Centre for Environment Fisheries & Aquaculture Science

Cefas

Radiological Habits Survey: Wylfa, 2023

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1. Key Points

- The last habits survey completed around the Wylfa nuclear site was in 2013. At the time of publishing, the 2013 Wylfa report could be accessed via https://www.cefas.co.uk/services/surveys/habits/.
- Porth Wnal was no longer a popular angling location in the aquatic survey area because the sea water temperature had returned to normal following the closure of the cooling water outfall.
- The consumption of molluscs decreased in 2023. Only winkles were identified being consumed in 2023, whereas king scallops and winkles were consumed in 2013.
- The consumption of samphire collected from Porth Padrig was identified in 2023.
- The consumption of common prawns was not identified in 2023.
- The collection of seaweed for use as a fertiliser for the production of fruit and vegetables was identified taking place within the survey area.
- The activities being undertaken on intertidal areas in 2023 were broadly similar to 2013, but the substrate at Cemlyn Bay had changed to stones.
- Occupancy rates over mud and sand significantly decreased due to the retirement of a commercial fisherman who was fixing moorings and undertaking boat maintenance in 2013.
- In 2023, there was a significant increase in the consumption rates of poultry, eggs and freshwater fish. Conversely, the consumption rates significantly decreased for potato and milk.
- The consumption of freshwater plants was not identified in 2023 due to the consumers no longer growing watercress in a garden pond.
- The direct radiation survey area was sparsely populated. Therefore, the 1 km area typically used in habits surveys was extended to 1.2 km.
- A large part of the land within 1.2 km of the site had been purchased by Horizon Nuclear Power for the construction of a new nuclear power station. All properties located in this area were demolished. The farmland purchased by the developers had been leased back to farmers.
- The Magnox visitor centre had permanently closed and additional offices were developed adjacent to the centre.
- Indoor occupancy rates for the >0.25 – 0.5 km zone were identified in 2023. The maximum occupancy rates increased in all zones in 2023.

2. Summary

This report presents the results of a survey conducted in 2023 to determine the habits and consumption patterns of people living, working, and pursuing recreational activities in the vicinity of the Wylfa nuclear site on Anglesey, Wales. The Wylfa nuclear site is situated west of Cemaes Bay, approximately 15 km north-east of Holyhead. The site discharges liquid radioactive wastes into the Irish Sea, gaseous radioactive wastes via stacks to the atmosphere, and contains sources of direct radiation. Areas likely to be most affected by the discharges and sources of radiation were defined as the aquatic survey area for liquid discharges, the terrestrial survey area for the deposition from gaseous discharges, and the direct radiation survey area for ionising radiation emanating directly from the site. The occupancy data collected from the direct radiation survey area are also applicable to inhalation and external exposure arising from gaseous releases from the site.

The following potential exposure pathways were investigated:

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

Information was collected from members of the public by means of interviews and the data obtained for 324 individuals are presented and discussed. High rates of consumption, occupancy over intertidal substrates and handling of sediment and fishing gear are identified using established methods comprising (a) a ‘cut-off’ to define the high-rate group and (b) 97.5th percentiles. The rates identified can be used in dose assessments. Additionally, profiles of integrated habits data are presented specifically for use in ‘total dose’ assessments.

The aquatic survey area

The aquatic survey area (Figure 5) was defined as the intertidal areas along the north coast of Anglesey from Carmel Head in the west, to Point Lynas in the east, and the adjacent sea area up to 6 km offshore.

Only a limited amount of commercial fishing took place within the survey area. Commercial fishermen were identified operating from Amlwch Harbour and Cemaes Harbour. The commercial fishermen were potting for brown crab and common lobster and were gill netting for sea fish in the winter. Fishing for common prawns and velvet swimming crabs was not identified during the survey.

The collection of seaweed for use as a fertiliser was identified within the survey area. Five adults and two children were identified consuming vegetables and fruit grown in soil fertilised with seaweed from the survey area. Livestock were observed accessing the shore at Hen Borth to graze on the seaweed.

Activities taking place on intertidal areas also included angling, bait digging, boat maintenance, collecting winkles, collecting seaweed, dog walking, playing, rock pooling, sitting on the beach, undertaking beach warden duties, undertaking nature warden duties, walking and water sports preparation.

Activities taking place in and on water included boat angling, jet skiing, kayaking, paddle boarding, paddling, pleasure cruising, rowing, snorkelling, sub-aqua diving, swimming, and undertaking charter boat duties.

The terrestrial survey area

The terrestrial survey area (Figure 6) covered the land within 5 km from the centre of the Wylfa site. The land in the terrestrial survey area is primarily agricultural. Interviews were conducted at 18 working farms, where beef, beef stores, suckler cows, milk and lamb were produced commercially. Grass (for haylage and silage), maize and barley were grown for animal feed. Arable crops were not being produced for human consumption. Five smallholdings were identified where pigs, store cattle, lambs, chickens, chicken eggs, ducks, geese, goose eggs and honey were produced.

One allotment site was identified within the terrestrial survey area where a wide variety of fruit and vegetables were grown. A small number of private gardens were also identified growing produce. Three beekeepers were identified who kept hives in the survey area and the consumption of honey was recorded. Game shooting was identified taking place on farmland and pheasant was consumed. Wild foods including blackberries, mushrooms and sloes were collected and consumed.

Foods from the terrestrial survey area were consumed from the following 15 food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; milk; cattle

meat; pig meat; sheep meat; poultry; eggs; wild/free foods; honey; wild fungi; freshwater fish. The mean consumption rates for the adult high-rate groups were above the national adult mean consumption rates that are used for comparison in habits surveys for the following 10 food groups: green vegetables, other vegetables, root vegetables, domestic fruit, cattle meat, pig meat, sheep meat, poultry, eggs and wild fungi.

The human consumption of filtered spring water was identified. Livestock were drinking mains water, borehole water, spring water, and had access to streams.

The nuclear site operator was asked about the potential transfer of contamination off-site by wildlife since radionuclides could enter the food chain or contaminate the environment through this pathway. The site representatives reported that it was highly unlikely that wildlife could enter controlled areas and did not consider this pathway to be a risk.

The direct radiation survey area

The direct radiation survey area (Figure 7) covered the land and sea within 1.2 km of the Wylfa nuclear licensed site boundary. The occupancy data collected from the direct radiation survey area are also applicable to inhalation and external exposure pathways arising from gaseous releases from the site.

The occupancy rates were analysed in zones according to the distance from the nuclear licensed site boundary. The zones were 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.2 km. In the 0 – 0.25 km zone, the highest indoor and total occupancy rates were for employees and the highest outdoor occupancy rate was for a dog walker. The highest indoor, outdoor and total occupancy rates were for employees in the >0.25 – 0.5 km zone. The highest indoor, outdoor and total occupancy rates were for residents in the >0.5 – 1.2 km zone.

Gamma dose rates were measured indoors and outdoors at most of the properties where interviews were conducted in the direct radiation survey area. Background readings were taken over grass at distances beyond 5 km from the Wylfa nuclear site centre. Of the 11 measurements taken indoors at locations within the direct radiation survey area, nine readings were higher than the maximum background reading. The measurements taken inside properties are expected to be higher than those taken outdoors because building materials and ground type can increase the gamma dose rates. Of the 14 measurements taken outdoors at locations within the direct radiation survey area, nine readings were higher than the maximum background reading. The nine indoor and nine outdoor readings which were higher than the maximum background reading were not all taken at the same locations.

Comparisons with the previous survey

Comparisons for adults were made with the results from the previous Wylfa habits survey in 2013. Reasons for changes in the consumption and occupancy rates were identified for certain pathways and these are presented in Section 10 of the report.

For the consumption of foods from the aquatic survey area, the main differences in 2023 were that the mean consumption rate decreased significantly for molluscs and the consumption of marine plants/algae was identified in 2023 (Figure 1).

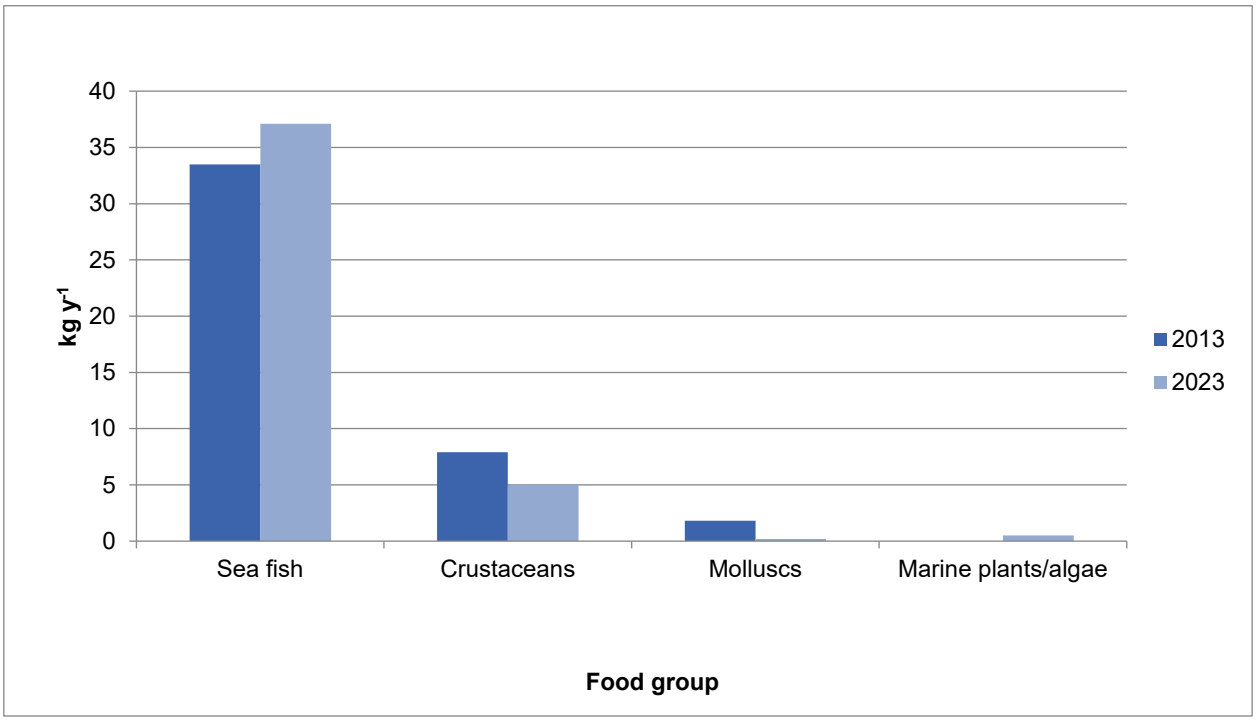

Figure 1. Comparison between 2013 and 2023 mean rates for the high-rate groups for aquatic foods

There were significant changes in occupancy over intertidal substrates in 2023 (Figure 2). The most noteworthy changes in 2023 were: a decrease in occupancy over mud and sand; a decrease in occupancy over sand and stones; and a decrease in handling sediment. Occupancy over stones was identified in 2023 but not in 2013.

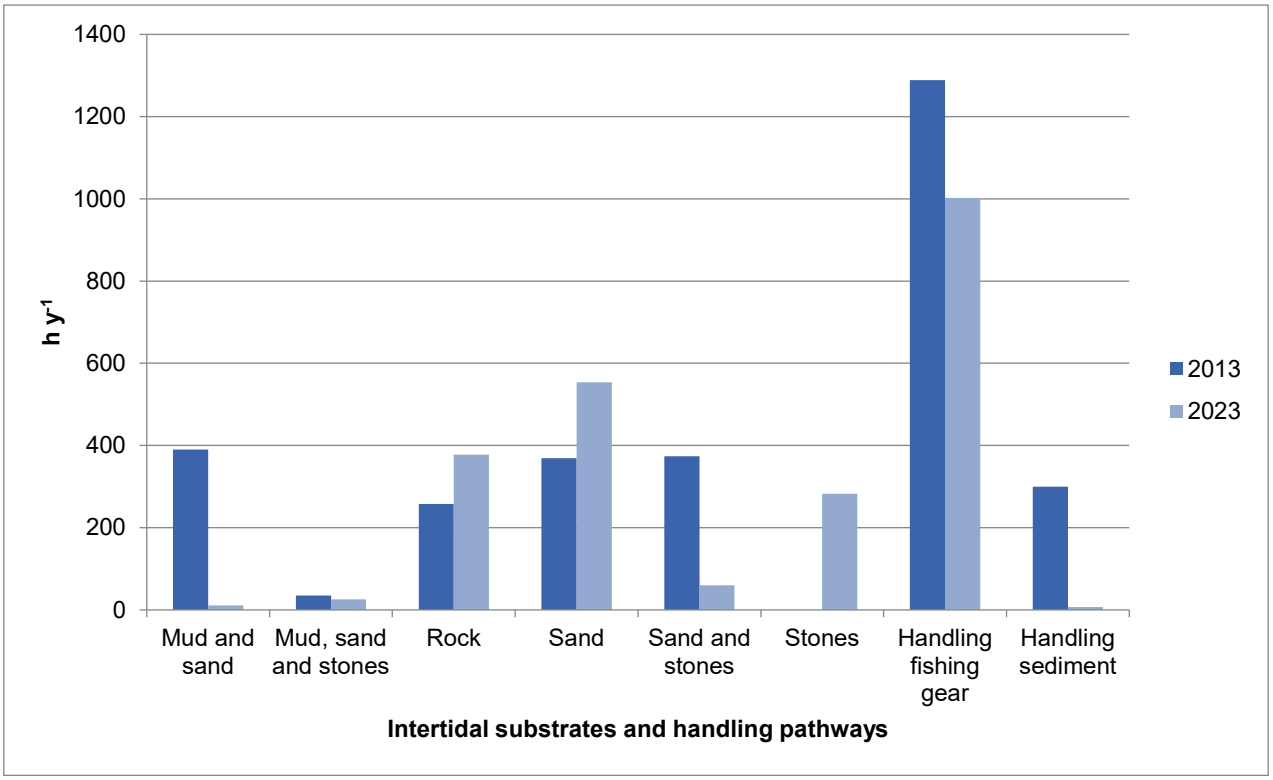

Figure 2. Comparison between 2013 and 2023 mean rates for the high-rate groups for occupancy over intertidal substrates, and handling pathways

The most notable changes in the consumption of terrestrial foods in 2023 were the increase in consumption rates of poultry, eggs and freshwater fish, and the decrease in the consumption rates of potato and milk, compared with 2013 (Figure 3). The consumption of freshwater plants was identified in 2013, but not in 2023.

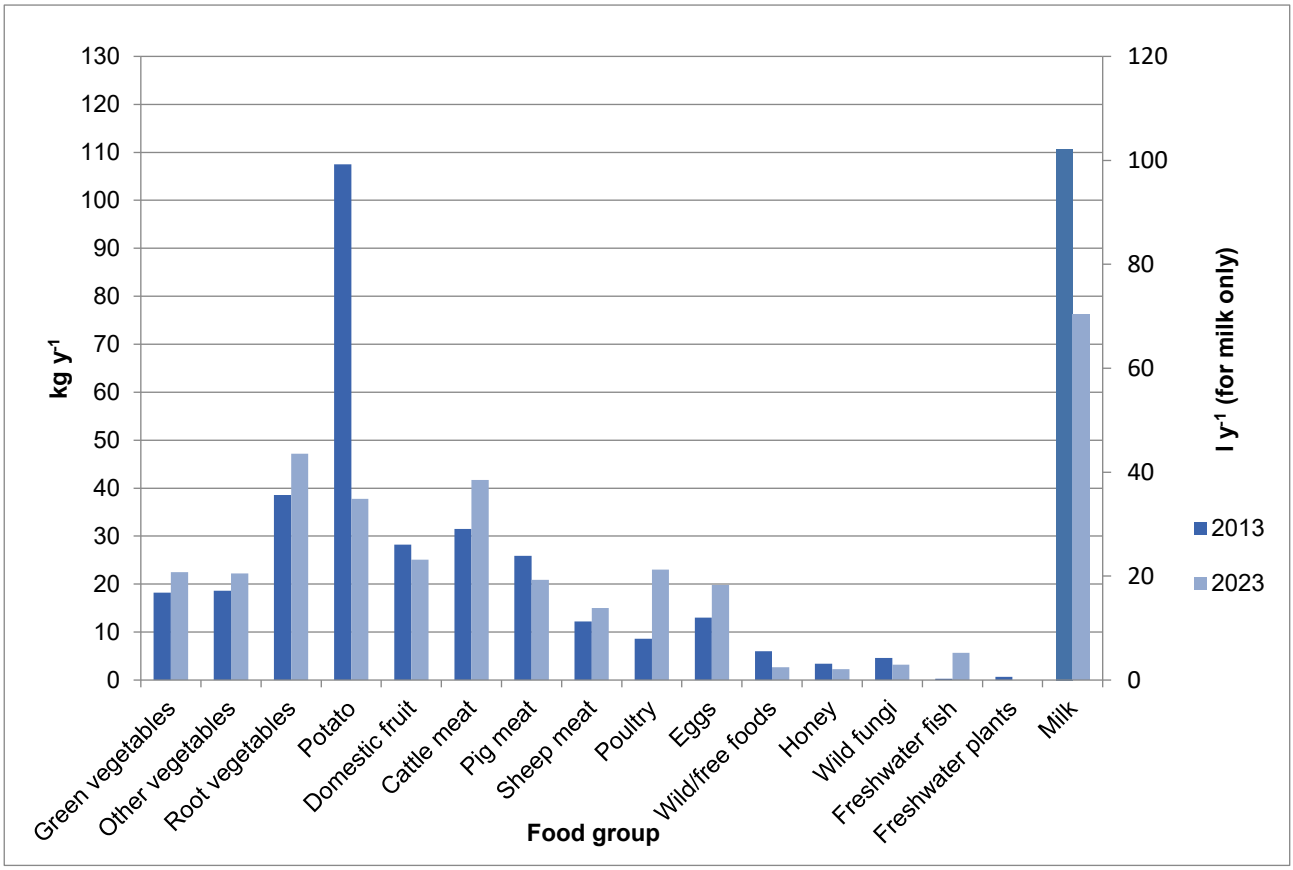

Figure 3. Comparison between 2013 and 2023 mean consumption rates for the high-rate groups for terrestrial foods

The significant changes in the maximum occupancy rates in the direct radiation area were: an increase in the indoor rate in the 0 – 0.25 km zone; increases in the indoor, outdoor and total rates in the >0.25 – 0.5 km zone; and an increase in the outdoor rate in the >0.5 – 1.2 km zone (Figure 4).

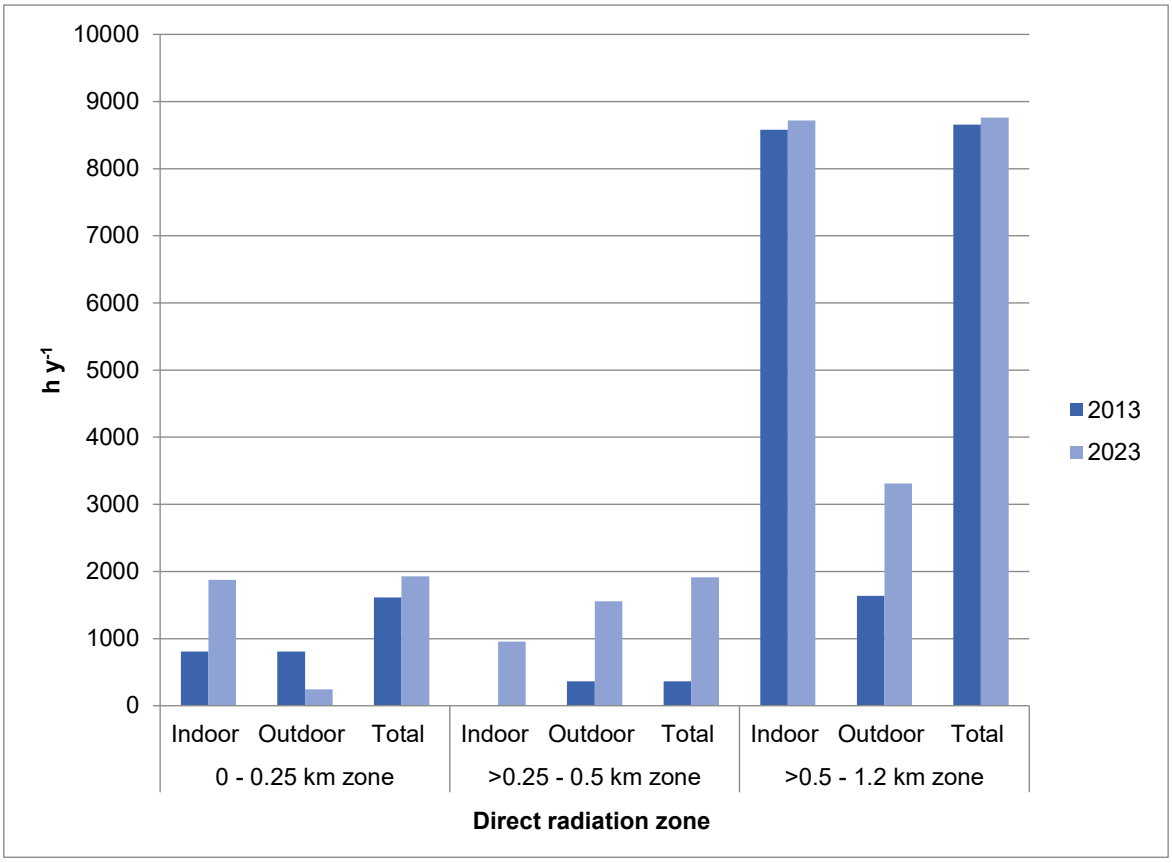

Figure 4. Comparison between 2013 and 2023 maximum direct radiation occupancy rates

Habits survey information for consideration when selecting samples and measurements for the Environment Agency and Food Standards Agency monitoring programmes

The foods and intertidal locations identified in the 2023 Wylfa habits survey could be used to assist in the selection of samples and measurements for future monitoring programmes. The foods that were either consumed in the largest quantities in their food groups, or were the only food in their food group, are presented in Section 12.2. These foods could be considered for sample selection for the Food Standards Agency monitoring programme. The current environmental monitoring programme conducted for the Environment Agency adequately covers the Wylfa area and no changes are suggested.

3. Introduction

Members of the public might be exposed to radiation as a result of the operations of the Wylfa nuclear licensed site, either through the permitted discharges of liquid or gaseous radioactive wastes into the local environment, or from radiation emanating directly from the site. This report provides information on activities carried out by members of the public in the vicinity of the Wylfa nuclear licensed site, which may influence their radiation exposure. The study has been funded by the Environment Agency (EA) (on behalf of Natural Resources Wales (NRW)), the Food Standards Agency (FSA) and the Office for Nuclear Regulation (ONR) in order to support their respective roles in protecting the public from exposure to radiation.

UK policy on the control of radiation exposure has long been based on the recommendations of the International Commission on Radiological Protection (ICRP), which embody the principles of justification of practices, optimisation of protection and dose limitation. Radiological protection of the public is based on the concept of a 'representative person'. ICRP (2007) recommendations use the term 'representative person' for assessing doses to members of the public. It is defined as 'an individual receiving a dose that is representative of the more highly exposed individuals in the population'. The 'representative person' concept is considered equivalent to the previously used 'critical group'.

3.1. Regulatory framework

In Wales, Natural Resources Wales regulates the discharges of radioactive waste under Environmental Permitting (England and Wales) Regulations 2016 (UK Parliament, 2016). These regulations transpose parts of the revised EU Basic Safety Standards (BSS) Directive 2013/59/Euratom (EC, 2014) which embody the recommendations of the ICRP, particularly ICRP 103 (ICRP, 2007). The revised BSS Directive was adopted in 2013 to consolidate and update existing Euratom provisions for protection against the harmful effects of ionising radiation by replacing five existing Directives and a Commission Recommendation into one Directive covering occupational, medical and public exposure (EC, 2014). Installation and operation of certain prescribed activities can only occur on sites if they are licensed under the Nuclear Installations Act 1965 (as amended) (NIA 65) (UK Parliament, 1965). The ONR has implemented this legislation and is also responsible for regulating, under the Ionising Radiations Regulations 2017 (IRR 17) (UK Parliament, 2017), the exposure of the public to direct radiation from the operations occurring on these sites.

Limits on disposals of radioactive waste are specified in a permit issued by Natural Resources Wales. The FSA is responsible for ensuring that any radioactivity present in food does not compromise food safety and that permitted discharges of radioactivity do not

result in unacceptable doses to consumers via the food chain. The FSA also ensures that public radiation exposure via the food chain is within acceptable limits.

3.2. Radiological protection framework

Dose standards for the public are embodied in the national policy (UK Parliament, 2012; BEIS, 2018), in guidance from the International Atomic Energy Agency (IAEA), in the Basic Safety Standards for Radiation Protection (IAEA, 1996) and in European Community legislation in the EU BSS Directive 2013/59/Euratom (EC, 2014). The public dose standards were incorporated into UK law under IRR 17. The requirement to observe the conditions laid down in the Basic Safety Standards (BSS) in England and Wales is incorporated in Environmental Permitting (England and Wales) Regulations 2016 (UK Parliament, 2016). These require that the environment agencies ensure, wherever applicable, that:

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

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

The UK environment agencies are also required to ensure that the dose estimates are as realistic as possible for the population as a whole and for reference groups of the population. They are required to take all necessary steps to identify the reference groups of the population, considering the effective pathways of transmission of radioactive substances. Guidance on the principles underlying prospective radiological assessments (for assessments of potential future doses) were provided by the National Dose Assessment Working Group (NDAWG), which consisted of representatives of UK Government Bodies and other organisations with responsibilities for dose assessments (EA, SEPA, DoENI, NRPB and FSA, 2002). NDAWG also published principles underlying retrospective radiological assessment (for assessments of doses already received from past discharges) (Allott, 2005) and possible methods of carrying out these assessments using the data from combined habits surveys (Camplin and others, 2005). NDAWG agreed that the optimal method for performing retrospective dose assessments would be to use habits profiles (profiling method) as described in Camplin and others (2005). This approach was adopted in Radioactivity in Food and the Environment (RIFE) publications, (for example: EA, FSA, FSS, NRW, NIEA and SEPA, 2023). NDAWG published reports on the collection and use of habits survey data in retrospective and prospective dose

assessments (NDAWG, 2005; NDAWG, 2012); the principles described in these reports are consistent with those used here. The UK environment agencies, UK Health Security Agency (formerly, Public Health England) and the FSA jointly produced an update of the 2002 interim guidance and principles for assessing prospective doses (EA, SEPA, NIEA, HPA and FSA, 2012).

4. The survey

4.1. Site activity

The Wylfa nuclear site is located on the north coast of Anglesey. At the time of the survey, it was managed and operated by Magnox Ltd., on behalf of the Nuclear Decommissioning Authority. On the 31st October 2023, Magnox Ltd. started trading as Nuclear Restoration Services (NRS). The station's two Magnox reactors ceased generating electricity in 2012 and 2015 respectively, marking the end of Magnox reactor generation in the UK. The outfalls at Porth Wnal were made redundant in 2016 due to the installation of a new pipeline to discharge liquid effluents into the Irish Sea approximately 200 metres offshore. The de-fuelling of the reactors was completed in 2019 and the decommissioning of the site commenced in 2020.

Under the radioactive substances provisions of Environmental Permitting (England and Wales) Regulations 2016 (UK Parliament, 2016), Magnox Ltd is permitted to undertake radioactive substances activities at the nuclear site. This includes permission to discharge gaseous radioactive wastes via approved outlets to the atmosphere and liquid radioactive wastes to the Irish Sea. The site is licensed for the purposes of operating certain activities prescribed under the Nuclear Installations Act, 1965 (as amended). The site contains sources of direct radiation. Details of the amounts of gaseous and liquid radioactive waste discharged are published in the RIFE reports (for example: EA, FSA, FSS, NRW, NIEA and SEPA, 2023).

4.2. Survey objectives

The Centre for Environment, Fisheries & Aquaculture Science (Cefas) completed the Wylfa habits survey in 2023 under contract to the EA (on behalf of NRW), the FSA, and the ONR. The aim of the survey was to obtain comprehensive information on the habits of the public that might lead to their exposure to radiation via gaseous discharges, liquid discharges and direct radiation from the Wylfa nuclear licensed site.

Specifically, investigations were conducted into the following:

- The consumption of food from the aquatic survey area.
- Activities and occupancy over intertidal substrates.

- The handling of fishing gear and sediment.
- Activities and occupancy in and on water.
- The use of seaweed as fertiliser or animal feed.
- The consumption of food from the terrestrial survey area.
- The use and destination of produce originating from the survey areas.
- The consumption and use of groundwater and surface water in the terrestrial survey area.
- Activities and occupancy within the direct radiation survey area.
- Any new or unusual exposure pathways.

No other additional site-specific investigations were requested for this survey.

Additionally, information on the potential transfer of contamination off-site by wildlife was obtained from the nuclear site operator (Section 7.3).

4.3. Survey areas

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

The aquatic survey area (Figure 5) covered the intertidal areas along the north coast of Anglesey from Carmel Head in the west, to Point Lynas in the east, and the adjacent sea area up to 6 km offshore.

The terrestrial survey area (Figure 6) covered all land, watercourses and freshwater bodies within 5 km of the site centre (National Grid Reference: SH 350 939), to encompass the main areas of potential deposition from gaseous discharges.

The direct radiation survey area (Figure 7) was defined as all land and sea within 1.2 km of the nuclear licensed site boundary, split into three zones, which were 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.2 km. The direct radiation survey area was sparsely populated; therefore, the area was extended to include residences bordering the 1 km area usually used in habits surveys. The occupancy data collected from the direct radiation survey area is also applicable to inhalation and external exposure pathways arising from gaseous releases from the site.

