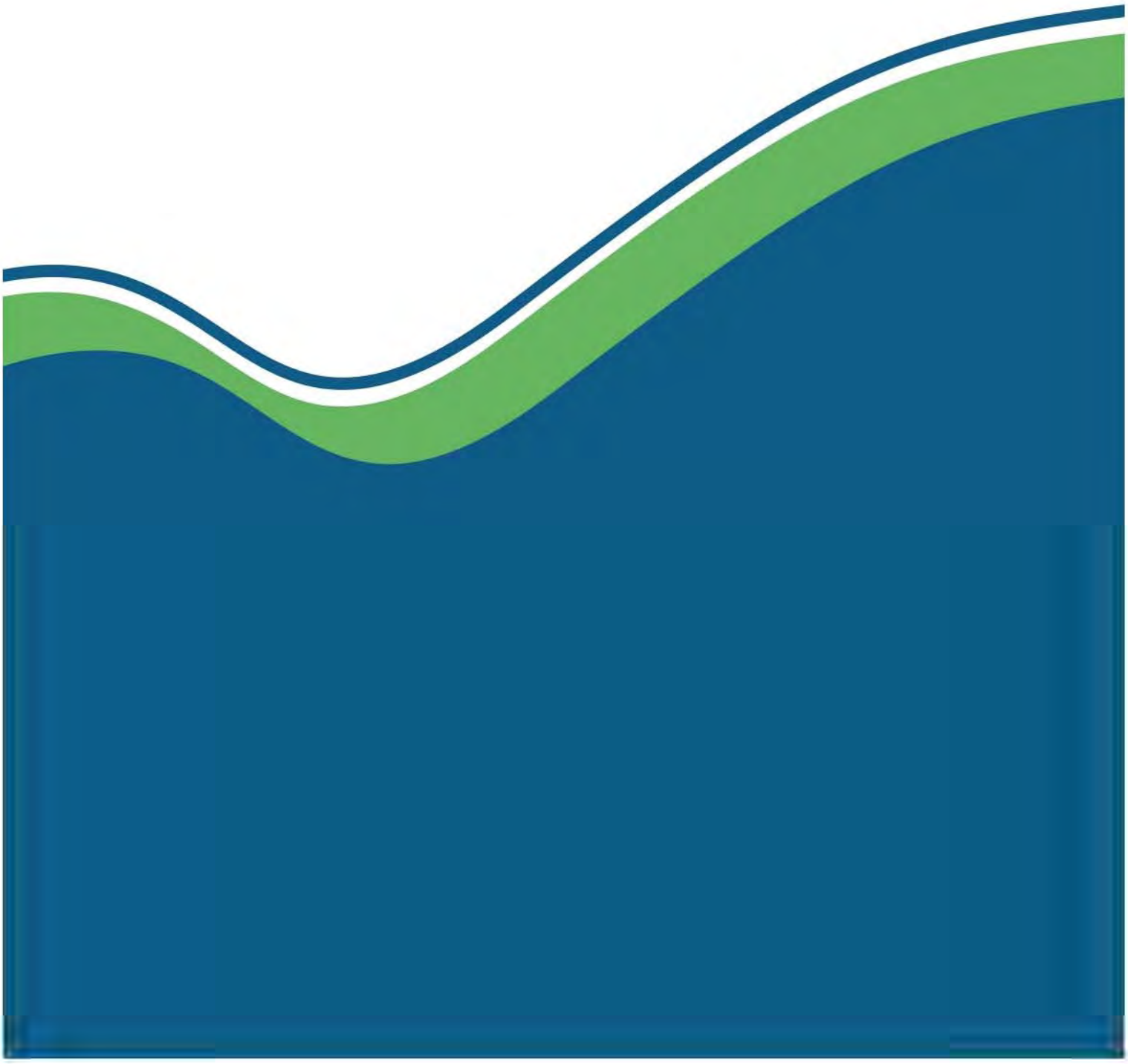
Radiological Habits Survey: Hunterston, 2012



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Final report

Radiological Habits Survey: Hunterston, 2012

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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 undertaking recreational activities in the vicinity of the Hunterston nuclear site. The site comprises two separate nuclear power stations, Hunterston A and Hunterston B. For the purpose of this survey they were considered together as one site. Liquid radioactive wastes from both power stations are discharged via one outfall into the Firth of Clyde and gaseous radioactive wastes are discharged to the atmosphere via separate stacks. The site contains sources of direct radiation.

Three survey areas, which were likely to be most affected by the discharges and sources of radiation, were defined as:

- The aquatic survey area; which covered the eastern side of the Firth of Clyde including Fairlie Roads and the coastline between Wemyss Bay and Saltcoats. The coastline of Great Cumbrae Island was included but the coastline of Little Cumbrae Island was excluded.
- The terrestrial survey area; which included all land and watercourses within 5 km of the site centre (National Grid Reference NS 183 514). This included the southern end of Great Cumbrae Island and the whole of Little Cumbrae Island.
- The direct radiation survey area; which covered the area within 1 km of the Hunterston site centre.

The following potential exposure pathways were investigated during the survey: the consumption of foods from the aquatic survey area; occupancy of intertidal areas; handling of fishing gear and sediment; the consumption of foods from the terrestrial survey area; and occupancy within the direct radiation survey area.

Interviews were conducted with members of the public and the data collected for 414 individuals are presented and discussed. High rates of consumption, intertidal occupancy and handling are identified using established methods comprising a 'cut off' to define the high-rate group, and 97.5th percentiles. The rates so identified can be used in dose assessments.

Aquatic survey area

The main commercial fishing activities identified within the aquatic survey area were trawling for *Nephrops* and creeling for brown crab and common lobster or *Nephrops*. Two fishermen also fished for mackerel and pollack using rod and line. The *Nephrops*, brown crab and common lobster were exported to Europe or sold in Scotland. One aquaculture farm was located on Southannan Sands. The product from the farm was sold within the UK and exported to the Far East. Several local commercial winkle collectors were identified collecting winkles from the shore at Wemyss Bay,

Southannan Sands, Ardrossan North Beach and Saltcoats. The winkles were sold to shellfish merchants in Ardrossan and Arran and were exported to Spain.

Aquatic foods were consumed from the following food groups: fish, crustaceans, molluscs and marine plants/algae. The mean consumption rates for the adult high-rate groups for these food groups were:

- 11 kg y^{-1} for fish (comprising mackerel, pollack, herring, cod, whiting, saithe and bass caught by commercial fishermen and anglers from Largs to Saltcoats)
- 12 kg y^{-1} for crustaceans (comprising *Nephrops*, brown crab and common lobster caught by commercial fishermen between Portencross and Saltcoats and along the Fairlie Roads)
- 11 kg y^{-1} for molluscs (comprising king scallops collected from the Fairlie Roads and Pacific oysters collected at Southannan Sands)
- 0.2 kg y^{-1} for marine plants/algae (comprising only sea lettuce, collected from Farland Point on Great Cumbrae Island)

No consumption of wildfowl was identified.

The relative contribution of the component species within each food group for the adult high-rate groups were:

- For fish: 56 % mackerel, 19% pollack, 7 % herring, 7 % cod, and 11 % a mix of whiting, saithe and bass
- For crustaceans: 70 % *Nephrops*, 23 % brown crab and 7% common lobster
- For molluscs: 79 % king scallops and 21 % Pacific oyster
- For marine plants/algae: 100% sea lettuce

One individual was identified collecting seaweed from Portencross Harbour for use as soil fertiliser for fruit and vegetables. Consumption rates were obtained for fruit and vegetables that had been grown in soil fertilised with seaweed. The use of seaweed as animal feed was not identified. Intertidal activities identified for adults included bait digging, coastguard duties, working on the shore, angling, walking, dog walking, playing, metal detecting, rock pooling, sitting on the beach, horse riding and collecting cockles, winkles, mussels, seaweed, marine plants and stones.

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

- 12 h y^{-1} over mud (for five individuals who were carrying out coastguard duties at various locations around Great Cumbrae Island)
- 180 h y^{-1} over rock (for three individuals whose activities included coastguard duties at various locations around Great Cumbrae Island; working on the shore at Farland Point and Portachur Point on Great Cumbrae Island; dog walking at Deadman's Bay on Great Cumbrae Island; angling at Portencross)
- 440 h y^{-1} over sand (for nine people whose activities included dog walking at Ardneil Bay, West Kilbride, Seamill, Ardrossan North Beach and Ardrossan South Beach; bait digging from

Largs to Saltcoats; collecting winkles at Southannan Sands; metal detecting at Ardneil Bay, Ardrossan South Beach and Ardrossan North Beach)

- 320 h y^{-1} over sand and stones (for 11 people whose activities included collecting winkles at Wemyss Bay, Largs, Ardrossan North Beach and Saltcoats; dog walking at Largs (south) and Fairlie Sands; coastguard duties at various locations around Great Cumbrae Island; working on the shore at Millport on Great Cumbrae Island)
- 170 h y^{-1} over stones (for two people who were dog walking at Portachur Point on Great Cumbrae Island)

Gamma dose rate measurements were taken over intertidal substrates in the aquatic survey area where people were spending time.

The activities for adults who were handling fishing gear included handling creels, trawl gear and nets. The activities identified for adults who were handling sediment included bait digging, working on the shore and collecting winkles, mussels, cockles and seaweed. The mean rates for the adult high-rate groups for handling were:

- 1500 h y^{-1} for handling fishing gear (for five fishermen who were handling creels or trawl gear along the Fairlie Roads)
- 550 h y^{-1} for handling sediment (for six people whose activities included collecting winkles at Southannan Sands, Wemyss Bay, Largs, Ardrossan North Beach and Saltcoats; bait digging from Largs to Saltcoats)

The handling of angling equipment was not considered to be a significant pathway, and therefore, as in previous surveys, data for this pathway were not collected.

The activities identified taking place 'in water' in the survey area included snorkelling, sub-aqua diving, kayaking, windsurfing and swimming. The maximum occupancy rate in water was 450 h y^{-1} for a watersports instructor who was teaching windsurfing and kayaking off Great Cumbrae Island. Activities taking place 'on water' in the survey area included trawling, creeling, boat angling, sailing, pleasure cruising, canoeing, rowing, travelling to and from diving locations, crewing on various vessels, lifeboat duties, paddling and playing on a lilo. The maximum occupancy rate on water was 3500 h y^{-1} for two people who were trawling along the Fairlie Roads.

The terrestrial survey area

Farmers in the survey area produced milk, beef, lamb, potatoes and vegetables. The majority of the farmers grew winter feed for their livestock in the form of cereals, grass, hay, swede and silage. Farmers and their families were consuming milk, beef, lamb, potatoes and vegetables produced on their own farms. One allotment site and several private gardens were identified within the survey area where a variety of fruit and vegetables were grown. Four beekeepers were interviewed who kept

hives in the survey area and consumed honey. Chickens and ducks were kept for eggs, which were consumed. Blackberries, dandelion leaves, elderflowers, hawthorn fruit, nettles, sloes, wild garlic and mushrooms were growing wild in the survey area and these were collected and consumed. Pheasant, hares, rabbits, pigeons, mallard and greylag geese shot on farmland were consumed. Grey squirrels were also being consumed. Brown trout and rainbow trout were caught from a reservoir within the terrestrial survey area and were consumed. Two farms were identified using spring water as their sole domestic water supply. Livestock at many of the farms were provided with well or spring water and had access to ditch or burn water.

In the terrestrial survey area, foods were consumed from 17 food groups. The mean consumption rates for the adult high-rate groups for terrestrial foods were:

- 20 kg y^{-1} for green vegetables
- 10 kg y^{-1} for other vegetables
- 51 kg y^{-1} for root vegetables
- 77 kg y^{-1} for potato
- 44 kg y^{-1} for domestic fruit
- 490 l y^{-1} for milk
- 24 kg y^{-1} for cattle meat
- 4.8 kg y^{-1} for sheep meat
- 5.0 kg y^{-1} for poultry
- 29 kg y^{-1} for eggs
- 7.9 kg y^{-1} for wild/free foods
- 9.6 kg y^{-1} for rabbits/hares
- 0.8 kg y^{-1} for squirrels
- 8.8 kg y^{-1} for honey
- 0.8 kg y^{-1} for wild fungi
- 30 kg y^{-1} for freshwater fish
- 0.5 kg y^{-1} for freshwater plants

Control measures were used by the Hunterston site in order to limit the possibility that contamination was transferred off-site by wildlife. These included the periodic culling of pigeons and gulls.

The direct radiation survey area

The land in the direct radiation survey area was predominantly agricultural and was sparsely populated. Occupancy rates were obtained at seven residences.

The highest occupancy rates in the direct radiation survey area were as follows:

- 7700 h y^{-1} for the indoor occupancy rate (for a resident)
- 3400 h y^{-1} for the outdoor occupancy rate (for a resident)
- 8500 h y^{-1} for the total occupancy rate (for a resident)

Gamma dose rate measurements were taken indoors and outdoors at most properties where interviews were conducted. For comparison, background gamma dose rate measurements were taken at distances further than 5 km from the Hunterston site centre.

Comparisons with the previous survey

The results of the 2012 Hunterston habits survey were compared with the last habits survey undertaken in the Hunterston area in 2007.

In the aquatic survey area, the mean consumption rate for the adult high-rate group decreased for fish, crustaceans and molluscs in 2012 when compared with 2007. The consumption of marine plants/algae was identified in 2012 but was not identified in 2007. The mean occupancy rates for the adult high-rate groups decreased for mud and for rock, were broadly similar for sand and increased slightly for sand and stones in 2012 compared with 2007. In 2012, activities were recorded over stones but no activities were recorded taking place over this substrate in 2007. In 2007, activities were recorded over mud and sand and over mud and stones but no activities were identified over these substrates in 2012. The mean rates for the adult high-rate group for handling fishing gear and for handling sediment increased in 2012 compared with 2007.

In the terrestrial survey area, in 2012 compared with 2007, the mean consumption rates for the adult high-rate groups increased for the following food groups: green vegetables, potato, domestic fruit, milk, eggs, wild/free foods, wild fungi and freshwater fish. The most significant increase was for milk. There were decreases in the mean consumption rates for the adult high-rate groups for other vegetables, root vegetables, cattle meat, sheep meat, poultry, rabbits/hares and honey. The most significant decrease was for poultry. The consumption of squirrels and freshwater plants were recorded in 2012 but were not recorded in 2007.

In the direct radiation survey area, in 2012 compared with 2007, the highest indoor and total occupancy rates increased. The highest outdoor occupancy rate was broadly similar in 2012 and 2007.

Suggestions for changes to the environmental monitoring programme

Based on the findings of this survey, the following suggestions for changes to the current environmental monitoring programme are provided for consideration:

- The sample of broad beans currently monitored could be replaced with a sample of tomatoes, since tomatoes made the highest contribution to the 'other vegetable' food group.
- The sample of carrots currently monitored could be replaced with a sample of swede, since swede made the highest contribution to the 'root vegetable' food group.
- The sample of rowan berries currently monitored could be replaced with a sample of blackberries, since the consumption of rowan berries was not identified during the survey.
- A one-off sample of grey squirrel could be considered since the consumption of grey squirrel has not been identified previously in the area and grey squirrels have not been monitored.

1 INTRODUCTION

1.1 Regulation of radioactive waste discharges

There are generally three main sources of radiation exposure to members of the public from nuclear sites during routine operations: discharges of liquid radioactive waste to the aquatic environment, discharges of gaseous radioactive waste to the atmosphere, and direct radiation emanating from the site. Regulation of radioactive waste discharges in Scotland is carried out under the Radioactive Substances Act 1993, (RSA93) (UK Parliament, 1993). Authorisations granted under RSA93 set limits on the activities of specified radionuclides that are authorised to be released from the site. For discharges in Scotland, the Scottish Environment Protection Agency (SEPA) is the regulatory authority under RSA93. Sources of direct radiation from sites are regulated by the Office for Nuclear Regulation (ONR).

1.2 The representative person

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 relevant dose limits and constraints, members of the public generally will receive lower doses, and overall protection of 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 the International Commission on Radiological Protection (ICRP) (ICRP, 2007).

The representative person can only be established once a dose assessment using environmental monitoring data and habits survey data has been undertaken. This survey provides information to assist SEPA in determining the representative person in the Hunterston area.

1.3 Dose limits and constraints

Doses to the representative person can be compared to nationally and internationally recommended dose limits and constraints. The Radioactive Substances (Basic Safety Standards) (Scotland) Direction 2000 (Scottish Executive, 2000) directs SEPA to ensure that the sum of doses of ionising radiation to the public do not exceed the limits set out in Article 13 of Council Directive 96/29/Euratom (CEC, 1996) and that doses should be as low as reasonably achievable (ALARA), economic and social factors being taken into account. In connection with this, SEPA is directed to have regard to the following maximum doses which may result from a defined source, for use at the planning stage in radiation protection:

a) 0.3 millisieverts per year from any source from which radioactive discharges are first made on, or after 13 May, 2000: or
b) 0.5 millisieverts per year from the discharges from any single site.

Additionally, the Government accepts that, in general it should be possible to operate existing facilities within the 0.3 mSv per year constraint. The ICRP recommends a dose limit of 1 mSv per year to members of the public from all anthropogenic sources.

2 THE SURVEY

2.1 Site activity

The Hunterston nuclear site is situated on the Ayrshire coast near West Kilbride. The site comprises two separate nuclear power stations, Hunterston A and Hunterston B. Hunterston A is owned by the Nuclear Decommissioning Authority (NDA) and operated by Magnox Electric. It was powered by twin Magnox reactors until it ceased producing electricity in 1990. Hunterston B is owned and operated by EDF Energy Nuclear Generation Ltd. The station is powered by two Advanced Gas-Cooled Reactors (AGRs) and is expected to cease electricity generation in 2016. Under authorisation from SEPA, liquid radioactive wastes from both power stations are discharged via one outfall into the Firth of Clyde and gaseous radioactive wastes are discharged to the atmosphere from the stations via separate stacks. The site contains sources of direct radiation.

2.2 Survey aims

The Centre for Environment, Fisheries & Aquaculture Science (Cefas) undertook the survey on behalf of SEPA (Cefas contract C3745 and SEPA contract R90077PUR). The aim of the survey was to obtain information on the habits of the public that might lead them to be exposed to the effects of liquid discharges, gaseous discharges and direct radiation arising from the routine activities undertaken at the Hunterston nuclear site. The survey provided comprehensive information to ensure that all potential pathways were identified.

Specifically, investigations were carried out to ascertain the following:

- The consumption of food from the aquatic survey area
- Activities and occupancy over intertidal areas
- The handling of fishing gear and sediment
- Activities and occupancy in and on water
- The use of seaweed as human or animal food or use as a fertiliser
- The consumption of food from the terrestrial survey area
- The production, use and destination of local produce
- 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

No additional site-specific investigations were requested by SEPA.

2.3 Survey areas

Three survey areas were defined to encompass the main areas potentially affected by the discharges from the Hunterston site and sources of radioactivity. These were an aquatic area relating to liquid discharges, a terrestrial area relating to the deposition of 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 eastern side of the Firth of Clyde including Fairlie Roads and the coastline between Wemyss Bay and Saltcoats. The coastline of Great Cumbrae Island was included but the coastline of Little Cumbrae Island was excluded since the main way to reach the island was by private boat.

The terrestrial survey area shown in Figure 2, included all land and watercourses within 5 km of the site centre (National Grid Reference NS 183 514). This covered the southern part of Great Cumbrae Island and the whole of Little Cumbrae Island.

The direct radiation survey area, also shown in Figure 2, was defined as the area within 1 km of the site centre.

The same aquatic, terrestrial and direct radiation survey areas were used in the previous habits survey conducted by Cefas around the Hunterston nuclear site, which was in 2007 (Sherlock *et al*., 2011).

Figure 1. The Hunterston aquatic survey area

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

Key

Hunterston Nuclear Power Stations

Allotment Site

2.4 Conduct of the survey

As part of the pre-survey preparation, SEPA was 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 at Hunterston. People with local knowledge of the survey area were contacted for information on any aspects relevant to the exposure pathways. These included a local beekeeper and representatives from a trout farm, the coastguard, a water sports centre, sailing clubs and a marine biology station. Prior to the fieldwork a proposed fieldwork programme was distributed to SEPA for their comment.

The fieldwork component of the survey was carried out from 27th June to 10th July 2012, by three members of staff from the Cefas laboratory at Lowestoft, according to techniques described by Leonard *et al.,* (1982). During the fieldwork an informal meeting was held between the survey team and representatives from the Hunterston A and B stations. This discussion provided details about current site activities, local information, potential pathways and activities in the area, and the potential transfer of contamination off-site by wildlife.

Interviews were conducted with individuals who were identified from the pre-survey preparation, or encountered during the fieldwork, that had the potential to be exposed to radioactivity from the site. These included, for example, anglers, sailors, people carrying out activities on intertidal areas, farmers, gardeners, beekeepers and people living close to the site. Interviews were used to establish individuals' consumption, occupancy and handling rates relevant to the aquatic, terrestrial and direct radiation areas. Any general information of use to the survey was also obtained. Gamma dose rate measurements were taken over intertidal substrates in the aquatic area and were also taken indoors and outdoors at most properties visited within the direct radiation area. Measurements of background gamma dose rates were taken at locations beyond 5 km from the site centre.

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. 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 purpose-built database where each individual for whom information was obtained was given a unique identifier (the observation number) to assist in maintaining data quality.

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 print and with the calculated mean rates for the high-rate group and 97.5th percentile rates noted at the foot of each table. 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 print.

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. These data were converted into consumption rates by the database using a variety of standard conversion factors. These factors included produce weights (Hessayon, 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 usually 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.

The habits data are structured into groups of food items or substrate types with similar attributes. 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, such as sand, are grouped together. The typical food groups used in habits surveys are shown in Table 1.

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	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

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.

3.4 Approaches for the identification of high rates

The habits data have been analysed to indicate high rates of consumption, occupancy and handling, prior to a formal assessment being undertaken. Two approaches have been used:

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

Secondly, 97.5th percentile rates were calculated using the Excel mathematical function for calculating percentiles. The use of percentiles accords with precedents used in risk assessment of the safety of food consumption. It should be noted that the interviewees in this study are often selected and therefore the calculated percentiles are not based on random data.

Mean and 97.5th percentile rates based on national statistics have been derived by the Ministry of Agriculture, Fisheries and Food (MAFF) (now part of 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 observed rates can be compared with the generic rates.