The same aquatic, terrestrial and direct radiation survey areas were used in the previous habits survey conducted by Cefas around the Wylfa nuclear site, which was in 2013 (Garrod and others, 2014).

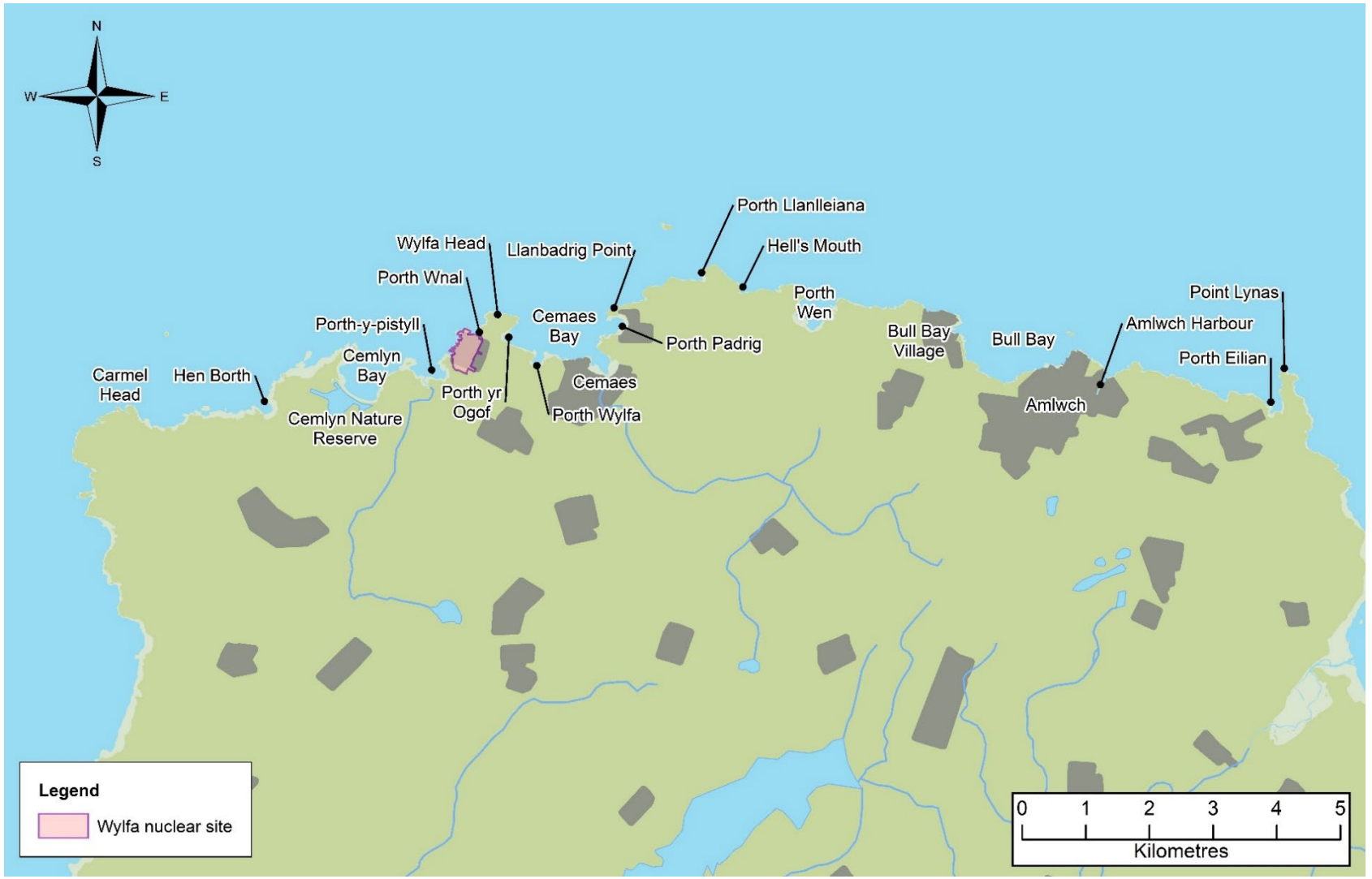

Figure 5. The Wylfa aquatic survey area

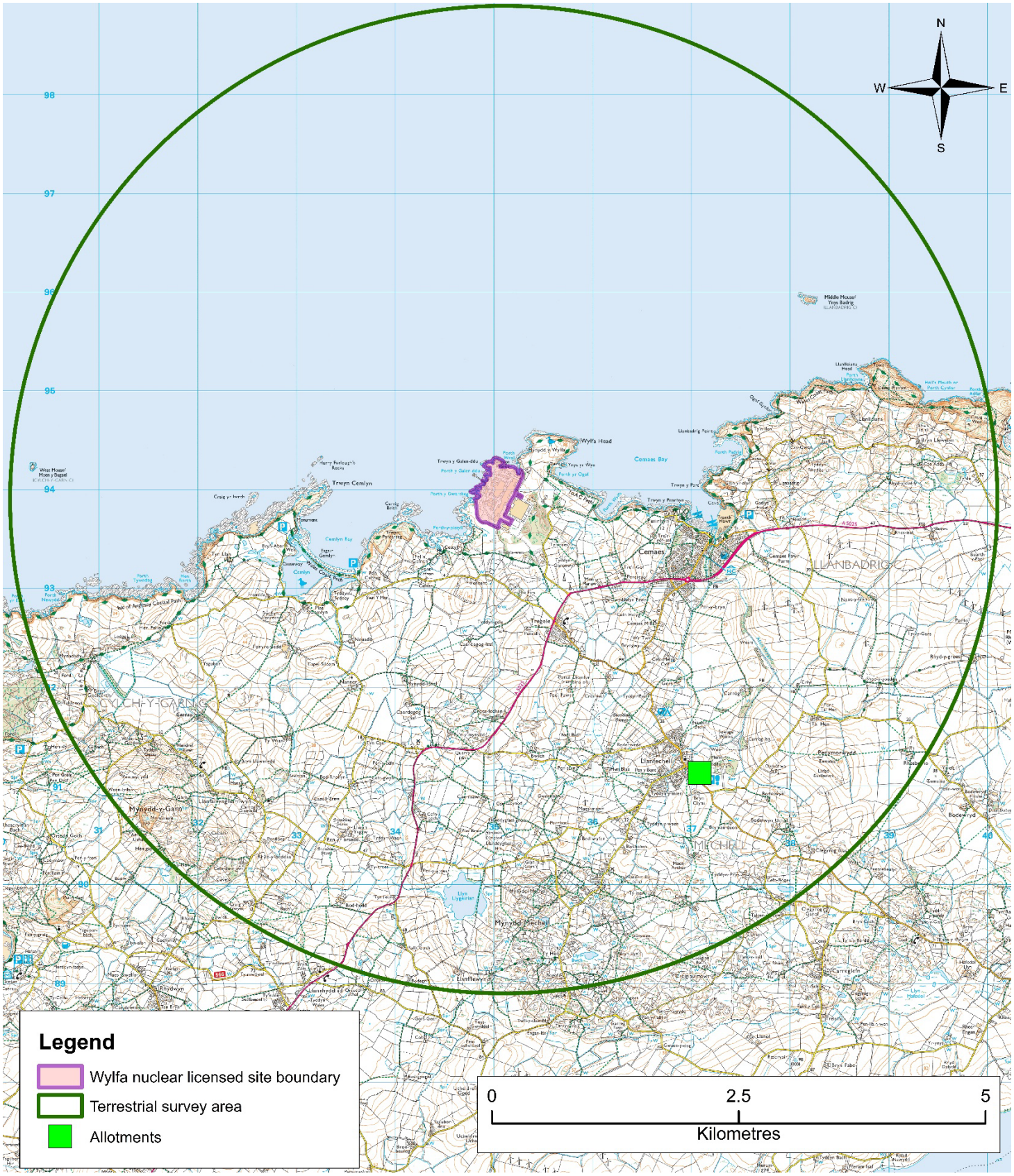

Figure 6. The Wylfa terrestrial survey area

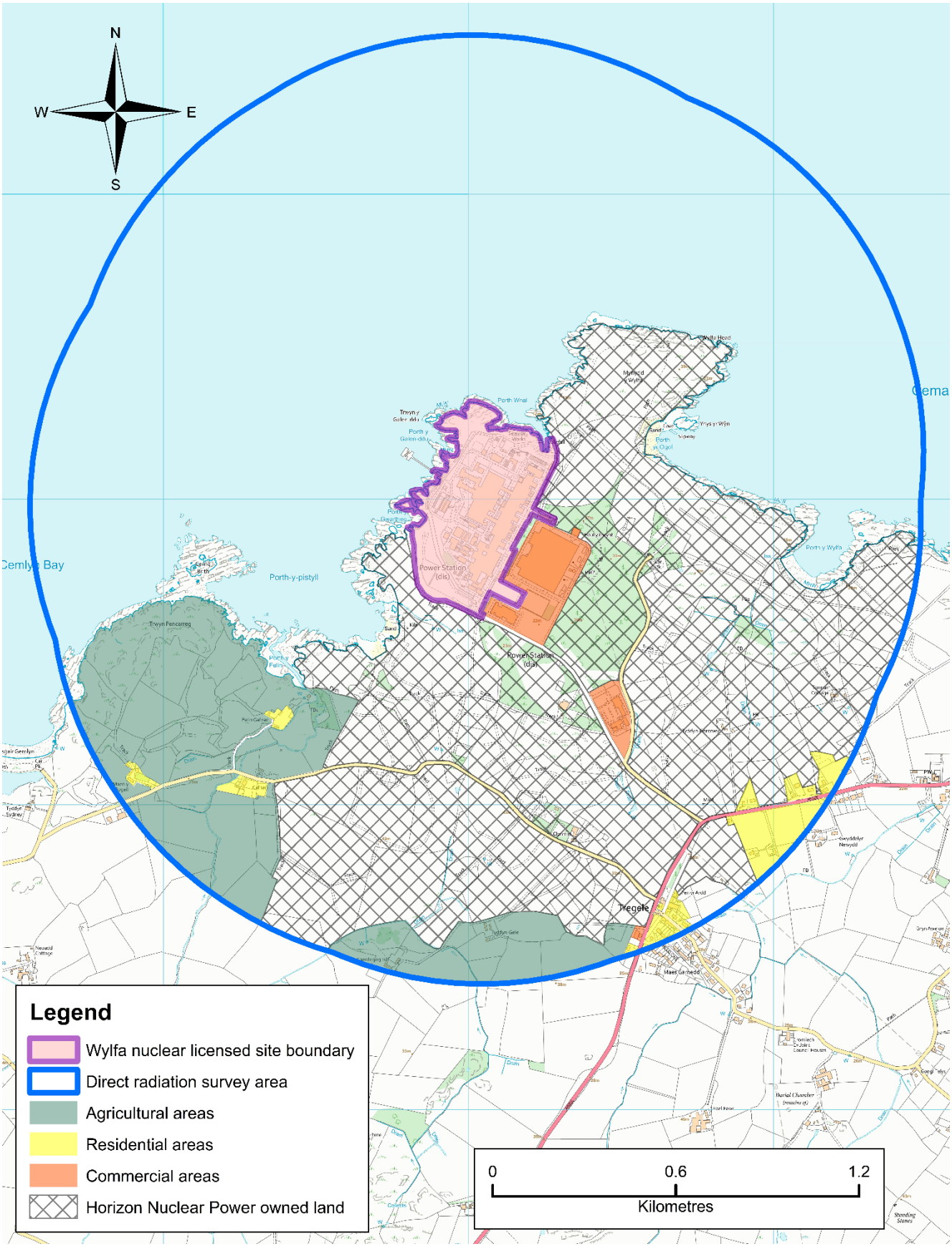

Figure 7. The Wylfa direct radiation survey area and land classification

4.4. Conduct of the survey

As part of the pre-survey preparation, the EA, NRW, FSA and ONR were contacted to identify any additional site-specific requirements. Information relating to the activities of people in the aquatic and the terrestrial survey areas was obtained from internet searches, Ordnance Survey maps and from previous habits surveys undertaken around the Wylfa nuclear licensed site. People with local knowledge of the survey area were contacted for information relevant to the various exposure pathways. These included an allotment association, who provided access to the local allotments, and local fishermen who provided information on activites in the aquatic survey area.

The fieldwork was carried out from the 4th July to the 12th July 2023 using survey techniques consistent with the previous Wylfa habits survey report (Garrod and others, 2014). During the fieldwork, a meeting was held between members of the survey team and representatives from Magnox Ltd. The discussion provided details about current site activities, local information, potential exposure pathways and activities in the area, and the potential for transfer of contamination off-site by wildlife.

The following information was obtained during the meeting:

- Routine site operations were being undertaken at the time of the survey.
- No changes had been made to the nuclear licensed site boundary or locations of sources of direct radiation since 2013.
- The volume of liquid discharges has decreased since the previous survey in 2013. The outfall at Porth Wnal used for cooling water and liquid effluent discharges was no longer operational. A new pipeline had been installed to discharge liquid effluent 200 metres offshore.
- Defuelling and depressurisation of the reactors were complete. A forced ventilation regime with HEPA filters were being used for gaseous discharges.
- An Intermediate Level Waste storage facility was in the early stages of development on the site. It was reported that the dose received from sources of direct radiation will not change as a result of the facility.
- It is highly unlikely that wildlife could enter controlled areas and this was not considered by Magnox Ltd. to be a risk.
- Information about potential exposure pathways and activities in the survey areas included angling locations and activities in the direct radiation area.
- Changes to the area around the site since 2013 included:
    - The Magnox visitor centre had permanently closed.
    - Offices had been developed adjacent to the visitor centre.

- The sports and social club was no longer active due to Horizon Nuclear Power purchasing the land and demolishing the sport and social clubhouse.

Interviews were conducted with individuals who were identified in the pre-survey preparation and others that were identified during the fieldwork. These included, for example, people spending time on intertidal substrates, farmers, allotment holders, beekeepers and people spending time within the direct radiation survey area. Interviews were used to establish individuals' consumption, occupancy and handling rates relevant to the aquatic, terrestrial and direct radiation survey areas. Any other information of possible use to the survey was also obtained. Gamma dose rate measurements were taken over intertidal substrates in the aquatic survey area, and indoors and outdoors at most properties in the direct radiation survey area where interviews were conducted. Background gamma dose rates were taken at a distance beyond 5 km from the site centre. All gamma dose rate measurements were taken using multiple Thermo RadEye GX Survey Meters, each connected to a compensated Geiger-Müller tube.

For practical and resource reasons, the survey did not involve the whole population in the vicinity of the Wylfa nuclear licensed site, but targeted subsets or groups, chosen in order to identify those individuals potentially most exposed to radiation pathways. However, it is possible that even within a subset or group there may have been people not interviewed during the survey. Therefore, to aid interpretation, the number of people for whom data were obtained in each group has been calculated as a percentage of the estimated complete coverage for that group (where it was possible to make such an estimate). The results are summarised in Table 24. These 'groups' are described and quantified, and the numbers of people for whom data were obtained are given as percentages of the totals. For certain groups, such as anglers, it can be virtually impossible to calculate the total number of people who undertake the activity in the survey area because it is difficult to quantify visitors from outside the area or occasional visitors during the year. Based on the most recent UK Office of National Statistics residential data for electoral wards (www.ons.gov.uk) there were approximately 3500 people living in the terrestrial survey area, although information was obtained from a significantly smaller number of residents. The survey did not include employees or contractors at the nuclear licensed sites while they were at work. This is because dose criteria applicable to these people whilst at work and the dose assessment methods (IRR17) are different from those for members of the public. However, data were collected for employees and contractors while outside work if these people were encountered during the survey.

People were initially questioned about their habits relating to the survey area that their first identified activity occurred in and, where possible, they were also asked about their habits relating to the other two survey areas. For example, people in the terrestrial survey were initially questioned because it was known that they grew or produced significant quantities of terrestrial foodstuffs. However, they were also asked about habits that might lead to exposure to liquid discharges or direct radiation. During interviews with representatives from organisations such as local businesses it was not possible to collect data for all

pathways (for example consumption of local foods) for each person. In these cases, the data were limited to those relating to the primary reason for the interview. For example, in the case of a business within the direct radiation survey area, the occupancy rates for the employees.

5. Methods for data analysis

5.1. Data recording and presentation

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

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

The results of the individuals' consumption, occupancy and handling rates collected during the survey were grouped and presented in tables with the high-rate group members indicated in bold and with the calculated mean rates for the high-rate group and 97.5th percentile rates. The consumption rates, occupancy rates and handling rates for all groups are presented in Annex 1 for adults, Annex 2 for children and Annex 3 for infants, with the high-rate group members indicated in bold.

If accurate, quantifiable data cannot be obtained from interviews, but pathways are known to exist, it is sometimes necessary to provide estimated habits data for use in dose assessments. In this series of habits survey reports, such data is presented in Annex 4. It was not necessary to estimate data for the Wylfa survey, but Annex 4 is included in this report to maintain consistency of presentation through the series of reports.

5.2. 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 (for example: eggs) consumed per year, whereas others gave the number

of plants in a crop or the length and number of rows in which the crop was grown per year. The habits survey database converted these data into consumption rates (kg y^{-1} for food and l y^{-1} for milk) using a variety of conversion factors. These factors included produce weights (Hessayon, 1990 and 1997; Good Housekeeping, 1994), edible fraction data researched by Cefas, and information supplied by the Meat and Livestock Commission.

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

For the purpose of data analysis, foodstuffs were aggregated into food groups as identified in Table 25. Specific food types relevant to this survey are presented in the subsequent tables. The data are structured into groups when it is reasonable to assume that consistent concentrations or dose rates would apply within the group. For example, when considering terrestrial food consumption, all types of root vegetables are grouped together in a food group called root vegetables. For external exposure over intertidal sediments, occupancy over the same substrate (for example: mud) are grouped together.

Data were structured into age groups because different dose coefficients (in other words, the factors which convert intakes of radioactivity into dose) can apply to different ages. The names used for the age groups, based on the recommendations in ICRP 103 (ICRP, 2007), are shown in Table 1.

Table 1. Names of age groups and range of ages within each age group

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

For direct radiation pathways, the data were grouped into distance zones from the nuclear site boundary as a coarse indication of the potential dose rate distribution due to this source of exposure. The bands used in this report were: 0 – 0.25 km; >0.25 – 0.5 km;

>0.5 – 1.2 km. These distance bands are also useful when assessing exposure to gaseous discharges.

5.4. Approaches for the identification of high rates

The habits data have been analysed to identify high rates of consumption, occupancy and handling, which can be used in radiological assessments. Two approaches have been used.

Firstly, the ‘cut-off’ method described by Hunt and others (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.

Secondly, the 97.5th percentile rate was calculated for each group. The use of percentiles accords with precedents used in risk assessments of the safety of food consumption described in MAFF (1996). It should be noted that the interviewees in this study are often selected and, therefore, the calculated percentiles are not based on random data.

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

The mean rates for the high-rate groups for children’s and infants’ consumption, occupancy over intertidal substrates and handling pathways, have been calculated. However, if there are cases where few child or infant observations are identified, an alternative approach can be used for assessments to estimate the mean rates for the high-rate groups for children and infants by applying scaling ratios to the mean rates for the high-rate groups for adults as described in Dewar (2013). Ratios for this purpose for the consumption and occupancy of intertidal substrates pathways, based on generic 97.5th percentile rates, are provided in Annex 5. The age ranges within the age groups in Annex 5 do not correspond exactly with the age ranges within the age groups used throughout the rest of this report, but these ratios are the best available data for estimating child rates and infant rates from adult rates. Adult to child and adult to infant ratios are not available for handling pathways.

For use in assessments of prenatal dose, consumption and occupancy rates are provided in Annex 6 for women of childbearing age. The age range used in this report for women of childbearing age is 15 – 44 years old, which is based on the classification used by the Office of National Statistics (www.ons.gov.uk).

For the direct radiation pathway, the maximum occupancy rates are used instead of calculating the mean occupancy rates and 97.5th percentile rates. This is due to the complex nature of the direct radiation dose rates, which are dependent on both the distance and direction from the primary sources of direct radiation on site (the spatial extent). Additional factors include the local geography and geology, as well as other structures on site, which can provide additional shielding between these sources on site and the local receptor points for direct radiation. For simple (cautious) dose assessment of direct radiation, it is appropriate to use the maximum dose and occupancy rates.

5.5. Profiles of habits survey data for use in 'total dose' assessments

The survey data have been analysed to produce profiles of consumption and occupancy rates according to the method described by Camplin and others, 2005. The profiles for adults are used to assess 'total dose' integrated across all pathways of exposure in the RIFE reports (for example: EA, FSA, FSS, NRW, NIEA, and SEPA, 2023).

Matrices of profiles for adults, children, infants and women of childbearing age are presented in Annex 7, Annex 8, Annex 9 and Annex 10. Within each matrix, the means for the high-rate groups, as determined by the 'cut-off' method, are presented on the diagonal. Except for the direct radiation pathway, the figures across the rows are the means of the consumption and occupancy rates for the other pathways for the individuals within that profile. For the direct radiation pathway, the figure denotes the proportion of the individuals within that profile who spend time within the direct radiation survey area.

5.6. Data quality

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

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

- Data were stored in a database in order to minimise transcription and other errors.
- Draft reports were reviewed by the EA (on behalf of NRW), FSA and ONR.
- Final reports were only issued when the EA, NRW, FSA and ONR were entirely satisfied with the format and content of the draft reports.

6. Aquatic radiation pathways

6.1. Aquatic survey area

The aquatic survey area (Figure 5) covered the intertidal areas of the northern coast of Anglesey from Carmel Head in the west, to Point Lynas in the east, and extended 6 km offshore. The same aquatic survey area was used in the previous habits survey in 2013.

The coastline between Carmel Head and Point Lynas includes rocky headlands, small bays and coves with beaches comprised of rock, sand and stones. Road access to the shore was limited across the survey area, but many beaches were accessible via the Isle of Anglesey Coastal Path (IACP) which runs along the entire length of the survey area. The entirety of the survey area falls within a designated Area of Outstanding Natural Beauty and Heritage Coast.

The aquatic survey area is described in detail below from west to east.

Carmel Head to Hen Borth

Carmel Head is a rocky outcrop located on a peninsula, north-west of Anglesey approximately 5 km from the Wylfa nuclear site. The coastline between Carmel Head and Hen Borth comprises of rocky cliffs and small coves which could only be accessed via the IACP. No activities were identified taking place on intertidal areas along this stretch of coastline. Hen Borth (Figure 8) is a small stony cove with areas of rock, which is located approximately 3 km west of the Wylfa nuclear site. Hen Borth could be accessed via a public footpath approximately 250 metres from a small car parking area. Shore angling, collecting seaweed to be used as fertiliser, walking and dog walking were taking place at the time of the survey. Sheep and cattle were observed accessing the shore to graze on the seaweed.

Figure 8. Hen Borth

Cemlyn Bay and Porth-y-pistyll

The IACP ran along the coastline between Hen Borth and Cemlyn Bay. One stretch of beach can be accessed in this area, but no activities were being undertaken at the time of the survey.

Cemlyn Bay is a large stony bay (Figure 9) located east of Hen Borth. The beach is predominantly stones with an area of mud and sand on the western end of the bay. One angler was identified bait digging on the area of mud and sand. A large shingle bank spans across the bay to separate the sea and a brackish lagoon known as Cemlyn Nature Reserve, which is managed by the North Wales Wildlife Trust. Several individuals worked at the nature reserve during the summer months and spent time on the intertidal area. At the time of the survey, many bird watchers were spending time on the shingle shore to view the Cemlyn Nature Reserve. Car parking areas were located on both sides of the bay, allowing easy access for visitors. Angling was taking place on the shingle shore and from rocks around the bay. One adult was identified collecting winkles for their own consumption from the rocks at Cemlyn Bay. Activities such as dog walking, walking, sitting on the beach and playing were identified taking place on the shore.

Boats or kayaks could be launched on the concrete ramp on the west side of the bay or via the beach on the east side of the bay. Boat angling was identified taking place in the bay. Two adults were identified swimming in the bay.

Figure 9. Cemlyn Bay

The IACP follows the coastline around a large rocky headland for approximately 1 km to the small bay of Porth-y-pistyll, also known locally as Cestyll Beach. The beach comprises of rock, sand and stones and can only be accessed via the IACP. The land of a smallholding borders the beach, and the residents access the beach regularly. Angling took place regularly at this beach and seaweed was collected to be used as fertiliser on a flower garden within the terrestrial survey area.

Porth Wnal to Wylfa Head

The coastline around the Wylfa nuclear site was not easily accessed due to the rocky terrain and the IACP diverted inland around the nuclear site. Porth Wnal is a rocky bay located at the northern end of the nuclear site. It was reported that Porth Wnal (Figure 10) was no longer a popular fishing location due to the change in the sea temperature from the decommissioning of the cooling water outfall. When operational, the cooling water outfall produced warmer water which attracted sea bass, but since ceasing operations, the water has reverted to ambient temperature and the bass have dispersed throughout the area. The site operators reported that a small number of anglers were angling from the rocks to the north of the site. Wylfa Head is a large headland with steep rocky areas. Car parking was available close to Wylfa Head, which was primarily used by dog walkers and walkers using the IACP. At the time of the survey, no activities were identified to be taking place on

intertidal areas at Porth Wnal or Wylfa Head. However, commercial fishermen were regularly potting and gill netting in the area around Wylfa Head and consuming the catch.

Figure 10. Porth Wnal

Porth yr Ogof to Porth Wylfa

Porth yr Ogof and Porth Wylfa are two small coves located east of Wylfa Head. The coves can be accessed via the IACP and are located close to the car park at Wylfa Head. Porth yr Ogof is a small sandy beach with patches of stones that could be accessed via steps (Figure 11). The beach was popular with local swimmers. Angling was also identified taking place on the shore at the time of the survey. Porth Wylfa is a stony beach with a large rocky area located approximately 0.7 km east of Porth yr Ogof. The beach was used by locals for swimming and rockpooling.

Figure 11. Porth yr Ogof

Cemaes

Cemaes is a large coastal village approximately 2 km east of the Wylfa nuclear site, and was the main hub of activity in the survey area. Cemaes is a popular location for tourists and it was reported to have become increasingly popular in recent years. The bay is comprised of two beaches, a small harbour and rocky cliffs at either side of the bay. The west beach, comprising of sand and stones, is the smaller of the two beaches and is less popular with tourists due to the rocky scars exposed at low tide. However, the exposed scars were popular with families rockpooling. Large sand flats were exposed at low tide on the east beach and angling, dog walking, walking, playing and sitting on the beach were all identifed at the time of the survey (Figure 12). Dogs were not permitted to access the west end of the beach during the summer, but were able to access other areas the whole year. Car parking was available at either end of the 300 metre concrete promenade which spanned the east beach. A small food station, public toilets and a beach warden station were located at the west car park.

A ramp located at the east car park was used to launch small boats, kayaks and paddle boards. People were identified kayaking and paddle boarding in Cemaes Bay, and spending time preparing their watersports equipment on the shore. The Cemaes Swimming Club was established during COVID-19 and had approximately 600 members

at the time of the survey. Approximately 40 members regularly visited Cemaes and various other locations throughout the survey area.

Figure 12. Cemaes Bay

A walled harbour (Figure 13) is located west of the concrete promenade in the corner of the bay. The harbour dries out at low tide to reveal patches of rock and a mix of mud and sand. A small river, Afon Wygyr, flows through the harbour into the sea. Two concrete slipways at the harbour are used to launch small boats at high tide, or to access the shore at low tide. The harbour arm was used by anglers, and families who were jumping into the sea at high tide. One commercial fisherman was regularly potting approximately 3 km offshore between Cemaes and Carmel Head. A commercial fisherman was identified undertaking boat maintenance in the harbour on mud and sand at low tide. Additionally, a charter angling boat and five private angling boats were based at Cemaes Harbour.

Figure 13. Cemaes Harbour

Porth Padrig, Llanbadrig Point, Porth Llanlleiana and Hell's Mouth

The small cove of Porth Padrig (Figure 14), also known locally as White Lady Beach, is situated half a kilometre to the northeast of Cemaes and the rocky promontory of Llanbadrig Point is directly north of the cove. A car park could be used to access the IACP and the beach at Porth Padrig. Sitting on the beach and swimming were the only activities identified taking place at Porth Padrig, however, it was reported that the beach was used by local dog walkers. Samphire collected from Porth Padrig was consumed by one individual. Anglers were fishing from rocks at Llanbadrig Point at the time of the survey and this was reported to be a popular angling location.

Porth Llanlleiana and Hell's Mouth are smaller coves located further east along the coast and both have rocky shores with small beaches of sand and stones. They could only be accessed by foot and no activities were identified taking place on these beaches at the time of the survey.

Figure 14. Porth Padrig

Porth Wen

The bay of Porth Wen is located approximately 1 km east of Hell's Mouth. It attracted hikers and tourists to its derelict brickworks which is now considered a popular destination along the IACP. The brickworks (Figure 15) could be accessed via the IACP or a footpath approximately 0.5 km from the road. Two small shingle beaches were located at the brickworks and were used by two dog walkers and a swimmer at the time of the survey. Porth Wen is a popular location for tourists, but many visitors did not spend any time on the small shingle beaches. Porth Wen Bay was reported to be a popular location for boat angling and one boat angler was identified visiting the bay at the time of the survey.