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 Infant and child ratios for use in dose assessments

For ingestion pathways, mean rates for the high-rate groups for infants and children have been calculated from the survey data. However, because few infant and child observations were identified, the rates should be viewed with caution. For assessment purposes, an alternative approach may be taken which involves scaling the mean rates for the adult high-rate groups by ratios. These ratios are given in Table 2 and have been calculated using generic 97.5th percentile consumption rates. Note that the age ranges within the age groups in Table 2 do not correspond exactly with the age ranges within the age groups used throughout the rest of this report.

4 AQUATIC RADIATION PATHWAYS

4.1 Aquatic survey area

The aquatic survey area (see Figure 1, page 17) covered the eastern side of the Firth of Clyde including Fairlie Roads and the coastline between Wemyss Bay and Saltcoats. The coastline of Great Cumbrae Island was included but the coastline of Little Cumbrae Island was not included since the main way of reaching the island was by private boat. The coastline in the survey area mainly comprised sand or sand and stones beaches with rocky outcrops.

Wemyss Bay to Auchengarth

Wemyss Bay (see Figure 3) marked the northern limit of the survey area. The shore was sand and stones with rocky outcrops. Families were observed playing on the beach and it was a popular location for commercial winkle collectors. It was reported that scuba divers regularly used the bay to dive around an offshore wreck. The terminal for the ferry crossing to the Isle of Bute was located in Wemyss Bay.

Figure 3. Wemyss Bay

The shore between Wemyss Bay and Largs was a mixture of rocky outcrops, sand and stones. A main road ran parallel with the shore in this area and the main access points to the shore were at Skelmorlie, Meigle Bay and Auchengarth. The only activity observed on the shore at Skelmorlie and at Meigle Bay was dog walking. Auchengarth was a popular location for anglers who fished from the rocks.

Largs

Largs was a popular seaside town featuring a large bay with a sand and stones beach (see Figure 4). Activities on the beach included playing and dog walking. There was a concrete promenade stretching along the length of the beach and many people walked along the promenade rather than on the beach. A lifeboat station was located near the promenade. There was a ferry terminal where two ferries operated between Largs and Great Cumbrae Island and a pier where commercial fishermen unloaded their catch. Angling was not permitted from the pier. To the south of the pier there were several small bays with beaches of sand, stones and rocky outcrops. There was easy access to the shore and the activities undertaken were dog walking, collecting winkles and bait digging. Largs Marina was located at the southern end of this area. The marina included a sailing club with approximately 500 members, a yacht haven with moorings for 700 yachts and a sailing institute which organised numerous sailing events during the season. A canoe club, a windsurfing club and a team of commercial divers were also based at the marina. The bay adjacent to the marina was popular with people who were kayaking, canoeing, windsurfing and sailing.

Figure 4. Largs

Offshore of Largs: Great Cumbrae Island

Great Cumbrae Island was located approximately 2 km offshore of Largs. The coastline around Great Cumbrae Island was approximately 16 km and a main road ran parallel to the shore around the whole of the island. The island had many bays which were a mixture of sand, stones and rocky outcrops. Activities were identified at Portachur Point, Deadman's Bay, Fintray Bay, Bell Bay, Little Skate Bay, White Bay, Tomont End, Ballochmartin Bay and Farland Point and included working on the shore, coastguard duties, dog walking, playing, walking, angling and collecting marine plants, cockles and mussels. One individual was collecting and consuming small quantities of sea lettuce from the rocks at Farland Point. Scotland's National Water Sports Centre was located on the north-eastern shore of Great Cumbrae Island. Instructors from the centre taught kayaking, windsurfing and sailing.

The busiest area was the seaside town of Millport, which was located at the southern end of the island. The shore at Millport stretched for over 1 km and there were two bays; Newtown Bay which had a sand and stone beach with rocky outcrops (see Figure 5) and Kames Bay which had a large sandy beach. Activities observed on the shore in the Millport area included walking, playing on the beach, rock pooling, paddling, bait digging, dog walking, metal detecting and working on the shore. Many vessels, sailing dinghies and pleasure craft were moored offshore. There was a coastguard station at Millport and a small harbour where pleasure craft and commercial fishing boats were moored. A charter boat was periodically based in the harbour and provided diving trips to wrecks around the Cumbraes and further afield, angling trips to the Fairlie Roads and trips to Little Cumbrae Island. At low tide, adults and children were observed playing on the sand in the harbour. Staff and students at the University Marine Biological Station (UMBS) located near Millport spent time on the shore at various locations around Great Cumbrae Island.

Figure 5. Newtown Bay

Fairlie to Portencross

Fairlie Sands was located to the south of Largs Marina. The sand and stone beach was approximately 2 km in length with a large expanse of sand at the southern end of the beach (see Figure 6). There was parking and easy access to the shore. A coal unloading terminal was located at the southern end of the beach. The beach was popular with dog walkers and kayaking was being undertaken offshore. Members of a sailing club kept their boats and dinghies near the shore and launched them from the public slipway.

Figure 6. Fairlie Sands

Adjacent to the western side of the coal unloading terminal was Southannan Sands. There was a large expanse of sand at low tide with patches of mussel, winkle and cockle shells. This was a popular location for several local commercial winkle collectors and an aquaculture farm was located on the sands. Dog walkers were observed in the area but they were walking above the intertidal area. There were lay-bys along the road to the Hunterston nuclear site from which Southannan Sands and the adjacent Hunterston Sands could be accessed. Located in front of the Hunterston nuclear site, Hunterston Sands (see Figure 7) was predominantly sand interspersed with areas of stones. The northern part of Hunterston Sands was backed by sea defence boulders. Activities identified taking place on Hunterston Sands included collecting cockles and mussels, bait digging and dog walking.

Figure 7. Hunterston Sands

Offshore of Hunterston: Little Cumbrae Island

Little Cumbrae Island was a private island located approximately 3 km offshore of Hunterston. The island's shore was predominantly cliffs and rocky outcrops. The main way to access the island was by private boat but there was one charter boat based in Largs and one charter boat based in Millport that occasionally provided day trips to the island. Due to the limited access, the island was not visited during the survey.

Portencross to Seamill

South of Hunterston Sands, the rocky shore could only be accessed from a footpath. Portencross was a small hamlet with a rocky shore, a pier and a natural harbour that dried out at low tide. Angling was very popular from the pier since the anglers could cast into deeper water (see Figure 8); anglers also fished from the rocks. Adults and children were observed playing and rock pooling on the rocks. Two small angling boats were moored in the harbour and one person was identified who collected seaweed from the harbour to use as a soil fertiliser.

The shore between Portencross and Ardrossan comprised many sandy beaches with rocky outcrops. All of the beaches along this stretch of coast were well used by walkers and dog walkers. Ardneil Bay was popular with horse riders and one person was identified who was metal detecting. West Kilbride beach and the adjacent Seamill beach appealed to families with children due to the easy access from the nearby town.

Figure 8. Portencross Pier

Ardrossan and Saltcoats

Ardrossan and Saltcoats were adjoining seaside towns; Saltcoats being the southern limit of the survey area. Ardrossan Harbour was located in a rocky headland. The inner harbour had a marina with approximately 240 berths, the majority of which were for sail boats with a smaller number of angling boats and commercial fishing vessels. The outer harbour had moorings for larger vessels and a ferry terminal for the Ardrossan to Isle of Arran ferry. Anglers fished from the outer harbour walls. There were two large sandy beaches either side of the headland; Ardrossan North Beach and Ardrossan South Beach (see Figure 9). Both beaches were very popular with dog walkers. There were boulder scars on Ardrossan North Beach where winkles were frequently gathered by local commercial collectors. Bait digging was also undertaken at low water and mussels were collected from the rocks near the harbour entrance. Ardrossan South Beach was adjacent to the main town area and it was popular with families with children who were walking and playing.

Ardrossan South Beach merged into Saltcoats beach, at the end of which was a rocky headland. There were several tidal swimming pools, which did not appear to be in use at the time of the survey. Saltcoats Harbour was a natural harbour located within the headland. At low tide the harbour mostly dried out exposing large areas of rocks, stones and sand. There was one slipway but no boats were observed during the survey. The only activities that were identified at Saltcoats were collecting winkles and angling.

Figure 9. Ardrossan South Beach

4.2 Commercial fisheries

The main commercial fishing methods identified in the survey area were trawling and creeling. The trawlers targeted *Nephrops* and the creel fishermen targeted brown crab and common lobster or *Nephrops*. The fishermen also caught mixed fish species, squat lobster and scallops as a by-catch. The boats that were fishing in the aquatic survey area were based at Largs Marina, Ardrossan Marina, Millport (Great Cumbrae Island) and Rothesay (on the Isle of Bute). The trawlers mainly fished along the Fairlie Roads and the creel fishermen set their creels offshore of Wemyss Bay and between Largs and Saltcoats. Two fishermen also fished for mackerel and pollack using rod and line, which were sold for human consumption and also used for bait.

Several commercial winkle collectors were identified collecting winkles from the shore at Southannan Sands, Wemyss Bay, Ardrossan North Beach and Saltcoats. One aquaculture farm was located on Southannan Sands.

It was reported that four boats were fishing commercially for razor clams within the survey area using electrical cables but no detailed information could be obtained since this fishing practice is currently illegal in Scotland. This fishing method involves towing electrified cables slowly across the seabed in order to stimulate razor clams to leave their burrows within the seabed. Divers follow the path of the cables and collect the razor clams.

4.3 Destination of seafood originating from the aquatic survey area

The *Nephrops*, brown crab and common lobster were exported to Europe or sold in Scotland. The winkles were sold to shellfish merchants in Ardrossan and Arran and were exported to Spain. The product from the aquaculture farm was sold within the UK and was exported to the Far East. A local wet fish shop sold fish and shellfish that were caught in the survey area.

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 creels, which is usually carried out from boats that do not have commercial fishing licences, and therefore, it is illegal to offer the catch for sale. Two hobby fishermen were creeling for brown crabs and common lobsters offshore of Portencross and along the Fairlie Roads. One of whom was also creeling for *Nephrops* along the Fairlie Roads. The catches were consumed by the fishermen and their families and friends.

Shore angling was popular in the survey area, particularly from the pier at Portencross. Shore angling was also identified at Farland Point on Great Cumbrae Island, Auchengarth and from the harbour wall at Ardrossan. Boat angling was also popular in the aquatic survey area along the Fairlie Roads and offshore of Millport Bay on Great Cumbrae Island, Wemyss Bay and between Hunterston and Ardrossan. Most of the shore anglers who were interviewed were fishing for mackerel. Other species caught by shore and boat anglers included pollack, cod, saithe and bass. One charter boat was periodically based in Millport Harbour and provided angling trips along the Fairlie Roads.

Small amounts of molluscs were being collected non-commercially in the aquatic area. One individual was identified diving in the area to the north of Great Cumbrae Island for king scallops for their own consumption. Cockles and mussels were collected from Hunterston Sands, mussels were also collected from Ardrossan North Beach and winkles were collected from Largs.

4.5 Wildfowling

It was reported that many years ago wildfowling occurred on Southannan Sands. However, this has not been undertaken in recent years. No other locations were identified in the survey area where wildfowling took place.

4.6 Other pathways

One person collected seaweed (unspecified species) from Portencross Harbour to use as a soil fertiliser on their fruit and vegetable garden. Three individuals were identified consuming sea lettuce which had been collected from Farland Point on Great Cumbrae Island.

4.7 Internal exposure

Adults' consumption data for foods from the aquatic survey area are shown in Tables 3 to 6 and adults' consumption data for vegetables and fruit grown in soil that had been fertilised with seaweed are shown in Table 7. Children's and infants' consumption data for foods from the aquatic survey area are shown in Tables 8 and 9.

Adults' consumption rates

The main consumers of seafood from the aquatic survey area were commercial fishermen, anglers, shellfish collectors and their families.

Table A presents a summary of the consumption rates for fish, crustaceans, molluscs, and marine plants/algae from the aquatic survey area. No consumption of wildfowl 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 based on national data, which are referred to as 'generic' data in this report. No generic rates have been determined for marine plants/algae.

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

Food group	Number of observations	Number of people in the high-rate group	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	92	23	22.2	7.5	11.2	15.2	15.0	40.0
Crustaceans	72	9	20.9	9.1	12.3	12.0	3.5	10.0
Molluscs	36	1	10.9	10.9	10.9	2.9	3.5	10.0
Marine plants/algae	3	3	0.2	0.2	0.2	0.2	ND	ND

Notes
ND - not determined

The predominant species of fish consumed by adults were mackerel and pollack, with smaller quantities of herring, cod, whiting, saithe and bass. These fish were mainly caught from Fairlie Roads, Largs, Portencross, Hunterston, Ardrossan, Saltcoats, Wemyss Bay and various locations on Great Cumbrae Island, including Portachur Point, Farland Point and Millport Bay. Of the fish consumed by the 23 people in the high-rate group, the percentage breakdown of species were, 56% mackerel, 19% pollack, 7 % herring, 7% cod and 11% a mix of whiting, saithe and bass.

The predominant species of crustaceans consumed by adults were *Nephrops*. Smaller quantities of brown crab, common lobster and squat lobster were also consumed. These crustaceans were mainly caught from Fairlie Roads, Portencross, Saltcoats, Largs and Ardrossan. Of the crustaceans consumed by the nine people in the high-rate group, the percentage breakdown of species was 70% *Nephrops*, 23% brown crab and 7% common lobster.

The predominant species of molluscs consumed by adults was king scallops. Smaller quantities of Pacific oysters, queen scallops, mussels, horse mussels, cockles and winkles were also consumed. These molluscs were caught from Fairlie Roads, Southannan Sands, Ardrossan North Beach, Saltcoats, Hunterston, Largs and various locations around Great Cumbrae Island. Of the molluscs consumed by adults in the high–rate group the percentage breakdown was 79% king scallop and 21% Pacific oyster.

Three adults were consuming marine plants/algae. The only species consumed was sea lettuce which was collected from the rocks at Farland Point on Great Cumbrae Island.

Five adults were identified consuming vegetables and fruit grown in fertiliser made with seaweed collected from Portencross Harbour. Table 7 presents the consumption rates of vegetables and fruit consumed. These foods are included in the aquatic section of this report as the exposure pathway is sea to land transfer and the source of potential exposure is liquid discharges from the Hunterston site. These foods were grown in the terrestrial survey area and they are also potentially subject to gaseous discharges. Therefore, they are also included in the terrestrial food groups and are included once in Annex 1 as terrestrial foods.

Children's and infants' consumption rates

Table B presents a summary of children's and infants' consumption rates of fish and crustaceans 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 and infant age groups, no consumption of molluscs, marine plants/algae or wildfowl was identified. The age group names and their relevant age ranges are listed in Section 3.3.

Table B. Summary of children's and infants' consumption rates of foods from the aquatic survey area						
Food group	Number of observations	Number of people in the high-rate group	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	13	8	10.7	3.8	7.1	10.7
Crustaceans	1	1	0.2	0.2	0.2	NA
Infant age group (0 – 5 years old)						
Fish	4	4	1.9	0.6	1.1	1.9
Crustaceans	2	1	0.1	0.1	0.1	0.1

Notes
NA = not applicable

The main species of fish consumed by individuals in the child age group were mackerel and pollack with smaller quantities of bass, saithe and cod. These fish were mainly caught from Fairlie Roads, Largs, Ardrossan, Saltcoats, Portencross and Millport Bay on Great Cumbrae Island. The main species of fish consumed by individuals in the infant age group was mackerel and pollack with smaller quantities of cod and common ling. These fish were mainly caught from Fairlie Roads, Portencross and Millport Bay on Great Cumbrae Island.

The only species of crustaceans consumed by the individual in the child age group was squat lobster which was caught from Fairlie Roads. The species of crustaceans consumed by individuals in the infant age group were squat lobster and *Nephrops* which were caught from Fairlie Roads.

4.8 External exposure

Intertidal occupancy

Intertidal occupancy rates for adults are presented in Table 10 and for children and infants are presented in Table 11. 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	12	12	12
Rock	31	3	265	184	174
Sand	63	9	730	439	510
Sand and stones	38	11	400	315	400
Stones	13	2	235	167	194

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

- For mud: coastguard duties at various locations around Great Cumbrae Island.
- For rock: coastguard duties at various locations around Great Cumbrae Island; working on the shore at Farland Point and Portachur Point on Great Cumbrae Island; dog walking at Deadman's Bay on Great Cumbrae Island; and angling at Portencross.
- For sand: dog walking at Ardneil Bay, West Kilbride, Seamill, Ardrossan North Beach and Ardrossan South Beach; collecting winkles at Southannan Sands; bait digging from Largs to Saltcoats; and metal detecting at Ardneil Bay, Ardrossan North Beach and Ardrossan South Beach.
- For sand and stones: collecting winkles at Wemyss Bay, Ardrossan North Beach, Largs and Saltcoats; dog walking at Largs (south) and Fairlie Sands; working on the shore at Millport on Great Cumbrae Island; and coastguard duties at various locations around Great Cumbrae Island.
- For stones: dog walking at Portachur Point on Great Cumbrae Island.

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)					
Rock	9	3	144	120	144
Sand	15	2	156	106	121
Sand and stones	14	6	27	21	27
Stones	2	2	1	1	1
Infant age group (0 - 5 years old)					
Rock	2	1	84	84	82
Sand	6	3	90	62	86
Sand and stones	5	3	27	21	27

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

- For rock: playing at Auchengarth and Portencross; and angling at Auchengarth.
- For sand: dog walking and playing at Ardrossan South Beach.
- For sand and stones: playing at Newtown Bay and Fintray Bay on Great Cumbrae Island, Wemyss Bay and Largs.
- For stones: playing at various locations around Great Cumbrae Island.

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

- For rock: rock pooling at Portencross.
- For sand: playing at Kames Bay on Great Cumbrae Island and Ardrossan South Beach.
- For sand and stones: playing at Wemyss Bay and at Newtown Bay, Fintray Bay and Bell Bay on Great Cumbrae Island.

Gamma dose rate measurements

Gamma dose rate measurements were taken over intertidal substrates to supplement those of SEPA's scheduled monitoring programme. These measurements are presented in Table 12 and are summarised below.

- Eight measurements taken over sand ranged from 0.048 µGy h^{-1} to 0.063 µGy h^{-1}
- Nine measurements taken over sand and stones ranged from 0.051 µGy h^{-1} to 0.071 µGy h^{-1}
- One measurement taken over stones was 0.064 µGy h^{-1}

Handling 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 there is a separate dose limit for skin for members of the public. There is also a contribution to effective dose due to skin exposure (ICRP, 1991). The handling of angling equipment was not considered to be a significant pathway since angling equipment does not generally become entrained with sediment. Therefore, as in previous surveys, data for this pathway were not collected.

Table 13 presents the adults' handling rates of fishing gear and sediment recorded during the survey and Table 14 presents the children's handling rates of sediment recorded during the survey. No individuals in the infant age group were identified handling sediment at the time of the survey and no individuals in the child or infant age group were identified handling fishing gear.

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	32	5	1980	1464	1980
Handling sediment	23	6	800	548	800

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

- For handling fishing gear: handling creels and trawl gear along the Fairlie Roads.
- For handling sediment: collecting winkles at Southannan Sands, Wemyss Bay, Largs, Ardrossan North Beach and Saltcoats; bait digging from Largs to Saltcoats.

Most of the fishermen interviewed wore gloves while operating trawl gear and creels. However, gloves could be taken off to mend fishing gear or perform certain operations at sea. None of the winkle collectors interviewed were wearing gloves. One commercial bait digger was wearing gloves but other bait diggers were not wearing gloves.

Children's handling rates of sediment

Table F presents the handling rates of sediment recorded during the survey for children. The table includes the mean handling rates for the high-rate groups and one observed 97.5th percentile rate.

Table F. Summary of children's handling rates of sediment

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)				
1	1	2	2	Not applicable

The activity undertaken by the only individual in the child age group high-rate group for handling sediment was bait digging at Kames Bay on Great Cumbrae Island.

Water based activities

Activities taking place in or on the water can potentially 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 and 97.5th percentile rates have not been calculated. Activities where there is a high potential of the individual's face submersing under the water have been classified as activities 'in water' since they are 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 15. Occupancy rates for activities taking place 'in water' and 'on water' in the survey area for the child age group and 'on water' for the infant age group are presented in Table 16. No individuals in the infant age group were identified spending time 'in water' in the survey area.

Activities taking place in the water in the aquatic survey area included kayaking, windsurfing, sub-aqua diving, snorkelling and swimming. Twenty-seven observations were recorded for occupancy in the water for adults. The highest occupancy rate in water for adults was 450 h y^{-1} for a watersports instructor who taught windsurfing and kayaking off Great Cumbrae Island. The highest occupancy rate in water for individuals in the child age group was 5 h y^{-1} for two children who were swimming at Kames Bay on Great Cumbrae Island.

Activities taking place on the water in the survey area included creeling, trawling, crewing on various vessels, sailing, lifeboat duties, boat angling, travelling to and from diving locations, canoeing, pleasure cruising, rowing, paddling and playing on a lilo. One hundred and thirteen observations were recorded for adults. The highest occupancy rate on water for adults was 3500 h y^{-1}, which was for two individuals who were trawling along the Fairlie Roads. Of the six individuals in the child age group, the highest occupancy rate was 8 h y^{-1} for three children who were paddling at Newtown Bay and Fintray Bay on Great Cumbrae Island. Of the six individuals in the infant age group, the highest occupancy rate was 4 h y^{-1} for two infants who were playing on a lilo at Kames Bay on Great Cumbrae Island.

5 TERRESTRIAL RADIATION PATHWAYS

5.1 Terrestrial survey area

The terrestrial survey area (see Figure 2, page 18) included all land and watercourses within 5 km of the Hunterston site centre (National Grid Reference NS 183 514). Fourteen working farms were identified within the survey area, three of which were on Great Cumbrae Island. One farm produced milk, two farms produced beef, one farm produced lamb, eight farms produced beef and lamb, one farm produced beef, lamb and potatoes, and one farm produced beef, lamb, potatoes, turnips, carrots and barley. The majority of the farmers grew winter feed for their livestock, which included cereals, grass, hay, swede and silage. No farms were identified on Little Cumbrae Island.

Beef cattle and lambs were sold through Ayr or Stirling livestock markets or sold to local abattoirs. Milk was sold via a dairy co-operative. Potatoes were sold privately or to local shops or supermarket chains and vegetables were sold privately. One farmer kept chickens for eggs for their own family's consumption. Farmers and their families were consuming milk, beef and lamb produced on their own farms.