Figure 15. Porth Wen

Bull Bay

Bull Bay (Figure 16), located east of Porth Wen, is approximately 2 km in diameter and is backed by rocky cliffs. The village of Bull Bay, situated at the west end of the bay, was a popular location to undertake activities due to the easy access to the shore from the road. The eastern area of the bay could only be accessed via the IACP and by descending steep cliffs. Angling from large areas of rock was identified in the eastern area of the bay. A gated concrete slipway is located at Bull Bay Village on a small beach of sand and stones surrounded by rock. Although the beach was small, dog walking, playing, angling and preparing water sports equipment were taking place on the shore. A car park was located close to the slipway and was used to store boats. A locked gate located on the slipway could be accessed by individuals who pay an annual fee. The slipway was used to launch jet skis, kayaking, rowing boats and other boats. A rowing club based at Bull Bay had approximately 60 members who were rowing along the coast between Porth Wen and Point Lynas. Sub-aqua divers were reported to dive from the shore.

Figure 16. Bull Bay

Amlwch

A former chemical plant was located on the peninsula between Bull Bay and Amlwch Harbour and this restricted public access to the shore. Amlwch Harbour (Figure 17) is the main port in the survey area. The harbour mouth is protected by a concrete breakwater and the shore either side of the harbour is rocky, both of which were popular with anglers. Boats moored in the inner basin of the harbour rest on mud and stones at low tide, whereas the outer basin of the harbour retains water throughout the tidal cycle. A concrete slipway at the inner basin is used to launch small boats and is easily accessed by road. The outer basin of the harbour could be accessed by a single track road which extended from a small car park in the town. Approximately 20 angling and pleasure boats, three commercial fishing vessels and three charter boats were moored in the inner basin, and four commercial fishing vessels, one pilot boat and one port tender were moored in the outer basin. Four commercial fishermen based at Amlwch Harbour were reported to be operating within the survey area. A small sub-aqua diving club is based at Amlwch with 8 members. The sub-aqua diving club travelled to the diving locations up to 20 km offshore, however, most of the locations are within the survey area.

Figure 17. Amlwch Harbour

Porth Eilian and Point Lynas

The small cove of Porth Eilian (Figure 18) is located approximately 3 km east of Amlwch. The upper shore at Porth Eilian is stones with areas of rock and the lower shore is sand and stones. The beach can be easily accessed via a concrete slipway which is used to launch small boats, kayaks, paddle boards and jet skis. A small car park is situated close to the beach. The beach was used for a variety of activities such as dog walking, sitting on the beach and playing. Members of a swimming club visited the cove regularly. The coastline east of Porth Eilian extends north approximately 600 metres to a peninsula known at Point Lynas. This section of coastline could not be accessed due to its steep cliffs. Other activities identified taking place at Porth Eilian and close to Point Lynas included paddle boarding, kayaking, snorkelling, jet skiing and boat angling.

Figure 18. Porth Eilian

6.2. Commercial fisheries

Only a limited number of commercial fishing took place within the survey area. Commercial fishermen were identified in 2023 operating their boats from Amlwch Harbour and Cemaes Harbour. The commercial fishermen were potting for brown crab and common lobster and one was also gill netting for sea fish in the winter. Two of the commercial fishermen were identified operating within 1.2 km of the Wylfa nuclear site regularly. Other commercial fishing vessels based at Amlwch Harbour were fishing outside the survey area for scallops and whelks. Common prawns, spiny crabs and velvet swimming crabs were caught commercially but this was not identified at the time of the survey.

6.3. Destination of seafood originating from the aquatic survey area

Common lobster and brown crab were sold direct to local hotels and restaurants and were being exported internationally via two wholesalers located in Wales. Sea fish were sold to local hotels and restaurants in the winter months.

6.4. Hobby fishing and angling

In this report, the term ‘hobby fishing’ is used to describe recreational fishing on a small scale with gear such as nets or pots. It is usually carried out by fishermen who do not have commercial fishing licences and therefore it is illegal to offer the catch for sale. Two hobby

fishermen operating from Bull Bay and Port Eilian were potting for brown crab or common lobster and were boat angling for a range of sea fish including bass, pollack, mackerel and dogfish. The catch was consumed by the fishermen, their families, and friends.

Four angling charter boats based at Cemaes Harbour and Amlwch Harbour operated within the survey area on a regular basis. Boat angling was popular in the survey area and many private angling boats were kept at Cemaes and Amlwch Harbours or launched from ramps and slipways at Cemlyn Bay, Cemaes, Bull Bay, Amlwch and Porth Eilian. Shore angling was identified taking place at locations throughout the survey area including Cemlyn Bay, Hen Borth, Porth yr Ogof, Cemaes Bay, Bull Bay, Llanbadrig Point, and Porth-y-pistyll. Angling was also being undertaken on non-tidal areas such as the harbour arms at Cemaes and Amlwch. The main edible species caught by the anglers were bass, mackerel, and pollack.

Porth Wnal was a popular angling location in 2013 due to the warm water from the Wylfa nuclear site outfalls. However, this is no longer a popular angling location due to the decommissioning of the cooling water outfall. When operational, the cooling water outfall produced warmer water which attracted sea bass, but since ceasing operations, the water has reverted to ambient temperature. It was reported that the sea fish are no longer localised at Porth Wnal and have dispersed throughout the survey area.

6.5. Other pathways

The collection of seaweed for use as a fertiliser was identified taking place within the survey area. Seaweed was collected for use as a fertiliser on an allotment plot and a flower meadow within the terrestrial survey area.

Sheep and cattle were observed accessing the shore at Hen Borth to graze on the seaweed.

6.6. Food consumption data

Consumption data for locally produced foodstuffs potentially affected by liquid discharges are presented from Table 26 to Table 29 for adults and Table 30 to Table 34 for children and infants. The mean consumption rates for the high-rate groups and the observed 97.5th percentile rates, calculated as described in Section 5.4 are given at the foot of each table.

Adults' consumption rates

The people consuming the greatest quantities of food from the aquatic survey area were anglers and their families.

Table 2 presents a summary of the adults' consumption rates for the following food groups: sea fish; crustaceans; molluscs; marine plants/algae. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. For comparison, the table also includes mean consumption rates and 97.5th percentile consumption rates for sea fish and crustaceans based on national data, which are referred to as 'generic' data in this report. No generic consumption rates are available for marine plants/algae.

Table 2. Summary of adults' consumption rates of foods from the aquatic survey area

	Food group			
	Sea fish	Crustaceans	Molluscs	Marine plants/algae
Number of observations	38	16	3	1
Number of high-rate consumers	11	5	3	1
Observed maximum for the high-rate group (kg y^{-1})	58.0	5.4	0.3	0.5
Observed minimum for the high-rate group (kg y^{-1})	30.0	4.2	0.1	0.5
Observed mean for the high-rate group (kg y^{-1})	37.1	5.0	0.2	0.5
Observed 97.5th percentile (kg y^{-1})	43.9	5.3	0.3	Not applicable
Generic mean (kg y^{-1})	15.0	3.5	3.5	Not determined
Generic 97.5th percentile (kg y^{-1})	40.0	10.0	10.0	Not determined

The predominant species of sea fish consumed by adults were bass, mackerel and pollack, with smaller quantities of ballan wrasse, cod, herring, huss, lesser spotted dogfish, ling, thornback ray and whiting. The sea fish were caught throughout the aquatic survey area. Of the sea fish consumed by the 11 people in the high-rate group, the percentage breakdown of species (rounded to the nearest 5%) was 60% bass, 15% pollack, 10% mackerel and 15% for a variety of other species including ballan wrasse,cod, ling, herring, huss, lesser spotted dogfish, thornback ray and whiting.

The main species of crustaceans consumed by adults was brown crab and common lobster, with smaller quantities of spiny spider crab. The common lobsters and brown crabs were caught using pots throughout the survey area. Of the crustaceans consumed by the five people in the high rate-group, the percentage breakdown of species (rounded to the nearest 5%) was 65% common lobster, 30% brown crab and 5% spiny spider crab.

The only species of mollusc consumed by adults was winkles, which were collected from the rocks at Cemlyn Bay.

The only species of marine plants consumed by adults was samphire, which was collected from the intertidal areas of Porth Padrig.

Children's and infants' consumption rates

Table 3 and Table 4 presents a summary of children's and infants' consumption rates of foods originating from the aquatic survey area. Children were identified consuming sea fish, crustaceans and molluscs. Infants were identified consuming sea fish and crustaceans. The tables include the mean consumption rates for the high-rate group and the observed 97.5th percentile rates. No generic rates have been determined for the child or infant age groups.

Table 3. Summary of children's consumption rates of foods from the aquatic survey area

	Food group		
	Sea fish	Crustaceans	Molluscs
Number of observations	2	1	2
Number of high-rate consumers	2	1	2
Observed maximum for the high-rate group (kg y^{-1})	0.7	3.2	0.1
Observed minimum for the high-rate group (kg y^{-1})	0.5	3.2	0.1
Observed mean for the high-rate group (kg y^{-1})	0.6	3.2	0.1
Observed 97.5th percentile (kg y^{-1})	0.7	Not applicable	0.1

Table 4. Summary of infants' consumption rates of foods from the aquatic survey area

	Food group	
	Sea fish	Crustaceans
Number of observations	1	1
Number of high-rate consumers	1	1
Observed maximum for the high-rate group (kg y^{-1})	0.3	1.1
Observed minimum for the high-rate group (kg y^{-1})	0.3	1.1
Observed mean for the high-rate group (kg y^{-1})	0.3	1.1
Observed 97.5th percentile (kg y^{-1})	Not applicable	Not applicable

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

Consumption data for foods grown in soil that had been fertilised with seaweed collected from the shore in the aquatic survey area are presented in Table 35 for adults and Table 36 for infants. Five adults and two infants were identified consuming foods that were grown in seaweed fertilised soil from the following food groups: green vegetables, other

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

6.7. Occupancy over intertidal substrates

Occupancy rates over intertidal areas for adults, children and infants are presented in Table 37, Table 38 and Table 39. It should be noted that there is often more than one substrate at one named location and that substrates at a given location are prone to change over time. Activities were assigned to the predominant substrate over which they were taking place.

Adults' occupancy rates over intertidal substrates

Table 5 presents a summary of the adults' occupancy rates over intertidal substrates 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 5. Summary of adults' intertidal occupancy rates

	Intertidal substrate					
	Mud and sand	Mud, sand and stones	Rock	Sand	Sand and stones	Stones
Number of observations	2	2	10	57	18	42
Number of people in the high-rate group	2	1	2	14	7	7
Maximum of the high-rate group (h y^{-1})	15	26	521	979	100	523
Mean of the high-rate group (h y^{-1})	11	26	378	554	60	283
Observed 97.5th percentile (h y^{-1})	15	26	457	610	98	274

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

- For mud and sand: boat maintenance at Cemaes Harbour and bait digging at Cemlyn Bay.
- For mud, sand and stones: boat maintenance at Amlwch Harbour.

- For rock: rock pooling at Cemaes Bay and Porth Wylfa, and angling at Porth Wnal and Porth-y-pistyll.
- For sand: dog walking and sitting on the beach at Cemaes Bay.
- For sand and stones: collecting seaweed and angling at Porth-y-pistyll, and dog walking and sitting on the beach at Porth Eilian.
- For stones: dog walking and undertaking nature warden duties at Cemlyn Bay, and dog walking at Bull Bay.

Children's occupancy rates over intertidal substrates

Table 6 presents a summary of the children's occupancy rates over intertidal substrates 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 6. Summary of children's intertidal occupancy rates

	Intertidal substrate		
	Sand	Sand and stones	Stones
Number of observations	1	4	2
Number of people in the high-rate group	1	2	2
Maximum of the high-rate group (h y^{-1})	92	46	92
Mean of the high-rate group (h y^{-1})	92	46	82
Observed 97.5th percentile (h y^{-1})	Not applicable	46	91

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

- For sand: playing at Cemaes Bay.
- For sand and stones: sitting on the beach at Porth Eilian
- For stones: playing at Bull Bay and walking at Cemlyn Bay.

Table 7. Summary of infants' intertidal occupancy rates

	Intertidal substrate		
	Sand	Sand and stones	Stones
Number of observations	3	1	2
Number of people in the high-rate group	1	1	1
Maximum of the high-rate group (h y^{-1})	92	46	92
Mean of the high-rate group (h y^{-1})	92	46	92
Observed 97.5th percentile (h y^{-1})	88	Not applicable	89

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

- For sand: playing at Cemaes Bay.
- For sand and stones: sitting on the beach at Porth Eilian.
- For stones: playing at Bull Bay.

6.8. Gamma dose rate measurements

Gamma dose rate measurements were taken over four intertidal substrates. All measurements were taken at a height of 1 metre above the substrate. The results are presented in Table 40 and are summarised in Table 8.

Table 8. Summary of gamma dose rate measurements taken over intertidal substrates

	Substrate			
	Mud, sand and stones	Sand	Sand and stones	Stones
Number of measurements taken	1	1	1	7
Minimum gamma dose rate at 1 metre[a] (μGy h^{-1})	0.096	0.059	0.071	0.061
Maximum gamma dose rate at 1 metre[a] (μGy h^{-1})	0.096	0.059	0.071	0.092

Notes

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

For comparison, natural background rates across the UK have been estimated at 0.05 μGy h^{-1} over sandy substrates, 0.07 μGy h^{-1} over mud and over salt marsh, and 0.06 μGy h^{-1} over other substrates (EA, FSA, FSS, NRW, NIEA and SEPA, 2023).

6.9. Handling of fishing gear and sediment

Handling fishing gear (nets and pots) that has become entrained with fine sediment particles, or handling sediment while undertaking activities such as bait digging or mollusc collecting, can potentially give rise to skin exposure from beta radiation. Doses to the skin are considered within the dose limitation system (ICRP, 1992).

Fishing gear can also be a source of gamma exposure due to occupancy in the vicinity of the gear. However, this pathway is minor compared with the exposure received during occupancy over intertidal areas and it has therefore been omitted from the report.

Handling of angling equipment (rod and line) was not considered to be a significant pathway. Therefore, as in previous surveys, data were not collected for this pathway.

Handling rates of fishing gear and sediment for adults are presented in Table 41. No children or infants were identified handling sediment or fishing gear.

Adults' handling rates of fishing gear and sediment

Table 9 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 9. Summary of adults' handling rates

	Handling activity	
	Handling fishing gear	Handling sediment
Number of observations	7	2
Number of people in the high-rate group	3	1
Maximum of the high-rate group (h y^{-1})	1189	7
Mean of the high-rate group (h y^{-1})	1002	7
Observed 97.5th percentile (h y^{-1})	1189	7

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

- For handling fishing gear: gill netting and potting throughout the survey area
- For handling sediment: bait digging at Cemlyn Bay

6.10. Water based activities

Activities taking place in or on water can lead to ingestion of water and/or inhalation of spray. These pathways are generally considered to be of minor radiological importance in comparison with other exposure pathways such as the consumption of foods produced in the vicinity of a nuclear site. However, relevant data have been collected for consideration in dose assessments.

For habits surveys, activities involving a high likelihood of an individual's face submerging under water are classified as activities 'in water', as they are more likely to lead to ingestion of water. All other water-based activities are classified as activities 'on water'.

Occupancy rates for on water activities in the aquatic survey area are presented in Table 42 for adults, Table 43 for children and Table 44 for infants. Where generic data for groups of people were collected, for example, members of sailing clubs, only representative examples have been included in the data presented.

Activities in water

The activities identified taking place in water in the aquatic survey area were jet skiing kayaking, paddle boarding, snorkelling, sub-aqua diving and swimming. Kayaking, paddle boarding and jet skiing are classified as ‘in water’ activities since they are likely to lead to the ingestion of seawater. Sixty-six observations were recorded for adults, one was recorded for the child age group and no observations were recorded for the infant age group. The highest occupancy rate for adults was 520 h y^{-1} for a group of individuals who kayaked within the survey area. The only occupancy rate for the child age group was 20 h y^{-1} for a child who was paddle boarding and swimming at Cemaes Bay.

Activities on water

The activities taking place on water in the aquatic survey area were rowing, boat angling, commercial fishing (including gill netting and potting), charter boat fishing, pleasure cruising and paddling. Forty-seven observations were recorded for adults, two were recorded for the child age group and two were recorded for the infant age group. The highest occupancy rate for adults was 2200 h y^{-1} for commercial fishermen who were gill netting and potting throughout the survey area. The highest occupancy rate for the child age group and infant age group was 92 h y^{-1} for a child and infant who were paddling at Cemaes Bay and Bull Bay.

7. Terrestrial radiation pathways

7.1. Terrestrial survey area

The terrestrial survey area (Figure 6) covered the land and watercourses within 5 km of the Wylfa site centre (National Grid Reference: SH 350 939).

The land in the terrestrial survey area is primarily agricultural. The main population centre is the coastal village of Cemaes to the east of the nuclear site. The small villages of Tregele and Llanfechell and the hamlet of Mynydd Mechel were located to the south and the village of Llanfairynghornwy to the south-west. The Afon Wygyr River flows through the survey area from the east and enters the sea at Cemaes Harbour. A freshwater lake, Llyn Llygeirian, is located approximately 3.75 km to the south of the nuclear site.

Interviews were conducted at 18 working farms and five smallholdings in the Wylfa terrestrial survey area. These farms and smallholdings produced the following:

- Cows’ milk
- Beef cattle
- Suckler beef

- Beef stores
- Lambs
- Pigs
- Chickens
- Chicken eggs
- Honey
- Geese
- Ducks
- Goose eggs

Grass (for haylage and silage), maize and barley were grown for animal feed. The production of arable crops for human consumption were not identified in the survey area. Farmers, smallholders and their families were consuming their own beef, lamb, milk, pork, chicken, duck, goose, chicken eggs and goose eggs.

One allotment site was located within the terrestrial survey area. A wide variety of fruit and vegetables were grown on the allotment. Produce was also grown in a small number of private gardens.

Three beekeepers were identified with a total of 209 hives in the survey area. These hives were located on allotment sites and on farmland within the survey area. The average production of honey per hive on the allotment site was 9.0 kg y^{-1}. The honey was consumed by the beekeepers, their families and friends. One beekeeper produced honey commercially which was sold to the public via a department store in London.

Wild foods that were collected from within the survey area and consumed included blackberries, sloes and mushrooms. Game shooting was identified taking place on farmland in the terrestrial survey area, where pheasants were shot and consumed. The human consumption of filtered spring water was identified at one residence, no other groundwater consumption was identified. Livestock were identified drinking mains water, borehole water, spring water and some had access to streams.

7.2. Destination of food originating from the terrestrial survey area

The destination of foods produced in the survey area included the following:

- Beef cattle were sold at livestock markets, to meat processing companies, to supermarkets, to an abattoir, and to finishers.

- Lambs were sold at livestock markets, to meat processing companies, and to an abattoir.
- Pigs were sold at abattoirs.
- Milk was sold to a cheese producer.
- Honey was sold to a department store and restaurants in London, and to the public in the survey area.

7.3. The potential transfer of contamination off-site by wildlife

The nuclear site operator was asked for information about the potential transfer of contamination off-site by wildlife, since radionuclides could enter the food chain or contaminate the environment through this pathway. Routine wildlife control was undertaken to manage gull populations on site by discouraging nesting by hawking. The site reported that it was highly unlikely that wildlife could enter controlled areas as all doors and openings remain closed when not in use and did not consider this pathway to be a risk.

7.4. Food consumption data

Consumption data for locally produced foodstuffs potentially affected by deposition of gaseous discharges are presented from Table 45 to Table 59 for adults and Table 60 to Table 78 for children and infants. The mean consumption rates for the high-rate groups and the observed 97.5th percentile rates, calculated as described in Section 5.4 are given at the foot of each table.

In order to provide information relevant to monitoring and assessments studies, the consumption rate data collected during the survey were analysed to indicate the percentage that each food type contributed to each food group. The data are summarised in Table 79.

Adults' consumption rates

Consumption of locally produced foods was identified in the following 15 food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; milk; cattle meat; pig meat; sheep meat; poultry; eggs; wild/free foods; honey; wild fungi; freshwater fish. The consumption of the following food groups were identified in 2013, but not in 2023: rabbits/hares; venison; freshwater plants.

Table 10 presents a summary of the adults' consumption rates for the foods consumed from the terrestrial survey area. The table includes the mean consumption rates for the

high-rate groups and the observed 97.5th percentile rates. For comparison, the table also includes mean consumption rates and 97.5th percentile consumption rates based on national data, which are referred to as ‘generic’ data in this report.

Table 10. Summary of adults' consumption rates of foods from the terrestrial survey area

	Food group														
	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish
Number of observations	38	42	34	38	60	28	6	2	20	5	29	52	4	28	6
Number of high-rate consumers	6	18	4	6	5	16	6	2	2	1	7	13	2	1	5
Observed maximum for the high-rate group (kg y^{-1} or l y^{-1})	36.1	29.3	49.2	56	35.3	103.7	41.7	20.9	20.0	23.0	33.6	5.5	2.3	3.2	7.1
Observed minimum for the high-rate group (kg y^{-1} or l y^{-1})	12.9	11.3	45.1	20.1	13.5	44.4	41.7	20.9	10.0	23.0	11.9	2.0	2.3	3.2	4.7
Observed mean for the high-rate group (kg y^{-1} or l y^{-1})	22.5	22.2	47.2	37.8	25.1	70.4	41.7	20.9	15.0	23.0	19.8	2.7	2.3	3.2	5.7
Observed 97.5th percentile (kg y^{-1} or l y^{-1})	36.1	29.2	49.2	56.0	28.4	103.7	41.7	20.9	15.2	21.1	33.6	5.0	2.3	1.6	7.1
Generic mean *(kg y^{-1} or l y^{-1})	15.0	20.0	10.0	50.0	20.0	95.0	15.0	15.0	8.0	10.0	8.5	7.0	2.5	3.0	Not determined
Generic 97.5th percentile* (kg y^{-1} or l y^{-1})	45.0	50.0	40.0	120.0	75.0	240.0	45.0	40.0	25.0	30.0	25.0	25.0	9.5	10.0	Not determined

Notes

*Generic rates based on data from Byrom and others, 1995.

The observed mean consumption rate for the high-rate group was greater than the generic 97.5th percentile consumption rate for root vegetables. Ten of the mean consumption rates for the high-rate groups exceeded the generic mean consumption rates. These were for green vegetables, other vegetables, root vegetables, domestic fruit, cattle meat, pig meat, sheep meat, poultry, eggs and wild fungi. Two of the observed 97.5th percentile consumption rates exceeded the generic 97.5th percentile consumption rates, which were for root vegetables and eggs.

Children's and infants' consumption rates

Thirteen individuals in the child age group and ten individuals in the infant age group were identified consuming foods from the terrestrial survey area.

Table 11 presents a summary of children's consumption rates and Table 12 presents a summary of infants' consumption rates. The tables include 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 and infant group. In the child age group, no consumption of foods from the following food groups was identified: root vegetables; pig meat; cattle meat; poultry; rabbits/hares; honey; venison; freshwater fish; freshwater plants. In the infant age group, no consumption of foods from the following food groups was identified: pig meat; cattle meat; poultry; rabbits/hares; honey; venison; freshwater fish; freshwater plants.

Table 11. Summary of children's consumption rates of foods from the terrestrial survey area (Age range: 6-year-old to 15-year-old)

	Food group								
	Green vegetables	Other vegetables	Potato	Domestic fruit	Milk	Sheep meat	Eggs	Wild/free foods	Wild fungi
Number of observations	2	2	2	3	5	5	5	6	5
Number of high-rate consumers	2	2	2	2	4	5	5	4	3
Observed maximum for the high-rate group (kg y^{-1} or l y^{-1})	0.6	1.0	9.1	0.8	66.4	2.7	8.3	0.4	0.4
Observed minimum for the high-rate group (kg y^{-1} or l y^{-1})	0.6	1.0	9.1	0.8	27.9	2.0	7.1	0.2	0.3
Observed mean for the high-rate group (kg y^{-1} or l y^{-1})	0.6	1.0	9.1	0.8	49.5	2.4	8.0	0.3	0.4
Observed 97.5th percentile (kg y^{-1} or l y^{-1})	0.6	1.0	9.1	0.8	66.4	2.7	8.3	0.4	0.4

Table 12. Summary of infants' consumption rates of foods from the terrestrial survey area (Age range: 0 to 5-year-old)

	Food group									
	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Sheep meat	Eggs	Wild/free foods	Wild fungi
Number of observations	2	2	2	2	3	5	2	3	4	1
Number of high-rate consumers	2	2	2	2	2	2	2	3	4	1
Observed maximum for the high-rate group (kg y^{-1} or l y^{-1})	1.8	2.4	3.0	4.3	0.7	207.3	1.3	4.7	0.2	0.2
Observed minimum for the high-rate group (kg y^{-1} or l y^{-1})	1.8	2.4	3.0	4.3	0.7	207.3	0.7	3.1	0.1	0.2
Observed mean for the high-rate group (kg y^{-1} or l y^{-1})	1.8	2.4	3.0	4.3	0.7	207.3	1.0	4.2	0.1	0.2
Observed 97.5th percentile (kg y^{-1} or l y^{-1})	1.8	2.4	3.0	4.3	0.7	207.3	1.3	4.7	0.2	Not applicable

8. Direct radiation pathways

8.1. Direct radiation survey area

The direct radiation survey area (Figure 7) covered the land and water within 1.2 km of the Wylfa nuclear licensed site boundary. The survey area was split into three zones, which were 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.2 km from the Wylfa nuclear licensed site boundary. The direct radiation survey area was sparsely populated. Therefore, the area was extended to include residences bordering the 1 km area typically used in habits surveys. The occupancy data collected from the direct radiation survey area are also applicable to inhalation and external exposure pathways arising from gaseous releases from the site.

The land within the direct radiation survey area is predominantly agricultural. A large part of the land within 1.2 km of the site had been purchased by Horizon Nuclear Power for the construction of a new nuclear power station close to the existing site. All properties located on the purchased land were demolished. The farmland purchased by the developers had been leased back to farmers on short term leases and was still used for farming. The main area of residences was located in the village of Tregele to the south-east of the site in the >0.5 – 1.2 km zone. A small number of properties were scattered across the >0.5 – 1.2 km zone along the main road and a minor road between Tregele and Cemlyn.

The power station is situated directly adjacent to the rocky coast between Porth-y-pistyll and Wylfa Head Nature Reserve. The IACP followed the coast and across fields within the survey area. A National Grid substation was located in the 0 – 0.25 km zone, offices were located in the >0.25 – 0.5 km zone and a petrol station with associated shop were located in the >0.5 – 1.2 km zone. The sports and social club and visitor centre, located in the direct radiation area, are now permanently closed. Additional offices have been developed adjacent to the visitor centre.

8.2. Residential activities

No residential properties were located within the 0 – 0.25 km zone and >0.25 – 0.5 km zone. All land within these zones was purchased by Horizon Nuclear Power as part of the new nuclear development. The closest residences to the Wylfa nuclear site were located along the road between Tregele Village and Cemlyn in the >0.5 – 1.2 km zone. Other residential properties were located in the village of Tregele located on the boundary of the >0.5 – 1.2 km zone south-east of the site and on the main road to Cemaes.

Interviews were conducted at 17 residences, including families with children. All properties were within the >0.5 – 1.2 km zone.

8.3. Leisure activities

Walking and dog walking were noted along the paths throughout the direct radiation survey area including Wylfa Head Nature Reserve. A small car park, located west of the nuclear site in the >0.25 – 0.5 km zone, was used by local dog walkers and people visiting the coastal path.

Porth yr Ogof, Porth-y-pistyll and Porth Wylfa were beaches located in the direct radiation survey area. Members of the public and the Cemaes Swimming Club were identified swimming and spending time on the beach at Porth yr Ogof on a regular basis. Angling was undertaken on the beaches at Porth yr Ogof and Porth-y-pistyll. Seaweed was collected from Porth-y-pistyll for use as fertiliser on a flower meadow.

It was reported that Porth Wnal was no longer a popular fishing location due to the decommissioning of the cooling water outfall. However, the site operators reported that a small number of anglers were observed angling from the rocks north of the site. Boat angling was identified offshore of Wylfa Head and Porth Wnal.

The visitor centre, which had previously received approximately 30,000 visitors annually, closed in 2015. At the time of the survey, the visitor centre and former sports and social club had been developed into offices for the Magnox Ltd and Horizon Nuclear Power employees.

8.4. Commercial activities

The direct radiation survey area included a limited number of commercial activities in all zones. A National Grid substation bordered the nuclear licensed site boundary in the 0 – 0.25 km zone. Ten employees were working at the substation on a full-time basis.

Office buildings had been developed on the former visitor centre and sports and social club site in the >0.25 – 0.5 km zone. The offices were used by two Horizon Nuclear Power employees and Magnox Ltd employees. It was reported that the offices were not used on a regular basis by the Magnox Ltd employees.

A petrol station and associated shop were located in Tregele Village, close to the outer boundary of the >0.5 – 1.2 km zone. The petrol station employed eight people who worked on a full-time or part-time basis. A public house was located within this zone but was closed and unoccupied at the time of the survey.

One farm and three smallholdings were located within the survey area. Several people who lived outside the area worked on farms in the area.

Four commercial fishermen were identified potting and gill netting offshore within the survey area.

8.5. Occupancy rates

Table 80 presents indoor, outdoor and total occupancy data for adults, children and infants. An analysis of the data by distance zones and occupancy rates is shown in Table 81. A summary of occupancy rates in the direct radiation survey area is presented in Table 13. Where generic data for groups of people were collected, for example, employees of businesses, only representative examples have been included in the presented data.