One allotment site was identified within the survey area with approximately 30 plots. The allotment holders were consuming a variety of vegetables and fruit grown on their plots. Many people were interviewed who grew a wide range of fruit and vegetables in their gardens, one of whom was selling potatoes from the door. One family was consuming fruit that had been grown on Little Cumbrae Island. Four individuals and their families were identified who kept chickens and consumed chicken eggs, one of whom also kept ducks for eggs.

Four beekeepers were identified with hives in the survey area. The beekeepers kept their hives in the vicinity of the Hunterston site and in the Fairly area. The honey produced per hive ranged from 9 kg y^{-1} to 27 kg y^{-1}. The honey was consumed by the beekeepers and their families and sold locally to small businesses. Two of the beekeepers were selling the majority of the honey they produced to businesses outside of the terrestrial survey area.

The consumption of wild foods from within the terrestrial survey area included blackberries, dandelion leaves, elderflowers, hawthorn fruit, nettles, sloes, wild garlic and mushrooms. Pheasants were reared within the survey area and were shot and consumed by members of shooting syndicates. Grey squirrels were culled and were consumed. Pheasant, pigeon, hares, rabbits, mallard and greylag geese were shot on farmland and were consumed.

A freshwater reservoir which was stocked with rainbow trout and also contained wild brown trout was located to the east of the Hunterston nuclear site. The reservoir was regularly fished by its club members who consumed brown trout and rainbow trout.

The consumption of groundwater by humans and livestock was identified. Two farms were using spring water as their sole domestic supply and as drinking water for livestock. Livestock at many of the farms were provided with well or spring water and had access to ditch or burn 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. The specific policy for controlling or monitoring of wildlife on the Hunterston site included the periodic culling of pigeons and gulls.

5.2 Land cover

Figure 10 shows the soil types in the area around the Hunterston site. The figure is reproduced from a land cover map produced by Macaulay Land Use Research Institute, with their consent.

On the mainland, a large proportion of the survey area was arable land and there were areas of heather moor to the east and smooth grassland to the north. The main urban area was West Kilbride which was located to the south of the survey area. The southern part of Great Cumbrae Island was within the survey area and the land was arable and heather moor. The town of Millport was located in this area. Little Cumbrae Island was predominantly smooth grassland.

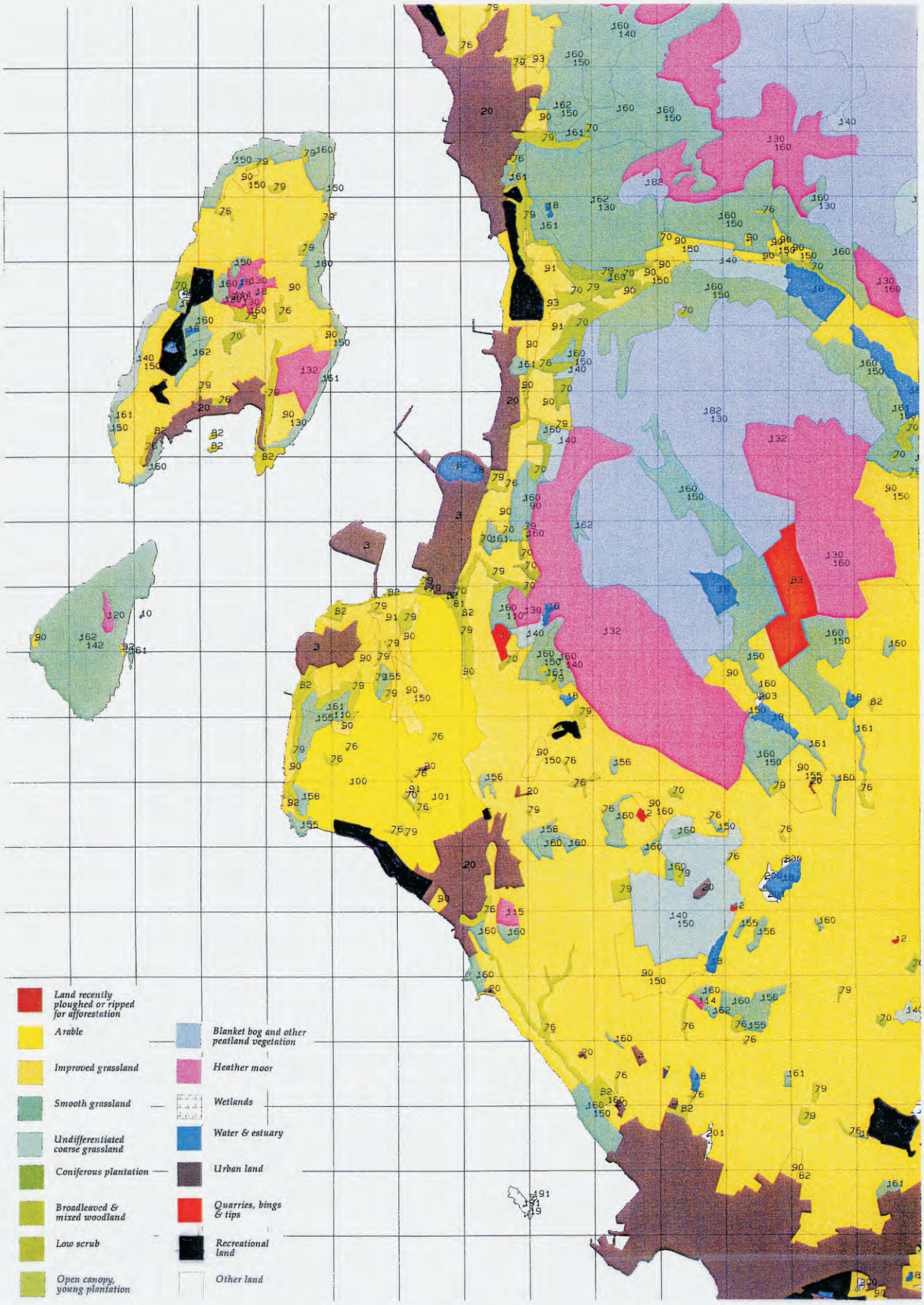

Figure 10. Land cover in the Hunterston area

The number codes on the figure relate to point and line features not shown in the key.
Reproduced with the permission of the Macaulay Institute for Soil Research, Aberdeen.
Base scale is 1:50000

5.3 Internal exposure

Consumption data for locally produced foodstuffs potentially affected by gaseous discharges are presented in Tables 17 to 33 for adults and Tables 34 to 44 for children and infants.

Adults' consumption rates

Consumption of locally produced foods was identified in the following 17 food groups: green vegetables, other vegetables, root vegetables, potato, domestic fruit, milk, cattle meat, sheep meat, poultry, eggs, wild/free foods, rabbits/hares, squirrels, honey, wild fungi, freshwater fish and freshwater plants. No consumption of pig meat, venison or cereals was identified.

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

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

Food group	Number of observations	Number of people in the high-rate group	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	31	7	34.1	12.5	19.7	29.9	15.0	45.0
Other vegetables	26	13	18.0	6.2	10.1	13.6	20.0	50.0
Root vegetables	27	12	82.9	32.0	50.7	82.9	10.0	40.0
Potato	29	9	104.0	45.4	77.3	104.0	50.0	120.0
Domestic fruit	33	5	57.5	29.4	44.3	51.6	20.0	75.0
Milk	8	3	486.7	486.7	486.7	486.7	95.0	240.0
Cattle meat	4	4	23.7	23.7	23.7	23.7	15.0	45.0
Sheep meat	11	6	5.7	3.0	4.8	5.7	8.0	25.0
Poultry	16	7	5.9	2.7	5.0	5.9	10.0	30.0
Eggs	42	7	41.6	18.0	29.3	41.3	8.5	25.0
Wild/free foods	22	3	13.6	5.0	7.9	9.1	7.0	25.0
Rabbits/hares	9	5	9.6	9.6	9.6	9.6	6.0	15.0
Squirrels	3	3	1.5	0.5	0.8	1.5	ND	ND
Honey	16	3	10.7	5.4	8.8	10.6	2.5	9.5
Wild fungi	2	2	0.8	0.8	0.8	0.8	3.0	10.0
Freshwater fish	6	4	31.4	26.7	30.3	31.4	ND	ND
Freshwater plants	2	2	0.5	0.5	0.5	0.5	ND	ND

Notes
ND – Not determined

Three observed 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 root vegetables, milk and eggs. Ten observed 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, eggs, wild/free foods, rabbits/hares and honey. Four observed 97.5th percentile consumption rates exceeded the generic 97.5th percentile consumption rates. These were for root vegetables, milk, eggs and honey. There are currently no generic consumption data available for squirrels, freshwater fish and freshwater plants so no comparisons can be made.

The percentage contribution each food type makes to its terrestrial food group, for adults, is presented in Table 45.

Children's and infants' consumption rates

Table H presents a summary of the children's and infants' 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. No generic data have been determined for the child or infant age groups.

Individuals in the child age group were identified consuming foods from the following food groups: potato, poultry, eggs, rabbits/hares, honey and freshwater fish. No consumption of foods from the following food groups was identified: green vegetables, other vegetables, root vegetables, domestic fruit, milk, cattle meat, pig meat, sheep meat, wild/free foods, squirrels, wild fungi, venison, freshwater plants and cereals.

Individuals in the infant age group were identified consuming foods from the following food groups: green vegetables, other vegetables, root vegetables, domestic fruit, poultry, eggs, rabbits/hares, squirrels and honey. No consumption of foods from the following food groups was identified: potato, milk, cattle meat, pig meat, sheep meat, wild/free foods, wild fungi, venison, freshwater fish, freshwater plants and 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 people in the high-rate group	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)						
Potato	2	2	10.0	10.0	10.0	10.0
Poultry	3	3	2.4	1.2	1.6	2.4
Eggs	2	2	1.4	1.4	1.4	1.4
Rabbit/hares	3	3	1.4	0.7	0.9	1.3
Honey	3	3	1.9	1.5	1.6	1.9
Freshwater fish	3	3	1.6	1.6	1.6	1.6
Infant age group (0 - 5 years old)						
Green vegetables	2	2	1.1	0.5	0.8	1.1
Other vegetables	4	3	1.3	0.9	1.0	1.3
Root vegetables	2	2	0.4	0.2	0.3	0.4
Domestic fruit	3	2	10.7	10.7	10.7	10.7
Poultry	1	1	0.6	0.6	0.6	NA
Eggs	1	1	1.1	1.1	1.1	NA
Rabbits/hares	1	1	0.1	0.1	0.1	NA
Squirrels	1	1	0.3	0.3	0.3	NA
Honey	1	1	0.2	0.2	0.2	NA

Notes
NA = Not applicable

6 DIRECT RADIATION PATHWAYS

6.1 Direct radiation survey area

The direct radiation survey area (see Figure 2, page 18) covered the area within 1 km of the Hunterston nuclear site centre (National Grid Reference NS 183 514).

The Hunterston nuclear site is positioned on the coast, approximately 4 km north of West Kilbride. The Hunterston B station is on the north-east side of the site and the Hunterston A station is on the south-west side of the site. The direct radiation survey area comprises tidal sands to the west and north, a tree covered hill immediately to the south of the A station, and rough grazing to the north and east. A public footpath ran along the Hunterston site access road and south along the coast to Portencross.

The main concentration of residential properties in the survey area was situated in the east and south-east of the Hunterston site. This included two properties to the east and three properties to the south-east, one of which was as a working farm. There was a single property immediately to the south of the Hunterston site.

6.2 Occupancy rates and gamma dose rate measurements

Interviews were conducted at seven residences. One of the residential properties was occupied by a family with children. Indoor, outdoor and total occupancy rates for adults, children and infants are presented in Table 46. The highest indoor occupancy rate was 7700 h y^{-1}, the highest outdoor occupancy rate was 3400 h y^{-1} and the highest total occupancy rate was 8500 h y^{-1}. These rates were all for residents.

Gamma dose rate measurements were taken both indoors and outdoors at most properties where interviews were conducted. Outdoor measurements were taken approximately 5 to 10 metres from the nearest building. Gamma dose rate measurements over rough grass were taken at locations at beyond the outer limit of the terrestrial survey area 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 natural background dose rates.

The results are presented in Table 47 and are summarised below:

Indoor measurements

- Five gamma dose rate measurements taken over wood ranged from 0.070 µGy h^{-1} to 0.107 µGy h^{-1}
- Two gamma dose rate measurements taken over concrete ranged from 0.090 µGy h^{-1} to 0.096 µGy h^{-1}

Outdoor measurements

- Six gamma dose rate measurements taken over grass ranged from 0.056 µGy h^{-1} to 0.074 µGy h^{-1}
- One gamma dose rate measurement taken over soil was 0.082 µGy h^{-1}

Background measurements

- The background measurements taken over grass ranged from 0.052 µGy h^{-1} to 0.063 µGy h^{-1}

It should be noted that the underlying geology may cause variations in the gamma dose measurement readings. The geology of the areas where measurements were taken during this survey was not investigated. The gamma dose rate measurements were taken at varying times of the day.

7 USES OF HABITS DATA FOR DOSE ASSESSMENTS

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 and are therefore apparent. 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 Annex 3. Each of the 26 combinations shown in this table 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 Annex 3 do not correlate directly with observation numbers in Annex 1. Other individuals from Annex 1 have combinations that are not listed in Annex 3 because they have fewer pathways and a dose assessment for them would be adequately covered by one of the 26 listed combinations.

8 COMPARISONS WITH THE PREVIOUS SURVEY

The results from this 2012 survey can be compared with results from the last habits survey, undertaken at Hunterston in 2007. The aquatic and terrestrial survey areas in the 2012 survey were the same as those in the 2007 survey.

Aquatic survey

A comparison between the 2007 and 2012 consumption rates of aquatic foods for adults is presented in Table I.

Table I. Comparison between 2007 and 2012 consumption rates of aquatic food groups for adults

	2007			2012		
Food group	**Number in high-rate group**	**Maximum consumption rate (kg y^{-1})**	**Mean consumption rate for the high-rate group (kg y^{-1})**	**Number in high-rate group**	**Maximum consumption rate (kg y^{-1})**	**Mean consumption rate for the high-rate group (kg y^{-1})**
Fish	10	66.5	47.0	23	22.2	11.2
Crustaceans	4	28.0	18.0	9	20.9	12.3
Molluscs	6	24.0	21.0	1	10.9	10.9
Marine plants/algae	Not identified			3	0.2	0.2

The mean consumption rate for the adult high-rate group decreased for fish, crustaceans and molluscs in 2012 when compared with 2007. The consumption of marine plants/algae was identified in 2012 but was not identified in 2007.

The species of fish consumed by the adult high-rate group in 2007 were mackerel, whiting, haddock, cod, pollack, saithe, conger eel and mixed fish. The same species were consumed by the adult high-rate group in 2012 except for haddock, conger eel and mixed fish and with the addition in 2012 of herring and bass. The species of crustaceans consumed by the adult high-rate group in 2007 and 2012 were *Nephrops* and common lobster. In 2007 squat lobster were also consumed and in 2012 brown crab were also consumed. In 2007, the species of molluscs consumed by the adult high-rate group were king scallop, Pacific oyster, razor clam, mussels, winkles and Manila clam. In 2012, the species of molluscs consumed was king scallop and Pacific oyster.

The decrease of the consumption rate of molluscs in 2012 was attributed to three consumers from the high-rate group in 2007 who were no longer living in the survey area in 2012. No specific reasons were identified for the changes in the other food groups.

A comparison between the 2007 and 2012 aquatic external exposure pathways for adults is presented in Table J.

Table J. Comparison between 2007 and 2012 intertidal occupancy rates and handling rates of fishing gear and sediment for adults

	2007			2012		
Intertidal substrate or handling pathway	**Number of people in the high-rate group**	**Maximum occupancy or handling rate (h y^{-1})**	**Mean occupancy or handling rate for the high-rate group (h y^{-1})**	**Number of people in the high-rate group**	**Maximum occupancy or handling rate (h y^{-1})**	**Mean occupancy or handling rate for the high-rate group (h y^{-1})**
Mud	2	56	56	5	12	12
Mud and sand	3	150	93	Not identified		
Mud and stones	1	300	300	Not identified		
Rock	5	350	270	3	265	184
Sand	5	730	440	9	730	439
Sand and stones	2	350	300	11	400	315
Stones	Not identified			2	235	167
Handling fishing	6	1600	1200	5	1980	1464
Handling sediment	3	700	440	6	800	548

In 2012, compared to 2007, the mean intertidal occupancy rate for the adult high-rate group decreased slightly for mud and for rock. The mean intertidal occupancy rate for the adult high-rate group over sand was broadly similar in both 2007 and 2012. The mean intertidal occupancy rate for the adult high-rate group over sand and stones had increased slightly in 2012 compared with 2007. In 2012, activities were identified taking place over stones but were not recorded in 2007. In 2007, activities were recorded over mud and sand and over mud and stones but no activities were identified over these substrates in 2012.

In 2012, the mean rates for the adult high-rate groups for handling fishing gear and sediment had increased slightly compared with 2007. No reasons were identified for the increases in the handling of fishing gear or sediment.

Terrestrial survey

A comparison between the 2007 and 2012 mean consumption rates for the adult high-rate groups for terrestrial foods is presented in Table K.

Table K. Comparison between 2007 and 2012 mean consumption rates for the adult high-rate groups for terrestrial food groups (kg y^{-1} or l y^{-1})

Food group	2007	2012
Green vegetables	15.6	19.7
Other vegetables	22.8	10.1
Root vegetables	75.0	50.7
Potato	67.9	77.3
Domestic fruit	40.6	44.3
Milk	312.1	486.7
Cattle meat	58.3	23.7
Sheep meat	8.5	4.8
Poultry	51.3	5.0
Eggs	19.3	29.3
Wild/free foods	4.5	7.9
Rabbits/hares	12.4	9.6
Squirrels	Not identified	0.8
Honey	10.8	8.8
Wild fungi	0.6	0.8
Freshwater fish	24.2	30.3
Freshwater plants	Not identified	0.5

In 2012, consumption rates had increased in the following food groups: green vegetables, potato domestic fruit, milk, eggs, wild/free foods, wild fungi and freshwater fish. Consumption rates had decreased in the following food groups: other vegetables, root vegetables, cattle meat, sheep meat, poultry, rabbits/hares and honey. The consumption of squirrels and freshwater plants was identified in the 2012 survey but was not identified in the 2007 survey.

The large decrease in the mean consumption rate for the high-rate group for poultry was attributed to the two consumers in the high-rate group in 2007 who kept chickens and were consuming large quantities of chicken. They were re-interviewed in 2012 but were no longer keeping or consuming chickens. There was a large increase in the mean consumption rate for the high-rate group for milk as a result of one family who increased their milk consumption in 2012. Another family had stopped drinking milk when re-interviewed in 2012, and therefore, there were fewer people in the high-rate group for milk in 2012. The large decrease in the mean consumption rate for the high-rate group for beef was due to one family who were in the high-rate group in 2007 who were still consuming beef in 2012 but in smaller quantities. No specific reasons were identified for the other changes in consumption rates.

Direct radiation survey

The activities that were identified in the direct radiation survey area in 2007 and 2012 were similar and included people residing and farming. Additionally in 2012, visitors to the direct radiation survey area were identified.

A comparison between the 2007 and 2012 direct radiation occupancy rates is presented in Table L.

Table L. Comparison between 2007 and 2012 direct radiation occupancy rates (h y^{-1})

	2007	**2012**
Highest indoor	7200	7668
Highest outdoor	3360	3402
Highest total	8448	8534

In 2012 the highest indoor, highest outdoor and highest total occupancy rates had all increased slightly when compared with 2007. The highest occupancy rates in both 2007 and 2012 were for residents.

9 MAIN FINDINGS

9.1 Survey findings

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

- Discharges of liquid radioactive waste to the Firth of Clyde
- Discharges of gaseous radioactive waste to the atmosphere
- Emissions of direct radiation

Data were collected for 414 individuals including, commercial fishermen, anglers, sailors, shellfish collectors, dog walkers, farmers, gardeners, beekeepers and people spending time within the direct radiation survey area. These people were targeted because their habits or where they live may cause them to be exposed to radioactivity or radiation from the site. However, it should be noted that the most exposed people could 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. The consumption and occupancy rates presented in this section are for adults only. However, consumption and occupancy rates were also obtained for individuals in the child age group (6 - 15 years old), and in the infant age group (0 - 5 years old).

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:

- 11 kg y^{-1} for fish
- 12 kg y^{-1} for crustaceans
- 11 kg y^{-1} for molluscs
- 0.2 kg y^{-1} for marine plants/algae

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

- For fish: mackerel and pollack
- For crustaceans: *Nephrops* and lobster
- For molluscs: king scallops and Pacific oysters
- For marine plants/algae: sea lettuce

The consumption of wildfowl was not identified. One individual was identified collecting seaweed from Portencross Harbour, which was used as a fertiliser on soil where vegetables and fruit were grown

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

- 12 h y^{-1} for mud
- 180 h y^{-1} for rock
- 440 h y^{-1} for sand
- 320 h y^{-1} for sand and stones
- 170 h y^{-1} for stones

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

- 1500 h y^{-1} for handling fishing gear
- 550 h y^{-1} for handling sediment

The handling of angling equipment was not considered to be a significant pathway, and therefore, as in previous surveys, data for this pathway were not collected.

The adult maximum occupancy rates for water based activities were:

- 450 h y^{-1} for occupancy in water
- 3500 h y^{-1} for occupancy on water

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:

- 20 kg y^{-1} for green vegetables
- 10 kg y^{-1} for other vegetables
- 51 kg y^{-1} for root vegetables
- 77 kg y^{-1} for potato
- 44 kg y^{-1} for domestic fruit
- 490 l y^{-1} for milk
- 24 kg y^{-1} for cattle meat
- 4.8 kg y^{-1} for sheep meat
- 5.0 kg y^{-1} for poultry
- 29 kg y^{-1} for eggs
- 7.9 kg y^{-1} for wild/free foods
- 9.6 kg y^{-1} rabbits/hares
- 0.8 kg y^{-1} squirrels
- 8.8 kg y^{-1} for honey

- 0.8 kg y^{-1} for wild fungi
- 30 kg y^{-1} for freshwater fish
- 0.5 kg y^{-1} for freshwater plants

No consumption of pig meat, venison or cereals from the survey area was identified. The consumption of foodstuffs from the terrestrial survey area by children and infants was also recorded.

Two farms were identified using spring water as their sole domestic water supply. Livestock at many of the farms were provided with well or spring water and had access to ditch or burn water.

The specific policy for controlling or monitoring of wildlife on the Hunterston site included the periodic culling of pigeons and gulls.

Direct radiation survey area

The highest occupancy rates within the direct radiation survey area were:

- 7700 h y^{-1} for the indoor occupancy rate (for a resident)
- 3400 h y^{-1} for the outdoor occupancy rate (for a resident)
- 8500 h y^{-1} for the total occupancy rate (for a resident)

10 SUGGESTIONS FOR CHANGES TO THE MONITORING PROGRAMME

Information collected during this habits survey can be used to make suggestions for changes to the current SEPA monitoring programme. A summary of the current environmental monitoring programme is provided below, followed by the suggestions for changes to the programme.

10.1 Summary of the current environmental monitoring programme

The 2011 SEPA monitoring programme, which is published in the RIFE report (EA, FSA, NIEA and SEPA 2012) included the samples and measurements listed below. The location names, foods and substrate classifications are taken directly from that publication. Some of the samples and measurements taken for the monitoring programmes may be from outside the survey area used for this habits survey.

Aquatic monitoring

Sample	**Location**
Cod	Millport
Hake	Millport
Mackerel	Firth of Clyde
Pollock	Millport
Crabs	Millport
Nephrops	Millport
Lobsters	Largs
Squat lobsters	Largs
Mussels	Hunterston
Winkles	Pipeline
Scallops	Largs
Oysters	Hunterston
Fucus vesiculosus	N of pipeline
Fucus vesiculosus	S of pipeline
Sediment	Millport
Sediment	Gull's Walk
Sediment	Ardneil Bay
Sediment	Fairlie
Sediment	Pipeline
Seawater	Pipeline
Seawater	S of pipeline

Gamma dose rate measurements over intertidal areas

Substrate	Location
Stones	Largs Bay
Sand	Kilchatten Bay
Sand	Millport
Mud	Gull's Walk
Sand	0.5 km north of pipeline
Sand and stones	0.5 km south of pipeline
NA	Ardneil Bay
NA	Ardrossan Bay
NA	Milstonford
NA	Biglies

Beta dose rate measurements on intertidal areas

Substrate	Location
Sand	Millport
Sand	0.5 km north of pipeline
Sand and stones	0.5 km south of pipeline

Terrestrial monitoring

- Milk
- Broad beans
- Cabbage
- Carrots
- Crab apples
- Eggs
- Honey
- Nettles
- Pheasant
- Potatoes
- Rabbit
- Rhubarb
- Rosehips
- Rowan berries
- Grass
- Soil
- Freshwater from Knockenden, Loch Ascog, Munnoch Reservoir, Camphill and Outerwards.
- Radioactivity in air near Hunterston; measurements taken at Fencebay, West Kilbride and Low Ballees.

10.2 Suggestions for changes

It is considered that SEPA's current monitoring programme provides adequate coverage. However, based on the findings of this habits survey, and also taking into account the potential radiological significance of the various pathways that were identified, the following suggestions are presented for consideration:

- Within the 'other vegetables' food group, the sample of broad beans currently monitored could be replaced with a sample of tomatoes, since tomatoes made the highest contribution to this food group.
- Within the 'root vegetables' food group, the sample of carrots currently monitored could be replaced with a sample of swede, since swede made the highest contribution to this food group.
- Within the 'wild/free foods' food group, the sample of rowan berries currently monitored could be replaced with a sample of blackberries, since the consumption of rowan berries was not identified during the survey. Additionally, crab apples and rosehips are currently monitored but no one was identified consuming these foods. Therefore, they could be replaced with dandelion leaves, wild garlic, sloe, hawthorn fruit or elderflower since these foods were being consumed, albeit in very small quantities.
- A one-off sample of grey squirrel could be considered since the consumption of grey squirrel has not been identified previously in the area and grey squirrels have not been monitored.

It is recommended that all other samples currently monitored remain unchanged.

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12 REFERENCES

Byrom, J., Robinson, C., Simmonds, J. R., Walters, B., and Taylor, R.R., 1995. Food consumption rates for use in generalised radiological dose assessments. J. Radiol. Prot. Vol. 15 (4) 335-341.

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

EA, FSA, NIEA and SEPA, 2012. Radioactivity in Food and the Environment, 2011. EA, FSA, NIEA and SEPA, Warrington, London, Belfast and Stirling. RIFE (17).

FSA, 2002. Assessment Methodology for the Potential Impact on Food of Radioactive Discharges to the Environment. FSA, London.

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

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

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

ICRP, 1991. 1990 Recommendations of the International Commission on Radiological Protection. Annal. ICRP 21 (1-3). Pergamon Press, Oxford, 201 pp. (ICRP Publ. 60.).

ICRP, 2007. Assessing the dose of the representative person for the purpose of radiological protection of the public and the optimisation of radiological protection. Annal. ICRP 36 (3). Elsevier Science, Oxford, (ICRP Publ. 101.).

Leonard, D. R. P., Hunt, G. J. AND Jones, P. G. W., 1982. Investigations of individual radiation exposures from discharges to the aquatic environment: the technique of habit surveys. pp. 512-517 *In:* 'Proceedings of the Third International Symposium on Radiological Protection - Advances in Theory and Practice', Inverness, 6-11 June 1982, Volume 2. The Society of Radiological Protection.

Macaulay Institute for Soil Research, Land cover of Scotland 1988, (LCS88) 1:50,000 series.

Scottish Executive, 2000. Radioactive Substances (Basic Safety Standards) (Scotland) Direction 2000. Scottish Executive, Edinburgh.

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

Sherlock, M., Garrod, C.J. and Tipple, J.R., 2011. Radiological Habits Survey: Hunterston, 2007. Environment Report RL 05/11. Cefas, Lowestoft.

UK Parliament, 1993. Radioactive Substances Act, 1993. HMSO, London.

Table 1. 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 2. 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.

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

Observation number	Bass	Cod	Common ling	Dover sole	Flounder	Haddock	Hake	Herring	Mackerel	Plaice	Pollack	Saithe	Whiting	Total
358	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11.1**	**-**	**11.1**	**-**	**-**	**22.2**
413	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**5.5**	**-**	**15.8**	**-**	**-**	**21.4**
410	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4.6**	**-**	**5.6**	**5.6**	**-**	**15.7**
334	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.7**	**-**	**-**	**-**	**-**	**13.7**
335	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.7**	**-**	**-**	**-**	**-**	**13.7**
205	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**9.4**	**2.6**	**-**	**1.2**	**-**	**-**	**13.3**
206	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**9.4**	**2.6**	**-**	**1.2**	**-**	**-**	**13.3**
392	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11.0**	**-**	**-**	**-**	**-**	**11.0**
393	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11.0**	**-**	**-**	**-**	**-**	**11.0**
360	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**5.4**	**-**	**5.4**	**-**	**-**	**10.9**
162	**0.2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10.0**	**-**	**0.6**	**-**	**-**	**10.7**
164	**0.2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10.0**	**-**	**0.6**	**-**	**-**	**10.7**
398	**0.3**	**1.5**	**-**	**-**	**-**	**-**	**-**	**-**	**2.8**	**-**	**2.1**	**2.1**	**-**	**8.8**
399	**0.3**	**1.5**	**-**	**-**	**-**	**-**	**-**	**-**	**2.8**	**-**	**2.1**	**2.1**	**-**	**8.8**
400	**0.3**	**1.5**	**-**	**-**	**-**	**-**	**-**	**-**	**2.8**	**-**	**2.1**	**2.1**	**-**	**8.8**
81	**-**	**2.7**	**-**	**-**	**-**	**-**	**-**	**-**	**2.7**	**-**	**-**	**-**	**2.7**	**8.2**
82	**-**	**2.7**	**-**	**-**	**-**	**-**	**-**	**-**	**2.7**	**-**	**-**	**-**	**2.7**	**8.2**
83	**-**	**2.7**	**-**	**-**	**-**	**-**	**-**	**-**	**2.7**	**-**	**-**	**-**	**2.7**	**8.2**
84	**-**	**2.7**	**-**	**-**	**-**	**-**	**-**	**-**	**2.7**	**-**	**-**	**-**	**2.7**	**8.2**
85	**-**	**2.7**	**-**	**-**	**-**	**-**	**-**	**-**	**2.7**	**-**	**-**	**-**	**2.7**	**8.2**
66	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8.0**	**-**	**-**	**-**	**-**	**8.0**
67	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8.0**	**-**	**-**	**-**	**-**	**8.0**
216	**-**	**0.4**	**-**	**-**	**-**	**-**	**-**	**-**	**6.2**	**-**	**0.8**	**-**	**-**	**7.5**
389	-	2.0	-	-	-	-	-	-	1.8	-	3.1	-	-	6.9
390	-	2.0	-	-	-	-	-	-	1.8	-	3.1	-	-	6.9
391	-	2.0	-	-	-	-	-	-	1.8	-	3.1	-	-	6.9
368	-	-	-	-	-	-	-	-	5.5	-	-	-	-	5.5
414	-	-	-	-	-	-	-	-	-	-	5.3	-	-	5.3
262	-	-	-	-	-	-	-	-	4.8	-	0.4	-	-	5.3
293	-	-	-	-	-	-	-	-	5.2	-	-	-	-	5.2
180	-	-	-	-	-	-	-	-	3.5	-	1.7	-	-	5.1
181	-	-	-	-	-	-	-	-	3.5	-	1.7	-	-	5.1
182	-	-	-	-	-	-	-	-	3.5	-	1.7	-	-	5.1
183	-	-	-	-	-	-	-	-	3.5	-	1.7	-	-	5.1
361	-	-	-	-	-	-	-	-	2.6	-	2.6	-	-	5.1
362	-	-	-	-	-	-	-	-	2.6	-	2.6	-	-	5.1
363	-	-	-	-	-	-	-	-	2.6	-	2.6	-	-	5.1
405	-	-	-	-	-	-	-	-	4.6	-	-	-	-	4.6
406	-	-	-	-	-	-	-	-	4.6	-	-	-	-	4.6
407	-	-	-	-	-	-	-	-	4.6	-	-	-	-	4.6
408	-	-	-	-	-	-	-	-	4.6	-	-	-	-	4.6
327	-	-	-	-	-	-	-	-	4.4	-	-	-	-	4.4
328	-	-	-	-	-	-	-	-	4.4	-	-	-	-	4.4

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

Observation number	Bass	Cod	Common ling	Dover sole	Flounder	Haddock	Hake	Herring	Mackerel	Plaice	Pollack	Saithe	Whiting	Total
370	-	1.3	1.3	-	-	-	-	-	0.9	-	0.8	-	-	4.3
371	-	1.3	1.3	-	-	-	-	-	0.9	-	0.8	-	-	4.3
372	-	1.3	1.3	-	-	-	-	-	0.9	-	0.8	-	-	4.3
373	-	1.3	1.3	-	-	-	-	-	0.9	-	0.8	-	-	4.3
374	-	1.3	1.3	-	-	-	-	-	0.9	-	0.8	-	-	4.3
207	-	-	-	-	-	-	-	-	2.6	-	1.2	-	-	3.8
208	-	-	-	-	-	-	-	-	2.6	-	1.2	-	-	3.8
209	-	-	-	-	-	-	-	-	2.6	-	1.2	-	-	3.8
210	-	-	-	-	-	-	-	-	2.6	-	1.2	-	-	3.8
211	-	-	-	-	-	-	-	-	2.6	-	1.2	-	-	3.8
330	-	-	-	-	-	-	-	-	3.8	-	-	-	-	3.8
331	-	-	-	-	-	-	-	-	3.8	-	-	-	-	3.8
388	-	-	-	-	-	-	-	-	3.7	-	-	-	-	3.7
215	-	0.4	-	-	-	-	-	-	2.1	-	0.8	-	-	3.4
87	-	2.3	-	0.3	-	0.2	-	-	-	0.2	-	-	-	3.0
88	-	2.3	-	0.3	-	0.2	-	-	-	0.2	-	-	-	3.0
89	-	2.3	-	0.3	-	0.2	-	-	-	0.2	-	-	-	3.0
90	-	2.3	-	0.3	-	0.2	-	-	-	0.2	-	-	-	3.0
91	-	2.3	-	0.3	-	0.2	-	-	-	0.2	-	-	-	3.0
92	-	2.3	-	0.3	-	0.2	-	-	-	0.2	-	-	-	3.0
329	-	-	-	-	-	-	-	-	2.7	-	-	-	-	2.7
254	-	-	-	-	-	-	-	-	2.1	-	0.4	-	-	2.5
255	-	-	-	-	-	-	-	-	2.1	-	0.4	-	-	2.5
256	-	-	-	-	-	-	-	-	2.1	-	0.4	-	-	2.5
153	-	-	-	-	0.4	-	-	-	2.1	-	-	-	-	2.5
154	-	-	-	-	0.4	-	-	-	2.1	-	-	-	-	2.5
409	-	-	-	-	-	-	-	-	2.3	-	-	-	-	2.3
41	-	-	-	-	-	-	-	-	2.1	-	-	-	-	2.1
42	-	-	-	-	-	-	-	-	2.1	-	-	-	-	2.1
156	-	-	-	-	-	-	-	-	2.1	-	-	-	-	2.1
157	-	-	-	-	-	-	-	-	2.1	-	-	-	-	2.1
158	-	-	-	-	-	-	-	-	2.1	-	-	-	-	2.1
159	-	-	-	-	-	-	-	-	2.1	-	-	-	-	2.1
217	-	-	-	-	-	-	-	-	2.1	-	-	-	-	2.1
218	-	-	-	-	-	-	-	-	2.1	-	-	-	-	2.1
47	-	-	-	-	-	-	-	-	1.7	-	-	-	-	1.7
48	-	-	-	-	-	-	-	-	1.7	-	-	-	-	1.7
257	-	-	-	-	-	-	-	-	1.4	-	-	-	0.3	1.7
258	-	-	-	-	-	-	-	-	1.4	-	-	-	0.3	1.7
264	-	-	-	-	-	-	1.5	-	-	-	-	-	-	1.5
297	-	-	-	-	-	0.7	0.7	-	-	-	-	-	-	1.4
302	-	-	-	-	-	0.7	0.7	-	-	-	-	-	-	1.4
303	-	-	-	-	-	0.7	0.7	-	-	-	-	-	-	1.4

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

Observation number	Bass	Cod	Common ling	Dover sole	Flounder	Haddock	Hake	Herring	Mackerel	Plaice	Pollack	Saithe	Whiting	Total
304	-	-	-	-	-	0.7	0.7	-	-	-	-	-	-	1.4
185	-	-	-	-	-	-	-	-	1.3	-	-	-	-	1.3
189	-	-	-	-	-	-	-	-	1.3	-	-	-	-	1.3
336	-	-	-	-	-	-	-	-	1.1	-	-	-	-	1.1
263	-	-	-	-	-	-	-	-	0.8	-	-	-	-	0.8
394	-	-	-	-	-	-	-	-	0.8	-	-	-	-	0.8

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish based on the 23 high-rate adult consumers is 11.2 kg y^{-1}

The observed 97.5th percentile rate based on 92 observations is 15.2 kg y^{-1}

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

Observation number	Brown crab	Common lobster	*Nephrops*	Squat lobster	Total
413	**19.7**	**1.2**	**-**	**-**	**20.9**
87	**-**	**-**	**12.0**	**-**	**12.0**
88	**-**	**-**	**12.0**	**-**	**12.0**
89	**-**	**-**	**12.0**	**-**	**12.0**
90	**-**	**-**	**12.0**	**-**	**12.0**
91	**-**	**-**	**12.0**	**-**	**12.0**
92	**-**	**-**	**12.0**	**-**	**12.0**
66	**3.0**	**3.0**	**3.0**	**-**	**9.1**
67	**3.0**	**3.0**	**3.0**	**-**	**9.1**
358	-	-	-	6.6	6.6
360	-	-	-	6.6	6.6
68	-	-	5.3	-	5.3
69	-	-	5.3	-	5.3
70	-	-	5.3	-	5.3
293	2.7	-	-	-	2.7
18	-	-	2.7	-	2.7
19	-	-	2.7	-	2.7
368	0.8	1.3	-	-	2.1
264	1.5	-	0.3	0.02	1.9
126	-	-	1.8	-	1.8
127	-	-	1.8	-	1.8
128	-	-	1.8	-	1.8
93	-	-	1.8	-	1.8
94	-	-	1.8	-	1.8
95	-	-	1.8	-	1.8
96	-	-	1.8	-	1.8
81	-	-	1.8	-	1.8
82	-	-	1.8	-	1.8
83	-	-	1.8	-	1.8
84	-	-	1.8	-	1.8
85	-	-	1.8	-	1.8
77	-	-	-	1.2	1.2
78	-	-	-	1.2	1.2
79	-	-	-	1.2	1.2
80	-	-	-	1.2	1.2
297	-	-	0.6	0.2	0.7
302	-	-	0.6	0.2	0.7
303	-	-	0.6	0.2	0.7
304	-	-	0.6	0.2	0.7
73	-	-	-	0.6	0.6
74	-	-	-	0.6	0.6
75	-	-	-	0.6	0.6
76	-	-	-	0.6	0.6
205	0.4	-	-	0.2	0.6
206	0.4	-	-	0.2	0.6
370	0.1	0.2	0.2	-	0.5
371	0.1	0.2	0.2	-	0.5
372	0.1	0.2	0.2	-	0.5
373	0.1	0.2	0.2	-	0.5
374	0.1	0.2	0.2	-	0.5
199	0.1	0.2	-	-	0.4
207	-	-	-	0.2	0.2
208	-	-	-	0.2	0.2
209	-	-	-	0.2	0.2
210	-	-	-	0.2	0.2
211	-	-	-	0.2	0.2
200	0.1	-	-	-	0.1
201	0.1	-	-	-	0.1
202	0.1	-	-	-	0.1

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

Observation number	Brown crab	Common lobster	*Nephrops*	Squat lobster	Total
203	0.1	-	-	-	0.1
245	-	-	0.1	-	0.1
184	-	-	0.1	0.03	0.1
414	-	0.1	-	-	0.1
180	-	-	0.1	-	0.05
181	-	-	0.1	-	0.05
182	-	-	0.1	-	0.05
183	-	-	0.1	-	0.05
242	-	-	0.1	-	0.05
243	-	-	0.1	-	0.05
244	-	-	0.1	-	0.05
357	-	-	-	0.04	0.04
175	-	-	0.03	-	0.03

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of crustaceans based on the 9 high-rate adult consumers is 12.3 kg y^{-1}

The observed 97.5th percentile rate based on 72 observations is 12.0 kg y^{-1}

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

Observation number	Cockle	Horse mussel	King scallop	Mussel	Pacific oyster	Queen scallop	Winkle	Total
155	**-**	**-**	**8.6**	**-**	**2.3**	**-**	**-**	**10.9**
358	-	-	1.7	-	-	-	-	1.7
360	-	-	1.7	-	-	-	-	1.7
293	-	0.03	1.4	-	-	-	-	1.5
400	-	-	-	1.5	-	-	-	1.5
401	-	-	-	1.5	-	-	-	1.5
402	-	-	-	1.5	-	-	-	1.5
336	-	-	-	-	1.4	-	-	1.4
321	-	-	-	0.4	-	-	1.0	1.4
322	-	-	-	0.4	-	-	1.0	1.4
283	0.9	-	-	0.3	-	-	-	1.2
284	0.9	-	-	0.3	-	-	-	1.2
87	-	-	0.8	-	-	-	-	0.8
88	-	-	0.8	-	-	-	-	0.8
89	-	-	0.8	-	-	-	-	0.8
90	-	-	0.8	-	-	-	-	0.8
91	-	-	0.8	-	-	-	-	0.8
92	-	-	0.8	-	-	-	-	0.8
371	-	-	-	0.4	0.3	-	-	0.7
413	-	-	-	-	-	-	0.6	0.6
245	-	-	0.5	-	-	-	-	0.5
370	-	-	-	0.4	-	-	-	0.4
180	-	-	0.4	-	-	-	-	0.4
93	-	-	0.2	-	-	0.1	-	0.3
94	-	-	0.2	-	-	0.1	-	0.3
95	-	-	0.2	-	-	0.1	-	0.3
96	-	-	0.2	-	-	0.1	-	0.3
199	-	-	-	-	0.2	-	-	0.2
200	-	-	-	-	0.2	-	-	0.2
201	-	-	-	-	0.2	-	-	0.2
202	-	-	-	-	0.2	-	-	0.2
203	-	-	-	-	0.2	-	-	0.2
173	-	-	-	-	0.1	-	-	0.1
174	-	-	-	-	0.1	-	-	0.1
356	-	-	-	-	0.04	-	-	0.04
242	-	-	-	-	-	0.02	-	0.02

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of molluscs based on the only adult consumer is 10.9 kg y^{-1}

The observed 97.5th percentile rate based on 36 observations is 2.9 kg y^{-1}

Table 6. Adults' consumption rates of marine plants/algae from the Hunterston aquatic survey area (kg y^{-1})

Observation number	Sea lettuce
242	**0.2**
243	**0.2**
244	**0.2**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of marine plants/algae based on the 3 high-rate adult consumers is 0.2 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 0.2 kg y^{-1}

Table 7. Adults' consumption rates of vegetables and fruit grown on land where seaweed has been used as a fertiliser (kg y^{-1})

Observation number	Green Vegetables			Other vegetables		Potato	Domestic fruit								
	Cucumber	Herbs	Nasturtium leaves	Chilli pepper	Tomato	Potato	Apple	Blackcurrant	Loganberry	Pear	Plum	Raspberry	Redcurrant	Strawberry	TOTAL
370	0.9	0.6	0.3	0.2	1.1	3.9	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.2	13.3
371	0.9	0.6	0.3	0.2	1.1	3.9	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.2	13.3
372	0.9	0.6	0.3	0.2	1.1	3.9	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.2	13.3
373	0.9	0.6	0.3	0.2	1.1	3.9	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.2	13.3
374	0.9	0.6	0.3	0.2	1.1	3.9	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.2	13.3

Notes

These foods are included in the aquatic section of this report as the exposure pathway is sea to land transfer and the source of potential exposure is liquid discharge. However, these foods were grown in the terrestrial survey area and they are also potentially subject to gaseous discharges. Therefore they are also included in the terrestrial food groups and in Annex 1 as terrestrial foods.