Table 13. Summary of direct radiation occupancy rates

	Zone		
	0 - 0.25 km	>0.25 - 0.5 km	>0.5 - 1.2 km
Number of observations	13	15	67
Highest indoor occupancy (h y^{-1})	1877	957	8719
Highest outdoor occupancy (h y^{-1})	243	1555	3311
Highest total occupancy (h y^{-1})	1929	1914	8760

0 – 0.25 km from the nuclear licensed site boundary

Occupancy data for 13 individuals in the 0 - 0.25 km zone were included in the analysis. The observations were for 10 employees and three dog walkers. The highest indoor and total occupancy rates were for employees. The highest outdoor occupancy rate was for a dog walker.

>0.25 – 0 5 km from the nuclear licensed site boundary

Occupancy data for 15 individuals in the >0.25 - 0.5 km zone were included in the analysis. The observations were for two employees, 12 swimmers and one angler. The highest indoor, outdoor and total occupancy rates were for employees.

>0.5 – 1.2 km from the nuclear licensed site boundary

Occupancy data for 67 individuals in the >0.5 - 1.2 km zone were included in the analysis. The observations were for 46 residents, eight employees, four commercial fishermen, four farm workers, three dog walkers and two boat anglers. The highest indoor, outdoor and total occupancy rates were for residents.

8.6. Gamma dose rate measurements

Gamma dose rates were measured indoors and outdoors at most properties where interviews were conducted in the Wylfa direct radiation survey area. Where possible, outdoor measurements were taken approximately 5 to 10 metres from the nearest building and over grass. Gamma dose rate measurements over grass were taken at locations further than 5 km from the site centre to obtain background dose rates. All measurements were taken at a height of 1 metre above the substrate using multiple Thermo RadEye GX Survey Meters, each connected to a compensated Geiger-Müller tube. The indoor and outdoor measurements have not been adjusted for background dose rates. The results are presented in Table 82 and are summarised in Table 14.

Table 14. Summary of gamma dose rate measurements taken in the direct radiation survey area

Substrate	Number of measurements taken	Minimum gamma dose rate at 1 metre (μGy h^{-1})	Maximum gamma dose rate at 1 metre (μGy h^{-1})
Indoor measurements[a]			
Concrete	11	0.083	0.116
Outdoor measurements[a]			
Concrete	4	0.095	0.119
Grass	9	0.085	0.101
Tarmac	1	0.076	0.076
Background measurements			
Grass	3	0.065	0.086

Note

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

Of the 11 measurements taken indoors at locations within the direct radiation survey area, nine readings were higher than the maximum background reading. Of the 14 measurements taken outdoors at locations within the direct radiation survey area, nine readings were higher than the maximum background reading. The nine indoor and nine outdoor readings which were higher than the maximum background reading were not taken all taken at the same locations. Since gamma dose rate measurements are influenced by the nature of building materials, the substrate over which they are taken, and many other factors, the measurements taken in residential areas are expected to be higher than those taken in rural areas.

The gamma dose rates can be compared with readings taken by the Radiological Response and Emergency Management System (RREMS) programme, which continuously monitors radiation levels at a network of 89 fixed monitors and a number of mobile monitors distributed throughout the UK (www.gov.uk). The nearest RREMS station

to Wylfa was at Llanfihangel yn Nhowyn, which was approximately 19 km away. The ambient (background) gamma dose rates at Llanfihangel yn Nhowyn during the survey period ranged from 0.09 μGy h^{-1} to 0.11 μGy h^{-1}. Most of the readings taken at the time of the survey were below or within the range observed for the RREMS system, with some dose rates at some locations being higher due to environmental variability.

9. Uses of habits data for dose assessments

9.1. Combined pathways

In determining habits data for the purposes of assessing radiological doses to the public, it may be necessary to consider a combination of pathways. Data are provided in Annex 1, Annex 2 and Annex 3 so that the full effect of combining pathways can be assessed for individual observations, given the concentrations and dose rates for a particular assessment. The rates for individuals in the high-rate groups are emboldened. In some circumstances, it will be possible to make simplifying assumptions and define the consumption and external exposure rates appropriate to a series of potential high-rate groups.

The most extensive combinations of pathways for adult dose assessment are shown in Table 84. Each of the 27 combinations shown in Table 84 represents an actual individual (or individuals) from Annex 1 who has positive data (irrespective of the magnitude), for each pathway marked with a cross. Other individuals from Annex 1 have combinations that are not listed in Table 84 because they have fewer pathways and a dose assessment for them would be adequately covered by one of the 27 listed combinations.

9.2. Prenatal dose assessment

Dose assessment of prenatal children was introduced routinely for the first time in the Radioactivity in Food and the Environment report for 2005 (EA, EHS, FSA and SEPA, 2006), following the publication of recommendations by the Radiation Protection Division of the UKHSA (formerly, Health Protection Agency) (National Radiological Protection Board, 2005). The adopted approach is to use the consumption and occupancy data for women of childbearing age in order to calculate the potential dose to prenatal children. Therefore, consumption and occupancy data collected during the Wylfa habits survey for females of childbearing age are presented in Annex 6. The Office of National Statistics classifies women to be of childbearing age if they are between 15 and 44 years old (www.ons.gov.uk); this age range has been used in Annex 6. It was not possible to collect ages for all female observations during the habits survey. However, these females with unknown ages have been included in Annex 6 as they might be women of childbearing age.

9.3. ‘Total dose’ assessment

The UK environment agencies and the FSA have considered ways of using habits data to estimate ‘total dose’ retrospectively. The adopted approach is to use the adult consumption and occupancy data collected in each habits survey to create a matrix with a series of habits profiles for each site. The National Dose Assessment Working Group (NDAWG) considered this approach for assessing retrospective total doses (Camplin and others, 2005) and agreed that using habits profiles is an appropriate approach. The method used to estimate ‘total dose’ integrated across pathways is provided in the RIFE reports (for example: EA, FSA, FSS, NRW, NIEA and SEPA, 2023).

The relevant matrix for the adults’ profiled habits data is shown in Annex 7. Additionally, profiles have been created for the child and infant age groups, and for women of childbearing age. These are shown in Annex 8, Annex 9 and Annex 10 respectively. Most of the groups used for the pathways in the matrices are exactly analogous to the groups used throughout this habits survey report, although the names used are slightly different, for example ‘Fruit – Domestic’ rather than ‘Domestic fruit’. However, in order to increase the robustness of the ‘total dose’ assessments, some of the groups that are used throughout the rest of this report have been amalgamated together for use in the matrices. These are indicated in the notes at the foot of each matrix, where applicable. The ‘Plume pathways’ are related to inhalation and external exposure arising from gaseous discharges and use the total of the individuals' indoor and outdoor occupancy rates for each of the direct radiation zones. The ‘Direct’ pathway is expressed as the proportion of the profile members who are exposed to direct radiation.

10. Comparisons with the previous survey

The results from this 2023 survey are compared below with results from the last combined habits survey undertaken at Wylfa in 2013. The aquatic, terrestrial and direct radiation survey areas in the 2023 survey were the same as those in the 2013 survey. The comparison of occupancy rates in the direct radiation area is for all age groups combined. All other comparisons are for adults only.

10.1. Aquatic survey area

The activities identified in the aquatic survey area in 2023 were similar to those identified in 2013. However, the number of commercial fishermen operating within the survey area decreased from seven in 2013 to four in 2023.

The main species of sea fish consumed by the adult high-rate group in 2023 were bass, pollack and mackerel, and the main species of sea fish consumed by the adult high-rate group in 2013 were bass, pollack, mackerel, cod and whiting. The main species of

crustaceans consumed by the adult high-rate group in 2013 were brown crab, common lobster and common prawn, whereas common prawn was not identified in 2023. The only species of molluscs consumed by the high-rate group in 2013 was king scallop, whereas in 2023, the only species consumed by the high-rate group was winkles. In 2023, the only species of marine plants/algae consumed by the adult high-rate group was samphire, whereas in 2013, the consumption of marine plants/algae was not identified.

A comparison between the consumption of aquatic foods in 2013 and 2023 is presented in Table 15.

Table 15. Comparison between 2013 and 2023 consumption rates of aquatic food groups for adults

Food group	2013			2023		
	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})
Sea fish	10	67.1	33.5	11	58.0	37.1
Crustaceans	9	18.1	7.9	5	5.4	5.0
Molluscs	3	1.8	1.8	3	0.3	0.2
Marine plants/algae	Not identified	Not identified	Not identified	1	0.5	0.5

The decrease in the number of commercial fishermen potting in the survey area had an impact on the consumption of crustaceans in 2023, since they were consuming smaller quantities of common lobster compared to 2013. They were not identified consuming common prawns in 2023. The consumption rate of molluscs decreased in 2023. The only mollusc species consumed by adults in the high-rate group in 2013 was king scallops, whereas the only mollusc species consumed by the adult high-rate group in 2023 was winkles.

The consumption of samphire was identified in 2023 but not in 2013. No specific reasons were identified for the changes in consumption rate of sea fish.

For intertidal occupancy in both 2013 and 2023, occupancy over intertidal substrates for adults was recorded over mud and sand; mud, sand and stones; rock; sand; sand and stones. Occupancy over stones was identified in 2023, but not in 2013.

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

- In 2013: angling, dog walking, boat maintenance, fixing moorings, nature warden duties, beach warden duties, walking, collecting winkles and collecting limpets.
- In 2023: angling, dog walking, boat maintenance, nature warden duties, bait digging, collecting seaweed, rock pooling and sitting on the beach.

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

- In 2013: handling pots.
- In 2023: handling pots and gill nets.

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

- In 2013: fixing moorings.
- In 2023: bait digging.

A comparison between the 2013 and 2023 data for adult occupancy over intertidal substrates and handling pathways is shown in Table 16.

Table 16. Comparison between 2013 and 2023 intertidal occupancy rates and handling rates of fishing gear and sediment for adults

Intertidal substrate or handling pathway	2013			2023		
	Number in high-rate group	Maximum occupancy or handling rate ($h\ y^{-1}$)	Mean occupancy or handling rate for the high-rate group ($h\ y^{-1}$)	Number in high-rate group	Maximum occupancy or handling rate ($h\ y^{-1}$)	Mean occupancy or handling rate for the high-rate group ($h\ y^{-1}$)
Mud and sand	1	390	390	2	15	11
Mud, sand and stones	1	35	35	1	26	26
Rock	8	426	258	2	521	378
Sand	16	548	369	14	979	554
Sand and stones	7	612	374	7	100	60
Stones	Not identified	Not Identified	Not identified	7	523	283
Handling fishing gear	6	1624	1289	3	1189	1002
Handling sediment	1	300	300	1	7	7

In 2023, the mean intertidal rate for the adult high-rate group increased significantly over sand and moderately over rock, when compared to 2013. Additionally, in 2023, the mean intertidal rate for the adult high-rate group decreased significantly over mud and sand, and sand and stones in comparison to 2013. Occupancy over stones was identified in 2023, but not in 2013.

The significant decrease in occupancy over mud and sand in 2023 was due to a high-rate commercial fisherman retiring since 2013. The retired commercial fisherman was no longer fixing moorings and undertaking boat maintenance at Cemaes Harbour. The decrease in occupancy over sand and stones in 2023 was due to nature wardens at Cemlyn primarily spending their time on stones. The substrate at Cemlyn Bay changed from sand and stones in 2013 to stones in 2023. The increase in occupancy over sand in 2023 was due to the identification of a high-rate dog walker and the Cemaes Swimming Club members spending large amounts of time on the sandy beaches at Cemaes Bay. Dog walking was a high-rate activity in both 2013 and 2023 at Cemaes Bay.

The mean rates for the adult high-rate groups for handling fishing gear and sediment decreased in 2023 compared to 2013. The decrease in handling rates for sediment was attributed to a commercial fisherman fixing their moorings in 2013 who has since retired.

For activities taking place in water in the aquatic survey area, the maximum adult occupancy rate was 260 h y^{-1} in 2013 for a chartered sub-aqua diver. In 2023, the maximum adult occupancy rate increased to 520 h y^{-1} for three kayakers undertaking excursions throughout the survey area.

For activities undertaken on the water in the aquatic survey area, the maximum adult occupancy rate was 1600 h y^{-1} in 2013 for commercial fishermen undertaking potting. In 2023, the maximum adult occupancy rate increased to 2200 h y^{-1} for a commercial fisherman undertaking potting and gill netting.

10.2. Terrestrial survey area

Activities in the terrestrial survey area in 2023 were broadly similar to those in 2013. The principal types of farm produce within the area continued to be cows' milk, beef and lamb. The growing of fruit and vegetables in gardens and on an allotment site, beekeeping and the collection of wild/free foods and game shooting on farmland were identified in both surveys.

The mean consumption rates for the adult high-rate groups for terrestrial food groups from the 2013 and 2023 surveys are shown in Table 17.

Table 17. Comparison between 2013 and 2023 mean consumption rates (kg y^{-1} or l y^{-1}) for the adult high-rate groups for terrestrial food groups

Food group	2013	2023
Green vegetables	18.2	22.5
Other vegetables	18.6	22.2
Root vegetables	38.6	47.2
Potato	107.5	37.8
Domestic fruit	28.2	25.1
Milk	102.2	70.4
Cattle meat	31.5	41.7
Pig meat	25.9	20.9
Sheep meat	12.2	15.0
Poultry	8.6	23.0
Eggs	13.0	19.8
Wild/free foods	6.0	2.7
Honey	3.4	2.3
Wild fungi	4.2	3.2
Freshwater fish	0.3	5.7
Freshwater plants	0.7	Not identified

In 2023, compared to 2013, the mean consumption rates for the adult high-rate group increased in the following food groups: green vegetables; other vegetable; root vegetables; cattle meat; sheep meat; poultry; eggs; freshwater fish. In 2023 the mean consumption rates for the adult high-rate groups decreased in the following food groups: potato; domestic fruit; milk; pig meat; wild/free foods; honey; wild fungi. The most significant increases in the consumption rates were for cattle meat, poultry, eggs and freshwater fish, whilst the most significant decreases were for potato, milk and wild/free food. The consumption of freshwater plants was not identified in 2023.

The increased consumption rate of poultry in 2023 was due to the identification of an individual who consumed large quantities of chicken meat from their smallholding. The decreased consumption of potato in 2023 was due to the identification of individuals consuming unusually high quantities of potato in 2013, who were not identified in 2023. The consumption of milk decreased in 2023 since farming families consumed less milk produced on their farms and one dairy farm diversified into other types of farming. The consumption rate for eggs increased in 2023 due to the identification of a small holder consuming large quantities of chicken eggs and small quantities of goose eggs. The consumers of freshwater plants from 2013 were no longer growing watercress in their garden pond. No specific reasons were identified for the other changes in consumption rates.

The human consumption of filtered spring water was identified in 2013 and 2023. Livestock were drinking mains water, borehole water, spring water and had access to streams in 2023. In 2013, the consumption of well water by humans and livestock was identified, but was not in 2023.

10.3. Direct radiation survey area

Activities identified in the direct radiation survey area in 2013 and 2023 were similar and included people residing, working and undertaking recreational activities. The direct radiation survey area was sparsely populated. Therefore, the area was extended to include residences bordering the 1 km area typically used in habits surveys. The survey area remained unchanged from the previous survey in 2013. A comparison between the 2013 and 2023 direct radiation occupancy rates for all age groups combined, by zone, is presented in Table 18.

Table 18. Comparison between 2013 and 2023 direct radiation occupancy rates (h y^{-1}) for all age groups combined

	2013	2023
0 - 0.25 km		
Highest indoor occupancy	806	1877
Highest outdoor occupancy	806	243
Highest total occupancy	1612	1929
>0.25 - 0.5 km		
Highest indoor occupancy	-	957
Highest outdoor occupancy	365	1555
Highest total occupancy	365	1914
>0.5 - 1.2 km		
Highest indoor occupancy	8578	8719
Highest outdoor occupancy	1638	3311
Highest total occupancy	8656	8760

Compared with 2013, there were some significant changes to occupancy rates in the direct radiation survey area in 2023. The maximum occupancy rates across all zones had increased in 2023, except the maximum outdoor occupancy rate in the 0 – 0.25 km zone, compared with 2013. The highest indoor occupancy rate in the 0 – 0.25 km zone increased significantly in 2023 for employees at the National Grid substation. The maximum indoor, outdoor and total occupancy rates in the <0.25 – 0.5 km zone increased significantly in 2023 due to the identification of Horizon Nuclear employees working in the area. In 2013, indoor occupancy in the <0.25 – 0.5 km zone was not identified. The maximum outdoor occupancy rate increased significantly in the >0.5 – 1.2 km zone due to the identification of a smallholder who had moved to the area after 2013.

Table 19. Comparison between 2013 and 2023 gamma dose rates (μGy h^{-1})

Location	Indoor		Outdoor	
	2013	2023	2013	2023
Residence 2	0.107	0.116	0.078	Not recorded
Residence 10	0.084	Not recorded	0.080	0.095
Residence 12	0.076	0.085	0.065	0.085
Residence 13	0.085	0.092	0.076	0.101
Business 1	Not recorded	0.069	Not recorded	0.076

Notes
These measurements have not been adjusted for background dose rates.
The locations correspond to those in Table 82.

All readings were higher in 2023, compared with 2013.

11. Main findings

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

- Discharges of liquid radioactive waste into the Irish Sea
- Discharges of gaseous radioactive waste to the atmosphere
- Emissions of direct radiation

Information was obtained by conducting interviews with members of the public including, for example, anglers, people spending time on intertidal substrates, farmers, allotment holders, beekeepers and people spending time within the direct radiation survey area. These people were targeted because their diet and habits may cause them to be exposed to radioactivity from the site. However, it should be noted that the most exposed people can only be defined with the outcome of a dose assessment. Data for 324 individuals are presented in this report. All consumption rates recorded are only for foods produced, collected or caught from within the aquatic and terrestrial survey areas as defined in Section 4.3. The consumption and occupancy rates in this section are presented to two significant figures.

11.1. Aquatic survey area

The mean consumption rates for the adult high-rate groups (as defined in Section 5.4) for the separate aquatic consumption pathways for foods potentially affected by liquid discharges were:

- 37 kg y^{-1} for sea fish
- 5.0 kg y^{-1} for crustaceans
- 0.2 kg y^{-1} for molluscs
- 0.5 kg y^{-1} for marine plants/algae

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

- For sea fish: bass, pollack and mackerel
- For crustaceans: common lobster and brown crab
- For molluscs: winkles
- For marine plants/algae: samphire

One individual was identified collecting small amounts of seaweed from the survey area for use as fertiliser on their allotment plot for the production of fruit and vegetables. The use of seaweed as animal feed was not identified, however, livestock had access to the shore at Hen Borth where they could graze on seaweed.

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

- 11 h y^{-1} for mud and sand
- 26 h y^{-1} for mud, sand and stones
- 380 h y^{-1} for rock
- 550 h y^{-1} for sand
- 60 h y^{-1} for sand and stones
- 280 h y^{-1} for stones

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

- 1000 h y^{-1} for handling fishing gear (pots and nets)
- 7.0 h y^{-1} for handling sediment

The maximum adult occupancy rates for water-based activities were:

- 520 h y^{-1} for ‘in water’
- 2200 h y^{-1} for ‘on water’

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

11.2. Terrestrial survey area

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

- 23 kg y^{-1} for green vegetables
- 22 kg y^{-1} for other vegetables
- 47 kg y^{-1} for root vegetables
- 38 kg y^{-1} for potato
- 25 kg y^{-1} for domestic fruit
- 70 l y^{-1} for milk
- 42 kg y^{-1} for cattle meat
- 21 kg y^{-1} for pig meat
- 15 kg y^{-1} for sheep meat
- 23 kg y^{-1} for poultry
- 20 kg y^{-1} for eggs
- 2.7 kg y^{-1} for wild/free foods
- 2.3 kg y^{-1} for honey
- 3.2 kg y^{-1} for wild fungi
- 5.7 kg y^{-1} for freshwater fish

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

The human consumption of filtered spring water was identified. Livestock were drinking mains water, borehole water, spring water and had access to streams.

11.3. Direct radiation survey area

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

0 – 0.25 km zone

- 1900 h y^{-1} for the indoor occupancy rate
- 240 h y^{-1} for the outdoor occupancy rate
- 1900 h y^{-1} for the total occupancy rate

>0.25 – 0.5 km zone

- 960 h y^{-1} for the indoor occupancy rate
- 1600 h y^{-1} for the outdoor occupancy rate
- 1900 h y^{-1} for the total occupancy rate

>0.5 – 1.2 km zone

- 8700 h y^{-1} for the indoor occupancy rate
- 3300 h y^{-1} for the outdoor occupancy rate
- 8760 h y^{-1} for the total occupancy rate

In the 0 – 0.25 km zone, the highest indoor and total occupancy rates were for National Grid employees and the highest outdoor occupancy rate was for a dog walker. The highest indoor, outdoor and total occupancy rates were for Horizon Nuclear Power employees in the >0.25 – 0.5 km zone. The highest indoor, outdoor and total occupancy rates were for residents in the >0.5 – 1.2 km zone.

12. Habits survey information for consideration in the selection of samples and measurements for monitoring programmes

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

In England and Wales, the monitoring programme for radioactivity in food is undertaken by the FSA, and the monitoring programme for radioactivity in the environment is conducted by the EA. The results of these programmes are published annually in the RIFE reports (for example: EA, FSA, FSS, NRW, NIEA and SEPA, 2023).

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

12.1. Summary of the monitoring programmes for Wylfa

The 2022 monitoring programmes relevant to the Wylfa area included the samples and measurements listed in Table 20 and Table 22. The location names, foods and substrate classifications are taken directly from RIFE 28 (EA, FSA, FSS, NRW, NIEA and SEPA, 2023). Some of the samples and measurements taken for the monitoring programmes may be from outside the survey areas used for the 2023 Wylfa habits survey.

Table 20. Aquatic food and environmental samples used in the RIFE 28 monitoring programme

Sample	Location
Plaice	Pipeline
Crabs	Pipeline
Lobsters	Pipeline
Winkles	Cemaes Bay
Seaweed	Cemaes Bay
Sediment	Cemaes Bay
Sediment	Cemlyn Bay East
Sediment	Cemlyn Bay West
Seawater	Cemaes Bay

Table 21. Gamma dose rate measurements over intertidal substrates used in the RIFE 28 monitoring programme

Location	Substrate
Cemaes Bay	Sand
Cemaes Bay	Sand and rock
Cemlyn Bay East	Sand and shingle
Cemlyn Bay West	Shingle
Porth yr Ogof	Shingle

Table 22. Terrestrial samples used in the RIFE 28 monitoring programme

Sample	Location
Milk	-
Potatoes	-
Grass	-
Grass	Foel Fawr
Grass	Wylfa Head Nature Reserve

12.2. Information from the 2023 Wylfa habits survey for use in the selection of samples and measurements for monitoring programmes

Food Standards Agency monitoring

The following foods presented in Table 23 were either consumed in the largest quantities in their food groups or were the only food in their food group and could be considered for potentially selecting samples for the FSA monitoring programme.

Table 23. Foods considered for potentially selecting samples for the FSA monitoring programme

Food	Food Group
Bass	Sea fish
Common lobster	Crustaceans
Winkle	Molluscs
Samphire	Marine plants/algae
Courgette	Green vegetables
Tomato	Other vegetables
Leek	Root vegetables
Potato	Potato
Apple	Domestic fruit
Cows' milk	Milk
Beef	Cattle meat
Pork	Pig meat
Lamb	Sheep meat
Chicken	Poultry
Chicken egg	Egg
Blackberry	Wild/free foods
Honey	Honey
Mushroom	Wild fungi
Rainbow trout	Freshwater fish

Environment Agency monitoring

The current environmental monitoring programme adequately covers the Wylfa area, and no changes are suggested.

13. Acknowledgements

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Table 24. Survey coverage

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
Summary of all pathways					
All potential interviewees in the Wylfa aquatic, terrestrial and direct radiation survey areas.	Number of people resident in the terrestrial survey area (excluding those residents in the direct radiation survey area) (See (B) Terrestrial pathways)	3400[a]	100[b]	2.94%	The survey targeted individuals who were potentially the most exposed, mostly producers of local foods such as farmers and allotment holders.
	Number of people resident in the direct radiation survey area (See (C) Direct radiation pathways)	100	46[b]	46%	Interviews were conducted with members of the public from 17 residences out of an estimated total of 36 permanent residences.
	Number of people working, visiting and undertaking recreational activities in the direct radiation survey area (See (C) Direct radiation pathways)	U	49[b]	U	Excluding employees and contractors at the nuclear licensed site. Where generalised data for groups of people were obtained, for example employees at some businesses, only a limited number of representative individuals have been included.
	Number of people affected by liquid discharges (excluding those assigned to other categories above) (See (A) Aquatic pathways)	U	129[b]	U	Where generalised data for groups of people were obtained, for example members of clubs, only a limited number of representative individuals have been included.
	Total for aquatic, terrestrial and direct radiation survey areas	U	324[b]	U	

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
(A) **Aquatic pathways**					
People using the intertidal areas (for example: dog walkers, people playing, etc.)	Number of people undertaking activities on the intertidal areas in the aquatic survey area	U	105	U	
People undertaking activities in or on water (for example: swimming, rowing and kayaking etc.)	Number of people undertaking activities in or on water in the aquatic survey area	U	106	U	
Sea fish and shellfish consumers	Number of people consuming sea fish and/or crustaceans from the aquatic survey area	U	46	U	
(B) **Terrestrial pathways**					
Farmers	Number of farmers, smallholders and their family members consuming food from the terrestrial survey area	U	78	U	Interviews were conducted at 18 farms out of an estimated 33 farms in the terrestrial survey area. Three of the farms interviewed were not consuming any food from the terrestrial survey area.

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
(B) **Terrestrial pathways**					
Allotment holders and gardeners	Number of allotment holders, gardeners and their family members consuming food from the terrestrial survey area	U	57	U	
Honey consumers	Number of people consuming honey produced in the survey area	U	4	U	Three beekeepers were identified who kept hives in the survey area.
(C) **Direct radiation pathways**					
Residents	Number of residents in the survey area	100	46	46%	Interviews were conducted with members of the public from 17 residences out of an estimated total of 36 permanent residences.
Employees	Number of people working in the survey area	U	28	U	Excluding people who were living in the direct radiation survey area and employees and contractors at the nuclear licensed site. Where generalised data for groups of people were obtained, for example employees at some businesses, only a limited number of representative individuals have been included.

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
Direct radiation pathways					
Visitors (people undertaking recreational activities or visiting relatives)	Number of people visiting the survey area	U	21	U	
Breakdown of age groups for people resident in the 5 km terrestrial survey area					
Adult	16-year-old and over	2900[a]	283	9.8%	
Child	6-year-old to 15-year-old	400[a]	26	6.5%	
Infant	0 to 5-year-old	200[a]	15	7.5%	

Notes

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

[b] The number of people for whom positive data was obtained for pathways (A) and (B) and (C) will usually not equal the relevant totals in the summary of all pathways. This is because in sections (A), (B) and (C) some individuals may be counted two or more times, for example someone who goes angling and consumes foods from the terrestrial area.

U – Unknown

Table 25. Typical food groups used in habits surveys

Food group	Examples of foods within the group
Green vegetables	Asparagus, broccoli, Brussels sprouts, cabbage, calabrese, cauliflower, chard, courgette, cucumber, gherkin, globe artichoke, herbs, kale, leaf beet, lettuce, marrow, spinach
Other vegetables	Aubergine, broad bean, chili 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, white currant
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

Food group	Examples of foods within the group
Wild fungi	Mushrooms, other edible fungi
Rabbits/hares	Hare, rabbit
Venison[a]	Venison
Sea fish	Bass, brill, cod, ling, dab, Dover sole, flounder, gurnard, haddock, hake, herring, lemon sole, mackerel, monkfish, mullet, plaice, pollack, rays, saithe, salmon, sea trout, sprat, turbot, whitebait, whiting, witch, cuttlefish[c], squid[c]
Freshwater fish	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 due to their mobility and physiology.

Table 26. Adults' consumption rates of sea fish from the Wylfa aquatic survey area (kg y^{-1})

Person ID number	Ballan Wrasse	Bass	Cod	Herring	Huss	Lesser spotted dogfish	Ling	Mackerel	Pollack	Thornback ray	Whiting	Total
3863/1/1	**-**	**29.8**	**-**	**-**	**-**	**-**	**-**	**-**	**28.1**	**-**	**-**	**58.0**
3865/1/1	**9.5**	**-**	**-**	**-**	**3.8**	**3.8**	**-**	**9.4**	**9.6**	**1.2**	**5.4**	**42.7**
3865/2/1	**9.5**	**-**	**-**	**-**	**3.8**	**3.8**	**-**	**9.4**	**9.6**	**1.2**	**5.4**	**42.7**
3771/1/1	**-**	**34.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**34.1**
3771/2/1	**-**	**34.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**34.1**
3771/3/1	**-**	**34.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**34.1**
3771/4/1	**-**	**34.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**34.1**
3771/5/1	**-**	**34.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**34.1**
3771/6/1	**-**	**34.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**34.1**
3789/6/1	**-**	**6.0**	**6.0**	**-**	**-**	**-**	**6.0**	**6.0**	**6.0**	**-**	**-**	**30.0**
3789/7/1	**-**	**6.0**	**6.0**	**-**	**-**	**-**	**6.0**	**6.0**	**6.0**	**-**	**-**	**30.0**
3721/1/1	-	-	4.8	3.0	-	-	-	3.0	-	-	-	10.8
3721/2/1	-	-	4.8	3.0	-	-	-	3.0	-	-	-	10.8
3715/1/1	-	-	-	-	-	-	-	5.2	5.2	-	-	10.4
3715/2/1	-	-	-	-	-	-	-	5.2	5.2	-	-	10.4
3806/2/1	-	-	-	-	-	-	-	8.2	2.2	-	-	10.4
3661/1/1	-	9.0	-	-	-	-	-	-	-	-	-	9.0
3773/1/1	-	-	-	-	-	-	-	7.2	-	-	-	7.2
3773/2/1	-	-	-	-	-	-	-	7.2	-	-	-	7.2
3761/1/1	-	-	-	-	-	-	-	1.8	4.7	-	-	6.5
3761/2/1	-	-	-	-	-	-	-	1.8	4.7	-	-	6.5

Person ID number	Ballan Wrasse	Bass	Cod	Herring	Huss	Lesser spotted dogfish	Ling	Mackerel	Pollack	Thornback ray	Whiting	Total
3694/2/1	-	-	0.2	-	-	-	-	-	4.8	-	-	5.0
3694/3/1	-	-	0.2	-	-	-	-	-	4.8	-	-	5.0
3718/1/1	-	-	-	-	-	-	-	1.9	2.5	-	-	4.4
3718/2/1	-	-	-	-	-	-	-	1.9	2.5	-	-	4.4
3718/3/1	-	-	-	-	-	-	-	1.9	2.5	-	-	4.4
3718/4/1	-	-	-	-	-	-	-	1.9	2.5	-	-	4.4
3786/1/1	-	-	1.3	-	-	-	-	1.3	-	-	1.3	3.8
3713/1/1	-	-	-	-	-	-	-	2.6	-	-	-	2.6
3713/2/1	-	-	-	-	-	-	-	2.6	-	-	-	2.6
3703/1/1	-	-	-	-	-	-	-	1.5	-	-	-	1.5
3703/2/1	-	-	-	-	-	-	-	1.5	-	-	-	1.5
3703/3/1	-	-	-	-	-	-	-	1.5	-	-	-	1.5
3780/1/1	-	-	-	-	-	-	-	1.2	-	-	-	1.2
3780/2/1	-	-	-	-	-	-	-	1.2	-	-	-	1.2
3768/1/1	-	0.6	-	-	-	-	-	0.2	-	-	-	0.8
3768/2/1	-	0.6	-	-	-	-	-	0.2	-	-	-	0.8
3709/2/1	-	-	0.8	-	-	-	-	-	-	-	-	0.8

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sea fish for adults based on the 11 high-rate consumers is 37.1 kg y^{-1}

The observed 97.5th percentile rate based on 38 observations is 43.9 kg y^{-1}

Table 27. Adults' consumption rates of crustaceans from the Wylfa aquatic survey area (kg y^{-1})

Person ID number	Brown crab	Common lobster	Spiny spider crab	Total
3771/2/1	**-**	**5.4**	**-**	**5.4**
3661/3/1	**2.1**	**3.2**	**-**	**5.3**
3661/4/1	**2.1**	**3.2**	**-**	**5.3**
3709/2/1	**2.2**	**1.7**	**0.9**	**4.8**
3661/1/1	**1.6**	**2.6**	**-**	**4.2**
3786/1/1	0.7	1.1	-	1.8
3697/1/1	0.5	0.9	-	1.4
3697/3/1	0.5	0.9	-	1.4
3715/1/1	-	1.1	-	1.1
3715/2/1	-	1.1	-	1.1
3718/1/1	-	1.1	-	1.1
3718/2/1	-	1.1	-	1.1
3718/3/1	-	1.1	-	1.1
3718/4/1	-	1.1	-	1.1
3674/1/1	-	0.4	-	0.4
3674/2/1	-	0.4	-	0.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of crustaceans for adults based on the 5 high-rate consumers is 5.0 kg y^{-1}

The observed 97.5th percentile rate based on 16 observations is 5.3 kg y^{-1}

Table 28. Adults' consumption rates of molluscs from the Wylfa aquatic survey area (kg y^{-1})

Person ID number	Winkle
3729/14/1	0.3
3865/1/1	0.1
3865/2/1	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of molluscs for adults based on the 3 high-rate consumers is 0.2 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 0.3 kg y^{-1}

Table 29. Adults' consumption rates of marine plants/algae from the Wylfa aquatic survey area (kg y^{-1})

Person ID number	Samphire
3777/1/1	0.5

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of marine plants/algae for adults based on the 1 high-rate consumers is 0.5 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 30. Children's consumption rates of sea fish from the Wylfa aquatic survey area (kg y^{-1})

Person ID number	Age	Lesser spotted dogfish
3718/7/1	10	0.7
3718/6/1	6	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sea fish for the child age group based on the 2 high-rate consumers is 0.6 kg y^{-1}

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

Table 31. Infants' consumption rates of sea fish from the Wylfa aquatic survey area (kg y^{-1})

Person ID number	Age	Lesser spotted dogfish
3718/5/1	3	0.3

Notes
The emboldened observation is the high-rate consumer
The mean consumption rate of sea fish for the infant age group based on the 1 high-rate consumer is 0.3 kg y^{-1}
The observed 97.5th percentile is not applicable for 1 observation

Table 32. Children's consumption rates of crustaceans from the Wylfa aquatic survey area (kg y^{-1})

Person ID number	Age	Brown crab	Common lobster	Total
3661/6/1	6	1.2	1.9	3.2

Notes
The emboldened observation is the high-rate consumer
The mean consumption rate of crustaceans for the child age group based on the 1 high-rate consumer is 3.2 kg y^{-1}
The observed 97.5th percentile is not applicable for 1 observation

Table 33. Infants' consumption rates of crustaceans from the Wylfa aquatic survey area (kg y^{-1})

Person ID number	Age	Brown crab	Common lobster	Total
3661/5/1	1	0.4	0.6	1.1

Notes
The emboldened observation is the high-rate consumer
The mean consumption rate of crustaceans for the infant age group based on the 1 high-rate consumer is 1.1 kg y^{-1}
The observed 97.5th percentile is not applicable for 1 observation

Table 34. Children's consumption rates of molluscs from the Wylfa aquatic survey area (kg y^{-1})

Person ID number	Age	Winkle
3865/3/1	13	0.1
3865/4/1	11	0.1

Notes
Emboldened observations are the high-rate consumers
The mean consumption rate of molluscs for the child age group based on the 2 high-rate consumers is 0.1 kg y^{-1}
The observed 97.5th percentile rate based on 2 observations is 0.1 kg y^{-1}

Table 35. Adults' consumption rates of vegetables and domestic fruit grown on land where seaweed has been used as a fertiliser (kg y^{-1})

Green vegetables						
Person ID number	**Broccoli**	**Brussels sprout**	**Courgette**	**Lettuce**	**Marrow**	**Total**
3783/1/1	1.4	1.5	1.7	2.8	0.8	8.3
3783/2/1	1.4	1.5	1.7	2.8	0.8	8.3
3783/3/1	1.4	1.5	1.7	2.8	0.8	8.3
3783/4/1	0.6	0.6	0.7	1.2	0.4	3.5
3783/5/1	0.6	0.6	0.7	1.2	0.4	3.5

Other Vegetables					
Person ID number	**Broad bean**	**French bean**	**Sweetcorn**	**Tomato**	**Total**
3783/1/1	1.4	2.1	0.8	7.0	11.3
3783/2/1	1.4	2.1	0.8	7.0	11.3
3783/3/1	1.4	2.1	0.8	7.0	11.3
3783/4/1	0.6	0.9	0.3	3.0	4.8
3783/5/1	0.6	0.9	0.3	3.0	4.8

Root Vegetables							
Person ID number	**Beetroot**	**Carrot**	**Garlic**	**Onion**	**Shallot**	**Swede**	**Total**
3783/1/1	1.3	1.7	0.6	4.1	1.4	5.0	14.0
3783/2/1	1.3	1.7	0.6	4.1	1.4	5.0	14.0
3783/3/1	1.3	1.7	0.6	4.1	1.4	5.0	14.0
3783/4/1	0.5	0.7	0.2	1.8	0.6	2.1	6.0
3783/5/1	0.5	0.7	0.2	1.8	0.6	2.1	6.0

Potato	
Person ID number	**Potato**
3783/1/1	20.1
3783/2/1	20.1
3783/3/1	20.1
3783/4/1	8.6
3783/5/1	8.6

Domestic fruit			
Person ID number	**Gooseberry**	**Rhubarb**	**Total**
3783/1/1	0.4	2.8	3.2
3783/2/1	0.4	2.8	3.2
3783/3/1	0.4	2.8	3.2
3783/4/1	0.2	1.2	1.4
3783/5/1	0.2	1.2	1.4

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 the potential exposure is liquid discharge. However, these foods were grown in the terrestrial survey area and are also potentially exposed to gaseous discharges. Therefore, they are also included in the terrestrial groups and are included in Annex 1 as terrestrial foods.

Table 36. Infants' consumption rates of vegetables and domestic fruit grown on land where seaweed has been used as a fertiliser (kg y^{-1})

Green vegetables						
Person ID number	Broccoli	Brussels sprout	Courgette	Lettuce	Marrow	Total
3783/6/1	0.3	0.3	0.4	0.6	0.2	1.8
3783/7/1	0.3	0.3	0.4	0.6	0.2	1.8

Other vegetables					
Person ID number	Broad bean	French bean	Sweetcorn	Tomato	Total
3783/6/1	0.3	0.5	0.2	1.5	2.4
3783/7/1	0.3	0.5	0.2	1.5	2.4

Root vegetables						
Person ID number	Beetroot	Carrot	Garlic	Onion	Shallot	Swede	Total
3783/6/1	0.3	0.4	0.1	0.9	0.3	1.1	3.0
3783/7/1	0.3	0.4	0.1	0.9	0.3	1.1	3.0

Potato	
Person ID number	Potato
3783/6/1	4.3
3783/7/1	4.3

Domestic fruit			
Person ID number	Gooseberry	Rhubarb	Total
3783/6/1	0.1	0.6	0.7
3783/7/1	0.1	0.6	0.7

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 the potential exposure is liquid discharge. However, these foods were grown in the terrestrial survey area and are also potentially exposed to gaseous discharges. Therefore, they are also included in the terrestrial groups and are included in Annex 1 as terrestrial foods.

Table 37. Adults' intertidal occupancy rates in the Wylfa aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Mud and sand	Mud, sand and stones	Rock	Sand	Sand and stones	Stones
3864/1/1	**Cemaes Harbour**	**Boat maintenance**	**15**	-	-	-	-	-
3865/1/1	**Cemlyn Bay**	**Bait digging**	**7**	-	-	-	-	-
	Cemlyn Bay, Hen Borth and Porth yr Ogof	Angling	-	-	22	-	-	-
	Cemlyn Bay	Angling	-	-	-	-	-	4
3806/1/1	**Amlwch Harbour**	**Boat maintenance**	-	**26**	-	-	-	-
3787/1/1	Amlwch	Sitting on the beach	-	2	-	-	-	-
	Cemaes Bay		-	-	-	2	-	-
	Porth Padrig		-	-	-	-	2	-
	Bull Bay, Cemlyn Bay and Porth Wen		-	-	-	-	-	5
3746/2/1	**Cemaes Bay and Porth Wylfa**	**Rock pooling**	-	-	**521**	-	-	-
3768/1/1	**Porth Wnal and Porth-y-pistyll**	**Angling**	-	-	**235**	-	-	-
3770/3/1	Bull Bay	Angling	-	-	104	-	-	-
	Cemaes Bay		-	-	-	104	-	-
3658/1/1	Bull Bay	Angling	-	-	60	-	-	-
	Cemlyn Bay		-	-	-	-	-	60
3713/1/1	Llanbadrig Point	Angling	-	-	30	-	-	-
3713/2/1	Llanbadrig Point	Angling	-	-	30	-	-	-
3761/1/1	Llanbadrig Point	Angling	-	-	18	-	-	-
3658/2/1	Bull Bay	Angling	-	-	5	-	-	-
	Cemlyn Bay		-	-	-	-	-	5
3729/14/1	Cemlyn Bay	Collecting winkles	-	-	2	-	-	-
3769/1/1	**Cemaes Bay**	**Dog walking**	-	-	-	**979**	-	-

Person ID number	Location	Activity	Mud and sand	Mud, sand and stones	Rock	Sand	Sand and stones	Stones
3769/2/1	**Cemaes Bay**	**Dog walking**	-	-	-	**652**	-	-
3672/1/1	**Cemaes Bay**	**Dog walking**	-	-	-	**548**	-	-
3777/1/1	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3777/2/1	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3777/2/2	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3777/2/3	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3777/2/4	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3777/2/5	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3777/2/6	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3777/2/7	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3777/2/8	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3777/2/9	**Cemaes Bay**	**Sitting on the beach**	-	-	-	**521**	-	-
	Porth yr Ogof		-	-	-	-	-	52
3768/2/1	**Cemaes Bay**	**Dog walking**	-	-	-	**365**	-	-

Person ID number	Location	Activity	Mud and sand	Mud, sand and stones	Rock	Sand	Sand and stones	Stones
3786/1/1	Cemaes Bay	**Dog walking**	-	-	-	274	-	-
	Bull Bay		-	-	-	-	-	**274**
3786/2/1	Cemaes Bay	**Dog walking**	-	-	-	274	-	-
	Bull Bay		-	-	-	-	-	**274**
3788/1/1	Cemaes Bay	Beach warden duties and dog walking	-	-	-	163	-	-
	Cemlyn Bay and Bull Bay	**Dog walking**	-	-	-	-	-	**208**
3784/1/1	Cemaes Bay	Dog walking	-	-	-	137	-	-
3784/2/1	Cemaes Bay	Dog walking	-	-	-	137	-	-
3678/1/1	Cemaes Bay	Dog walking	-	-	-	117	-	-
3696/1/1	Cemaes Bay	**Dog walking**	-	-	-	95	-	-
	Porth Eilian		-	-	-	-	**95**	-
	Porth Wen		-	-	-	-	-	95
3790/1/1	Cemaes Bay	Dog walking	-	-	-	42	-	-
3790/2/1	Cemaes Bay	Dog walking	-	-	-	42	-	-
3667/1/1	Cemaes Bay	Dog walking	-	-	-	39	-	-
	Cemlyn Bay		-	-	-	-	-	39
3667/2/1	Cemaes Bay	Dog walking	-	-	-	29	-	-
	Cemlyn Bay		-	-	-	-	-	29
3674/1/1	Cemaes Bay	Dog walking and sitting on the beach	-	-	-	27	-	-
3674/2/1	Cemaes Bay	Dog walking and sitting on the beach	-	-	-	27	-	-
3789/1/1	Cemaes Bay	Playing	-	-	-	24	-	-
	Cemlyn Bay and Bull Bay		-	-	-	-	-	48

Person ID number	Location	Activity	Mud and sand	Mud, sand and stones	Rock	Sand	Sand and stones	Stones
3789/2/1	Cemaes Bay	Playing	-	-	-	24	-	-
	Cemlyn Bay and Bull Bay		-	-	-	-	-	48
3789/3/1	Cemaes Bay	Playing	-	-	-	24	-	-
	Cemlyn Bay and Bull Bay		-	-	-	-	-	48
3789/4/1	Cemaes Bay	Playing	-	-	-	24	-	-
	Cemlyn Bay and Bull Bay		-	-	-	-	-	48
3789/5/1	Cemaes Bay	Playing	-	-	-	24	-	-
	Cemlyn Bay and Bull Bay		-	-	-	-	-	48
3695/1/1	Cemaes Bay	Playing	-	-	-	14	-	-
	Cemlyn Bay	Walking	-	-	-	-	-	2
3695/3/1	Cemaes Bay	Playing	-	-	-	14	-	-
	Cemlyn Bay	Walking	-	-	-	-	-	2
3695/4/1	Cemaes Bay	Playing	-	-	-	14	-	-
	Cemlyn Bay	Walking	-	-	-	-	-	2
3722/1/1	Cemaes Bay	Sitting on the beach	-	-	-	12	-	-
	Porth yr Ogof, Porth Padrig and Porth Eilian		-	-	-	-	-	36
3710/1/1	Cemaes Bay	Dog walking	-	-	-	6	-	-
	Porth Wen		-	-	-	-	-	6
3660/1/1	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
	Porth Eilian		-	-	-	-	4	-
3671/1/1	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
3671/1/2	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
3671/1/3	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
3671/1/4	Cemaes Bay	Water sports preparation	-	-	-	4	-	-

Person ID number	Location	Activity	Mud and sand	Mud, sand and stones	Rock	Sand	Sand and stones	Stones
3671/1/5	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
3671/1/6	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
3671/1/7	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
3671/1/8	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
3671/1/9	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
3671/1/10	Cemaes Bay	Water sports preparation	-	-	-	4	-	-
3757/1/1	Cemaes Bay	Dog walking	-	-	-	4	-	-
3757/2/1	Cemaes Bay	Dog walking	-	-	-	4	-	-
3757/7/1	Cemaes Bay	Dog walking	-	-	-	4	-	-
3757/8/1	Cemaes Bay	Dog walking	-	-	-	4	-	-
3660/2/1	Cemaes Bay	Water sports preparation	-	-	-	1	-	-
	Porth Eilian		-	-	-	-	1	-
3660/3/1	Cemaes Bay	Water sports preparation	-	-	-	1	-	-
	Porth Eilian		-	-	-	-	1	-
3660/4/1	Cemaes Bay	Water sports preparation	-	-	-	1	-	-
	Porth Eilian		-	-	-	-	1	-
3863/1/1	**Porth-y-pistyll**	**Collecting seaweed and angling**	-	-	-	-	**100**	-
3718/1/1	**Porth Eilian**	**Sitting on the beach**	-	-	-	-	**46**	-
3718/2/1	**Porth Eilian**	**Sitting on the beach**	-	-	-	-	**46**	-
3718/3/1	**Porth Eilian**	**Sitting on the beach**	-	-	-	-	**46**	-
3718/4/1	**Porth Eilian**	**Sitting on the beach**	-	-	-	-	**46**	-
3719/1/1	**Porth Eilian**	**Dog walking**	-	-	-	-	**39**	-
3702/1/1	Porth Eilian	Sitting on the beach	-	-	-	-	18	-
3702/2/1	Porth Eilian	Sitting on the beach	-	-	-	-	18	-

Person ID number	Location	Activity	Mud and sand	Mud, sand and stones	Rock	Sand	Sand and stones	Stones
3702/3/1	Porth Eilian	Sitting on the beach	-	-	-	-	18	-
3707/1/1	Porth Eilian	Playing	-	-	-	-	10	-
3783/1/1	Hen Borth	Collecting seaweed	-	-	-	-	6	-
3783/2/1	Hen Borth	Collecting seaweed	-	-	-	-	6	-
3734/3/1	**Cemlyn Bay**	**Nature warden duties**	-	-	-	-	-	**523**
3734/1/1	**Cemlyn Bay**	**Nature warden duties**	-	-	-	-	-	**261**
3734/2/1	**Cemlyn Bay**	**Nature warden duties**	-	-	-	-	-	**261**
3664/1/1	**Cemlyn Bay**	**Dog walking**	-	-	-	-	-	**183**
3734/4/1	Cemlyn Bay	Nature warden duties	-	-	-	-	-	87
3747/1/1	Cemlyn Bay	Walking	-	-	-	-	-	72
3747/2/1	Cemlyn Bay	Walking	-	-	-	-	-	72
3747/3/1	Cemlyn Bay	Walking	-	-	-	-	-	72
3747/5/1	Cemlyn Bay	Walking	-	-	-	-	-	72
3700/1/1	Bull Bay	Sitting on the beach	-	-	-	-	-	18
3700/2/1	Bull Bay	Sitting on the beach	-	-	-	-	-	18
3700/3/1	Bull Bay	Sitting on the beach	-	-	-	-	-	18

Notes for Table 37

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over mud and sand for adults based on 2 high-rate observations is 11 h y^{-1}

The observed 97.5th percentile rate based on 2 observations is 15 h y^{-1}

The mean intertidal occupancy rate over mud, sand and stones for adults based on 1 high-rate observations is 26 h y^{-1}

The observed 97.5th percentile rate based on 2 observations is 26 h y^{-1}

The mean intertidal occupancy rate over rock for adults based on 2 high-rate observations is 378 h y^{-1}

The observed 97.5th percentile rate based on 10 observations is 457 h y^{-1}

The mean intertidal occupancy rate over sand for adults based on 14 high-rate observations is 554 h y^{-1}

The observed 97.5th percentile rate based on 57 observations is 610 h y^{-1}

The mean intertidal occupancy rate over sand and stones for adults based on 7 high-rate observations is 60 h y^{-1}

The observed 97.5th percentile rate based on 18 observations is 98 h y^{-1}

The mean intertidal occupancy rate over stones for adults based on 7 high-rate observations is 283 h y^{-1}

The observed 97.5th percentile rate based on 42 observations is 274 h y^{-1}

Table 38. Children's intertidal occupancy rates in the Wylfa aquatic survey area (h y^{-1})

Person ID number	Age	Location	Activity	Sand	Sand and stones	Stones
3786/3/1	**7**	**Cemaes Bay**	**Playing**	**92**	-	-
3786/3/1	**7**	**Bull Bay**	**Playing**	-	-	**92**
3718/6/1	**6**	**Porth Eilian**	**Sitting on the beach**	-	**46**	-
3718/7/1	**10**	**Porth Eilian**	**Sitting on the beach**	-	**46**	-
3707/2/1	11	Porth Eilian	Playing	-	10	-
3707/3/1	7	Porth Eilian	Playing	-	10	-
3747/4/1	**8**	**Cemlyn Bay**	**Walking**	-	-	**72**

Notes

Emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over sand for the child age group based on 1 high-rate observation is 92 h y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

The mean intertidal occupancy rate over sand and stones for the child age group based on 2 high-rate observations is 46 h y^{-1}

The observed 97.5th percentile rate based on 4 observations is 46 h y^{-1}

The mean intertidal occupancy rate over stones for the child age group based on 2 high-rate observations is 82 h y^{-1}

The observed 97.5th percentile rate based on 2 observations is 91 h y^{-1}

Table 39. Infants' intertidal occupancy rates in the Wylfa aquatic survey area (h y^{-1})

Person ID number	Age	Location	Activity	Sand	Sand and stones	Stones
3786/4/1	**4**	**Cemaes Bay**	**Playing**	**92**	-	-
3786/4/1	**4**	**Bull Bay**	**Playing**	-	-	**92**
3695/2/1	5	Cemaes Bay	Playing	14	-	-
3695/2/1	5	Cemlyn Bay	Walking	-	-	2
3757/9/1	3	Cemaes Bay	Dog walking	4	-	-
3718/5/1	**3**	**Porth Eilian**	**Sitting on the beach**	-	**46**	-

Notes for Table 39
Emboldened observations are the high-rate individuals
The mean intertidal occupancy rate over sand for the infant age group based on 1 high-rate observations is 92 h y^{-1}
The observed 97.5th percentile rate based on 3 observations is 88 h y^{-1}
The mean intertidal occupancy rate over sand and stones for the infant age group based on 1 high-rate observation is 46 h y^{-1}
The observed 97.5th percentile is not applicable for 1 observation
The mean intertidal occupancy rate over stones for the infant age group based on 1 high-rate observations is 92 h y^{-1}
The observed 97.5th percentile rate based on 2 observations is 89 h y^{-1}

Table 40. Gamma dose rate measurements over intertidal substrates in the Wylfa aquatic survey area (µGy h^{-1})

Location	National Grid Reference	Substrate	Gamma dose rate at 1m[a]
Cemlyn Bay	SH 330 936	Stones	0.074
Cemlyn Bay East	SH 335 931	Stones	0.066
Porth Padrig	SH 375 943	Sand and stones	0.071
Cemaes Harbour	SH 372 935	Mud, sand and stones	0.096
Bull Bay	SH 426 943	Stones	0.092
Porth Eilian	SH 476 929	Stones	0.080
Porth Wen	SH 402 946	Stones	0.072
Cemaes Beach	SH 373 936	Sand	0.059
Porth Yr Ogof	SH 356 941	Stones	0.061
Hen Borth	SH 319 928	Stones	0.072

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

Table 41. Adults' handling rates of fishing gear and sediment in the Wylfa aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Fishing gear	Sediment
3661/1/1	**Various locations throughout the survey area**	**Potting and gill netting**	**1189**	**-**
3661/2/1	**Various locations throughout the survey area**	**Potting and gill netting**	**1189**	**-**
3864/1/1	**Various locations throughout the survey area**	**Potting**	**626**	**-**
3714/1/1	Various locations throughout the survey area	Potting	288	-
3721/1/1	Various locations throughout the survey area	Potting	275	-
3718/1/1	Various locations throughout the survey area	Potting	157	-
3864/2/1	Various locations throughout the survey area	Potting	42	-
3865/1/1	**Cemlyn Bay**	**Bait digging**	**-**	**7**
3729/14/1	Cemlyn Bay	Collecting winkles	-	2

Notes

Emboldened observations are the high-rate individuals

The mean handling rate of fishing gear for adults based on 3 high-rate observations is 1002 h y^{-1}

The observed 97.5th percentile rate based on 7 observations is 1189 h y^{-1}

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

The observed 97.5th percentile rate based on 2 observations is 7 h y^{-1}

Table 42. Adults' occupancy rates in and on water in the Wylfa aquatic survey area (h y^{-1})

Person ID number	Location	Activity	In water	On water
3705/1/1	Bull Bay and various locations throughout the survey area	Kayaking	522	-
3705/2/1	Bull Bay and various locations throughout the survey area	Kayaking	522	-
3705/2/2	Bull Bay and various locations throughout the survey area	Kayaking	522	-
3777/1/1	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3777/2/1	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3777/2/2	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3777/2/3	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3777/2/4	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3777/2/5	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3777/2/6	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3777/2/7	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3777/2/8	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3777/2/9	Cemaes Bay and Porth yr Ogof	Swimming	313	-
3788/1/1	Bull Bay	Jet skiing, kayaking and paddle boarding	261	-
3788/2/1	Bull Bay	Jet skiing, kayaking and paddle boarding	261	-
3727/1/1	Cemaes Bay	Swimming	209	-
3706/1/1	Bull Bay, Porth Eilian and various locations throughout the survey area	Kayaking	193	-
3789/3/1	Bull Bay, Cemaes Bay and Cemlyn Bay	Swimming	144	-
3659/1/1	Point Lynas and various locations throughout the survey area	Snorkelling and kayaking	127	-
3773/1/1	Porth Wen and Bull Bay	Swimming and kayaking	127	-
3746/2/1	Cemaes Bay and Porth Wylfa	Swimming	104	-
3698/2/1	Bull Bay, Porth Eilian, Porth Wen and various locations throughout the survey area	Pleasure cruising, rowing, swimming and sub-aqua diving	67	45
3806/1/1	Bull Bay and various locations throughout the survey area	Boat angling, kayaking and swimming	65	235
3806/2/1	Bull Bay and various locations throughout the survey area	Boat angling, kayaking and swimming	65	235
3673/1/1	Various locations throughout the survey area	Kayaking	60	-

Person ID number	Location	Activity	In water	On water
3673/2/1	Various locations throughout the survey area	Kayaking	60	-
3673/3/1	Various locations throughout the survey area	Kayaking	60	-
3660/1/1	Cemaes Bay and Point Lynas	Kayaking	56	-
3698/1/1	Various locations throughout the survey area	Sub-aqua diving and pleasure cruising	55	20
3698/1/2	Various locations throughout the survey area	Sub-aqua diving and pleasure cruising	55	20
3698/1/3	Various locations throughout the survey area	Sub-aqua diving and pleasure cruising	55	20
3698/1/4	Various locations throughout the survey area	Sub-aqua diving and pleasure cruising	55	20
3698/1/5	Various locations throughout the survey area	Sub-aqua diving and pleasure cruising	55	20
3698/1/6	Various locations throughout the survey area	Sub-aqua diving and pleasure cruising	55	20
3863/1/1	Porth-y-pistyll	Kayaking	54	-
3863/2/1	Porth-y-pistyll	Kayaking	54	-
3670/1/1	Cemaes Bay	Kayaking and paddle boarding	45	-
3670/2/1	Cemaes Bay	Kayaking and paddle boarding	45	-
3722/1/1	Cemaes Bay, Porth Eilian, Porth Padrig and Porth yr Ogof	Swimming	36	-
3707/1/1	Bull Bay	Kayaking	24	-
3703/1/1	Porth Eilian	Jet skiing and boat angling	20	27
3703/2/1	Porth Eilian	Jet skiing and boat angling	20	27
3703/3/1	Porth Eilian	Jet skiing and boat angling	20	27
3671/1/1	Various locations throughout the survey area	Kayaking	20	-
3671/1/2	Various locations throughout the survey area	Kayaking	20	-
3671/1/3	Various locations throughout the survey area	Kayaking	20	-
3671/1/4	Various locations throughout the survey area	Kayaking	20	-
3671/1/5	Various locations throughout the survey area	Kayaking	20	-
3671/1/6	Various locations throughout the survey area	Kayaking	20	-
3671/1/7	Various locations throughout the survey area	Kayaking	20	-
3671/1/8	Various locations throughout the survey area	Kayaking	20	-