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

Child age group (6 - 15 years old)

Observation number	Age	Bass	Cod	Common ling	Mackerel	Pollack	Saithe	Total
163	**13**	**0.2**	**-**	**-**	**10.0**	**0.6**	**-**	**10.7**
165	**10**	**0.2**	**-**	**-**	**10.0**	**0.6**	**-**	**10.7**
166	**6**	**0.2**	**-**	**-**	**10.0**	**0.6**	**-**	**10.7**
364	**12**	**-**	**-**	**-**	**2.6**	**2.6**	**-**	**5.1**
365	**11**	**-**	**-**	**-**	**2.6**	**2.6**	**-**	**5.1**
366	**11**	**-**	**-**	**-**	**2.6**	**2.6**	**-**	**5.1**
367	**9**	**-**	**-**	**-**	**2.6**	**2.6**	**-**	**5.1**
212	**14**	**-**	**-**	**-**	**2.6**	**1.2**	**-**	**3.8**
403	7	0.1	0.4	-	0.7	0.5	0.5	2.2
190	8	-	-	-	1.0	-	-	1.0
395	13	-	-	-	0.8	-	-	0.8
396	10	-	-	-	0.8	-	-	0.8
397	10	-	-	-	0.8	-	-	0.8

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish for the child age group based upon the 8 high-rate consumers is 7.1 kg y^{-1}

The observed 97.5th percentile rate based on 13 observations is 10.7 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Bass	Cod	Common ling	Mackerel	Pollack	Saithe	Total
214	**3**	**-**	**-**	**-**	**1.3**	**0.6**	**-**	**1.9**
375	**4**	**-**	**0.3**	**0.3**	**0.2**	**0.2**	**-**	**1.1**
213	**2**	**-**	**-**	**-**	**0.9**	**-**	**-**	**0.9**
191	**3**	**-**	**-**	**-**	**0.6**	**-**	**-**	**0.6**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish for the infant age group based upon the 4 high-rate consumers is 1.1 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 1.9 kg y^{-1}

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

Child age group (6 - 15 years old)

Observation number	Age	*Nephrops*	Squat lobster	Total
212	**14**	**-**	**0.2**	**0.2**

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 0.2 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	*Nephrops*	Squat lobster	Total
214	**3**	**-**	**0.1**	**0.1**
375	4	0.03	-	0.03

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of crustaceans for the infant age group based upon the only high-rate consumer is 0.1 kg y^{-1}

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

Table 10. Adults' intertidal occupancy rates in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	Mud	Rock	Sand	Sand and stones	Stones
176	**Various locations around Great Cumbrae**	**Coastguard duties**	**12**	-	-	-	-
	Various locations around Great Cumbrae	**Coastguard duties**	**-**	**265**	-	-	-
	Farland Point and Portachur Point (Great Cumbrae)	**Working on the shore**	**-**		-	-	-
	Deadman's Bay (Great Cumbrae)	**Dog walking**	**-**		-	-	-
	Millport (Great Cumbrae)	Dog walking	**-**	**-**	61	-	-
	White Bay (Great Cumbrae)	Collecting marine plants	**-**	**-**		-	**-**
	Great Cumbrae	**Coastguard duties**	**-**	**-**	-	**186**	-
	Millport (Great Cumbrae)	**Working on the shore**	**-**	**-**	-		**-**
	Portachur Point (Great Cumbrae)	**Dog walking**	**-**	**-**	-	-	**235**
184	**Various locations around Great Cumbrae**	**Coastguard duties**	**12**	-	-	-	-
	Various locations around Great Cumbrae	Working on the shore and coastguard duties	**-**	31	-	-	-
	Kames Bay and various locations around Great Cumbrae	Working on the shore and coastguard duties	**-**	-	20	-	-
	Various locations around Great Cumbrae	Coastguard duties	**-**	-	-	12	-
	Various locations around Great Cumbrae	Working on the shore and coastguard duties	**-**	-	-	-	15
177	**Various locations around Great Cumbrae**	**Coastguard duties**	**12**	12	12	12	12
178	**Various locations around Great Cumbrae**	**Coastguard duties**	**12**	12	12	12	12
179	**Various locations around Great Cumbrae**	**Coastguard duties**	**12**	12	12	12	12
392	**Portencross**	**Angling**	-	**144**	-	-	-
393	**Portencross**	**Angling**	-	**144**	-	-	-
370	Portencross	Rock pooling	-	86	-	-	-
	Hunterston Sands	Collecting mussels	-		-	-	-
	Portencross	Collecting seaweed	-	-	-	-	2
162	Auchengarth	Angling	-	72	-	-	-
	Ardrossan North Beach and Saltcoats	Bait digging	-	-	72	-	-
327	Portencross	Angling	-	48	-	-	-
328	Portencross	Angling	-	48	-	-	-
215	Farland Point (Great Cumbrae)	Angling	-	40	-	-	-
216	Farland Point (Great Cumbrae)	Angling	-	40	-	-	-
41	Auchengarth	Angling	-	33	-	-	-
43	Auchengarth	Angling	-	33	-	-	-
44	Auchengarth	Angling	-	33	-	-	-
45	Auchengarth	Angling	-	33	-	-	-
394	Portencross	Angling	-	32	-	-	-
257	Portencross	Angling	-	30	-	-	-

Table 10. Adults' intertidal occupancy rates in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	Mud	Rock	Sand	Sand and stones	Stones
180	Millport and Farland Point (Great Cumbrae)	Working on the shore	-	21	-	-	-
	White Bay (Great Cumbrae)	Working on the shore	-	-	6	-	-
	North-east shore of Great Cumbrae	Collecting cockles	-	-		-	-
	Millport (Great Cumbrae)	Dog walking	-	-		-	-
175	Farland Point (Great Cumbrae)	Rock pooling	-	15	-	-	-
	Kames Bay, Ballochmartin Bay, White Bay (Great Cumbrae)	Working on the shore	-	-	14	-	-
	Portachur Point (Great Cumbrae)	**Dog walking**	-	-	-	-	**98**
305	Farland Point (Great Cumbrae)	Angling	-	6	-	-	-
	Kames Bay (Great Cumbrae)	Metal detecting and bait digging	-	-	5	-	-
	Newtown Bay (Great Cumbrae)	Metal detecting	-	-	-	3	-
259	Portencross	Angling	-	5	-	-	-
195	Various locations around Great Cumbrae	Walking	-	4	-	-	-
	Fintray Bay, Bell Bay and Kames Bay (Great Cumbrae)	Sitting on the beach and playing	-	-	7	-	-
	White Bay (Great Cumbrae)	Sitting on the beach	-	-	-	1	-
196	Various locations around Great Cumbrae	Walking	-	4	-	-	-
	Fintray Bay, Bell Bay and Kames Bay (Great Cumbrae)	Sitting on the beach and playing	-	-	7	-	-
	White Bay (Great Cumbrae)	Collecting stones	-	-	-	1	-
243	Farland Point and Tomont End (Great Cumbrae)	Rock pooling	-	4	-	-	-
	White Bay and Little Skate Bay (Great Cumbrae)	Working on the shore and collecting mussels	-	-	5	-	-
	Ballochmartin Bay (Great Cumbrae)	Collecting mussels	-	-	-	2	-
244	Farland Point (Great Cumbrae)	Angling	-	3	-	-	-
220	Farland Point (Great Cumbrae)	Playing	-	2	-	-	-
	Kames Bay (Great Cumbrae)	Dog walking	-	-	22	-	-
	Newtown Bay, Fintray Bay and Bell Bay (Great Cumbrae)	Playing	-	-	-	26	-
219	Farland Point (Great Cumbrae)	Angling	-	2	-	-	-
	Kames Bay (Great Cumbrae)	Dog walking	-	-	22	-	-
	Great Cumbrae (Fintray Bay and Bell Bay)	Sitting on the beach	-	-	-	9	-
192	Various locations around Great Cumbrae	Playing	-	2	4	2	1
371	Hunterston Sands	Collecting mussels	-	2	-	-	-
378	**Ardneil Bay, West Kilbride and Seamill**	**Dog walking**	-	-	**730**	-	-
369	**Largs to Saltcoats**	**Bait digging**	-	-	**576**	-	-
404	**Seamill to Ardrossan North Beach**	**Dog walking**	-	-	**456**	-	-

Table 10. Adults' intertidal occupancy rates in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	Mud	Rock	Sand	Sand and stones	Stones
325	**Southannan Sands**	**Collecting winkles**	-	-	**400**	-	-
	Wemyss Bay	**Collecting winkles**	-	-	**-**	**400**	-
326	**Southannan Sands**	**Collecting winkles**	-	-	**400**	-	-
	Wemyss Bay	**Collecting winkles**	-	-	**-**	**400**	-
411	**West Kilbride to Ardrossan North Beach**	**Dog walking**	-	-	**365**	-	-
412	**West Kilbride to Ardrossan North Beach**	**Dog walking**	-	-	**365**	-	-
318	**Ardrossan South Beach**	**Dog walking**	-	-	**347**	-	-
345	**Ardneil Bay and Ardrossan north and south beach**	**Metal detecting**	-	-	**312**	-	-
249	Ardneil Bay	Horse riding	-	-	242	-	-
250	Ardneil Bay	Horse riding	-	-	242	-	-
251	Ardneil Bay	Horse riding	-	-	242	-	-
252	Ardneil Bay	Horse riding	-	-	242	-	-
253	Ardneil Bay	Horse riding	-	-	242	-	-
314	Ardrossan South Beach	Dog walking	-	-	208	-	-
289	Skelmorlie, Seamill, and Kames Bay (Great Cumbrae)	Dog walking	-	-	194	-	-
	Newtown Bay and White Bay (Great Cumbrae)	Dog walking	-	-	-	4	-
	Portencross and Largs	Coastguard duties	-	-	-	-	46
341	Ardrossan North Beach	Dog walking	-	-	183	-	-
342	Ardrossan North Beach	Dog walking	-	-	183	-	-
323	Ardrossan North Beach	Dog walking	-	-	182	-	-
324	Ardrossan North Beach	Dog walking	-	-	182	-	-
379	West Kilbride and Seamill	Playing and walking	-	-	167	-	-
343	Ardneil Bay	Dog walking	-	-	156	-	-
344	Ardneil Bay	Dog walking	-	-	156	-	-
332	Ardrossan South Beach	Dog walking	-	-	156	-	-
383	Ardneil Bay	Dog walking	-	-	104	-	-
413	Largs (south), Hunterston Sands and Ardrossan North Beach	Bait digging	-	-	98	-	-
	Largs	Collecting winkles	-	-		-	-
222	Kames Bay	Playing	-	-	90	-	-
414	Largs, Hunterston Sands and Ardrossan	Bait digging	-	-	88	-	-
281	Hunterston Sands	Dog walking	-	-	81	-	-
224	Kames Bay (Great Cumbrae)	Playing	-	-	60	-	-
356	Southannan Sands	Working on the shore	-	-	56	-	-
315	Ardrossan South Beach	Playing	-	-	56	-	-
316	Ardrossan South Beach	Playing	-	-	56	-	-

Table 10. Adults' intertidal occupancy rates in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	Mud	Rock	Sand	Sand and stones	Stones
313	Ardrossan South Beach	Dog walking	-	-	52	-	-
242	Kames Bay (Great Cumbrae)	Working on the shore	-	-	44	-	-
	Hunterston Sands	Collecting mussels	-	-		-	-
337	Ardrossan South Beach	Playing	-	-	36	-	-
338	Ardrossan South Beach	Playing	-	-	36	-	-
398	Ardrossan North Beach	Collecting mussels	-	-	30	-	-
	Ardrossan and Hunterston Sands	Bait digging	-	-		-	-
399	Ardrossan North Beach	Collecting mussels	-	-	30	-	-
	Ardrossan and Hunterston Sands	Bait digging	-	-		-	-
353	Southannan Sands	Working on the shore	-	-	21	-	-
354	Southannan Sands	Working on the shore	-	-	21	-	-
355	Southannan Sands	Working on the shore	-	-	21	-	-
380	West Kilbride	Playing	-	-	11	-	-
308	Ardneil Bay	Horse riding	-	-	5	-	-
237	Millport Harbour (Great Cumbrae)	Playing	-	-	4	-	-
	Great Cumbrae (Newtown Bay and Fintray Bay)	Playing and sitting on the beach	-	-	-	16	-
283	Hunterston Sands	Collecting cockles and mussels	-	-	4	-	-
284	Hunterston Sands	Collecting cockles and mussels	-	-	4	-	-
228	Millport Harbour (Great Cumbrae)	Playing	-	-	1	-	-
	Newtown Beach (Great Cumbrae)	Walking	-	-	-	1	-
110	**Wemyss Bay, Ardrossan North Beach and Largs**	**Collecting winkles**	-	-	-	**390**	-
155	**Fairlie Sands**	**Dog walking**	-	-	-	**366**	-
21	**Largs (south)**	**Dog walking**	-	-	-	**365**	-
321	**Ardrossan North Beach and Saltcoats**	**Collecting winkles**	-	-	-	**360**	-
322	**Ardrossan North Beach and Saltcoats**	**Collecting winkles**	-	-	-	**360**	-
6	**Fairlie Sands**	**Dog walking**	-	-	-	**245**	-
49	**Fairlie Sands**	**Dog walking**	-	-	-	**209**	-
22	**Largs (south)**	**Dog walking**	-	-	-	**183**	-
17	Largs (south)	Dog walking	-	-	-	104	-
20	Largs (south)	Dog walking	-	-	-	104	-
111	Largs (south)	Dog walking	-	-	-	90	-
231	Newtown Bay and Fintray Bay (Great Cumbrae)	Playing	-	-	-	73	-
232	Newtown Bay and Fintray Bay (Great Cumbrae)	Playing	-	-	-	73	-
13	Meigle Bay	Dog walking	-	-	-	24	-
170	Wemyss Bay	Playing	-	-	-	24	-

Table 10. Adults' intertidal occupancy rates in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	Mud	Rock	Sand	Sand and stones	Stones
233	Newtown Bay and Fintray Bay (Great Cumbrae)	Playing	-	-	-	14	-
14	Largs	Playing	-	-	-	12	-
167	Wemyss Bay	Playing	-	-	-	10	-
168	Wemyss Bay	Playing	-	-	-	10	-
185	The Eileans (Great Cumbrae)	Playing	-	-	-	5	-
189	The Eileans (Great Cumbrae)	Playing	-	-	-	5	-
290	Portencross and Largs	Coastguard duties	-	-	-	-	48
291	Portencross and Largs	Coastguard duties	-	-	-	-	48
292	Portencross and Largs	Coastguard duties	-	-	-	-	48
204	Portachur Point (Great Cumbrae)	Dog walking	-	-	-	-	36

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over mud based on 5 high-rate observations is 12 h y^{-1}

The observed 97.5th percentile rate based on 5 observations for mud is 12 h y^{-1}

The mean intertidal occupancy rate over rock based on 3 high-rate observations is 184 h y^{-1}

The observed 97.5th percentile rate based on 31 observations for rock is 174 h y^{-1}

The mean intertidal occupancy rate over sand based on 9 high-rate observations is 439 h y^{-1}

The observed 97.5th percentile rate based on 63 observations for sand is 510 h y^{-1}

The mean intertidal occupancy rate over sand and stones based on 11 high-rate observations is 315 h y^{-1}

The observed 97.5th percentile rate based on 38 observations for sand and stones is 400 h y^{-1}

The mean intertidal occupancy rate over stones based on 2 high-rate observations is 167 h y^{-1}

The observed 97.5th percentile rate based on 13 observations for stones is 194 h y^{-1}

Table 11. Children's and infants' intertidal occupancy rates in the Hunterston aquatic survey area (h y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Location	Activity	Rock	Sand	Sand and stones	Stones
165	**10**	**Auchengarth and Portencross**	**Playing**	**144**	-	-	-
166	**6**	**Auchengarth and Portencross**	**Playing**	**144**	-	-	-
163	**13**	**Auchengarth**	**Angling**	**72**	-	-	-
395	13	Portencross	Angling	32	-	-	-
396	10	Portencross	Angling	32	-	-	-
397	10	Portencross	Rock pooling	32	-	-	-
306	9	Farland Point (Great Cumbrae)	Angling	6	-	-	-
		Kames Bay (Great Cumbrae)	Bait digging and metal detecting	-	5	-	-
		Newtown Bay (Great Cumbrae)	Metal detecting	-	-	3	-
193	**15**	**Various locations around Great Cumbrae**	**Playing**	**2**	**4**	**2**	**1**
194	**9**	**Various locations around Great Cumbrae**	**Playing**	**2**	**4**	**2**	**1**
333	**11**	**Ardrossan South Beach**	**Dog walking**	-	**156**	-	-
317	**6**	**Ardrossan South Beach**	**Playing**	-	**56**	-	-
340	8	Ardrossan South Beach	Playing	-	36	-	-
226	13	Kames Bay (Great Cumbrae)	Playing	-	31	-	-
227	11	Kames Bay (Great Cumbrae)	Playing	-	31	-	-
403	7	Ardrossan North Beach	Playing	-	24	-	-
381	6	West Kilbride	Playing	-	11	-	-
197	7	Kames Bay (Great Cumbrae)	Playing	-	5	-	-
239	8	Millport Harbour, Newtown Bay and Fintray Bay (Great Cumbrae)	Playing	-	4	8	-
240	14	Millport Harbour, Newtown Bay and Fintray Bay (Great Cumbrae)	Playing	-	4	8	-
241	11	Millport Harbour, Newtown Bay and Fintray Bay (Great Cumbrae)	Playing	-	4	8	-
307	11	Great Cumbrae (Kames Bay and Newtown Bay)	Metal detecting	-	3	3	-
234	**6**	**Newtown Bay and Fintray Bay (Great Cumbrae)**	**Playing**	**-**	-	**27**	-
236	**8**	**Newtown Bay and Fintray Bay (Great Cumbrae)**	**Playing**	**-**	-	**27**	-
171	**9**	**Wemyss Bay**	**Playing**	**-**	-	**24**	-
172	**11**	**Wemyss Bay**	**Playing**	**-**	-	**24**	-
15	**7**	**Largs**	**Playing**	**-**	-	**12**	-
16	**7**	**Largs**	**Playing**	**-**	-	**12**	-
190	8	The Eileans (Great Cumbrae)	Playing	-	-	5	-

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over rock based on 3 high-rate observations is 120 h y^{-1}

The observed 97.5th percentile rate based on 9 observations for rock is 144 h y^{-1}

The mean intertidal occupancy rate over sand based on 2 high-rate observations is 106 h y^{-1}

The observed 97.5th percentile rate based on 15 observations for sand is 121 h y^{-1}

The mean intertidal occupancy rate over sand and stones based on 6 high-rate observations is 21 h y^{-1}

The observed 97.5th percentile rate based on 14 observations for sand and stones is 27 h y^{-1}

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

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

Table 11. Children's and infants' intertidal occupancy rates in the Hunterston aquatic survey area (h y^{-1})

Infant age group (0 - 5 years old)

Observation number	Age	Location	Activity	Rock	Sand	Sand and stones
375	**4**	**Portencross**	**Rock pooling**	**84**	-	-
221	**3**	Farland Point (Great Cumbrae)	Playing	2	-	-
		Kames Bay (Great Cumbrae)	Dog walking	-	11	**-**
		Newtown Bay, Fintray and Bell Bay (Great Cumbrae)	**Playing**	**-**	-	**26**
223	**3**	**Kames Bay (Great Cumbrae)**	**Playing**	-	**90**	-
225	**5**	**Kames Bay (Great Cumbrae)**	**Playing**	-	**60**	-
339	**5**	**Ardrossan South Beach**	**Playing**	-	**36**	-
198	4	Kames Bay (Great Cumbrae)	Playing	-	5	-
229	5	Millport Harbour (Great Cumbrae)	Playing	-	1	-
		Newtown Bay (Great Cumbrae)	Playing	-	-	2
235	**4**	**Newtown Bay and Fintray Bay (Great Cumbrae)**	**Playing**	-	-	**27**
169	**1**	**Wemyss Bay**	**Playing**	-	-	**10**
191	3	The Eileans (Great Cumbrae)	Playing	-	-	5

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over rock based on 1 high-rate observation is 84 h y^{-1}

The observed 97.5th percentile rate based on 2 observations for rock is 82 h y^{-1}

The mean intertidal occupancy rate over sand based on 3 high-rate observations is 62 h y^{-1}

The observed 97.5th percentile rate based on 6 observations for sand is 86 h y^{-1}

The mean intertidal occupancy rate over sand and stones based on 3 high-rate observations is 21 h y^{-1}

The observed 97.5th percentile rate based on 5 observations for sand and stones is 27 h y^{-1}

Table 12. Gamma dose rate measurements over intertidal substrates in the Hunterston aquatic survey area (μGy h^{-1})

Location	NGR	Substrate	Gamma dose rate at 1 metre[a]
Wemyss Bay	NS 193 692	Sand and stones	0.058
Meigle Bay	NS 192 654	Sand and stones	0.051
Largs	NS 198 603	Sand and stones	0.063
Largs	NS 201 595	Stones	0.064
Largs (south)	NS 208 575	Sand and stones	0.063
White Bay (Great Cumbrae)	NS 177 590	Sand	0.059
White Bay (Great Cumbrae)	NS 177 590	Sand and stones	0.058
Fintray Bay (Great Cumbrae)	NS 159 569	Sand and stones	0.055
Kames Bay (Great Cumbrae)	NS 170 549	Sand	0.048
Newtown Bay (Great Cumbrae)	NS 165 549	Sand and stones	0.057
Fairlie Sands	NS 208 553	Sand and stones	0.055
Southannan Sands	NS 191 528	Sand	0.063
Hunterston Sands	NS 189 522	Sand	0.056
Ardneil Bay	NS 183 484	Sand	0.053
West Kilbride	NS 196 474	Sand	0.052
Ardrossan North Beach	NS 227 431	Sand	0.056
Ardrossan North Beach	NS 224 429	Sand and stones	0.071
Ardrossan South Beach	NS 237 418	Sand	0.054