Person ID number	Location	Activity	In water	On water
3671/1/9	Various locations throughout the survey area	Kayaking	20	-
3671/1/10	Various locations throughout the survey area	Kayaking	20	-
3762/1/1	Cemaes Bay	Swimming and paddle boarding	20	-
3762/3/1	Cemaes Bay	Paddle boarding	10	-
3660/2/1	Cemaes Bay and Point Lynas	Kayaking	8	-
3660/3/1	Cemaes Bay and Point Lynas	Kayaking	8	-
3660/4/1	Cemaes Bay and Point Lynas	Kayaking	8	-
3768/2/1	Cemaes Bay	Swimming	6	-
3787/1/1	Cemlyn Bay, Cemaes Bay, Porth Wen, Porth Padrig, Bull Bay and Amlwch	Swimming	6	-
3700/1/1	Bull Bay	Kayaking	6	-
3700/2/1	Bull Bay	Kayaking	6	-
3700/3/1	Bull Bay	Kayaking	6	-
3702/1/1	Porth Eilian	Paddle boarding	5	-
3702/2/1	Porth Eilian	Paddle boarding	5	-
3702/3/1	Porth Eilian	Paddle boarding	5	-
3661/1/1	Various locations throughout the survey area	Gill netting and potting	-	2196
3661/2/1	Various locations throughout the survey area	Gill netting and potting	-	2196
3715/1/1	Various locations throughout the survey area	Charter boat duties	-	901
3864/1/1	Cemaes Harbour and various locations throughout the survey area	Potting and pleasure cruising	-	745
3721/1/1	Various locations throughout the survey area	Potting	-	412
3718/1/1	Various locations throughout the survey area	Potting and boat angling	-	352
3714/1/1	Various locations throughout the survey area	Potting	-	300
3865/1/1	Various locations throughout the survey area	Boat angling	-	255
3697/1/1	Various locations throughout the survey area	Pleasure cruising	-	204
3694/1/1	Various locations throughout the survey area	Charter boat duties	-	120
3771/1/1	Various locations throughout the survey area	Boat angling	-	120

Person ID number	Location	Activity	In water	On water
3771/2/1	Various locations throughout the survey area	Boat angling	-	120
3697/2/1	Various locations throughout the survey area	Pleasure cruising	-	102
3697/2/2	Various locations throughout the survey area	Pleasure cruising	-	102
3697/2/3	Various locations throughout the survey area	Pleasure cruising	-	102
3697/2/4	Various locations throughout the survey area	Pleasure cruising	-	102
3709/1/1	Various locations throughout the survey area	Rowing	-	91
3709/2/1	Various locations throughout the survey area	Rowing	-	91
3694/2/1	Various locations throughout the survey area	Boat angling	-	54
3864/2/1	Various locations throughout the survey area	Potting	-	49
3772/1/1	Various locations throughout the survey area	Pleasure cruising	-	30
3772/1/2	Various locations throughout the survey area	Pleasure cruising	-	30
3772/1/3	Various locations throughout the survey area	Pleasure cruising	-	30
3772/1/4	Various locations throughout the survey area	Pleasure cruising	-	30
3772/1/5	Various locations throughout the survey area	Pleasure cruising	-	30
3772/1/6	Various locations throughout the survey area	Pleasure cruising	-	30
3772/2/1	Various locations throughout the survey area	Pleasure cruising	-	30
3772/2/2	Various locations throughout the survey area	Pleasure cruising	-	30
3770/3/1	Cemaes Bay, Cemlyn Bay and Bull Bay	Boat angling	-	30
3691/1/1	Bull Bay and Cemaes Bay	Pleasure cruising	-	14
3691/2/1	Cemaes Bay and Bull Bay	Pleasure cruising	-	14
3693/1/1	Cemaes Bay, Porth Wen and Point Lynas	Boat angling	-	12
3695/1/1	Cemaes Bay	Paddling	-	2
3695/3/1	Cemaes Bay	Paddling	-	2
3695/4/1	Cemaes Bay	Paddling	-	2

Table 43. Children's occupancy rates in and on water in the Wylfa aquatic survey area (h y^{-1})

Person ID number	Age	Location	Activity	In water	On water
3762/2/1	9	Cemaes Bay	Paddle boarding and swimming	20	-
3786/3/1	7	Cemaes Bay and Bull Bay	Paddling	-	92
3865/3/1	13	Various locations throughout the survey area	Boat angling	-	20

Table 44. Infants' occupancy rates on water in the Wylfa aquatic survey area (h y^{-1})

Person ID number	Age	Location	Activity	On water
3786/4/1	4	Cemaes Bay and Bull Bay	Paddling	92
3695/2/1	5	Cemaes Bay	Paddling	2

Table 45. Adults' consumption rates of green vegetables from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Artichoke	Asparagus	Broccoli	Brussels sprout	Cabbage	Cauliflower	Chard	Courgette	Cucumber	Kale	Lettuce	Marrow	Spinach	Total
3781/1/1	**-**	**-**	**2.4**	**-**	**3.1**	**0.9**	**2.1**	**10.8**	**7.7**	**5.3**	**3.6**	**-**	**0.1**	**36.1**
3781/2/1	**-**	**-**	**2.4**	**-**	**3.1**	**0.9**	**2.1**	**10.8**	**7.7**	**5.3**	**3.6**	**-**	**0.1**	**36.1**
3780/1/1	**-**	**-**	**-**	**0.9**	**-**	**1.7**	**7.9**	**3.7**	**4.3**	**-**	**-**	**-**	**-**	**18.5**
3780/2/1	**-**	**-**	**-**	**0.9**	**-**	**1.7**	**7.9**	**3.7**	**4.3**	**-**	**-**	**-**	**-**	**18.5**
3863/1/1	**1.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7.3**	**-**	**4.0**	**-**	**-**	**12.9**
3863/2/1	**1.6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7.3**	**-**	**4.0**	**-**	**-**	**12.9**
3725/1/1	-	-	-	-	-	1.4	-	7.4	-	-	2.0	-	-	10.7
3725/2/1	-	-	-	-	-	1.4	-	7.4	-	-	2.0	-	-	10.7
3761/1/1	-	-	3.4	2.7	2.1	1.7	-	-	-	-	-	-	-	10.0
3761/2/1	-	-	3.4	2.7	2.1	1.7	-	-	-	-	-	-	-	10.0
3783/1/1	-	-	1.4	1.5	-	-	-	1.7	-	-	2.8	0.8	-	8.3
3783/2/1	-	-	1.4	1.5	-	-	-	1.7	-	-	2.8	0.8	-	8.3
3783/3/1	-	-	1.4	1.5	-	-	-	1.7	-	-	2.8	0.8	-	8.3
3865/1/1	-	-	-	-	-	-	-	2.4	3.4	-	-	-	-	5.8
3865/2/1	-	-	-	-	-	-	-	2.4	3.4	-	-	-	-	5.8
3784/1/1	-	-	-	-	-	-	-	5.5	0.1	-	-	-	-	5.6
3784/2/1	-	-	-	-	-	-	-	5.5	0.1	-	-	-	-	5.6
3760/1/1	-	-	-	-	-	-	0.3	-	2.8	-	1.7	-	-	4.8
3760/2/1	-	-	-	-	-	-	0.3	-	2.8	-	1.7	-	-	4.8
3760/3/1	-	-	-	-	-	-	0.3	-	2.8	-	1.7	-	-	4.8
3760/4/1	-	-	-	-	-	-	0.3	-	2.8	-	1.7	-	-	4.8

Person ID number	Artichoke	Asparagus	Broccoli	Brussels sprout	Cabbage	Cauliflower	Chard	Courgette	Cucumber	Kale	Lettuce	Marrow	Spinach	Total
3760/5/1	-	-	-	-	-	-	0.3	-	2.8	-	1.7	-	-	4.8
3760/6/1	-	-	-	-	-	-	0.3	-	2.8	-	1.7	-	-	4.8
3783/4/1	-	-	0.6	0.6	-	-	-	0.7	-	-	1.2	0.4	-	3.5
3783/5/1	-	-	0.6	0.6	-	-	-	0.7	-	-	1.2	0.4	-	3.5
3716/1/1	-	0.5	1.0	-	-	-	-	-	0.5	-	-	-	-	2.0
3752/1/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3752/2/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3752/3/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3752/4/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3752/5/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3752/6/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3752/7/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3752/9/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3752/10/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3752/12/1	-	-	-	-	-	-	-	-	-	-	0.6	-	-	0.6
3757/1/1	-	-	-	-	-	-	-	-	0.4	-	-	-	-	0.4
3757/2/1	-	-	-	-	-	-	-	-	0.4	-	-	-	-	0.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for adults based on the 6 high-rate consumers is 22.5 kg y^{-1}

The observed 97.5th percentile rate based on 38 observations is 36.1 kg y^{-1}

Table 46. Adults' consumption rates of other vegetables from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Broad bean	French bean	Mangetout	Pea	Pumpkin	Runner bean	Squash	Sweetcorn	Tomato	Total
3865/1/1	**2.3**	**4.5**	**-**	**4.5**	**-**	**4.5**	**5.4**	**-**	**7.9**	**29.3**
3865/2/1	**2.3**	**4.5**	**-**	**4.5**	**-**	**4.5**	**5.4**	**-**	**7.9**	**29.3**
3781/1/1	**1.8**	**1.6**	**-**	**1.8**	**1.8**	**0.9**	**14.3**	**5.2**	**1.4**	**28.7**
3781/2/1	**1.8**	**1.6**	**-**	**1.8**	**1.8**	**0.9**	**14.3**	**5.2**	**1.4**	**28.7**
3760/1/1	**1.4**	**0.9**	**-**	**-**	**-**	**4.3**	**-**	**-**	**18.0**	**24.5**
3760/2/1	**1.4**	**0.9**	**-**	**-**	**-**	**4.3**	**-**	**-**	**18.0**	**24.5**
3760/3/1	**1.4**	**0.9**	**-**	**-**	**-**	**4.3**	**-**	**-**	**18.0**	**24.5**
3760/4/1	**1.4**	**0.9**	**-**	**-**	**-**	**4.3**	**-**	**-**	**18.0**	**24.5**
3760/5/1	**1.4**	**0.9**	**-**	**-**	**-**	**4.3**	**-**	**-**	**18.0**	**24.5**
3760/6/1	**1.4**	**0.9**	**-**	**-**	**-**	**4.3**	**-**	**-**	**18.0**	**24.5**
3761/1/1	**1.4**	**0.9**	**-**	**0.1**	**16.5**	**2.6**	**-**	**0.7**	**-**	**22.1**
3761/2/1	**1.4**	**0.9**	**-**	**0.1**	**16.5**	**2.6**	**-**	**0.7**	**-**	**22.1**
3784/1/1	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**21.6**	**21.6**
3784/2/1	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**21.6**	**21.6**
3732/1/1	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**14.4**	**14.4**
3783/1/1	**1.4**	**2.1**	**-**	**-**	**-**	**-**	**-**	**0.8**	**7.0**	**11.3**
3783/2/1	**1.4**	**2.1**	**-**	**-**	**-**	**-**	**-**	**0.8**	**7.0**	**11.3**
3783/3/1	**1.4**	**2.1**	**-**	**-**	**-**	**-**	**-**	**0.8**	**7.0**	**11.3**
3770/1/1	-	-	-	0.3	-	-	-	-	7.2	7.5
3770/2/1	-	-	-	0.3	-	-	-	-	7.2	7.5
3770/3/1	-	-	-	0.3	-	-	-	-	7.2	7.5
3783/4/1	0.6	0.9	-	-	-	-	-	0.3	3.0	4.8
3783/5/1	0.6	0.9	-	-	-	-	-	0.3	3.0	4.8

Person ID number	Broad bean	French bean	Mangetout	Pea	Pumpkin	Runner bean	Squash	Sweetcorn	Tomato	Total
3757/1/1	-	-	-	0.5	-	0.5	-	-	1.8	2.8
3757/2/1	-	-	-	0.5	-	0.5	-	-	1.8	2.8
3780/1/1	0.5	-	-	-	-	-	-	-	2.3	2.7
3780/2/1	0.5	-	-	-	-	-	-	-	2.3	2.7
3863/1/1	-	-	-	-	-	-	-	-	2.0	2.0
3863/2/1	-	-	-	-	-	-	-	-	2.0	2.0
3716/1/1	-	0.5	-	0.5	-	-	-	-	0.5	1.5
3752/1/1	-	-	-	-	-	-	-	-	1.0	1.0
3752/2/1	-	-	-	-	-	-	-	-	1.0	1.0
3752/3/1	-	-	-	-	-	-	-	-	1.0	1.0
3752/4/1	-	-	-	-	-	-	-	-	1.0	1.0
3752/5/1	-	-	-	-	-	-	-	-	1.0	1.0
3752/6/1	-	-	-	-	-	-	-	-	1.0	1.0
3752/7/1	-	-	-	-	-	-	-	-	1.0	1.0
3752/9/1	-	-	-	-	-	-	-	-	1.0	1.0
3752/10/1	-	-	-	-	-	-	-	-	1.0	1.0
3752/12/1	-	-	-	-	-	-	-	-	1.0	1.0
3725/1/1	-	-	0.7	-	-	-	-	-	-	0.7
3725/2/1	-	-	0.7	-	-	-	-	-	-	0.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables for adults based on the 18 high-rate consumers is 22.2 kg y^{-1}

The observed 97.5th percentile rate based on 42 observations is 29.2 kg y^{-1}

Table 47. Adults' consumption rates of root vegetables from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Beetroot	Carrot	Celery	Chicory root	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Sweet potato	Turnip	Total
3781/1/1	**2.4**	**-**	**-**	**0.8**	**-**	**0.1**	**27.0**	**9.9**	**2.4**	**1.0**	**-**	**-**	**3.7**	**-**	**1.9**	**49.2**
3781/2/1	**2.4**	**-**	**-**	**0.8**	**-**	**0.1**	**27.0**	**9.9**	**2.4**	**1.0**	**-**	**-**	**3.7**	**-**	**1.9**	**49.2**
3865/1/1	**13.5**	**16.9**	**-**	**-**	**-**	**-**	**-**	**7.9**	**6.8**	**-**	**-**	**-**	**-**	**-**	**-**	**45.1**
3865/2/1	**13.5**	**16.9**	**-**	**-**	**-**	**-**	**-**	**7.9**	**6.8**	**-**	**-**	**-**	**-**	**-**	**-**	**45.1**
3783/1/1	1.3	1.7	-	-	-	0.6	-	4.1	-	-	1.4	-	5.0	-	-	14.0
3783/2/1	1.3	1.7	-	-	-	0.6	-	4.1	-	-	1.4	-	5.0	-	-	14.0
3783/3/1	1.3	1.7	-	-	-	0.6	-	4.1	-	-	1.4	-	5.0	-	-	14.0
3761/1/1	1.5	0.4	-	-	1.0	-	5.0	4.9	-	-	0.5	-	-	-	-	13.4
3761/2/1	1.5	0.4	-	-	1.0	-	5.0	4.9	-	-	0.5	-	-	-	-	13.4
3760/1/1	4.5	-	-	-	-	-	1.2	2.6	-	-	-	0.1	-	3.3	-	11.7
3760/2/1	4.5	-	-	-	-	-	1.2	2.6	-	-	-	0.1	-	3.3	-	11.7
3760/3/1	4.5	-	-	-	-	-	1.2	2.6	-	-	-	0.1	-	3.3	-	11.7
3760/4/1	4.5	-	-	-	-	-	1.2	2.6	-	-	-	0.1	-	3.3	-	11.7
3760/5/1	4.5	-	-	-	-	-	1.2	2.6	-	-	-	0.1	-	3.3	-	11.7
3760/6/1	4.5	-	-	-	-	-	1.2	2.6	-	-	-	0.1	-	3.3	-	11.7
3732/1/1	-	-	-	-	-	-	-	6.6	-	-	-	-	-	-	4.3	10.9
3863/1/1	-	-	3.0	-	-	-	-	5.0	-	-	-	-	-	-	-	8.0
3863/2/1	-	-	3.0	-	-	-	-	5.0	-	-	-	-	-	-	-	8.0
3783/4/1	0.5	0.7	-	-	-	0.2	-	1.8	-	-	0.6	-	2.1	-	-	6.0
3783/5/1	0.5	0.7	-	-	-	0.2	-	1.8	-	-	0.6	-	2.1	-	-	6.0
3780/1/1	3.8	-	-	-	-	0.2	-	1.6	-	-	-	0.2	-	-	-	5.8
3780/2/1	3.8	-	-	-	-	0.2	-	1.6	-	-	-	0.2	-	-	-	5.8

Person ID number	Beetroot	Carrot	Celery	Chicory root	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Sweet potato	Turnip	Total
3774/1/1	1.5	0.9	-	-	-	-	-	2.2	-	-	-	-	-	-	-	4.6
3774/2/1	1.5	0.9	-	-	-	-	-	2.2	-	-	-	-	-	-	-	4.6
3770/1/1	-	-	-	-	-	-	-	2.9	-	-	-	-	-	-	-	2.9
3770/2/1	-	-	-	-	-	-	-	2.9	-	-	-	-	-	-	-	2.9
3770/3/1	-	-	-	-	-	-	-	2.9	-	-	-	-	-	-	-	2.9
3789/1/1	-	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	2.2
3789/2/1	-	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	2.2
3789/3/1	-	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	2.2
3789/4/1	-	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	2.2
3789/5/1	-	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	2.2
3757/1/1	0.5	-	-	-	-	-	-	1.3	-	-	-	-	-	-	-	1.8
3757/2/1	0.5	-	-	-	-	-	-	1.3	-	-	-	-	-	-	-	1.8

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables for adults based on the 4 high-rate consumers is 47.2 kg y^{-1}

The observed 97.5th percentile rate based on 34 observations is 49.2 kg y^{-1}

Table 48. Adults' consumption rates of potato from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Potato
3865/1/1	**56.0**
3865/2/1	**56.0**
3732/1/1	**54.6**
3783/1/1	**20.1**
3783/2/1	**20.1**
3783/3/1	**20.1**
3725/2/1	15.0
3761/1/1	12.5
3761/2/1	12.5
3863/1/1	12.5
3863/2/1	12.5
3760/1/1	9.1
3760/2/1	9.1
3760/3/1	9.1
3760/4/1	9.1
3760/5/1	9.1
3760/6/1	9.1
3780/1/1	9.1
3780/2/1	9.1
3752/1/1	9.1
3752/2/1	9.1
3752/3/1	9.1
3752/4/1	9.1
3752/5/1	9.1
3752/6/1	9.1
3752/7/1	9.1
3752/9/1	9.1
3752/10/1	9.1
3752/12/1	9.1
3783/4/1	8.6
3783/5/1	8.6
3781/1/1	6.9
3781/2/1	6.9
3784/1/1	5.0
3784/2/1	5.0
3774/1/1	3.4
3774/2/1	3.4
3729/14/1	1.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato for adults based on the 6 high-rate consumers is 37.8 kg y^{-1}

The observed 97.5th percentile rate based on 38 observations is 56.0 kg y^{-1}

Table 49. Adults' consumption rates of domestic fruit from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Apple	Blackberry	Blackcurrant	Blueberry	Fig	Gooseberry	Grapes	Lemon	Loganberry	Melon	Peach	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	White currant	Total
3865/1/1	**10.2**	**4.5**	**-**	**-**	**-**	**3.4**	**-**	**-**	**0.5**	**-**	**-**	**4.0**	**-**	**2.3**	**0.2**	**4.5**	**5.7**	**-**	**35.3**
3865/2/1	**10.2**	**4.5**	**-**	**-**	**-**	**3.4**	**-**	**-**	**0.5**	**-**	**-**	**4.0**	**-**	**2.3**	**0.2**	**4.5**	**5.7**	**-**	**35.3**
3863/1/1	**5.0**	**-**	**-**	**1.0**	**-**	**2.0**	**-**	**-**	**-**	**-**	**-**	**5.0**	**-**	**1.0**	**-**	**3.0**	**3.8**	**-**	**20.8**
3863/2/1	**5.0**	**-**	**-**	**1.0**	**-**	**2.0**	**-**	**-**	**-**	**-**	**-**	**5.0**	**-**	**1.0**	**-**	**3.0**	**3.8**	**-**	**20.8**
3757/2/1	**3.0**	**-**	**-**	**-**	**-**	**-**	**6.4**	**0.4**	**-**	**-**	**0.3**	**-**	**-**	**-**	**-**	**0.5**	**3.0**	**-**	**13.5**
3780/1/1	5.0	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	3.4	0.5	-	10.7
3780/2/1	5.0	-	-	-	-	-	-	-	-	-	-	-	-	1.8	-	3.4	0.5	-	10.7
3757/1/1	3.0	-	-	-	-	-	1.6	0.4	-	-	0.3	-	-	-	-	0.5	3.0	-	8.7
3774/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	-	6.8
3774/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	-	6.8
3716/1/1	-	-	0.5	-	2.0	-	-	-	-	-	-	0.5	1.0	0.8	-	-	0.5	-	5.3
3754/1/1	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0
3754/2/1	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0
3783/1/1	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	2.8	-	-	3.2
3783/2/1	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	2.8	-	-	3.2
3783/3/1	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	2.8	-	-	3.2
3781/1/1	-	-	0.1	-	-	0.3	-	-	-	-	-	-	-	0.3	0.5	0.5	-	0.5	2.3
3781/2/1	-	-	0.1	-	-	0.3	-	-	-	-	-	-	-	0.3	0.5	0.5	-	0.5	2.3
3768/2/1	0.3	-	-	-	-	-	-	-	-	-	-	0.7	0.7	-	-	0.3	-	-	2.1
3757/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	1.5

Person ID number	Apple	Blackberry	Blackcurrant	Blueberry	Fig	Gooseberry	Grapes	Lemon	Loganberry	Melon	Peach	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	White currant	Total
3757/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	1.5
3783/4/1	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	1.2	-	-	1.4
3783/5/1	-	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	1.2	-	-	1.4
3768/1/1	0.3	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	0.3	-	-	1.3
3770/1/1	0.2	-	-	-	-	0.3	-	-	-	0.6	-	-	-	-	-	-	0.2	-	1.3
3770/2/1	0.2	-	-	-	-	0.3	-	-	-	0.6	-	-	-	-	-	-	0.2	-	1.3
3770/3/1	0.2	-	-	-	-	0.3	-	-	-	0.6	-	-	-	-	-	-	0.2	-	1.3
3761/1/1	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	1.0	-	-	1.3
3761/2/1	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	1.0	-	-	1.3
3729/14/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	1.0
3752/1/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3752/2/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3752/3/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3752/4/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3752/5/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3752/6/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3752/7/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3752/9/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3752/10/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3752/12/1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.8
3753/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6
3753/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6

Person ID number	Apple	Blackberry	Blackcurrant	Blueberry	Fig	Gooseberry	Grapes	Lemon	Loganberry	Melon	Peach	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	White currant	Total
3753/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6
3753/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6
3753/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6
3753/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6
3753/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6
3753/8/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6
3753/9/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6
3753/10/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6
3784/1/1	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	0.5
3784/2/1	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	0.5
3749/1/1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
3749/2/1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
3760/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.3
3760/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.3
3760/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.3
3760/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.3
3760/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.3
3760/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	0.3

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for adults based on the 5 high-rate consumers is 25.1 kg y^{-1}

The observed 97.5th percentile rate based on 60 observations is 28.4 kg y^{-1}

Table 50. Adults' consumption rates of milk from the Wylfa terrestrial survey area (l y^{-1})

Person ID number	Cows' milk
3779/3/1	**103.7**
3779/4/1	**103.7**
3779/7/1	**88.8**
3784/1/1	**72.0**
3784/2/1	**72.0**
3752/1/1	**66.4**
3752/2/1	**66.4**
3752/3/1	**66.4**
3752/4/1	**66.4**
3752/5/1	**66.4**
3752/6/1	**66.4**
3752/7/1	**66.4**
3752/9/1	**66.4**
3752/10/1	**66.4**
3779/1/1	**44.4**
3779/2/1	**44.4**
3716/1/1	29.6
3736/1/1	14.8
3736/2/1	14.8
3747/1/1	13.5
3747/2/1	13.5
3747/3/1	13.5
3747/5/1	13.5
3775/1/1	12.8
3775/2/1	12.8
3746/1/1	8.7
3746/2/1	8.7
3746/3/1	8.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk for adults based on the 16 high-rate consumers is 70.4 l y^{-1}

The observed 97.5th percentile rate based on 28 observations is 103.7 kg y^{-1}

Table 51. Adults' consumption rates of cattle meat from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Beef
3785/1/1	41.7
3785/1/2	41.7
3785/1/3	41.7
3785/1/4	41.7
3785/1/5	41.7
3785/1/6	41.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of cattle meat for adults based on the 6 high-rate consumers is 41.7 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 41.7 kg y^{-1}

Table 52. Adults' consumption rates of pig meat from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Pork
3784/1/1	20.9
3784/2/1	20.9

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of pig meat for adults based on the 2 high-rate consumers is 20.9 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 20.9 kg y^{-1}

Table 53. Adults' consumption rates of sheep meat from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Lamb
3729/14/1	**20.0**
3784/3/1	**10.0**
3784/1/1	5.0
3784/2/1	5.0
3729/1/1	2.7
3729/2/1	2.7
3729/3/1	2.7
3729/4/1	2.7
3729/5/1	2.7
3729/6/1	2.7
3753/1/1	1.0
3753/2/1	1.0
3753/3/1	1.0
3753/4/1	1.0
3753/5/1	1.0
3753/6/1	1.0
3753/7/1	1.0
3753/8/1	1.0
3753/9/1	1.0
3753/10/1	1.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sheep meat for adults based on the 2 high-rate consumers is 15.0 kg y^{-1}

The observed 97.5th percentile rate based on 20 observations is 15.2 kg y^{-1}

Table 54. Adults' consumption rates of poultry from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Chicken	Duck	Goose	Pheasant	Total
3863/1/1	**21.0**	**0.9**	**1.1**	**-**	**23.0**
3863/2/1	1.5	0.9	1.1	-	3.5
3784/1/1	1.1	-	-	-	1.1
3784/2/1	1.1	-	-	-	1.1
3751/1/1	-	-	-	0.4	0.4

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of poultry for adults based on the 1 high-rate consumers is 23.0 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 21.1 kg y^{-1}

Table 55. Adults' consumption rates of eggs from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Chicken egg	Goose egg	Total
3863/1/1	**33.5**	**0.2**	**33.6**
3863/2/1	**33.5**	**0.2**	**33.6**
3784/1/1	**17.8**	**-**	**17.8**
3784/2/1	**17.8**	**-**	**17.8**
3770/1/1	**11.9**	**-**	**11.9**
3770/2/1	**11.9**	**-**	**11.9**
3770/3/1	**11.9**	**-**	**11.9**
3775/1/1	9.5	-	9.5
3775/2/1	9.5	-	9.5
3754/1/1	8.9	-	8.9
3754/2/1	8.9	-	8.9
3723/1/1	8.3	-	8.3
3723/2/1	8.3	-	8.3
3757/1/1	8.2	-	8.2
3757/2/1	8.2	-	8.2
3752/1/1	8.2	-	8.2
3752/2/1	8.2	-	8.2
3752/3/1	8.2	-	8.2
3752/4/1	8.2	-	8.2
3752/5/1	8.2	-	8.2
3752/6/1	8.2	-	8.2
3752/7/1	8.2	-	8.2
3752/9/1	8.2	-	8.2
3752/10/1	8.2	-	8.2
3752/12/1	8.2	-	8.2
3716/1/1	5.9	-	5.9
3783/1/1	3.8	-	3.8
3783/2/1	3.8	-	3.8
3783/3/1	3.8	-	3.8

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for adults based on the 7 high-rate consumers is 19.8 kg y^{-1}

The observed 97.5th percentile rate based on 29 observations is 33.6 kg y^{-1}

Table 56. Adults' consumption rates of wild/free foods from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Blackberry	Sloe	Total
3754/1/1	**5.5**	**-**	**5.5**
3754/2/1	**5.5**	**-**	**5.5**
3751/1/1	**3.5**	**-**	**3.5**
3752/1/1	**0.4**	**1.6**	**2.0**
3752/2/1	**0.4**	**1.6**	**2.0**
3752/3/1	**0.4**	**1.6**	**2.0**
3752/4/1	**0.4**	**1.6**	**2.0**
3752/5/1	**0.4**	**1.6**	**2.0**
3752/6/1	**0.4**	**1.6**	**2.0**
3752/7/1	**0.4**	**1.6**	**2.0**
3752/9/1	**0.4**	**1.6**	**2.0**
3752/10/1	**0.4**	**1.6**	**2.0**
3752/12/1	**0.4**	**1.6**	**2.0**
3777/1/1	1.5	-	1.5
3777/2/1	1.5	-	1.5
3777/2/2	1.5	-	1.5
3777/2/3	1.5	-	1.5
3777/2/4	1.5	-	1.5
3777/2/5	1.5	-	1.5
3777/2/6	1.5	-	1.5
3777/2/7	1.5	-	1.5
3777/2/8	1.5	-	1.5
3777/2/9	1.5	-	1.5
3729/14/1	1.0	-	1.0
3757/1/1	0.5	0.5	1.0
3757/2/1	0.5	0.5	1.0
3781/1/1	0.8	-	0.8
3781/2/1	0.8	-	0.8
3736/1/1	0.8	-	0.8
3736/2/1	0.8	-	0.8
3753/1/1	0.6	-	0.6
3753/2/1	0.6	-	0.6
3753/3/1	0.6	-	0.6
3753/4/1	0.6	-	0.6
3753/5/1	0.6	-	0.6
3753/6/1	0.6	-	0.6
3753/7/1	0.6	-	0.6
3753/8/1	0.6	-	0.6
3753/9/1	0.6	-	0.6

Person ID number	Blackberry	Sloe	Total
3753/10/1	0.6	-	0.6
3770/1/1	0.6	-	0.6
3770/2/1	0.6	-	0.6
3770/3/1	0.6	-	0.6
3716/1/1	0.5	-	0.5
3749/1/1	0.3	-	0.3
3749/2/1	0.3	-	0.3
3775/1/1	0.2	-	0.2
3775/2/1	0.2	-	0.2
3768/1/1	0.2	-	0.2
3768/2/1	0.2	-	0.2
3723/1/1	0.1	-	0.1
3723/2/1	0.1	-	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild/free foods for adults based on the 13 high-rate consumers is 2.7 kg y^{-1}

The observed 97.5th percentile rate based on 52 observations is 5.0 kg y^{-1}

Table 57. Adults' consumption rates of honey from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Honey
3761/1/1	**2.3**
3761/2/1	**2.3**
3716/2/1	0.5
3716/3/1	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of honey for adults based on the 2 high-rate consumers is 2.3 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 2.3 kg y^{-1}

Table 58. Adults' consumption rates of wild fungi from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Mushrooms
3729/14/1	**3.2**
3777/1/1	0.8
3777/2/1	0.8
3777/2/2	0.8
3777/2/3	0.8
3777/2/4	0.8
3777/2/5	0.8
3777/2/6	0.8
3777/2/7	0.8
3777/2/8	0.8
3777/2/9	0.8
3716/1/1	0.5
3752/1/1	0.4
3752/2/1	0.4
3752/3/1	0.4
3752/4/1	0.4
3752/5/1	0.4
3752/6/1	0.4
3752/7/1	0.4
3752/9/1	0.4
3752/10/1	0.4
3752/12/1	0.4
3749/1/1	0.3
3749/2/1	0.3
3865/1/1	0.3
3865/2/1	0.3
3723/1/1	0.1
3723/2/1	0.1

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of wild fungi for adults based on the 1 high-rate consumers is 3.2 kg y^{-1}

The observed 97.5th percentile rate based on 28 observations is 1.6 kg y^{-1}

Table 59. Adults' consumption rates of freshwater fish from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Rainbow trout
3761/1/1	**7.1**
3761/2/1	**7.1**
3783/1/1	**4.7**
3783/2/1	**4.7**
3783/3/1	**4.7**
3761/3/1	1.9

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of freshwater fish for adults based on the 5 high-rate consumers is 5.7 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 7.1 kg y^{-1}

Table 60. Children's consumption rates of green vegetables from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Lettuce
3752/8/1	**15**	**0.6**
3752/11/1	**11**	**0.6**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for the child age group based on the 2 high-rate consumers is 0.6 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 0.6 kg y^{-1}

Table 61. Infants' consumption rates of green vegetables from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Broccoli	Brussels sprout	Courgette	Lettuce	Marrow	Total
3783/6/1	**5**	**0.3**	**0.3**	**0.4**	**0.6**	**0.2**	**1.8**
3783/7/1	**5**	**0.3**	**0.3**	**0.4**	**0.6**	**0.2**	**1.8**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for the infant age group based on the 2 high-rate consumers is 1.8 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 1.8 kg y^{-1}

Table 62. Children's consumption rates of other vegetables from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Tomato
3752/8/1	15	1.0
3752/11/1	11	1.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables for the child age group based on the 2 high-rate consumers is 1.0 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 1.0 kg y^{-1}

Table 63. Infants' consumption rates of other vegetables from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Broad bean	French bean	Sweetcorn	Tomato	Total
3783/6/1	5	0.3	0.5	0.2	1.5	2.4
3783/7/1	5	0.3	0.5	0.2	1.5	2.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables for the infant age group based on the 2 high-rate consumers is 2.4 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 2.4 kg y^{-1}

Table 64. Infants' consumption rates of root vegetables from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Beetroot	Carrot	Garlic	Onion	Shallot	Swede	Total
3783/6/1	5	0.3	0.4	0.1	0.9	0.3	1.1	3.0
3783/7/1	5	0.3	0.4	0.1	0.9	0.3	1.1	3.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables for the infant age group based on the 2 high-rate consumers is 3.0 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 3.0 kg y^{-1}

Table 65. Children's consumption rates of potato from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Potato
3752/8/1	**15**	**9.1**
3752/11/1	**11**	**9.1**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato for the child age group based on the 2 high-rate consumers is 9.1 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 9.1 kg y^{-1}

Table 66. Infants' consumption rates of potato from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Potato
3783/6/1	**5**	**4.3**
3783/7/1	**5**	**4.3**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato for the infant age group based on the 2 high-rate consumers is 4.3 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 4.3 kg y^{-1}

Table 67. Children's consumption rates of domestic fruit from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Apple	Rhubarb	Total
3752/8/1	**15**	**0.4**	**0.4**	**0.8**
3752/11/1	**11**	**0.4**	**0.4**	**0.8**
3749/3/1	8	0.3	-	0.3

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for the child age group based on the 2 high-rate consumers is 0.8 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 0.8 kg y^{-1}

Table 68. Infants' consumption rates of domestic fruit from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Apple	Gooseberry	Rhubarb	Total
3783/6/1	**5**	**-**	**0.1**	**0.6**	**0.7**
3783/7/1	**5**	**-**	**0.1**	**0.6**	**0.7**
3749/4/1	5	0.2	-	-	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for the infant age group based on the 2 high-rate consumers is 0.7 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 0.7 kg y^{-1}

Table 69. Children's consumption rates of milk from the Wylfa terrestrial survey area (l y^{-1})

Person ID number	Age	Cows' milk
3752/8/1	**15**	**66.4**
3752/11/1	**11**	**66.4**
3757/5/1	**12**	**37.2**
3757/6/1	**9**	**27.9**
3775/3/1	8	9.6

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk for the child age group based on the 4 high-rate consumers is 49.5 l y^{-1}

The observed 97.5th percentile rate based on 5 observations is 66.4 l y^{-1}

Table 70. Infants' consumption rates of milk from the Wylfa terrestrial survey area (l y^{-1})

Person ID number	Age	Cows' milk
3779/5/1	**2**	**207.3**
3779/6/1	**3**	**207.3**
3775/4/1	5	6.4
3775/5/1	3	6.4
3775/6/1	2	4.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of milk for the infant age group based on the 2 high-rate consumers is 207.3 l y^{-1}

The observed 97.5th percentile rate based on 5 observations is 207.3 l y^{-1}

Table 71. Children's consumption rates of sheep meat from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Lamb
3729/7/1	14	2.7
3729/8/1	12	2.7
3729/10/1	10	2.7
3729/11/1	9	2.0
3729/12/1	8	2.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sheep meat for the child age group based on the 5 high-rate consumers is 2.4 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 2.7 kg y^{-1}

Table 72. Infants' consumption rates of sheep meat from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Lamb
3729/9/1	4	1.3
3729/13/1	1	0.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sheep meat for the infant age group based on the 2 high-rate consumers is 1.0 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 1.3 kg y^{-1}

Table 73. Children's consumption rates of eggs from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Chicken egg
3723/3/1	14	8.3
3723/4/1	12	8.3
3752/8/1	15	8.2
3752/11/1	11	8.2
3775/3/1	8	7.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for the child age group based on the 5 high-rate consumers is 8.0 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 8.3 kg y^{-1}

Table 74. Infants' consumption rates of eggs from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Chicken egg
3775/4/1	**5**	**4.7**
3775/5/1	**3**	**4.7**
3775/6/1	**2**	**3.1**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for the infant age group based on the 3 high-rate consumers is 4.2 kg y^{-1}

The observed 97.5th percentile rate based on 3 observations is 4.7 kg y^{-1}

Table 75. Children's consumption rates of wild/free foods from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Blackberry
3752/8/1	**15**	**0.4**
3752/11/1	**11**	**0.4**
3749/3/1	**8**	**0.3**
3775/3/1	**8**	**0.2**
3723/3/1	14	0.1
3723/4/1	12	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild/free foods for the child age group based on the 4 high-rate consumers is 0.3 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 0.4 kg y^{-1}

Table 76. Infants' consumption rates of wild/free foods from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Blackberry	Total
3749/4/1	**5**	**0.2**	**0.2**
3775/4/1	**5**	**0.1**	**0.1**
3775/5/1	**3**	**0.1**	**0.1**
3775/6/1	**2**	**0.1**	**0.1**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild/free foods for the infant age group based on the 4 high-rate consumers is 0.1 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 0.2 kg y^{-1}

Table 77. Children's consumption rates of wild fungi from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Mushrooms
3752/8/1	**15**	**0.4**
3752/11/1	**11**	**0.4**
3749/3/1	**8**	**0.3**
3723/3/1	14	0.1
3723/4/1	12	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of wild fungi for the child age group based on the 3 high-rate consumers is 0.4 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 0.4 kg y^{-1}

Table 78. Infants' consumption rates of wild fungi from the Wylfa terrestrial survey area (kg y^{-1})

Person ID number	Age	Mushrooms
3749/4/1	**5**	**0.2**

Notes

The emboldened observation is the high-rate consumer

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

The observed 97.5th percentile is not applicable for 1 observation

Table 79. Percentage contribution each food type makes to its terrestrial food group for adults

Food group	Food	Percentage
Green vegetables	Courgette	24.6%
	Cucumber	23.7%
	Lettuce	17.1%
	Chard	8.2%
	Broccoli	6.8%
	Brussels sprout	4.8%
	Cauliflower	4.2%
	Kale	4.0%
	Cabbage	3.9%
	Marrow	1.2%
	Artichoke	1.2%
	Asparagus	0.2%
	Spinach	0.1%
Other vegetables	Tomato	55.6%
	Runner bean	9.3%
	Squash	8.6%
	Pumpkin	8.0%
	French bean	6.1%
	Broad bean	5.6%
	Pea	3.3%
	Sweetcorn	3.2%
	Mangetout	0.3%
Root vegetables	Onion	30.1%
	Beetroot	19.0%
	Leek	17.3%
	Carrot	10.4%
	Swede	6.5%
	Sweet potato	4.9%
	Parsnip	4.5%
	Turnip	2.0%
	Shallot	1.6%
	Celery	1.5%
	Garlic	0.7%
	Radish	0.5%
	Fennel	0.5%
	Chicory root	0.4%
	Spring onion	0.3%
Potato	Potato	100.0%
Domestic fruit	Apple	26.8%
	Strawberry	21.7%
	Rhubarb	18.7%

Food group	Food	Percentage
Domestic fruit	Pear	8.5%
	Gooseberry	5.8%
	Raspberry	4.9%
	Blackberry	3.9%
	Grapes	3.4%
	Plum	1.0%
	Blueberry	0.9%
	Fig	0.9%
	Melon	0.8%
	Redcurrant	0.7%
	Peach	0.6%
	White currant	0.5%
	Loganberry	0.4%
	Blackcurrant	0.3%
	Lemon	0.3%
Milk	Cows' milk	100.0%
Cattle meat	Beef	100.0%
Pig meat	Pork	100.0%
Sheep meat	Lamb	100.0%
Poultry	Chicken	84.8%
	Goose	7.5%
	Duck	6.2%
	Pheasant	1.5%
Eggs	Chicken egg	99.9%
	Goose egg	0.1%
Wild/free foods	Blackberry	74.%3
	Sloe	25.7%
Honey	Honey	100.0%
Wild fungi	Mushrooms	100.0%
Freshwater fish	Rainbow trout	100.0%

Notes

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

Table 80. Direct radiation occupancy rates for adults, children and infants in the Wylfa area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
0 – 0.25 km zone				
3685/1/1	Working	1877	52	1929
3685/2/1	Working	1877	52	1929
3685/1/2	Working	1877	52	1929
3685/1/3	Working	1877	52	1929
3685/1/4	Working	1877	52	1929
3685/1/5	Working	1877	52	1929
3685/1/6	Working	1877	52	1929
3685/1/7	Working	1877	52	1929
3685/1/8	Working	1877	52	1929
3685/1/9	Working	1877	52	1929
3731/1/1	Dog walking	-	243	243
3731/2/1	Dog walking	-	137	137
3731/3/1	Dog walking	-	33	33
>0.25 – 0.5 km zone				
3684/1/1	Working	957	957	1914
3684/2/1	Working	359	1555	1914
3777/1/1	Swimming	-	104	104
3777/2/1	Swimming	-	104	104
3777/2/2	Swimming	-	104	104
3777/2/3	Swimming	-	104	104
3777/2/4	Swimming	-	104	104
3777/2/5	Swimming	-	104	104

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
>0.25 – 0.5 km zone				
3777/2/6	Swimming	-	104	104
3777/2/7	Swimming	-	104	104
3777/2/8	Swimming	-	104	104
3777/2/9	Swimming	-	104	104
3722/1/1	Swimming	-	20	20
3773/1/1	Swimming	-	16	16
3865/1/1	Angling	-	9	9
>0.5 – 1.2 km zone				
3683/1/1	Residing	7846	914	8760
3744/1/1	Residing	8719	17	8736
3770/1/1	Residing	8369	235	8604
3770/2/1	Residing	8369	235	8604
3746/1/1	Residing	8311	179	8490
3688/1/1	Residing	6855	1279	8134
3746/3/1	Residing	8078	51	8129
3768/2/1	Residing	7117	913	8030
3789/4/1	Residing	7311	666	7978
3789/5/1	Residing	7703	275	7978
3688/2/1	Residing	7874	26	7900
3789/1/1	Residing	7508	366	7874
3745/2/1	Residing	7839	26	7865
3686/2/1	Residing	7672	150	7822
3687/1/1	Residing	7181	536	7717
3768/1/1	Residing	6569	1148	7717

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
>0.5 – 1.2 km zone				
3780/1/1	Residing	7503	183	7685
3863/1/1	Residing	4354	3311	7665
3774/1/1	Residing	6881	640	7521
3774/2/1	Residing	6608	913	7521
3746/2/1	Residing	7080	435	7515
3789/2/1	Residing	7170	104	7274
3689/2/1	Residing	6436	784	7220
3780/2/1	Residing	6924	183	7107
3789/3/1	Residing	6519	573	7092
3745/1/1	Residing	6795	206	7001
3727/1/1	Residing	6557	418	6975
3727/2/1	Residing	5775	1200	6975
3747/5/1	Residing	6857	26	6883
3770/3/1	Residing	6257	469	6726
3747/4/1	Residing	6622	52	6675
3689/5/1	Residing	6530	104	6634
3689/3/1	Residing	5431	1043	6473
3689/4/1	Residing	6329	104	6434
3686/5/1	Residing	5294	1025	6319
3686/6/1	Residing	5294	1025	6319
3682/1/1	Residing	5866	356	6222
3689/1/1	Residing	5317	836	6153
3686/3/1	Residing	5666	351	6017
3747/3/1	Residing	5816	22	5838

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
>0.5 – 1.2 km zone				
3682/2/1	Residing	5237	460	5696
3686/4/1	Residing	5641	25	5666
3747/2/1	Residing	5559	52	5612
3686/1/1	Residing	5139	26	5165
3747/1/1	Residing	3728	731	4459
3863/2/1	Residing	2386	477	2863
3782/2/1	Working	1845	80	1926
3782/5/1	Working	1845	80	1926
3782/6/1	Working	1845	80	1926
3782/6/2	Working	1845	80	1926
3661/1/1	Commercial fishing	-	1251	1251
3661/2/1	Commercial fishing	-	1251	1251
3782/3/1	Working	1155	48	1204
3782/1/1	Working	738	32	770
3782/1/2	Working	738	32	770
3782/4/1	Working	417	16	433
3864/1/1	Commercial fishing	-	365	365
3737/1/1	Dog walking	-	274	274
3737/2/1	Dog walking	-	274	274
3737/3/1	Dog walking	-	274	274
3753/1/1	Working	-	261	261
3753/6/1	Working	-	261	261
3754/1/1	Working	-	118	118
3754/2/1	Working	-	118	118

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
>0.5 – 1.2 km zone				
3771/1/1	Boat angling	-	30	30
3771/2/1	Boat angling	-	30	30
3864/2/1	Commercial fishing	-	24	24

Table 81. Analysis of direct radiation occupancy rates for adults, children and infants in the Wylfa area (h y^{-1})

0 – 0.25 km zone	
Number of hours	**Number of observations**
>8000 to 8760	0
>7000 to 8000	0
>6000 to 7000	0
>5000 to 6000	0
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	0
>1000 to 2000	10
0 to 1000	3
0 to 8760	13
>0.25 – 0.5 km zone	
Number of hours	**Number of observations**
>8000 to 8760	0
>7000 to 8000	0
>6000 to 7000	0
>5000 to 6000	0
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	0
>1000 to 2000	2
0 to 1000	13
0 to 8760	15
>0.5 – 1.2 km zone	
Number of hours	**Number of observations**
>8000 to 8760	8
>7000 to 8000	18
>6000 to 7000	13
>5000 to 6000	5
>4000 to 5000	1
>3000 to 4000	0
>2000 to 3000	1
>1000 to 2000	7
0 to 1000	14
0 to 8760	67

Table 82. Gamma dose rate measurements (µGy h^{-1}) for the Wylfa direct radiation survey area

Location	Indoor substrate	Indoor gamma dose rate at 1 metre[a]	Outdoor substrate	Outdoor gamma dose rate at 1 metre[a]
Residences				
Residence 1	Concrete	0.087	Concrete	0.096
Residence 2	Concrete	0.116	Not recorded	Not recorded
Residence 3	Concrete	0.114	Grass	0.085
Residence 4	Concrete	0.083	Not recorded	Not recorded
Residence 5	Concrete	0.107	Grass	0.086
Residence 6	Concrete	0.107	Grass	0.099
Residence 7	Concrete	0.112	Grass	0.089
Residence 8	Concrete	0.110	Concrete	0.102
Residence 9	Not recorded	Not recorded	Concrete	0.119
Residence 10	Not recorded	Not recorded	Concrete	0.095
Residence 11	Concrete	0.107	Grass	0.087
Residence 12	Concrete	0.085	Grass	0.085
Residence 13	Concrete	0.092	Grass	0.101
Residence 14	Not recorded	Not recorded	Grass	0.096
Businesses				
Business 1	Not recorded	Not recorded	Tarmac	0.076
Business 2	Not recorded	Not recorded	Grass	0.085

Notes

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

Table 83. Background gamma dose rate measurements for the Wylfa survey area (µGy h^{-1})

	Location	Substrate	Gamma dose rate at 1 metre
Background 1	West	Grass	0.086
Background 2	South	Grass	0.079
Background 3	East	Grass	0.065

Table 84. Combinations of adult pathways for consideration in dose assessments in the Wylfa area

Combination number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1 km of the nuclear licensed site boundary	Outdoor occupancy within 1 km of the nuclear licensed site boundary
1											X																				
2	X																											X	X		
3																					X							X	X		
4	X	X																								X			X	X	X
5																				X						X			X	X	X
6										X												X						X		X	X
7	X				X	X	X	X	X								X		X			X									
8	X	X																					X			X			X		
9					X	X	X	X	X						X				X				X								
10	X				X	X	X	X	X					X	X								X					X		X	X
11					X	X		X	X	X		X	X	X	X									X								
12										X															X					X	X
13	X	X																					X		X						
14																							X		X				X		
15							X																X		X			X		X	X
16																					X		X	X	X			X			

Combination number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1 km of the nuclear licensed site boundary	Outdoor occupancy within 1 km of the nuclear licensed site boundary
17	X		X		X	X	X	X	X							X		X		X		X			X		X		X	X	X
18														X		X															
19	X								X							X						X								X	X
20					X	X	X	X	X							X															
21	X								X							X							X					X		X	X
22					X	X	X		X						X	X							X								
23						X	X		X						X	X						X	X						X	X	X
24									X				X			X														X	X
25					X	X		X	X	X					X	X		X													
26			X					X	X				X			X		X				X					X				
27				X												X		X					X		X			X		X	X

Notes

The food groups and external pathways marked with a cross are combined for the corresponding combination number. For example, combination number 2 represents an individual (or individuals) from Annex 1 who had positive data for the following pathways: sea fish, occupancy in water, occupancy on water.

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

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3658/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	60	-	-	-	-	-	-
3658/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	5	-	-	-	-	-	-
3659/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	127	-	-	-
3660/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	-	-	-	56	-	-	-
3660/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	8	-	-	-
3660/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	8	-	-	-
3660/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	8	-	-	-
3661/1/1	9.0	**4.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1189**	-	-	2196	-	1251
3661/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1189**	-	-	2196	-	1251
3661/3/1	-	**5.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3661/4/1	-	**5.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3664/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**183**	-	-	-	-	-	-
3667/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	39	-	-	-	-	-	-
3667/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	-	29	-	-	-	-	-	-
3670/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	-	-	-
3670/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	-	-	-
3671/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-
3671/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-
3671/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-
3671/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-
3671/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-
3671/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-
3671/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-
3671/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-
3671/1/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-
3671/1/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	20	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3672/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**548**	-	-	-	-	-	-	-	-
3673/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-
3673/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-
3673/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-
3674/1/1	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-	-	-	-	-	-	-
3674/2/1	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-	-	-	-	-	-	-
3678/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117	-	-	-	-	-	-	-	-
3682/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5866	356
3682/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5237	460
3683/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7846	914
3684/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	957	957
3684/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	359	1555
3685/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3685/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3685/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3685/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3685/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3685/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3685/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3685/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3685/1/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3685/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3686/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5139	26
3686/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7672	150
3686/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5666	351
3686/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5641	25
3687/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7181	536
3688/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6855	1279

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3688/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7874	26
3689/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5317	836
3689/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6436	784
3689/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5431	1043
3689/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6329	104
3691/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-
3691/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-
3693/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-
3694/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-
3694/2/1	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	-	-
3694/3/1	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3695/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	2	-	-	-	2	-	-
3695/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	2	-	-	-	2	-	-
3695/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	2	-	-	-	2	-	-
3696/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	**95**	95	-	-	-	-	-	-
3697/1/1	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	204	-	-
3697/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	-	-
3697/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	-	-
3697/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	-	-
3697/2/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	-	-
3697/3/1	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3698/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	20	-	-
3698/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	20	-	-
3698/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	20	-	-
3698/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	20	-	-
3698/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	20	-	-
3698/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	20	-	-
3698/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	45	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3700/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	6	-	-	-
3700/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	6	-	-	-
3700/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	6	-	-	-
3702/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	5	-	-	-
3702/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	5	-	-	-
3702/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	5	-	-	-
3703/1/1	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	27	-	-
3703/2/1	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	27	-	-
3703/3/1	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	27	-	-
3705/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	522	-	-	-
3705/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	522	-	-	-
3705/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	522	-	-	-
3706/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	193	-	-	-
3707/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	24	-	-	-
3709/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91	-	-
3709/2/1	0.8	**4.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91	-	-
3710/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	6	-	-	-	-	-	-
3713/1/1	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-
3713/2/1	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-
3714/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	288	-	-	300	-	-
3715/1/1	10.4	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	901	-	-
3715/2/1	10.4	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3716/1/1	-	-	-	-	2.0	1.5	-	-	5.3	29.6	-	-	-	-	5.9	0.5	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
3716/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3716/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3718/1/1	4.4	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**46**	-	157	-	-	352	-	-
3718/2/1	4.4	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**46**	-	-	-	-	-	-	-
3718/3/1	4.4	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**46**	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3718/4/1	4.4	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**46**	-	-	-	-	-	-	-
3719/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**39**	-	-	-	-	-	-	-
3721/1/1	10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	275	-	-	412	-	-
3721/2/1	10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3722/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	36	-	-	36	-	-	20
3723/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	0.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
3723/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	0.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
3725/1/1	-	-	-	-	10.7	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3725/2/1	-	-	-	-	10.7	0.7	-	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3727/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	209	-	6557	418
3727/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5775	1200
3729/1/1	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3729/2/1	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3729/3/1	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3729/4/1	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3729/5/1	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3729/6/1	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3729/14/1	-	-	**0.3**	-	-	-	-	1.0	1.0	-	-	-	**20.0**	-	-	1.0	-	**3.2**	-	-	-	2	-	-	-	2	-	-	-	-	-
3731/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	243
3731/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	137
3731/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33
3732/1/1	-	-	-	-	-	**14.4**	10.9	**54.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3734/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**261**	-	-	-	-	-	-
3734/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**261**	-	-	-	-	-	-
3734/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**523**	-	-	-	-	-	-
3734/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87	-	-	-	-	-	-
3736/1/1	-	-	-	-	-	-	-	-	-	14.8	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3736/2/1	-	-	-	-	-	-	-	-	-	14.8	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3737/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	274
3737/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	274
3737/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	274
3744/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8719	17
3745/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6795	206
3745/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7839	26
3746/1/1	-	-	-	-	-	-	-	-	-	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8311	179
3746/2/1	-	-	-	-	-	-	-	-	-	8.7	-	-	-	-	-	-	-	-	-	-	-	**521**	-	-	-	-	104	-	7080	435
3746/3/1	-	-	-	-	-	-	-	-	-	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8078	51
3747/1/1	-	-	-	-	-	-	-	-	-	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-	3728	731
3747/2/1	-	-	-	-	-	-	-	-	-	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-	5559	52
3747/3/1	-	-	-	-	-	-	-	-	-	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-	5816	22
3747/5/1	-	-	-	-	-	-	-	-	-	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-	6857	26
3749/1/1	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
3749/2/1	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
3751/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	**3.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/1/1	-	-	-	-	0.6	1.0	-	9.1	0.8	**66.4**	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/2/1	-	-	-	-	0.6	1.0	-	9.1	0.8	**66.4**	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/3/1	-	-	-	-	0.6	1.0	-	9.1	0.8	**66.4**	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/4/1	-	-	-	-	0.6	1.0	-	9.1	0.8	**66.4**	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/5/1	-	-	-	-	0.6	1.0	-	9.1	0.8	**66.4**	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/6/1	-	-	-	-	0.6	1.0	-	9.1	0.8	**66.4**	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/7/1	-	-	-	-	0.6	1.0	-	9.1	0.8	**66.4**	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/9/1	-	-	-	-	0.6	1.0	-	9.1	0.8	**66.4**	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/10/1	-	-	-	-	0.6	1.0	-	9.1	0.8	**66.4**	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3752/12/1	-	-	-	-	0.6	1.0	-	9.1	0.8	-	-	-	-	-	8.2	**2.0**	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
3753/1/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	261
3753/2/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3753/3/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3753/4/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3753/5/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3753/6/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	261
3753/7/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3753/8/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3753/9/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3753/10/1	-	-	-	-	-	-	-	-	0.6	-	-	-	1.0	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3754/1/1	-	-	-	-	-	-	-	-	5.0	-	-	-	-	-	8.9	**5.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118
3754/2/1	-	-	-	-	-	-	-	-	5.0	-	-	-	-	-	8.9	**5.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118
3757/1/1	-	-	-	-	0.4	2.8	1.8	-	8.7	-	-	-	-	-	8.2	1.0	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-
3757/2/1	-	-	-	-	0.4	2.8	1.8	-	**13.5**	-	-	-	-	-	8.2	1.0	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-
3757/3/1	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3757/4/1	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3757/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-
3757/8/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-
3760/1/1	-	-	-	-	4.8	**24.5**	11.7	9.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3760/2/1	-	-	-	-	4.8	**24.5**	11.7	9.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3760/3/1	-	-	-	-	4.8	**24.5**	11.7	9.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3760/4/1	-	-	-	-	4.8	**24.5**	11.7	9.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3760/5/1	-	-	-	-	4.8	**24.5**	11.7	9.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3760/6/1	-	-	-	-	4.8	**24.5**	11.7	9.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3761/1/1	6.5	-	-	-	10.0	**22.1**	13.4	12.5	1.3	-	-	-	-	-	-	-	**2.3**	-	**7.1**	-	-	18	-	-	-	-	-	-	-	-	-
3761/2/1	6.5	-	-	-	10.0	**22.1**	13.4	12.5	1.3	-	-	-	-	-	-	-	**2.3**	-	**7.1**	-	-	-	-	-	-	-	-	-	-	-	-
3761/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-
3762/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-
3762/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
3768/1/1	0.8	-	-	-	-	-	-	-	1.3	-	-	-	-	-	-	0.2	-	-	-	-	-	**235**	-	-	-	-	-	-	-	6569	1148