Notes

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

Table 13. Adults' handling rates of fishing gear and sediment in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	Fishing gear	Sediment
81	**Fairlie Roads**	**Handling trawl gear**	**1980**	-
86	**Fairlie Roads**	**Handling trawl gear**	**1980**	-
18	**Fairlie Roads**	**Handling creels**	**1200**	-
19	**Fairlie Roads**	**Handling creels**	**1200**	-
87	**Fairlie Roads**	**Handling trawl gear**	**960**	-
72	Farlie Roads	Handling trawl gear	648	-
73	Farlie Roads	Handling trawl gear	648	-
97	Fairlie Roads	Handling trawl gear	625	-
98	Fairlie Roads	Handling trawl gear	625	-
99	Fairlie Roads	Handling trawl gear	625	-
100	Fairlie Roads	Handling trawl gear	625	-
101	Fairlie Roads	Handling trawl gear	625	-
358	Largs to Ardrossan	Handling creels	516	-
359	Largs to Ardrossan	Handling creels	516	-
93	Fairlie Roads	Handling trawl gear	500	-
94	Fairlie Roads	Handling trawl gear	500	-
413	Portencross to Saltcoats	Handling creels	496	-
	Largs	Collecting winkles	-	98
	Largs, Hunterston Sands and Ardrossan North Beach	Bait digging	-	
414	Portencross to Saltcoats	Handling creels	496	-
	Largs, Hunterston Sands and Ardrossan North Beach	Bait digging	-	88
126	Fairlie Roads	Handling trawl gear	443	-
127	Farlie Roads	Handling trawl gear	443	-
128	Farlie Roads	Handling trawl gear	443	-
66	Fairlie Roads	Handling creels	360	-
71	Farlie Roads	Handling trawl gear	225	-
376	Wemyss Bay	Handling creels	217	-
377	Wemyss Bay	Handling creels	217	-
68	Fairlie Roads	Handling trawl gear	210	-
298	Fairlie Roads	Handling nets	30	-
299	Farlie Roads	Handling nets	30	-
300	Fairlie Roads	Handling nets	30	-
301	Fairlie Roads	Handling nets	30	-
293	Farlie Roads	Handling nets	16	-
371	Off Portencross	Handling creels	5	-
	Hunterston Sands	Collecting mussels	-	2
325	**Southannan Sands and Wemyss Bay**	**Collecting winkles**	**-**	**800**
326	**Southannan Sands and Wemyss Bay**	**Collecting winkles**	**-**	**800**
369	**Largs to Saltcoats**	**Bait digging**	**-**	**576**
110	**Wemyss Bay, Ardrossan North Beach and Largs**	**Collecting winkles**	**-**	**390**
321	**Ardrossan North Beach and Saltcoats**	**Collecting winkles**	**-**	**360**
322	**Ardrossan North Beach and Saltcoats**	**Collecting winkles**	**-**	**360**
162	Ardrossan and Saltcoats	Bait digging	-	72

Table 13. Adults' handling rates of fishing gear and sediment in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	Fishing gear	Sediment
356	Southannan Sands	Working on the shore	-	56
398	Hunterston Sands and Ardrossan	Bait digging	-	30
	Ardrossan North Beach	Collecting mussels	-	
399	Hunterston Sands and Ardrossan	Bait digging	-	30
	Ardrossan North Beach	Collecting mussels	-	
242	Hunterston Sands	Collecting mussels	-	22
353	Southannan Sands	Working on the shore	-	21
354	Southannan Sands	Working on the shore	-	21
355	Southannan Sands	Working on the shore	-	21
283	Hunterston Sands	Collecting cockles and collecting mussels	-	4
284	Hunterston Sands	Collecting cockles and collecting mussels	-	4
370	Hunterston Sands	Collecting mussels	-	4
	Portencross	Collecting seaweed	-	
243	Ballochmartin Bay and Little Skate Bay (Great Cumbrae)	Collecting mussels	-	3
305	Kames Bay (Great Cumbrae)	Bait digging	-	2
180	North-east shore of Great Cumbrae	Collecting cockles	-	2

Notes

Emboldened observations are the high-rate individuals

The mean fishing gear handling rate based on 5 high-rate observations is 1464 h y^{-1}

The observed 97.5th percentile rate based on 32 observations for fishing gear is 1980 h y^{-1}

The mean sediment handling rate based on 6 high-rate observations is 548 h y^{-1}

The observed 97.5th percentile rate based on 23 observations for sediment is 800 h y^{-1}

Table 14. Children's handling rates of sediment in the Hunterston aquatic survey area (h y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Location	Activity	Sediment
306	**9**	**Kames Bay (Great Cumbrae)**	**Bait digging**	**2**

Notes

Emboldened observations are the high-rate individuals

The mean sediment handling rate based on 1 high-rate observation is 2 h y^{-1}

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

Table 15. Adults' occupancy rates in and on water in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	In water	On water
199	Fairlie Roads	Windsurfing and kayaking	446	-
	Fairlie Roads	Pleasure cruising and sailing	-	112
157	Fairlie Sands	Kayaking	312	-
158	Fairlie Sands	Kayaking	312	-
159	Fairlie Sands	Kayaking	312	-
245	Various locations around Great Cumbrae	Diving	250	-
	Fairlie Roads	Windsurfing		-
	Various locations around Great Cumbrae	On a dive boat	-	1625
	Fairlie Roads	Pleasure cruising and sailing	-	
8	Fairlie Roads	Diving	146	-
	Fairlie Roads	On a dive boat	-	218
9	Fairlie Roads	Diving	146	-
	Fairlie Roads	On a dive boat	-	218
10	Fairlie Roads	Diving	146	-
	Fairlie Roads	On a dive boat	-	218
11	Fairlie Roads	Diving	146	-
	Fairlie Roads	On a dive boat	-	218
12	Fairlie Roads	Diving	146	-
	Fairlie Roads	On a dive boat	-	218
144	Largs Marina	Windsurfing	72	-
145	Largs Marina	Windsurfing	72	-
146	Largs Marina	Windsurfing	72	-
147	Largs Marina	Windsurfing	72	-
185	Fairlie Roads	Windsurfing and kayaking	60	-
	Fairlie Roads	Pleasure cruising, sailing and angling	-	321
	Millport Bay (Great Cumbrae)	Rowing	-	
180	Millport Bay (Great Cumbrae)	Diving	52	-
	Millport Bay (Great Cumbrae)	Diving	-	159
	Farland Point, Portachur Point and Biggar Point (Great Cumbrae)	Angling	-	
219	Between Fintray Bay and Bell Bay (Great Cumbrae)	Snorkelling	30	-
230	Kames Bay (Great Cumbrae)	Swimming and sailing	20	700
184	Various locations around Great Cumbrae	Diving and trawling	10	18
244	Farland Point (Great Cumbrae)	Swimming	9	-
	Farland Point (Great Cumbrae)	Sailing	-	16
	Fairlie Roads	Angling	-	

Table 15. Adults' occupancy rates in and on water in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	In water	On water
231	Newtown Bay and Fintray Bay (Great Cumbrae)	Swimming	7	-
232	Newtown Bay and Fintray Bay (Great Cumbrae)	Swimming	7	-
243	Farland Point (Great Cumbrae)	Swimming	4	-
	Farland Point (Great Cumbrae)	Sailing and angling	-	18
	Fairlie Roads	Pleasure cruising and steaming	-	
360	North of Great Cumbrae Island	Diving	4	-
196	Kames Bay (Great Cumbrae)	Swimming	3	-
195	Kames Bay (Great Cumbrae)	Swimming	1	-
228	Newtown Bay (Great Cumbrae)	Swimming	1	-
93	Farlie Roads	Trawling	-	3500
94	Fairlie Roads	Trawling	-	3500
97	Fairlie Roads	Trawling	-	3000
98	Fairlie Roads	Trawling	-	3000
99	Fairlie Roads	Trawling	-	3000
100	Fairlie Roads	Trawling	-	3000
101	Farlie Roads	Trawling	-	3000
81	Fairlie Roads	Trawling	-	2880
86	Fairlie Roads	Trawling	-	2880
72	Farlie Roads	Trawling	-	2400
73	Farlie Roads	Trawling	-	2400
87	Farlie Roads	Trawling	-	1900
66	Fairlie Roads	Creeling and angling	-	1728
29	Fairlie Roads	Passenger ferry crew duties	-	1560
30	Fairlie Roads	Passenger ferry crew duties	-	1560
31	Fairlie Roads	Passenger ferry crew duties	-	1560
32	Fairlie Roads	Passenger ferry crew duties	-	1560
358	Largs to Ardrossan	Creeling	-	1553
359	Largs to Ardrossan	Creeling	-	1553
68	Fairlie Roads	Trawling	-	1500
126	Farlie Roads	Trawling	-	1500
127	Fairlie Roads	Trawling	-	1500
128	Fairlie Roads	Trawling	-	1500
23	Fairlie Roads	Passenger ferry crew duties	-	1440
24	Fairlie Roads	Passenger ferry crew duties	-	1440
25	Fairlie Roads	Passenger ferry crew duties	-	1440

Table 15. Adults' occupancy rates in and on water in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	In water	On water
26	Fairlie Roads	Passenger ferry crew duties	-	1440
27	Fairlie Roads	Passenger ferry crew duties	-	1440
28	Fairlie Roads	Passenger ferry crew duties	-	1440
18	Farlie Roads	Creeling	-	1200
19	Fairlie Roads	Creeling	-	1200
71	Farlie Roads	Trawling	-	900
46	Fairlie Roads	Sailing	-	720
293	Farlie Roads	Charter boat skipper duties	-	709
413	Portencross to Saltcoats	Creeling	-	480
414	Portencross to Saltcoats	Creeling	-	480
297	Fairlie Roads	Charter boat skipper duties	-	400
298	Farlie Roads	Charter boat skipper duties	-	400
299	Fairlie Roads	Charter boat skipper duties	-	400
300	Fairlie Roads	Charter boat skipper duties	-	400
301	Fairlie Roads	Charter boat skipper duties	-	400
7	Fairlie Roads	On dive boat	-	364
156	Fairlie Roads	Angling	-	312
129	Fairlie Roads	Sailing	-	260
130	Fairlie Roads	Sailing	-	260
131	Fairlie Roads	Sailing	-	260
132	Fairlie Roads	Sailing	-	260
133	Fairlie Roads	Sailing	-	260
134	Fairlie Roads	Sailing	-	260
135	Fairlie Roads	Sailing	-	260
136	Fairlie Roads	Sailing	-	260
137	Fairlie Roads	Sailing	-	260
138	Fairlie Roads	Sailing	-	260
139	Fairlie Roads	Sailing	-	260
140	Fairlie Roads	Sailing	-	260
141	Fairlie Roads	Sailing	-	260
142	Fairlie Roads	Sailing	-	260
143	Fairlie Roads	Sailing	-	260
376	Wemyss Bay	Creeling	-	248
377	Wemyss Bay	Creeling	-	248
294	Fairlie Roads	Charter boat skipper duties	-	237

Table 15. Adults' occupancy rates in and on water in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	In water	On water
295	Farlie Roads	Charter boat skipper duties	-	237
296	Farlie Roads	Charter boat skipper duties	-	237
33	Farlie Roads	Lifeboat duties and sailing	-	182
34	Farlie Roads	Lifeboat duties and sailing	-	182
35	Farlie Roads	Lifeboat duties and sailing	-	182
372	Off Portencross	Angling	-	182
373	Off Portencross	Angling	-	182
374	Off Portencross	Angling	-	182
160	Largs Marina	Canoeing	-	120
161	Largs Marina	Canoeing	-	120
389	Off Portencross	Angling	-	120
390	Off Portencross	Angling	-	120
391	Off Portencross	Angling	-	120
36	Farlie Roads	Lifeboat duties	-	112
319	Fairlie Roads	Sailing	-	110
320	Fairlie Roads	Sailing	-	110
405	Fairlie Roads	Angling	-	108
406	Fairlie Roads	Angling	-	108
334	Ardrossan to Hunterston	Angling	-	99
148	Largs Marina	Canoeing	-	84
149	Largs Marina	Canoeing	-	84
150	Largs Marina	Canoeing	-	84
151	Largs Marina	Canoeing	-	84
152	Largs Marina	Canoeing	-	84
205	Fairlie Roads	Angling	-	75
206	Fairlie Roads	Angling	-	75
37	Fairlie Roads	Lifeboat duties	-	52
38	Fairlie Roads	Lifeboat duties	-	52
39	Fairlie Roads	Lifeboat duties	-	52
40	Fairlie Roads	Lifeboat duties	-	52
153	Wemyss Bay	Angling	-	40
371	Off Portencross	Creeling	-	36
	Between Portencross and Little Cumbrae	Sailing	-	-
47	Fairlie Roads	Angling	-	24
186	Fairlie Roads	Sailing	-	12

Table 15. Adults' occupancy rates in and on water in the Hunterston aquatic survey area (h y^{-1})

Observation number	Location	Activity	In water	On water
187	Fairlie Roads	Sailing	-	12
188	Fairlie Roads	Sailing	-	12
242	Millport Bay (Great Cumbrae)	Sailing	-	7
	Fairlie Roads	Angling	-	
222	Kames Bay (Great Cumbrae)	Paddling	-	4
189	Millport Bay (Great Cumbrae)	Rowing	-	3

Table 16. Children's and infants' occupancy rates in and on water in the Hunterston aquatic survey area (h y^{-1})

Observation number	Age	Location	Activity	In water	On water
Child age group (6 - 15 years old)					
226	13	Kames Bay (Great Cumbrae)	Swimming	5	-
227	11	Kames Bay (Great Cumbrae)	Swimming	5	-
197	7	Kames Bay (Great Cumbrae)	Swimming	3	-
239	8	Newtown Bay and Fintray Bay (Great Cumbrae)	Paddling	-	8
240	14	Newtown Bay and Fintray Bay (Great Cumbrae)	Paddling	-	8
241	11	Newtown Bay and Fintray Bay (Great Cumbrae)	Paddling	-	8
190	8	Millport Bay (Great Cumbrae)	Rowing	-	3
234	6	Newtown Bay and Fintray Bay (Great Cumbrae)	Paddling	-	3
236	8	Newtown Bay and Fintray Bay (Great Cumbrae)	Paddling	-	3
Infant age group (0 - 5 years old)					
223	3	Kames Bay (Great Cumbrae)	Playing on lilo	-	4
225	5	Kames Bay (Great Cumbrae)	Playing on lilo	-	4
191	3	Millport Bay (Great Cumbrae)	Rowing	-	3
221	3	Fintray Bay and Bell Bay (Great Cumbrae)	Paddling	-	3
235	4	Newtown Bay and Fintray Bay (Great Cumbrae)	Paddling	-	3
198	4	Kames Bay (Great Cumbrae)	Paddling	-	1

Table 17. Adults' consumption rates of green vegetables from the Hunterston terrestrial survey area (kg y^{-1})

Observation number	Broccoli	Brussels sprout	Cabbage	Cauliflower	Courgette	Cucumber	Herbs	Kale	Lettuce	Nasturtium leaves	Rocket	Spinach	Total
174	**3.1**	**4.1**	**6.4**	**3.8**	**5.5**	**-**	**-**	**-**	**11.3**	**-**	**-**	**-**	**34.1**
173	**3.1**	**4.1**	**6.4**	**3.8**	**5.5**	**-**	**-**	**-**	**5.6**	**-**	**-**	**-**	**28.5**
50	**3.4**	**-**	**-**	**-**	**18.4**	**-**	**-**	**-**	**1.0**	**-**	**-**	**-**	**22.8**
384	**-**	**-**	**13.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.7**
385	**-**	**-**	**13.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13.7**
59	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12.5**	**-**	**-**	**-**	**-**	**12.5**
60	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12.5**	**-**	**-**	**-**	**-**	**12.5**
66	10.0	-	-	-	-	-	-	-	-	-	-	-	10.0
67	10.0	-	-	-	-	-	-	-	-	-	-	-	10.0
273	-	-	-	4.5	-	-	-	-	0.6	-	-	-	5.1
274	-	-	-	4.5	-	-	-	-	0.6	-	-	-	5.1
275	-	-	-	4.5	-	-	-	-	0.6	-	-	-	5.1
55	-	2.3	-	-	-	-	-	-	0.8	-	0.7	1.0	4.7
56	-	2.3	-	-	-	-	-	-	0.8	-	0.7	1.0	4.7
57	-	2.3	-	-	-	-	-	-	0.8	-	0.7	1.0	4.7
58	-	2.3	-	-	-	-	-	-	0.8	-	0.7	1.0	4.7
276	-	-	0.5	-	1.5	-	-	-	0.3	-	-	-	2.3
277	-	-	0.5	-	1.5	-	-	-	0.3	-	-	-	2.3
382	-	-	-	-	-	-	-	-	2.0	-	-	-	2.0
383	-	-	-	-	-	-	-	-	2.0	-	-	-	2.0
285	-	-	1.8	-	-	-	-	-	-	-	-	-	1.8
286	-	-	1.8	-	-	-	-	-	-	-	-	-	1.8
373	-	-	-	-	-	0.9	0.6	-	-	0.3	-	-	1.8
374	-	-	-	-	-	0.9	0.6	-	-	0.3	-	-	1.8
370	-	-	-	-	-	0.9	0.6	-	-	0.3	-	-	1.8
371	-	-	-	-	-	0.9	0.6	-	-	0.3	-	-	1.8
372	-	-	-	-	-	0.9	0.6	-	-	0.3	-	-	1.8
280	-	-	-	-	-	-	-	-	-	-	-	1.7	1.7
175	-	-	-	-	-	-	-	-	1.2	-	-	-	1.2
176	-	-	-	-	-	-	-	-	1.2	-	-	-	1.2
281	-	-	-	-	-	0.9	-	-	-	-	-	-	0.9

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables based on the 7 high-rate adult consumers is 19.7 kg y^{-1}

The observed 97.5th percentile rate based on 31 observations is 29.9 kg y^{-1}

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

Observation number	Broad bean	Chilli pepper	French bean	Pea	Runner bean	Squash	Sweetcorn	Tomato	Total
50	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**18.0**	**18.0**
273	**-**	**-**	**-**	**0.9**	**2.7**	**0.2**	**-**	**7.2**	**11.0**
274	**-**	**-**	**-**	**0.9**	**2.7**	**0.2**	**-**	**7.2**	**11.0**
275	**-**	**-**	**-**	**0.9**	**2.7**	**0.2**	**-**	**7.2**	**11.0**
384	**-**	**-**	**-**	**3.7**	**-**	**-**	**-**	**7.2**	**10.9**
385	**-**	**-**	**-**	**3.7**	**-**	**-**	**-**	**7.2**	**10.9**
112	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10.8**	**10.8**
113	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10.8**	**10.8**
114	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10.8**	**10.8**
173	**2.1**	**-**	**-**	**0.3**	**-**	**1.0**	**-**	**3.4**	**6.8**
174	**2.1**	**-**	**-**	**0.3**	**-**	**1.0**	**-**	**3.4**	**6.8**
280	**-**	**-**	**1.4**	**-**	**3.4**	**-**	**0.3**	**1.1**	**6.2**
281	**-**	**-**	**1.4**	**-**	**3.4**	**-**	**0.3**	**1.1**	**6.2**
276	-	-	-	-	-	2.0	0.6	-	2.6
277	-	-	-	-	-	2.0	0.6	-	2.6
285	-	-	-	1.4	-	-	-	-	1.4
286	-	-	-	1.4	-	-	-	-	1.4
370	-	0.2	-	-	-	-	-	1.1	1.3
371	-	0.2	-	-	-	-	-	1.1	1.3
372	-	0.2	-	-	-	-	-	1.1	1.3
373	-	0.2	-	-	-	-	-	1.1	1.3
374	-	0.2	-	-	-	-	-	1.1	1.3
55	-	-	-	-	-	-	0.3	-	0.3
56	-	-	-	-	-	-	0.3	-	0.3
57	-	-	-	-	-	-	0.3	-	0.3
58	-	-	-	-	-	-	0.3	-	0.3

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables based on the 13 high-rate adult consumers is 10.1 kg y^{-1}

The observed 97.5th percentile rate based on 26 observations is 13.6 kg y^{-1}

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

Observation number	Beetroot	Carrot	Celeriac	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Turnip	Total
59	**-**	**-**	**-**	**-**	**35.3**	**14.0**	**-**	**-**	**12.5**	**-**	**-**	**21.1**	**82.9**
60	**-**	**-**	**-**	**-**	**35.3**	**14.0**	**-**	**-**	**12.5**	**-**	**-**	**21.1**	**82.9**
382	**-**	**18.5**	**-**	**-**	**17.6**	**21.2**	**-**	**-**	**-**	**-**	**-**	**-**	**57.3**
383	**-**	**18.5**	**-**	**-**	**17.6**	**21.2**	**-**	**-**	**-**	**-**	**-**	**-**	**57.3**
112	**-**	**-**	**-**	**-**	**0.7**	**27.5**	**-**	**-**	**-**	**-**	**26.0**	**-**	**54.1**
113	**-**	**-**	**-**	**-**	**0.7**	**27.5**	**-**	**-**	**-**	**-**	**26.0**	**-**	**54.1**
114	**-**	**-**	**-**	**-**	**0.7**	**27.5**	**-**	**-**	**-**	**-**	**26.0**	**-**	**54.1**
50	**-**	**23.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**14.0**	**37.0**
55	**2.4**	**2.0**	**1.1**	**-**	**6.8**	**8.6**	**2.2**	**0.6**	**1.7**	**-**	**-**	**7.3**	**32.6**
56	**2.4**	**2.0**	**1.1**	**-**	**6.8**	**8.6**	**2.2**	**0.6**	**1.7**	**-**	**-**	**7.3**	**32.6**
57	**2.4**	**2.0**	**1.1**	**-**	**6.8**	**8.6**	**2.2**	**-**	**1.7**	**-**	**-**	**7.3**	**32.0**
58	**2.4**	**2.0**	**1.1**	**-**	**6.8**	**8.6**	**2.2**	**-**	**1.7**	**-**	**-**	**7.3**	**32.0**
384	-	-	-	-	4.5	10.8	-	-	-	-	-	-	15.3
385	-	-	-	-	4.5	10.8	-	-	-	-	-	-	15.3
173	2.8	1.6	-	4.7	1.9	-	-	-	-	-	-	-	11.0
174	2.8	1.6	-	4.7	1.9	-	-	-	-	-	-	-	11.0
285	1.4	2.7	-	-	-	1.1	-	-	-	-	-	-	5.1
286	1.4	2.7	-	-	-	1.1	-	-	-	-	-	-	5.1
246	-	-	-	-	-	4.5	-	-	-	-	-	-	4.5
247	-	-	-	-	-	4.5	-	-	-	-	-	-	4.5
273	-	-	-	-	0.9	-	-	-	-	-	-	1.1	2.0
274	-	-	-	-	0.9	-	-	-	-	-	-	1.1	2.0
275	-	-	-	-	0.9	-	-	-	-	-	-	1.1	2.0
280	-	0.5	-	-	-	0.5	-	-	-	-	-	-	1.0
281	-	0.5	-	-	-	0.5	-	-	-	-	-	-	1.0
276	-	0.3	-	-	-	-	0.3	-	-	0.2	-	-	0.8
277	-	0.3	-	-	-	-	0.3	-	-	0.2	-	-	0.8