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3768/2/1	0.8	-	-	-	-	-	-	-	2.1	-	-	-	-	-	-	0.2	-	-	-	-	-	-	**365**	-	-	-	-	6	-	7117	913
3769/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**979**	-	-	-	-	-	-	-	-
3769/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**652**	-	-	-	-	-	-	-	-
3770/1/1	-	-	-	-	-	7.5	2.9	-	1.3	-	-	-	-	-	**11.9**	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	8369	235
3770/2/1	-	-	-	-	-	7.5	2.9	-	1.3	-	-	-	-	-	**11.9**	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	8369	235
3770/3/1	-	-	-	-	-	7.5	2.9	-	1.3	-	-	-	-	-	**11.9**	0.6	-	-	-	-	-	104	104	-	-	-	-	-	30	6257	469
3771/1/1	**34.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	30
3771/2/1	**34.1**	**5.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	30
3771/3/1	**34.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3771/4/1	**34.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3771/5/1	**34.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3771/6/1	**34.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3772/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3772/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3772/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3772/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3772/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3772/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3772/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3772/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3773/1/1	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	127	-	-	16
3773/2/1	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3774/1/1	-	-	-	-	-	-	4.6	3.4	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6881	640
3774/2/1	-	-	-	-	-	-	4.6	3.4	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6608	913
3775/1/1	-	-	-	-	-	-	-	-	-	12.8	-	-	-	-	9.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3775/2/1	-	-	-	-	-	-	-	-	-	12.8	-	-	-	-	9.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3777/1/1	-	-	-	**0.5**	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104
3777/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3777/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104
3777/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104
3777/2/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104
3777/2/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104
3777/2/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104
3777/2/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104
3777/2/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104
3777/2/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	0.8	-	-	-	-	**521**	-	52	-	-	313	-	-	104
3779/1/1	-	-	-	-	-	-	-	-	-	**44.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3779/2/1	-	-	-	-	-	-	-	-	-	**44.4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3779/3/1	-	-	-	-	-	-	-	-	-	**103.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3779/4/1	-	-	-	-	-	-	-	-	-	**103.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3779/7/1	-	-	-	-	-	-	-	-	-	**88.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3780/1/1	1.2	-	-	-	**18.5**	2.7	5.8	9.1	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7503	183
3780/2/1	1.2	-	-	-	**18.5**	2.7	5.8	9.1	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6924	183
3781/1/1	-	-	-	-	**36.1**	**28.7**	**49.2**	6.9	2.3	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3781/2/1	-	-	-	-	**36.1**	**28.7**	**49.2**	6.9	2.3	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3782/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	738	32
3782/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	738	32
3782/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1845	80
3782/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1155	48
3782/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	417	16
3782/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1845	80
3782/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1845	80
3782/6/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1845	80
3783/1/1	-	-	-	-	8.3	**11.3**	14.0	**20.1**	3.2	-	-	-	-	-	3.8	-	-	-	**4.7**	-	-	-	-	6	-	-	-	-	-	-	-
3783/2/1	-	-	-	-	8.3	**11.3**	14.0	**20.1**	3.2	-	-	-	-	-	3.8	-	-	-	**4.7**	-	-	-	-	6	-	-	-	-	-	-	-
3783/3/1	-	-	-	-	8.3	**11.3**	14.0	**20.1**	3.2	-	-	-	-	-	3.8	-	-	-	**4.7**	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3783/4/1	-	-	-	-	3.5	4.8	6.0	8.6	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3783/5/1	-	-	-	-	3.5	4.8	6.0	8.6	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3784/1/1	-	-	-	-	5.6	**21.6**	-	5.0	0.5	**72.0**	-	**20.9**	5.0	1.1	**17.8**	-	-	-	-	-	-	-	137	-	-	-	-	-	-	-	-
3784/2/1	-	-	-	-	5.6	**21.6**	-	5.0	0.5	**72.0**	-	**20.9**	5.0	1.1	**17.8**	-	-	-	-	-	-	-	137	-	-	-	-	-	-	-	-
3784/3/1	-	-	-	-	-	-	-	-	-	-	-	-	**10.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3785/1/1	-	-	-	-	-	-	-	-	-	-	**41.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3785/1/2	-	-	-	-	-	-	-	-	-	-	**41.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3785/1/3	-	-	-	-	-	-	-	-	-	-	**41.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3785/1/4	-	-	-	-	-	-	-	-	-	-	**41.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3785/1/5	-	-	-	-	-	-	-	-	-	-	**41.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3785/1/6	-	-	-	-	-	-	-	-	-	-	**41.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3786/1/1	3.8	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	274	-	**274**	-	-	-	-	-	-
3786/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	274	-	**274**	-	-	-	-	-	-
3787/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	2	5	-	-	6	-	-	-
3788/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	163	-	**208**	-	-	261	-	-	-
3788/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	261	-	-	-
3789/1/1	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	48	-	-	-	-	7508	366
3789/2/1	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	48	-	-	-	-	7170	104
3789/3/1	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	48	-	-	144	-	6519	573
3789/4/1	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	48	-	-	-	-	7311	666
3789/5/1	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	48	-	-	-	-	7703	275
3789/6/1	**30.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3789/7/1	**30.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3790/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	-	-	-	-	-	-	-	-
3790/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	-	-	-	-	-	-	-	-
3806/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**26**	-	-	-	-	-	-	65	235	-	-
3806/2/1	10.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	235	-	-
3863/1/1	**58.0**	-	-	-	**12.9**	2.0	8.0	12.5	**20.8**	-	-	-	-	**23.0**	**33.6**	-	-	-	-	-	-	-	-	**100**	-	-	-	54	-	4354	3311

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Freshwater fish	Intertidal occupancy over mud and sand	Intertidal occupancy over mud, sand and stones	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 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3863/2/1	-	-	-	-	**12.9**	2.0	8.0	12.5	**20.8**	-	-	-	-	3.5	**33.6**	-	-	-	-	-	-	-	-	-	-	-	-	54	-	2386	477
3864/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**15**	-	-	-	-	-	**626**	-	-	745	-	365
3864/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	-	-	49	-	24
3865/1/1	**42.7**	-	**0.1**	-	5.8	**29.3**	**45.1**	**56.0**	**35.3**	-	-	-	-	-	-	-	-	0.3	-	**7**	-	22	-	-	4	-	**7**	-	255	-	9
3865/2/1	**42.7**	-	**0.1**	-	5.8	**29.3**	**45.1**	**56.0**	**35.3**	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

Emboldened observations are the high-rate individuals

Person ID numbers starting with 3783 have consumption of produce grown using seaweed as fertiliser. Please see Table 35 for further information.

U = Unknown

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

Person ID number	Sea fish	Crustaceans	Molluscs	Green vegetables	Other vegetables	Potato	Domestic fruit	Milk	Sheep meat	Eggs	Wild/free foods	Wild fungi	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3661/6/1	-	**3.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3686/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5294	1025
3686/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5294	1025
3689/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6530	104
3707/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-
3707/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-
3718/6/1	**0.5**	-	-	-	-	-	-	-	-	-	-	-	-	**46**	-	-	-	-	-
3718/7/1	**0.7**	-	-	-	-	-	-	-	-	-	-	-	-	**46**	-	-	-	-	-
3723/3/1	-	-	-	-	-	-	-	-	-	**8.3**	0.1	0.1	-	-	-	-	-	-	-
3723/4/1	-	-	-	-	-	-	-	-	-	**8.3**	0.1	0.1	-	-	-	-	-	-	-
3729/7/1	-	-	-	-	-	-	-	-	**2.7**	-	-	-	-	-	-	-	-	-	-
3729/8/1	-	-	-	-	-	-	-	-	**2.7**	-	-	-	-	-	-	-	-	-	-
3729/10/1	-	-	-	-	-	-	-	-	**2.7**	-	-	-	-	-	-	-	-	-	-
3729/11/1	-	-	-	-	-	-	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-
3729/12/1	-	-	-	-	-	-	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-
3747/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**72**	-	-	6622	52
3749/3/1	-	-	-	-	-	-	0.3	-	-	-	**0.3**	**0.3**	-	-	-	-	-	-	-
3752/8/1	-	-	-	**0.6**	**1.0**	**9.1**	**0.8**	**66.4**	-	**8.2**	**0.4**	**0.4**	-	-	-	-	-	-	-
3752/11/1	-	-	-	**0.6**	**1.0**	**9.1**	**0.8**	**66.4**	-	**8.2**	**0.4**	**0.4**	-	-	-	-	-	-	-
3757/5/1	-	-	-	-	-	-	-	**37.2**	-	-	-	-	-	-	-	-	-	-	-
3757/6/1	-	-	-	-	-	-	-	**27.9**	-	-	-	-	-	-	-	-	-	-	-
3762/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-
3775/3/1	-	-	-	-	-	-	-	9.6	-	**7.1**	**0.2**	-	-	-	-	-	-	-	-
3786/3/1	-	-	-	-	-	-	-	-	-	-	-	-	**92**	-	**92**	-	92	-	-
3865/3/1	-	-	**0.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-
3865/4/1	-	-	**0.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

Emboldened observations are the high-rate individuals

U = Unknown

Annex 3. Infants' consumption rates (kg y^{-1} and l y^{-1}) and occupancy rates (h y^{-1}) in the Wylfa area

Person ID number	Sea fish	Crustaceans	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Sheep meat	Eggs	Wild/free foods	Wild fungi	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy on water
3661/5/1	-	**1.1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3695/2/1	-	-	-	-	-	-	-	-	-	-	-	-	14	-	2	2
3718/5/1	**0.3**	-	-	-	-	-	-	-	-	-	-	-	-	**46**	-	-
3729/9/1	-	-	-	-	-	-	-	-	**1.3**	-	-	-	-	-	-	-
3729/13/1	-	-	-	-	-	-	-	-	**0.7**	-	-	-	-	-	-	-
3749/4/1	-	-	-	-	-	-	0.2	-	-	-	**0.2**	**0.2**	-	-	-	-
3749/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3757/9/1	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-
3775/4/1	-	-	-	-	-	-	-	6.4	-	**4.7**	**0.1**	-	-	-	-	-
3775/5/1	-	-	-	-	-	-	-	6.4	-	**4.7**	**0.1**	-	-	-	-	-
3775/6/1	-	-	-	-	-	-	-	4.2	-	**3.1**	**0.1**	-	-	-	-	-
3779/5/1	-	-	-	-	-	-	-	**207.3**	-	-	-	-	-	-	-	-
3779/6/1	-	-	-	-	-	-	-	**207.3**	-	-	-	-	-	-	-	-
3783/6/1	-	-	**1.8**	**2.4**	**3.0**	**4.3**	**0.7**	-	-	-	-	-	-	-	-	-
3783/7/1	-	-	**1.8**	**2.4**	**3.0**	**4.3**	**0.7**	-	-	-	-	-	-	-	-	-
3786/4/1	-	-	-	-	-	-	-	-	-	-	-	-	**92**	-	**92**	92

Notes

Emboldened observations are the high-rate individuals

Person ID numbers starting with 3783 have consumption of produce grown using seaweed as fertiliser. Please see Table 36 for further information.

U = Unknown

Annex 4. Qualitative and estimated data for use in dose assessments

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

Annex 5. Ratios for determining consumption and occupancy rates for children and infants

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

Notes

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

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

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

[d] Game includes rabbits/hares and venison.

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

Annex 6. Consumption rates (kg y^{-1} and l y^{-1}) and occupancy rates (h y^{-1}) for women of childbearing age[a] in the Wylfa area

Person ID number	Sea fish	Crustaceans	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Sheep meat	Eggs	Wild/free foods	Honey	Wild fungi	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3664/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-	-
3674/2/1	-	0.4	-	-	-	-	-	-	-	-	-	-	-	27	-	-	-	-	-	-
3685/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1877	52
3686/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5666	351
3689/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6436	784
3689/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6329	104
3689/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6530	104
3695/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	2	-	2	-	-
3698/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	45	-	-
3700/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	6	-	-	-
3702/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	5	-	-	-
3702/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	5	-	-	-
3702/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	5	-	-	-
3716/3/1	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-
3718/4/1	4.4	1.1	-	-	-	-	-	-	-	-	-	-	-	-	46	-	-	-	-	-
3721/2/1	10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Sheep meat	Eggs	Wild/free foods	Honey	Wild fungi	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3729/2/1	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-
3729/3/1	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-
3729/5/1	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-
3731/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	137
3734/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	261	-	-	-	-
3734/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87	-	-	-	-
3736/2/1	-	-	-	-	-	-	-	14.8	-	-	0.8	-	-	-	-	-	-	-	-	-
3747/2/1	-	-	-	-	-	-	-	13.5	-	-	-	-	-	-	-	72	-	-	5559	52
3747/3/1	-	-	-	-	-	-	-	13.5	-	-	-	-	-	-	-	72	-	-	5816	22
3749/2/1	-	-	-	-	-	-	0.3	-	-	-	0.3	-	0.3	-	-	-	-	-	-	-
3752/2/1	-	-	0.6	1.0	-	9.1	0.8	66.4	-	8.2	2.0	-	0.4	-	-	-	-	-	-	-
3752/3/1	-	-	0.6	1.0	-	9.1	0.8	66.4	-	8.2	2.0	-	0.4	-	-	-	-	-	-	-
3752/5/1	-	-	0.6	1.0	-	9.1	0.8	66.4	-	8.2	2.0	-	0.4	-	-	-	-	-	-	-
3752/12/1	-	-	0.6	1.0	-	9.1	0.8	-	-	8.2	2.0	-	0.4	-	-	-	-	-	-	-
3753/5/1	-	-	-	-	-	-	0.6	-	1.0	-	0.6	-	-	-	-	-	-	-	-	-
3753/8/1	-	-	-	-	-	-	0.6	-	1.0	-	0.6	-	-	-	-	-	-	-	-	-
3753/10/1	-	-	-	-	-	-	0.6	-	1.0	-	0.6	-	-	-	-	-	-	-	-	-
3757/8/1	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
3760/6/1	-	-	4.8	24.5	11.7	9.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Sheep meat	Eggs	Wild/free foods	Honey	Wild fungi	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3762/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
3771/4/1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3771/5/1	34.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3772/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3772/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-
3773/2/1	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3775/2/1	-	-	-	-	-	-	-	12.8	-	9.5	0.2	-	-	-	-	-	-	-	-	-
3779/4/1	-	-	-	-	-	-	-	103.7	-	-	-	-	-	-	-	-	-	-	-	-
3781/1/1	-	-	36.1	28.7	49.2	6.9	2.3	-	-	-	0.8	-	-	-	-	-	-	-	-	-
3782/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	738	32
3782/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	738	32
3782/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1155	48
3782/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	417	16
3782/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1845	80
3782/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1845	80
3782/6/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1845	80
3788/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	163	-	208	261	-	-	-
3789/3/1	-	-	-	-	2.2	-	-	-	-	-	-	-	-	24	-	48	144	-	6519	573
3789/4/1	-	-	-	-	2.2	-	-	-	-	-	-	-	-	24	-	48	-	-	7311	666

Person ID number	Sea fish	Crustaceans	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Sheep meat	Eggs	Wild/free foods	Honey	Wild fungi	Intertidal occupancy over sand	Intertidal occupancy over sand and stones	Intertidal occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.2 km of the nuclear licensed site boundary	Outdoor occupancy within 1.2 km of the nuclear licensed site boundary
3789/7/1	30.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

U = Unknown

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

Annex 7. Summary of profiles for adults in the Wylfa area for use in the assessment of 'total dose'

Profile Name	Pathway Name	Number of Individuals		Crustacea	Direct	Eggs	Fish - Fresh	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sediments	Honey	Marine plants/algae	Meat - Cow	Meat - Pig	Meat - Poultry	Meat - Sheep	Milk	Mollusca	Mushrooms	Occupancy In water	Occupancy On water	Plume (IN; 0-0.25 km)	Plume (MID; 0.25-0.5 km)	Plume (OUT; 0.5-1.2 km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
			Notes		1						2		3										4	4	4				
			Units	kg	-	kg	kg	kg	kg	kg	h	kg	kg	kg	kg	kg	kg	l	kg	kg	h	h	h	h	h	kg	kg	kg	kg
Crustacea Consumers		5		**5.0**	0.4	-	-	8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	480	-	-	260	-	-	-	-
Occupants for Direct Radiation		91		0.1	**1.0**	1.3	-	2.1	1.4	0.3	77	-	0.01	-	-	0.3	0.02	0.9	0.01	0.1	42	63	220	54	3450	0.8	0.7	1.2	1.1
Egg Consumers		7		-	0.7	**19.8**	-	8.3	6.6	0.3	68	-	-	-	6.0	4.1	1.4	20.6	-	-	15	4	-	-	4920	5.3	10.0	5.0	3.5
Freshwater Fish Consumers		5		-	-	2.3	**5.7**	2.6	2.4	-	2	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	8.9	15.6	17.0	13.7
Sea Fish Consumers		11		0.5	0.6	3.1	-	**37.1**	8.3	-	10	-	-	-	-	2.1	-	-	0.02	0.1	5	45	-	1	700	2.2	5.5	11.3	8.9
Domestic Fruit Consumers		5		-	0.6	15.1	-	28.7	**25.1**	0.2	23	-	-	-	-	5.3	-	-	0.04	0.1	22	51	-	2	2110	7.6	13.1	27.4	21.6
Wild Fruit and Nut Consumers		13		-	0.2	7.6	-	-	1.4	**2.7**	-	-	-	-	-	0.03	-	45.9	-	0.3	-	-	-	-	18	0.5	0.8	7.0	-
Occupants over Sediment		18		0.1	0.6	-	-	0.3	0.1	0.9	**570**	-	0.03	-	-	-	-	-	-	0.4	190	-	-	58	450	-	-	-	-
Honey Consumers		2		-	-	-	7.1	6.5	1.3	-	-	**2.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0	22.1	12.5	13.4
Consumers of Marine Plants and Algae		1		-	1.0	-	-	-	-	1.5	570	-	**0.5**	-	-	-	-	-	-	0.8	310	-	-	100	-	-	-	-	-
Cattle Meat Consumers		6		-	-	-	-	-	-	-	-	-	-	**41.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pig Meat Consumers		2		-	-	17.8	-	-	0.5	-	140	-	-	-	**20.9**	1.1	5.0	72.0	-	-	-	-	-	-	-	5.6	21.6	5.0	-
Poultry Meat consumers		1		-	1.0	33.6	-	58.0	20.8	-	100	-	-	-	-	**23.0**	-	-	-	-	54	-	-	-	7670	12.9	2.0	12.5	8.0
Sheep Meat Consumers		2		-	-	-	-	-	0.5	0.5	0	-	-	-	-	-	**15.0**	-	0.2	1.6	-	-	-	-	-	-	-	0.5	-
Milk Consumers		16		-	-	6.8	-	-	0.5	1.1	17	-	-	-	2.6	0.1	0.6	**70.4**	-	0.2	-	-	-	-	-	1.0	3.3	5.7	-
Mollusca Consumers		3		-	0.3	-	-	28.5	23.8	0.3	4	-	-	-	-	-	6.7	-	**0.2**	1.3	-	85	-	3	-	3.9	19.5	37.7	30.1
Mushroom consumers		1		-	-	-	-	-	1.0	1.0	-	-	-	-	-	-	20.0	-	0.3	**3.2**	-	-	-	-	-	-	-	1.0	-
Occupants In Water		17		-	0.7	-	-	-	-	0.9	360	-	0.03	-	-	-	-	-	-	0.5	**330**	-	-	61	410	-	-	-	-
Occupants On Water		4		1.3	0.8	-	-	4.9	-	-	4	-	-	-	-	-	-	-	-	-	-	**1510**	-	-	720	-	-	-	-
Local Inhabitants (0-0.25 km)		10		-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1930**	-	-	-	-	-	-
Local Inhabitants (0.25-0.5 km)		2		-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1910**	-	-	-	-	-
Local Inhabitants (0.5-1.2 km)		41		-	1.0	1.7	-	1.5	1.5	0.1	30	-	-	-	-	0.6	-	2.0	-	-	13	1	-	-	**7200**	1.2	0.7	0.9	1.2
Green Vegetable Consumers		6		-	0.7	11.2	-	10.1	11.2	0.3	17	-	-	-	-	4.4	-	-	-	-	18	-	-	-	4220	**22.5**	11.1	9.5	21.0
Other Domestic Vegetable Consumers		18		-	0.1	2.6	1.6	5.5	5.0	0.1	17	0.3	-	-	2.3	0.1	0.6	8.0	0.01	0.04	-	14	-	1	-	9.4	**22.2**	18.4	18.8
Potato Consumers		6		-	0.2	1.9	2.4	14.2	13.3	-	4	-	-	-	-	-	-	-	0.04	0.1	-	43	-	2	-	6.1	17.8	**37.8**	23.9
Root Vegetable Consumers		4		-	0.3	-	-	21.4	18.8	0.4	3	-	-	-	-	-	-	-	0.1	0.2	-	64	-	2	-	20.9	29.0	31.5	**47.2**

Notes for Annex 7

1) Direct radiation is expressed as proportion of group who are present within 1.2 km of site perimeter.
2) Gamma ext (external gamma) - Sediments represents occupancy over intertidal substrates including mud; mud, sand and stones; rock; sand; sand and stones; stones.
3) Marine plants/algae represents consumption of samphire.
4) Plume times are the sum of individuals' indoor and outdoor times.

The means of the high-rate groups are determined by the ‘cut-off’ method and are emboldened on the diagonal.
Except for the direct radiation pathway, the figures across the rows are the means of the consumption and occupancy rates for the other pathways for the individuals within that profile.

Annex 8. Summary of profiles for the child age group (6 - 15 years old) in the Wylfa area for use in the assessment of 'total dose'

Profile Name	Pathway Name	Number of Individuals		Crustacea	Direct	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sediments	Meat - Sheep	Milk	Mollusca	Mushrooms	Occupancy In water	Occupancy On water	Plume (OUT; 0.5-1.2 km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes
			Notes		1					2							3			
			Units	kg	-	kg	kg	kg	kg	h	kg	l	kg	kg	h	h	h	kg	kg	kg
Crustacea Consumers		1		**3.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Occupants for Direct Radiation		4		-	**1.0**	-	-	-	-	18	-	-	-	-	-	-	6940	-	-	-
Egg Consumers		5		-	-	**8.0**	-	0.3	0.3	-	-	28.5	-	0.21	-	-	-	0.24	0.4	3.6
Sea Fish Consumers		2		-	-	-	**0.58**	-	-	46	-	-	-	-	-	-	-	-	-	-
Domestic Fruit Consumers		2		-	-	8.2	-	**0.8**	0.4	-	-	66.4	-	0.4	-	-	-	0.6	1.0	9.1
Wild Fruit and Nut Consumers		4		-	-	5.9	-	0.5	**0.3**	-	-	35.6	-	0.3	-	-	-	0.3	0.5	4.5
Occupants over Sediment		2		-	0.5	-	-	-	-	**130**	-	-	-	-	-	46	3340	-	-	-
Sheep Meat Consumers		5		-	-	-	-	-	-	-	**2.4**	-	-	-	-	-	-	-	-	-
Milk Consumers		4		-	-	4.1	-	0.4	0.2	-	-	**49.5**	-	0.2	-	-	-	0.3	0.5	4.5
Mollusca Consumers		2		-	-	-	-	-	-	-	-	-	**0.1**	-	-	10	-	-	-	-
Mushroom Consumers		3		-	-	5.4	-	0.6	0.4	-	-	44.2	-	**0.4**	-	-	-	0.4	0.7	6
Occupants In Water		1		-	-	-	-	-	-	-	-	-	-	-	**20**	-	-	-	-	-
Occupants On Water		1		-	-	-	-	-	-	180	-	-	-	-	-	**92**	-	-	-	-
Local Inhabitants (0.5-1.2 km)		4		-	1.0	-	-	-	-	18	-	-	-	-	-	-	**6940**	-	-	-
Green Vegetable Consumers		2		-	-	8.2	-	0.8	0.4	-	-	66.4	-	0.4	-	-	-	**0.6**	1.0	9.1
Other Domestic Vegetable Consumers		2		-	-	8.2	-	0.8	0.4	-	-	66.4	-	0.4	-	-	-	0.6	**1.0**	9.1
Potato Consumers		2		-	-	8.2	-	0.8	0.4	-	-	66.4	-	0.4	-	-	-	0.6	1.0	**9.1**

Notes for Annex 8

1) Direct radiation is expressed as proportion of group who are present within 1.2 km of site perimeter.
2) Gamma ext (external gamma) - Sediments represents occupancy over intertidal substrates including sand; sand and stones; stones.
3) Plume times are the sum of individuals' indoor and outdoor times.

The means of the high-rate groups are determined by the ‘cut-off’ method and are emboldened on the diagonal.

Except for the direct radiation pathway, the figures across the rows are the means of the consumption and occupancy rates for the other pathways for the individuals within that profile.

Annex 9. Summary of profiles for the infant age group (0 - 5 years old) in the Wylfa area for use in the assessment of 'total dose'

Profile Name	Pathway Name	Number of Individuals		Crustacea	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sediments	Meat - Sheep	Milk	Mushrooms	Occupancy On water	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
			Notes						1								
			Units	kg	kg	kg	kg	kg	h	kg	l	kg	h	kg	kg	kg	kg
Crustacea Consumers		1		**1.1**	-	-	-	-	-	-	-	-	-	-	-	-	-
Egg Consumers		3		-	**4.2**	-	-	0.1	-	-	5.7	-	-	-	-	-	-
Sea Fish Consumers		1		-	-	**0.3**	-	-	46	-	-	-	-	-	-	-	-
Domestic Fruit consumers		2		-	-	-	**0.7**	-	-	-	-	-	-	1.8	2.4	4.3	3.0
Wild Fruit and Nut Consumers		4		-	3.1	-	0.04	**0.1**	-	-	4.2	0.04	-	-	-	-	-
Occupants over Sediment		1		-	-	-	-	-	**180**	-	-	-	92	-	-	-	-
Sheep Meat Consumers		2		-	-	-	-	-	-	**1.0**	-	-	-	-	-	-	-
Milk Consumers		2		-	-	-	-	-	-	-	**207.3**	-	-	-	-	-	-
Mushroom Consumers		1		-	-	-	0.2	0.2	-	-	-	**0.2**	-	-	-	-	-
Occupants On Water		1		-	-	-	-	-	180	-	-	-	**92**	-	-	-	-
Green Vegetable Consumers		2		-	-	-	0.7	-	-	-	-	-	-	**1.8**	2.4	4.3	3.0
Other Domestic Vegetable Consumers		2		-	-	-	0.7	-	-	-	-	-	-	1.8	**2.4**	4.3	3.0
Potato Consumers		2		-	-	-	0.7	-	-	-	-	-	-	1.8	2.4	**4.3**	3.0
Root Vegetable Consumers		2		-	-	-	0.7	-	-	-	-	-	-	1.8	2.4	4.3	**3.0**

Notes for Annex 9

1) Gamma ext (external gamma) - Sediments represents occupancy over intertidal substrates including sand; sand and stones; stones.
The means of the high-rate groups are determined by the ‘cut-off’ method and are emboldened on the diagonal.
Except for the direct radiation pathway, the figures across the rows are the means of the consumption and occupancy rates for the other pathways for the individuals within that profile.

Annex 10. Summary of profiles for women of childbearing age[a] in the Wylfa area, for use in assessments of 'total dose' to prenatal children

Profile Name	Pathway Name	Number of Individuals	Notes	Crustacea	Direct	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sediments	Honey	Meat - Sheep	Milk	Mushrooms	Occupancy IN water	Occupancy ON water	Plume (IN; 0-0.25 km)	Plume (MID; 0.25-0.5 km)	Plume (OUT; 0.5-1.2 km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
			Notes		1					2							3	3	3				
			Units	kg	-	kg	kg	kg	kg	h	kg	kg	l	kg	h	h	h	h	h	kg	kg	kg	kg
Crustacea Consumers		2		**0.8**	-	-	2.2	-	-	37	-	-	-	-	-	-	-	-	-	-	-	-	-
Occupants for Direct Radiation		17		-	**1.0**	-	-	-	-	17	-	-	1.6	-	8	-	8	110	3630	-	-	-	0.3
Egg Consumers		5		-	-	**8.4**	-	0.64	1.6	-	-	-	42.4	0.3	-	-	-	-	-	0.5	0.8	7.3	-
Sea Fish Consumers		3		-	-	-	**32.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Domestic Fruit Consumers		5		-	-	6.5	-	**1.1**	1.8	-	-	-	39.8	0.3	-	-	-	-	-	7.7	6.5	8.6	9.8
Wild Fruit and Nut Consumers		6		-	-	5.4	-	0.9	**1.6**	-	-	-	35.6	0.3	-	-	-	-	-	6.4	5.4	7.2	8.2
Occupants over Sediment		3		-	-	-	-	-	-	**270**	-	-	-	-	87	-	-	-	-	-	-	-	-
Honey Consumers		1		-	-	-	-	-	-	-	**0.5**	-	-	-	-	-	-	-	-	-	-	-	-
Sheep Meat Consumers		6		-	-	-	-	0.3	0.3	-	-	**1.8**	-	-	-	-	-	-	-	-	-	-	-
Milk Consumers		4		-	-	6.1	-	0.6	1.5	-	-	-	**75.7**	0.3	-	-	-	-	-	0.5	0.8	6.8	-
Mushroom Consumers		5		-	-	6.5	-	0.7	1.7	-	-	-	39.8	**0.4**	-	-	-	-	-	0.5	0.8	7.3	-
Occupants In Water		2		-	0.5	-	-	-	-	220	-	-	-	-	**200**	-	-	-	3550	-	-	-	1.1
Occupants On Water		3		-	-	-	-	-	-	-	-	-	-	-	22	**35**	-	-	-	-	-	-	-
Local Inhabitants (0-0.25 km)		1		-	1.0	-	-	-	-	-	-	-	-	-	-	-	**140**	-	-	-	-	-	-
Local Inhabitants (0.25-0.5 km)		1		-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	**1930**	-	-	-	-	-
Local Inhabitants (0.5-1.2 km)		8		-	1.0	-	-	-	-	36	-	-	3.4	-	18	-	-	-	**6600**	-	-	-	0.6
Green Vegetable Consumers		1		-	-	-	-	2.3	0.8	-	-	-	-	-	-	-	-	-	-	**36.1**	28.7	6.9	49.2
Other Domestic Vegetable Consumers		2		-	-	-	-	1.3	0.4	-	-	-	-	-	-	-	-	-	-	20.4	**26.6**	8.0	30.5
Potato Consumers		6		-	-	5.4	-	1.0	1.5	-	-	-	33.2	0.3	-	-	-	-	-	7.2	9.5	**8.7**	10.2
Root Vegetable Consumers		1		-	-	-	-	2.3	0.8	-	-	-	-	-	-	-	-	-	-	36.1	28.7	6.9	**49.2**

Notes for Annex 10

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

1) Direct radiation is expressed as proportion of group who are present within 1.2 km of site perimeter.
2) Gamma ext (external gamma) - Sediments represents occupancy over intertidal substrates including sand; sand and stones; stones.
3) Plume times are the sum of individuals' indoor and outdoor times.

The means of the high-rate groups are determined by the ‘cut-off’ method and are emboldened on the diagonal.

Except for the direct radiation pathway, the figures across the rows are the means of the consumption and occupancy rates for the other pathways for the individuals within that profile.

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