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables based on the 12 high-rate adult consumers is 50.7 kg y^{-1}

The observed 97.5th percentile rate based on 27 observations is 82.9 kg y^{-1}

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

Observation number	Potato
382	**104.0**
383	**104.0**
59	**98.5**
60	**98.5**
50	**91.0**
384	**54.6**
385	**54.6**
246	**45.4**
247	**45.4**
264	16.0
173	15.2
174	15.2
346	10.0
347	10.0
55	8.2
56	8.2
57	8.2
58	8.2
370	3.9
371	3.9
372	3.9
373	3.9
374	3.9
285	2.7
286	2.7
175	1.5
176	1.5
280	0.7
281	0.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato based on the 9 high-rate adult consumers is 77.3 kg y^{-1}

The observed 97.5th percentile rate based on 29 observations is 104.0 kg y^{-1}

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

Observation number	Apple	Blackberry	Blackcurrant	Gooseberry	Grape	Jostaberry	Loganberry	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	Total
173	**33.8**	**-**	**2.1**	**4.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4.3**	**12.8**	**57.5**
50	**5.9**	**-**	**9.1**	**-**	**17.0**	**-**	**-**	**-**	**-**	**9.1**	**-**	**-**	**9.1**	**50.2**
385	**-**	**3.2**	**9.1**	**6.5**	**-**	**4.8**	**-**	**-**	**-**	**-**	**-**	**2.1**	**19.0**	**44.7**
384	**-**	**3.2**	**9.1**	**6.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.1**	**19.0**	**39.9**
174	**5.6**	**-**	**2.1**	**4.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4.3**	**12.8**	**29.4**
382	-	-	-	8.2	-	-	-	-	-	4.1	-	-	-	12.3
383	-	-	-	8.2	-	-	-	-	-	4.1	-	-	-	12.3
370	0.7	-	0.9	-	-	-	0.9	0.9	0.9	0.9	0.9	-	0.2	6.4
371	0.7	-	0.9	-	-	-	0.9	0.9	0.9	0.9	0.9	-	0.2	6.4
372	0.7	-	0.9	-	-	-	0.9	0.9	0.9	0.9	0.9	-	0.2	6.4
373	0.7	-	0.9	-	-	-	0.9	0.9	0.9	0.9	0.9	-	0.2	6.4
374	0.7	-	0.9	-	-	-	0.9	0.9	0.9	0.9	0.9	-	0.2	6.4
246	-	-	-	-	-	-	-	-	-	-	-	-	4.5	4.5
247	-	-	-	-	-	-	-	-	-	-	-	-	4.5	4.5
280	-	-	0.9	-	-	-	-	-	-	1.7	0.7	-	0.7	3.9
281	-	-	0.9	-	-	-	-	-	-	1.7	0.7	-	0.7	3.9
55	-	-	-	-	-	-	-	-	-	-	-	1.7	2.0	3.8
56	-	-	-	-	-	-	-	-	-	-	-	1.7	2.0	3.8
57	-	-	-	-	-	-	-	-	-	-	-	1.7	2.0	3.8
58	-	-	-	-	-	-	-	-	-	-	-	1.7	2.0	3.8
175	1.0	-	-	-	-	-	-	-	2.5	-	-	-	-	3.5
176	1.0	-	-	-	-	-	-	-	2.5	-	-	-	-	3.5
282	3.0	-	-	-	-	-	-	-	-	-	-	-	-	3.0
273	-	-	-	1.4	-	-	-	-	-	-	-	1.5	-	2.9
274	-	-	-	1.4	-	-	-	-	-	-	-	1.5	-	2.9
275	-	-	-	1.4	-	-	-	-	-	-	-	1.5	-	2.9
112	-	-	1.7	-	-	-	-	-	-	-	0.8	-	-	2.4
113	-	-	1.7	-	-	-	-	-	-	-	0.8	-	-	2.4
114	-	-	1.7	-	-	-	-	-	-	-	0.8	-	-	2.4
264	-	-	1.1	-	-	-	-	-	-	0.9	-	-	-	2.0
265	-	-	1.1	-	-	-	-	-	-	0.9	-	-	-	2.0
276	1.0	0.2	-	-	-	-	-	-	-	0.5	-	-	-	1.7
277	1.0	0.2	-	-	-	-	-	-	-	0.5	-	-	-	1.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit based on the 5 high-rate adult consumers is 44.3 kg y^{-1}

The observed 97.5th percentile rate based on 33 observations is 51.6 kg y^{-1}

Table 22. Adults' consumption rates of milk from the Hunterston terrestrial survey area (l y^{-1})

Observation number	Cows' milk	Sheeps' milk	Total
350	**486.7**	**-**	**486.7**
351	**486.7**	**-**	**486.7**
352	**486.7**	**-**	**486.7**
50	-	17.7	17.7
51	-	17.7	17.7
52	-	17.7	17.7
53	-	17.7	17.7
54	-	17.7	17.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk based on the 3 high-rate adult consumers is 486.7 l y^{-1}

The observed 97.5th percentile rate based on 8 observations is 486.7 l y^{-1}

Table 23. Adults' consumption rates of cattle meat from the Hunterston terrestrial survey area (kg y^{-1})

Observation number	Beef
1	**23.7**
2	**23.7**
3	**23.7**
4	**23.7**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of cattle meat based on the 4 high-rate adult consumers is 23.7 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 23.7 kg y^{-1}

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

Observation number	Lamb
61	**5.7**
62	**5.7**
248	**5.7**
249	**5.7**
384	**3.0**
385	**3.0**
50	0.7
51	0.7
52	0.7
53	0.7
54	0.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sheep meat based on the 6 high-rate adult consumers is 4.8 kg y^{-1}

The observed 97.5th percentile rate based on 11 observations is 5.7 kg y^{-1}

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

Observation number	Greylag goose	Mallard	Pheasant	Pigeon	Total
50	**1.3**	**0.9**	**0.9**	**2.8**	**5.9**
51	**1.3**	**0.9**	**0.9**	**2.8**	**5.9**
52	**1.3**	**0.9**	**0.9**	**2.8**	**5.9**
53	**1.3**	**0.9**	**0.9**	**2.8**	**5.9**
54	**1.3**	**0.9**	**0.9**	**2.8**	**5.9**
5	**-**	**-**	**2.7**	**-**	**2.7**
155	**-**	**-**	**2.7**	**-**	**2.7**
237	-	-	1.4	0.3	1.6
238	-	-	1.4	0.3	1.6
174	-	-	1.4	-	1.4
282	-	-	1.4	-	1.4
276	-	-	1.2	-	1.2
277	-	-	1.2	-	1.2
173	-	-	0.7	-	0.7
61	-	-	0.5	-	0.5
62	-	-	0.5	-	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of poultry based on the 7 high-rate adult consumers is 5.0 kg y^{-1}

The observed 97.5th percentile rate based on 16 observations is 5.9 kg y^{-1}

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

Observation number	Chicken egg	Duck egg	Total
119	**41.6**	**-**	**41.6**
120	**41.6**	**-**	**41.6**
248	**31.2**	**-**	**31.2**
249	**31.2**	**-**	**31.2**
63	**20.8**	**-**	**20.8**
64	**20.8**	**-**	**20.8**
285	**18.0**	**-**	**18.0**
370	11.5	-	11.5
371	11.5	-	11.5
372	11.5	-	11.5
373	11.5	-	11.5
374	11.5	-	11.5
115	4.8	5.9	10.7
116	4.8	5.9	10.7
117	4.8	5.9	10.7
118	4.8	5.9	10.7
382	8.0	-	8.0
383	8.0	-	8.0
286	7.7	-	7.7
310	7.3	-	7.3
173	2.1	4.1	6.1
174	2.1	4.1	6.1
308	3.6	-	3.6
309	3.6	-	3.6
112	3.0	-	3.0
113	3.0	-	3.0
114	3.0	-	3.0
121	2.7	-	2.7
384	0.7	0.3	1.0
385	0.7	0.3	1.0
276	0.8	-	0.8
277	0.8	-	0.8
297	0.6	-	0.6
302	0.6	-	0.6
303	0.6	-	0.6
304	0.6	-	0.6
180	0.4	-	0.4
181	0.4	-	0.4
182	0.4	-	0.4
183	0.4	-	0.4
175	0.2	-	0.2
176	0.2	-	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs based on the 7 high-rate adult consumers is 29.3 kg y^{-1}

The observed 97.5th percentile rate based on 42 observations is 41.3 kg y^{-1}

Table 27. Adults' consumption rates of wild/free foods from the Hunterston terrestrial survey area (kg y^{-1})

Observation number	Blackberry	Dandelion leaves	Elderflower	Hawthorn fruit	Nettle	Sloe	Wild garlic	Total
50	**13.6**	**-**	**-**	**-**	**-**	**-**	**-**	**13.6**
173	**2.5**	**-**	**0.2**	**0.6**	**0.5**	**0.6**	**0.5**	**5.0**
174	**2.5**	**-**	**0.2**	**0.6**	**0.5**	**0.6**	**0.5**	**5.0**
282	3.2	-	-	-	-	-	-	3.2
370	0.9	0.3	-	-	-	-	-	1.2
371	0.9	0.3	-	-	-	-	-	1.2
372	0.9	0.3	-	-	-	-	-	1.2
373	0.9	0.3	-	-	-	-	-	1.2
374	0.9	0.3	-	-	-	-	-	1.2
297	1.1	-	-	-	-	-	-	1.1
302	1.1	-	-	-	-	-	-	1.1
303	1.1	-	-	-	-	-	-	1.1
304	1.1	-	-	-	-	-	-	1.1
175	1.0	-	-	-	-	-	-	1.0
181	0.9	-	-	-	-	-	-	0.9
63	0.7	-	-	-	-	-	-	0.7
64	0.7	-	-	-	-	-	-	0.7
311	0.6	-	-	-	-	-	-	0.6
312	0.6	-	-	-	-	-	-	0.6
242	-	-	-	-	-	-	0.1	0.1
243	-	-	-	-	-	-	0.1	0.1
244	-	-	-	-	-	-	0.1	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild/free foods based on the 3 high-rate adult consumers is 7.9 kg y^{-1}

The observed 97.5th percentile rate based on 22 observations is 9.1 kg y^{-1}

Table 28. Adults' consumption rates of rabbits/hares from the Hunterston terrestrial survey area (kg y^{-1})

Observation number	Hare	Rabbit	Total
50	**6.4**	**3.2**	**9.6**
51	**6.4**	**3.2**	**9.6**
52	**6.4**	**3.2**	**9.6**
53	**6.4**	**3.2**	**9.6**
54	**6.4**	**3.2**	**9.6**
237	-	0.9	0.9
238	-	0.9	0.9
276	-	0.2	0.2
277	-	0.2	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of rabbits/hares based on the 5 high-rate adult consumers is 9.6 kg y^{-1}

The observed 97.5th percentile rate based on 9 observations is 9.6 kg y^{-1}

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

Observation number	Grey squirrel
282	**1.5**
276	**0.5**
277	**0.5**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of squirrels based on the 3 high-rate adult consumers is 0.8 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 1.5 kg y^{-1}

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

Observation number	Honey
276	**10.7**
50	**10.4**
173	**5.4**
265	3.2
260	2.7
266	1.9
268	1.9
271	1.9
272	1.9
273	1.8
275	1.8
274	0.9
350	0.8
351	0.8
352	0.8
261	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of honey based on the 3 high-rate adult consumers is 8.8 kg y^{-1}

The observed 97.5th percentile rate based on 16 observations is 10.6 kg y^{-1}

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

Observation number	Mushrooms
173	**0.8**
174	**0.8**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild fungi based on the 2 high-rate adult consumers is 0.8 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 0.8 kg y^{-1}

Table 32. Adults' consumption rates of freshwater fish from the Hunterston terrestrial survey area (kg y^{-1})

Observation number	Brown trout	Rainbow trout	Total
107	**3.8**	**27.7**	**31.4**
108	**3.8**	**27.7**	**31.4**
109	**3.8**	**27.7**	**31.4**
155	**3.1**	**23.6**	**26.7**
102	0.2	1.4	1.6
103	0.2	1.4	1.6

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of freshwater fish based on the 4 high-rate adult consumers is 30.3 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 31.4 kg y^{-1}

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

Observation number	Watercress
66	**0.5**
67	**0.5**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of freshwater plants based on the 2 high-rate adult consumers is 0.5 kg y^{-1}

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

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

Infant age group (0 - 5 years old)

Observation number	Age	Cabbage	Courgette	Lettuce	Total
278	**3**	**0.2**	**0.8**	**0.2**	**1.1**
279	**0.6**	**0.1**	**0.4**		**0.5**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for the infant age group based upon the 2 high-rate consumers is 0.8 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 1.1 kg y^{-1}

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

Infant age group (0 - 5 years old)

Observation number	Age	Pea	Squash	Sweetcorn	Total
278	**3**		**1.0**	**0.3**	**1.3**
386	**4**	**0.9**			**0.9**
387	**2**	**0.9**			**0.9**
279	0.6			0.1	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables for the infant age group based upon the 3 high-rate consumers is 1.0 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 1.3 kg y^{-1}

Table 36. Infants' consumption rates of root vegetables from the Hunterston terrestrial area (kg y^{-1})

Infant age group (0 - 5 years old)

Observation number	Age	Carrot	Parsnip	Spring onion	Total
278	**3**	**0.2**	**0.1**	**0.1**	**0.4**
279	**0.7**	**0.1**	**0.1**		**0.2**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables for the infant age group based upon the 2 high-rate consumers is 0.3 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 0.4 kg y^{-1}

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

Child age group (6 - 15 years old)

Observation number	Age	Potato
348	**14**	**10.0**
349	**11**	**10.0**

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 10.0 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 10.0 kg y^{-1}

Table 38. Infants' consumption rates of domestic fruit from the Hunterston terrestrial area (kg y^{-1})

Infant age group (0 - 5 years old)

Observation number	Age	Apple	Blackberry	Blackcurrant	Gooseberry	Jostaberry	Raspberry	Strawberry	Total
386	**4**		**0.8**	**2.3**	**1.6**	**1.2**		**4.8**	**10.7**
387	**2**		**0.8**	**2.3**	**1.6**	**1.2**		**4.8**	**10.7**
279	0.7	0.3	0.1				0.1		0.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for the infant age group based upon the 2 high-rate consumers is 10.7 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 10.7 kg y^{-1}

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

Child age group (6 - 15 years old)

Observation number	Age	Pheasant	Pigeon	Total
240	14	2.0	0.4	2.4
239	8	1.0	0.2	1.2
241	11	1.0	0.2	1.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of poultry for the child age group based upon the 3 high-rate consumers is 1.6 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 2.4 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Pheasant	Pigeon	Total
278	3	0.6	-	0.6

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of poultry for the infant age group based upon the only high-rate consumer is 0.6 kg y^{-1}

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

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

Child age group (6 - 15 years old)

Observation number	Age	Chicken egg
122	6	1.4
123	12	1.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for the child age group based upon the 2 high-rate consumers is 1.4 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 1.4 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Chicken egg
278	3	1.1

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of eggs for the infant age group based upon the only high-rate consumer is 1.1 kg y^{-1}

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

Table 41. Children's and infants' consumption rates of rabbits/hares from the Hunterston terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Rabbit
240	14	1.4
239	8	0.7
241	11	0.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of rabbits/hares for the child age group based upon the 3 high-rate consumers is 0.9 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 1.3 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Rabbit
278	3	0.1

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of rabbits/hares for the infant age group based upon the only high-rate consumer is 0.1 kg y^{-1}

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

Table 42. Infants' consumption rates of squirrels from the Hunterston terrestrial survey area (kg y^{-1})

Infant age group (0 - 5 years old)

Observation number	Age	Grey squirrel
278	3	0.3

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of squirrels for the infant age group based upon the only high-rate consumer is 0.3 kg y^{-1}

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

Table 43. Children's and infants' consumption rates of honey from the Hunterston terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Honey
267	10	1.9
269	6	1.5
270	8	1.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of honey for the child age group based upon the 3 high-rate consumers is 1.6 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 1.9 kg y^{-1}

Infant age group (0 - 5 years old)

Observation number	Age	Honey
278	3	0.2

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of honey for the infant age group based upon the only high-rate consumer is 0.2 kg y^{-1}

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

Table 44. Children's consumption rates of freshwater fish from the Hunterston terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Observation number	Age	Brown trout	Rainbow trout	Total
104	13	0.2	1.4	1.6
105	10	0.2	1.4	1.6
106	8	0.2	1.4	1.6

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of freshwater fish for the child age group based upon the 3 high-rate consumers is 1.6 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 1.6 kg y^{-1}

Table 45. Percentage contribution each food type makes to its terrestrial food group for adults

Green vegetables	
Cabbage	20.52 %
Courgette	14.90 %
Lettuce	13.57 %
Broccoli	13.55 %
Kale	11.45 %
Cauliflower	9.75 %
Brussels sprout	7.93 %
Spinach	2.65 %
Cucumber	2.45 %
Herbs	1.35 %
Rocket	1.24 %
Nasturtium leaves	0.62 %

Other vegetables	
Tomato	68.72 %
Runner bean	10.18 %
Pea	9.12 %
Squash	4.48 %
Broad bean	2.86 %
Sweetcorn	2.19 %
French bean	1.84 %
Chilli pepper	0.62 %

Root vegetables	
Swede	33.71 %
Onion	23.96 %
Leek	16.28 %
Turnip	9.58 %
Carrot	8.46 %
Shallot	3.43 %
Beetroot	1.92 %
Garlic	1.02 %
Parsnip	0.99 %
Celeriac	0.47 %
Radish	0.14 %
Spring onion	0.04 %

Potato	
Potato	100.00 %

Domestic fruit	
Strawberry	25.64 %
Apple	15.46 %
Blackcurrant	12.48 %
Gooseberry	11.85 %
Grapes	9.45 %
Raspberry	7.74 %
Rhubarb	6.73 %
Plum	2.65 %
Redcurrant	2.27 %
Blackberry	1.89 %
Jostaberry	1.33 %
Pear	1.26 %
Loganberry	1.26 %

Milk	
Cows' milk	94.28 %
Sheeps' milk	5.72 %

Cattle meat	
Beef	100.00 %

Sheep meat	
Lamb	100.00 %

Poultry	
Pheasant	43.09 %
Pigeon	32.09 %
Greylag goose	14.76 %
Mallard	10.06 %

Eggs	
Chicken egg	91.33 %
Duck egg	8.67 %

Wild/free foods	
Blackberry	84.20 %
Dandelion leaves	3.25 %
Wild garlic	3.10 %
Sloe	2.99 %
Hawthorn fruit	2.99 %
Nettle	2.39 %
Elderflower	1.08 %

Rabbits/hares	
Hare	61.13 %
Rabbit	34.10 %

Squirrels	
Grey Squirrel	100.00 %

Honey	
Honey	100.00 %

Wild fungi	
Mushrooms	100.00 %

Freshwater fish	
Rainbow trout	88.10 %
Brown trout	11.90 %

Freshwater plants	
Watercress	100.00 %

Notes

Food types in emboldened italics were monitored by SEPA in 2011 (EA, FSA, NIEA and SEPA, 2012).
Crab apples, rosehips, rowan berries, grass, soil and freshwater were also monitored.
Percentages are based on the consumption of all adults in the survey consuming that particular food group.

Table 46. Occupancy rates in the Hunterston direct radiation survey area for adults, children and infants

Observation number	Sex	Age (years)	Indoor occupancy ($h\ y^{-1}$)	Outdoor occupancy ($h\ y^{-1}$)	Total occupancy ($h\ y^{-1}$)
Adult observations					
120	M	70	7439	1095	8534
285	M	64	4749	3402	8151
286	F	61	6440	1701	8141
277	F	37	7469	334	7803
281	F	66	7021	770	7791
119	F	68	7668	72	7740
309	M	64	6894	676	7570
276	M	47	6608	191	6799
246	M	70	5225	1007	6232
247	F	67	5225	1007	6232
308	F	49	5096	833	5929
283	F	55	3588	788	4376
310	M	16	4094	77	4171
280	M	71	644	1232	1876
282	M	64	552	1266	1818
121	M	48	1628	36	1664
287	F	16	399	105	504
284	M	57	56	224	280
173	F	U	-	125	125
65	M	U	-	105	105
Child and infant observations					
278	M	3	6899	761	7660
279	F	0.7	4357	195	4552
122	M	6	1002	1002	2004
123	M	12	1002	1002	2004
124	M	7	147	147	294
125	M	13	147	147	294
288	M	15	154	14	168

Notes

U - Unknown

Table 47. Gamma dose rate measurements taken in the Hunterston 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	Wood	0.096	Grass	0.063
Residence 2	Concrete	0.090	Grass	0.061
Residence 3	Wood	0.077	Grass	0.056
Residence 4	Wood	0.070	Grass	0.066
Residence 5	Wood	0.107	Grass	0.065
Residence 6	Wood	0.100	Soil	0.082
Residence 7	Concrete	0.096	Grass	0.074

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	South of Seamill	NS 212 453	Grass	0.052
Background 2	Largs	NS 198 603	Grass	0.063
Background 3	Glaid Stone	NS 168 570	Grass	0.058
			Mean background	0.058

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
1	M	40	-	-	-	-	-	-	-	-	-	-	**23.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	F	45	-	-	-	-	-	-	-	-	-	-	**23.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	M	79	-	-	-	-	-	-	-	-	-	-	**23.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	F	76	-	-	-	-	-	-	-	-	-	-	**23.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	M	59	-	-	-	-	-	-	-	-	-	-	-	-	**2.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**245**	-	-	-	-	-	-	-
7	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	364	-	-
8	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	146	218	-	-
9	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	146	218	-	-
10	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	146	218	-	-
11	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	146	218	-	-
12	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	146	218	-	-
13	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-	-	-
14	M	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-
17	M	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-
18	M	48	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1200**	-	-	1200	-	-
19	M	16	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1200**	-	-	1200	-	-
20	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-
21	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-
22	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**183**	-	-	-	-	-	-	-
23	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1440	-	-
24	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1440	-	-
25	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1440	-	-
26	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1440	-	-
27	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1440	-	-
28	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1440	-	-
29	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1560	-	-
30	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1560	-	-
31	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1560	-	-
32	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1560	-	-
33	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
34	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	-	-
35	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	-	-
36	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	112	-	-
37	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-
38	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-
39	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-
40	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-
41	M	U	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	-	-	-	-	-	-	-	-	-
42	F	U	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	-	-	-	-	-	-	-	-	-
44	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	-	-	-	-	-	-	-	-	-
45	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	-	-	-	-	-	-	-	-	-
46	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	720	-	-
47	M	U	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-
48	F	U	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**209**	-	-	-	-	-	-	-
50	M	U	-	-	-	-	**22.8**	**18.0**	**37.0**	**91.0**	**50.2**	17.7	-	0.7	**5.9**	-	**13.6**	**9.6**	-	**10.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	M	U	-	-	-	-	-	-	-	-	-	17.7	-	0.7	**5.9**	-	-	**9.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	M	U	-	-	-	-	-	-	-	-	-	17.7	-	0.7	**5.9**	-	-	**9.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	F	U	-	-	-	-	-	-	-	-	-	17.7	-	0.7	**5.9**	-	-	**9.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	F	U	-	-	-	-	-	-	-	-	-	17.7	-	0.7	**5.9**	-	-	**9.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	M	71	-	-	-	-	4.7	0.3	**32.6**	8.2	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	F	69	-	-	-	-	4.7	0.3	**32.6**	8.2	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	M	U	-	-	-	-	4.7	0.3	**32.0**	8.2	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	F	U	-	-	-	-	4.7	0.3	**32.0**	8.2	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	M	74	-	-	-	-	**12.5**	-	**82.9**	**98.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	F	75	-	-	-	-	**12.5**	-	**82.9**	**98.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	M	U	-	-	-	-	-	-	-	-	-	-	-	**5.7**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	F	U	-	-	-	-	-	-	-	-	-	-	-	**5.7**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	**20.8**	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	**20.8**	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
65	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105
66	M	U	**8.0**	**9.1**	-	-	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.5**	-	-	-	-	-	360	-	-	1728	-	-
67	F	U	**8.0**	**9.1**	-	-	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.5**	-	-	-	-	-	-	-	-	-	-	-
68	M	U	-	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	-	-	1500	-	-
69	F	U	-	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	F	19	-	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	-	-	900	-	-
72	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	648	-	-	2400	-	-
73	M	U	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	648	-	-	2400	-	-
74	F	U	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	F	U	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76	M	U	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77	M	U	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
78	M	U	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	M	U	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	M	U	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	M	U	**8.2**	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1980**	-	-	2880	-	-
82	M	U	**8.2**	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
83	M	U	**8.2**	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
84	F	U	**8.2**	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85	F	U	**8.2**	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
86	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1980**	-	-	2880	-	-
87	M	U	3.0	**12.0**	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**960**	-	-	1900	-	-
88	M	U	3.0	**12.0**	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89	M	U	3.0	**12.0**	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	F	U	3.0	**12.0**	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
91	F	U	3.0	**12.0**	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
92	F	U	3.0	**12.0**	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
93	M	U	-	1.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	-	-	3500	-	-
94	M	U	-	1.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	-	-	3500	-	-
95	F	U	-	1.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
96	F	U	-	1.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
97	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	625	-	-	3000	-	-
98	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	625	-	-	3000	-	-
99	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	625	-	-	3000	-	-
100	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	625	-	-	3000	-	-
101	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	625	-	-	3000	-	-
102	M	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-
103	F	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-
107	M	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**31.4**	-	-	-	-	-	-	-	-	-	-	-	-
108	F	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**31.4**	-	-	-	-	-	-	-	-	-	-	-	-
109	F	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**31.4**	-	-	-	-	-	-	-	-	-	-	-	-
110	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**390**	-	-	**390**	-	-	-	-
111	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-
112	M	80	-	-	-	-	-	**10.8**	**54.1**	-	2.4	-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
113	F	U	-	-	-	-	-	**10.8**	**54.1**	-	2.4	-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
114	F	U	-	-	-	-	-	**10.8**	**54.1**	-	2.4	-	-	-	-	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
115	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
116	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
117	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
118	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
119	F	68	-	-	-	-	-	-	-	-	-	-	-	-	-	**41.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7668	72
120	M	70	-	-	-	-	-	-	-	-	-	-	-	-	-	**41.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7439	1095
121	M	48	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1628	36
126	M	U	-	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-	1500	-	-
127	M	U	-	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-	1500	-	-
128	M	U	-	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-	1500	-	-
129	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
130	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
131	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
132	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
133	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
134	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
135	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
136	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
137	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
138	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
139	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
140	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
141	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
142	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
143	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-
144	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-
145	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-
146	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-
147	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-
148	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	-	-
149	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	-	-
150	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	-	-
151	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	-	-
152	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	-	-
153	M	U	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-
154	F	U	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
155	M	U	-	-	**10.9**	-	-	-	-	-	-	-	-	-	**2.7**	-	-	-	-	-	-	**26.7**	-	-	-	-	**366**	-	-	-	-	-	-	-
156	M	U	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	312	-	-
157	M	U	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	312	-	-	-
158	F	U	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	312	-	-	-
159	F	U	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	312	-	-	-
160	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
161	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
162	M	47	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	72	-	-	-	72	-	-	-	-
164	F	44	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
167	F	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
168	M	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-
170	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-	-	-
173	F	U	-	-	0.1	-	**28.5**	**6.8**	11.0	15.2	**57.5**	-	-	-	0.7	6.1	**5.0**	-	-	**5.4**	**0.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	125
174	F	U	-	-	0.1	-	**34.1**	**6.8**	11.0	15.2	**29.4**	-	-	-	1.4	6.1	**5.0**	-	-	-	**0.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
175	F	59	-	0.03	-	-	1.2	-	-	1.5	3.5	-	-	-	-	0.2	1.0	-	-	-	-	-	-	-	15	14	-	**98**	-	-	-	-	-	-
176	M	59	-	-	-	-	1.2	-	-	1.5	3.5	-	-	-	-	0.2	-	-	-	-	-	-	-	**12**	**265**	61	**186**	**235**	-	-	-	-	-	-
177	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**12**	12	12	12	12	-	-	-	-	-	-
178	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**12**	12	12	12	12	-	-	-	-	-	-
179	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**12**	12	12	12	12	-	-	-	-	-	-
180	M	61	5.1	0.1	0.4	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	21	6	-	-	-	2	52	159	-	-
181	F	53	5.1	0.1	-	-	-	-	-	-	-	-	-	-	-	0.4	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
182	F	17	5.1	0.1	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
183	M	17	5.1	0.1	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
184	M	48	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**12**	31	20	12	15	-	-	10	18	-	-
185	M	39	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	60	321	-	-
186	M	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-
187	M	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-
188	M	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-
189	F	39	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	3	-	-
192	M	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	2	1	-	-	-	-	-	-
195	M	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	7	1	-	-	-	1	-	-	-
196	F	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	7	1	-	-	-	3	-	-	-
199	M	27	-	0.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	446	112	-	-
200	M	25	-	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
201	F	25	-	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
202	M	31	-	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
203	F	56	-	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
204	F	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	-	-	-	-	-
205	M	57	**13.3**	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	-	-
206	M	40	**13.3**	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	-	-
207	M	46	3.8	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
208	M	38	3.8	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
209	F	36	3.8	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
210	F	26	3.8	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
211	F	22	3.8	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
215	M	49	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-	-	-
216	F	43	**7.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-	-	-
217	M	72	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
218	M	86	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
219	M	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	22	9	-	-	-	30	-	-	-
220	F	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	22	26	-	-	-	-	-	-	-
222	M	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	4	-	-
224	F	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-
228	F	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	-	-
230	M	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	700	-	-
231	F	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	-	-	-	7	-	-	-
232	F	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	-	-	-	7	-	-	-
233	F	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-
237	F	44	-	-	-	-	-	-	-	-	-	-	-	-	1.6	-	-	0.9	-	-	-	-	-	-	-	4	16	-	-	-	-	-	-	-
238	F	47	-	-	-	-	-	-	-	-	-	-	-	-	1.6	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
242	F	22	-	0.1	0.02	**0.2**	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	44	-	-	-	22	-	7	-	-
243	M	23	-	0.1	-	**0.2**	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	4	5	2	-	-	3	4	18	-	-
244	M	24	-	0.1	-	**0.2**	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	3	-	-	-	-	-	9	16	-	-
245	M	29	-	0.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	1625	-	-
246	M	70	-	-	-	-	-	-	4.5	**45.4**	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5225	1007
247	F	67	-	-	-	-	-	-	4.5	**45.4**	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5225	1007
248	F	50	-	-	-	-	-	-	-	-	-	-	-	**5.7**	-	**31.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
249	F	26	-	-	-	-	-	-	-	-	-	-	-	**5.7**	-	**31.2**	-	-	-	-	-	-	-	-	-	242	-	-	-	-	-	-	-	-
250	F	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	242	-	-	-	-	-	-	-	-
251	F	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	242	-	-	-	-	-	-	-	-
252	F	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	242	-	-	-	-	-	-	-	-
253	F	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	242	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
254	M	72	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
255	M	55	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256	M	72	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
257	M	61	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-
258	M	18	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
259	M	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-
260	M	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
261	F	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
262	M	49	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
263	M	61	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
264	F	66	1.5	1.9	-	-	-	-	-	16.0	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
265	M	67	-	-	-	-	-	-	-	-	2.0	-	-	-	-	-	-	-	-	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
266	F	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
268	M	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
271	M	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
272	M	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
273	M	55	-	-	-	-	5.1	**11.0**	2.0	-	2.9	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
274	M	83	-	-	-	-	5.1	**11.0**	2.0	-	2.9	-	-	-	-	-	-	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
275	F	78	-	-	-	-	5.1	**11.0**	2.0	-	2.9	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
276	M	47	-	-	-	-	2.3	2.6	0.8	-	1.7	-	-	-	1.2	0.8	-	0.2	**0.5**	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	6608	191
277	F	37	-	-	-	-	2.3	2.6	0.8	-	1.7	-	-	-	1.2	0.8	-	0.2	**0.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	7469	334
280	M	71	-	-	-	-	1.7	**6.2**	1.0	0.7	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	644	1232
281	F	66	-	-	-	-	0.9	**6.2**	1.0	0.7	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	-	-	-	-	-	-	7021	770
282	M	64	-	-	-	-	-	-	-	-	3.0	-	-	-	1.4	-	3.2	-	**1.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	552	1266
283	F	55	-	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	4	-	-	3588	788
284	M	57	-	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	4	-	-	56	224
285	M	64	-	-	-	-	1.8	1.4	5.1	2.7	-	-	-	-	-	**18.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4749	3402
286	F	61	-	-	-	-	1.8	1.4	5.1	2.7	-	-	-	-	-	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6440	1701
287	F	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	399	105
289	M	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	194	4	46	-	-	-	-	-	-
290	F	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
291	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-
292	M	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-
293	M	54	5.2	2.7	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	709	-	-
294	M	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	237	-	-
295	M	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	237	-	-
296	M	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	237	-	-
297	M	48	1.4	0.7	-	-	-	-	-	-	-	-	-	-	-	0.6	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-
298	M	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	400	-	-
299	M	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	400	-	-
300	M	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	400	-	-
301	M	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	400	-	-
302	F	52	1.4	0.7	-	-	-	-	-	-	-	-	-	-	-	0.6	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
303	M	19	1.4	0.7	-	-	-	-	-	-	-	-	-	-	-	0.6	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
304	F	17	1.4	0.7	-	-	-	-	-	-	-	-	-	-	-	0.6	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
305	M	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	5	3	-	-	2	-	-	-	-
308	F	49	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	5096	833
309	M	64	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6894	676
310	M	16	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4094	77
311	M	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
312	F	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
313	M	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	-
314	F	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	208	-	-	-	-	-	-	-	-
315	M	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	-	-	-	-	-	-	-	-
316	F	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	-	-	-	-	-	-	-	-
318	M	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**347**	-	-	-	-	-	-	-	-
319	M	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	110	-	-
320	M	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	110	-	-
321	M	41	-	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**360**	-	-	**360**	-	-	-	-
322	M	46	-	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**360**	-	-	**360**	-	-	-	-
323	M	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	-	-	-	-	-	-	-	-
324	F	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
325	M	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**400**	**400**	-	-	**800**	-	-	-	-
326	M	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**400**	**400**	-	-	**800**	-	-	-	-
327	M	32	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-
328	M	32	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-
329	M	40	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
330	M	38	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
331	F	35	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
332	M	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	-	-	-	-	-	-
334	M	61	**13.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99	-	-	-
335	F	60	**13.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
336	M	58	1.1	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
337	M	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	-	-	-	-	-	-	-
338	F	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	-	-	-	-	-	-	-
341	M	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-	-	-	-	-	-
342	F	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-	-	-	-	-	-
343	F	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	-	-	-	-	-	-
344	F	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	-	-	-	-	-	-
345	M	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**312**	-	-	-	-	-	-	-	-
346	M	65	-	-	-	-	-	-	-	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
347	F	55	-	-	-	-	-	-	-	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350	M	46	-	-	-	-	-	-	-	-	-	**486.7**	-	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
351	F	48	-	-	-	-	-	-	-	-	-	**486.7**	-	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
352	M	17	-	-	-	-	-	-	-	-	-	**486.7**	-	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
353	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	-	21	-	-	-	-
354	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	-	21	-	-	-	-
355	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	-	21	-	-	-	-
356	M	U	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	-	-	-	56	-	-	-	-
357	M	U	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
358	M	51	**22.2**	6.6	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	516	-	-	1553	-	-
359	M	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	516	-	-	1553	-	-
360	F	35	**10.9**	6.6	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
361	M	U	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
362	F	U	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
363	M	U	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
368	M	60	5.5	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
369	M	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**576**	-	-	-	**576**	-	-	-	-
370	F	55	4.3	0.5	0.4	-	1.8	1.3	-	3.9	6.4	-	-	-	-	11.5	1.2	-	-	-	-	-	-	-	86	-	-	2	-	4	-	-	-	-
371	M	58	4.3	0.5	0.7	-	1.8	1.3	-	3.9	6.4	-	-	-	-	11.5	1.2	-	-	-	-	-	-	-	2	-	-	-	5	2	-	36	-	-
372	F	23	4.3	0.5	-	-	1.8	1.3	-	3.9	6.4	-	-	-	-	11.5	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	-	-
373	F	21	4.3	0.5	-	-	1.8	1.3	-	3.9	6.4	-	-	-	-	11.5	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	-	-
374	M	17	4.3	0.5	-	-	1.8	1.3	-	3.9	6.4	-	-	-	-	11.5	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	-	-
376	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	217	-	-	248	-	-
377	M	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	217	-	-	248	-	-
378	M	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**730**	-	-	-	-	-	-	-	-
379	F	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	167	-	-	-	-	-	-	-	-
380	F	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-
382	M	57	-	-	-	-	2.0	-	**57.3**	**104.0**	12.3	-	-	-	-	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
383	F	U	-	-	-	-	2.0	-	**57.3**	**104.0**	12.3	-	-	-	-	8.0	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	-
384	F	62	-	-	-	-	**13.7**	**10.9**	15.3	**54.6**	**39.9**	-	-	**3.0**	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
385	M	62	-	-	-	-	**13.7**	**10.9**	15.3	**54.6**	**44.7**	-	-	**3.0**	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
388	F	69	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
389	M	70	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
390	M	35	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
391	M	37	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
392	M	53	**11.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**144**	-	-	-	-	-	-	-	-	-
393	M	50	**11.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**144**	-	-	-	-	-	-	-	-	-
394	M	40	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	-	-	-	-	-	-	-	-	-
398	M	55	**8.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	30	-	-	-	-
399	M	58	**8.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	30	-	-	-	-
400	F	U	**8.8**	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
401	M	U	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
402	F	U	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrels	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
404	M	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**456**	-	-	-	-	-	-	-	-
405	M	60	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	108	-	-
406	M	61	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	108	-	-
407	F	U	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
408	F	U	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
409	M	U	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
410	M	30	**15.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
411	M	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-	-
412	F	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-	-
413	M	U	**21.4**	**20.9**	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98	-	-	496	98	-	480	-	-
414	F	U	5.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	-	-	496	88	-	480	-	-

Notes

Emboldened observations are the high-rate individuals

U - Unknown

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Poultry	Eggs	Rabbits/hares	Squirrels	Honey	Freshwater fish	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
Child age group (6 - 15 years old)																								
15	M	7	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**	**12**	**-**	-	-	-	-	-
16	F	7	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**	**12**	**-**	-	-	-	-	-
104	M	13	-	-	-	-	-	-	-	-	-	-	-	-	**1.6**	-	-	-	-	-	-	-	-	-
105	F	10	-	-	-	-	-	-	-	-	-	-	-	-	**1.6**	-	-	-	-	-	-	-	-	-
106	M	8	-	-	-	-	-	-	-	-	-	-	-	-	**1.6**	-	-	-	-	-	-	-	-	-
122	M	6	-	-	-	-	-	-	-	-	**1.4**	-	-	-	-	-	-	-	-	-	-	-	1002	1002
123	M	12	-	-	-	-	-	-	-	-	**1.4**	-	-	-	-	-	-	-	-	-	-	-	1002	1002
124	M	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	147	147
125	M	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	147	147
163	M	13	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	**72**	**-**	**-**	**-**	-	-	-	-	-
165	M	10	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	**144**	-	-	-	-	-	-	-	-
166	M	6	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	**144**	-	-	-	-	-	-	-	-
171	M	9	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**	**24**	**-**	-	-	-	-	-
172	M	11	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**	**24**	**-**	-	-	-	-	-
190	F	8	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	3	-	-
193	M	15	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	2	1	-	-	-	-	-
194	M	9	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	2	1	-	-	-	-	-
197	F	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	3	-	-	-
212	F	14	**3.8**	**0.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
226	M	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	-	-	-	5	-	-	-
227	F	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	-	-	-	5	-	-	-
234	F	6	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**	**27**	**-**	-	-	3	-	-
236	M	8	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**	**27**	**-**	-	-	3	-	-
239	F	8	-	-	-	-	-	-	-	**1.2**	-	**0.7**	-	-	-	-	4	8	-	-	-	8	-	-
240	M	14	-	-	-	-	-	-	-	**2.4**	-	**1.4**	-	-	-	-	4	8	-	-	-	8	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Poultry	Eggs	Rabbits/hares	Squirrels	Honey	Freshwater fish	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
241	M	11	-	-	-	-	-	-	-	**1.2**	-	**0.7**	-	-	-	-	4	8	-	-	-	8	-	-
267	M	10	-	-	-	-	-	-	-	-	-	-	-	**1.9**	-	-	-	-	-	-	-	-	-	-
269	F	6	-	-	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-	-
270	F	8	-	-	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-	-
288	M	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	154	14
306	M	9	-	-	-	-	-	-	-	-	-	-	-	-	-	6	5	3	-	**2**	-	-	-	-
307	F	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	-	-	-	-	-	-
317	M	6	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**56**	**-**	**-**	-	-	-	-	-
333	M	11	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**156**	**-**	**-**	-	-	-	-	-
340	F	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	-	-	-	-	-	-
348	M	14	-	-	-	-	-	**10.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
349	M	11	-	-	-	-	-	**10.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
364	F	12	**5.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
365	M	11	**5.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
366	F	11	**5.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
367	F	9	**5.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
381	F	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-
395	M	13	0.8	-	-	-	-	-	-	-	-	-	-	-	-	32	-	-	-	-	-	-	-	-
396	M	10	0.8	-	-	-	-	-	-	-	-	-	-	-	-	32	-	-	-	-	-	-	-	-
397	M	10	0.8	-	-	-	-	-	-	-	-	-	-	-	-	32	-	-	-	-	-	-	-	-
403	F	7	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-	-	-
Infant age group (0 - 5 years old)																								
169	M	1	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**	**10**	**-**	-	-	-	-	-
191	F	3	**0.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	3	-	-
198	F	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	1	-	-
213	F	2	**0.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Observation number	Sex	Age (years)	Fish	Crustaceans	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Poultry	Eggs	Rabbits/hares	Squirrels	Honey	Freshwater fish	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
214	F	3	**1.9**	**0.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
221	M	3	-	-	-	-	-	-	-	-	-	-	-	-	-	2	11	**26**	**-**	-	-	3	-	-
223	M	3	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**90**	**-**	**-**	-	-	4	-	-
225	F	5	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**60**	**-**	**-**	-	-	4	-	-
229	F	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-
235	M	4	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**-**	**27**	**-**	-	-	3	-	-
278	M	3	-	-	**1.1**	**1.3**	**0.4**	-	-	**0.6**	**1.1**	**0.1**	**0.3**	**0.2**	-	-	-	-	-	-	-	-	6899	761
279	F	0.6	-	-	**0.5**	0.1	**0.2**	-	0.4	-	-	-	-	-	-	**-**	**-**	**-**	**-**	-	-	-	4357	195
339	F	5	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**36**	**-**	**-**	-	-	-	-	-
375	M	4	**1.1**	0.03	-	-	-	-	-	-	-	-	-	-	-	**84**	**-**	**-**	**-**	-	-	-	-	-
386	F	4	-	-	-	**0.9**	-	-	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
387	F	2	-	-	-	**0.9**	-	-	**10.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

Emboldened observations are the high-rate individuals

Annex 3. Combinations of adult pathways for consideration in dose assessments in the Hunterston area

Combination number	Fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Squirrel	Honey	Wild fungi	Freshwater fish	Freshwater plants	Intertidal occupancy over mud	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within the direct radiation survey area	Outdoor occupancy within the direct radiation survey area
1											X																					
2					X	X	X	X	X	X		X	X		X	X		X														
3		X		X											X								X	X	X			X	X	X		
4	X	X	X											X									X	X				X	X	X		
5	X	X			X																X						X			X		
6			X		X	X	X	X	X				X	X	X			X	X													X
7					X	X	X		X				X	X		X	X	X													X	X
8	X	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		X						
11					X			X	X					X								X	X	X	X	X						
12		X																				X	X	X	X	X			X	X		
13	X																								X				X	X		
14													X			X								X	X							
15		X	X	X											X									X				X		X		
16					X	X	X	X	X															X							X	X
17												X		X										X								
18	X	X	X		X	X		X	X					X	X								X			X		X				
19									X				X		X		X														X	X
20			X																					X				X		X	X
21					X	X	X	X						X																	X	X
22														X										X							X	X
23			X																						X			X				
24					X		X	X	X					X										X								
25					X	X	X	X	X			X		X																		
26	X	X	X																					X			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 3 represents an individual (or individuals) from Annex 1 who had positive data in the following pathways; crustaceans, marine plants/algae, wild/free foods, intertidal occupancy over rock, intertidal occupancy over sand, intertidal occupancy over sand and stones, handling sediment, occupancy in water and occupancy on water.