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Radiological Habits Survey: Trawsfynydd, 2018

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Environment Report RL 06/19

Radiological Habits Survey: Trawsfynydd, 2018

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KEY POINTS

- The mean consumption rate of fish decreased slightly in the 2018 Trawsfynydd habits survey compared with the previous habits survey, which was undertaken in 2005. Conversely, the maximum consumption rate of fish increased significantly in 2018.

- Larger quantities of brown trout and small quantities of perch were being consumed in 2018.

- A cycle and walking route has been extended around the whole of Lake Trawsfynydd and reopened, whilst kayaking and canoeing are permitted on the lake. The area is also part of the Snowdonia Centre of Excellence, resulting in an increased number of visitors in recent years.

- The occupancy rates over rock on the banks of the River Prysor increased significantly in 2018. Over recent years, gorge walking and other adrenaline activities, such as canyoning, have increased in popularity in the area.

- New consumption pathways identified in 2018 included pig meat and salt marsh grazed lamb. A farm in the terrestrial survey area was grazing sheep and lambs on salt marsh in the Vale of Ffestiniog Estuary, which was not in the aquatic survey area.

- Large quantities of ducks (unidentified species), mallard, geese, pheasants and rabbits were being consumed.

- The direct radiation survey area was sparsely populated and was extended to 1.5 km. A larger number of activities were identified in the direct radiation survey area in 2018 compared to the previous survey.

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SUMMARY

This report presents the results of a survey conducted in 2018 to determine the habits and consumption patterns of people living, working and pursuing recreational activities in the vicinity of the Trawsfynydd nuclear power station in Gwynedd, Wales. The site discharges gaseous radioactive waste via stacks to the atmosphere, liquid radioactive waste into Lake Trawsfynydd 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 is also applicable to inhalation and external exposure arising from gaseous releases from the site.

The following potential exposure pathways were investigated:

- The consumption of food from the aquatic survey area
- Activities and occupancy over lake shore and river bank substrates
- The handling of commercial fishing gear and sediment
- Activities and occupancy in and on water
- The consumption of food from the terrestrial survey area
- The use and destination of produce originating from the survey areas
- The consumption and use of groundwater and surface water in the terrestrial survey area
- The transfer of contamination off-site by wildlife
- Activities and occupancy within the direct radiation survey area
- Any new or unusual exposure pathways

Information was collected from members of the public by means of interviews and the data obtained for 434 individuals are presented and discussed. High rates of consumption, and lake shore and river bank occupancy, are identified using established methods comprising (a) a ‘cut off’ to define the high-rate group and (b) 97.5th percentiles. These 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 (see Figure 1, page 20) covered Lake Trawsfynydd and its shoreline, and the River Prysor from where it leaves the lake at Maentwrog Dam to its confluence with the River Dwyryd. The discharges into the lake are the predominant release point and the aquatic survey area was taken to represent the predominant area of mixing of discharged radionuclides in freshwater. In the case of a rare overflow event, discharges of low-level radioactivity are released via the sewage plant into a small stream to the north east of the site (Nant Gwylan). Overflow releases are very small in volume and activity compared to routine releases.

There have been several developments in the area to increase tourism around Lake Trawsfynydd. A cycle and walking route has been extended around the whole of the lake and reopened, whilst kayaking and canoeing are permitted on the lake. The area is also part of the Snowdonia Centre of Excellence, which has increased the number of visitors in recent years. The Prysor Angling Association lease the rights to all fishing and activities undertaken on Lake Trawsfynydd and issue permits for angling and other activities. Boat angling and shore angling were popular at many locations around lake.

Fish was the only food that was consumed from the aquatic survey area. The mean consumption rate for the adult high-rate group for fish was 56 kg y^{-1}. This rate was above the national adult mean consumption rate of 15 kg y^{-1} that is used for comparison in habits surveys. Rainbow trout and brown trout were the predominant fish species consumed by the people in the adult high-rate group.

The activity undertaken by adults in the high-rate group for occupancy on the river bank was gorge walking, and for occupancy on the lake shore were angling and dog walking. Gamma dose rates were measured at most of the locations where activities were undertaken in the aquatic survey area.

No handling of commercial fishing gear or sediment was identified in the survey area. The activities undertaken by people in and on the water included gorge walking, belly boating, boat angling, kayaking, paddling, swimming and tending a fish farm.

The terrestrial survey area

The terrestrial survey area (see Figure 2, page 21) covered the land within 5 km of the centre of the Trawsfynydd site. Twenty-three working farms were identified in the terrestrial survey area, producing beef cattle, lambs and chicken eggs. Grass for silage and haylage was grown on some of the farms for livestock feed. Farmers and their families were consuming beef, lamb and chicken eggs produced on their own farms.

One allotment site (with four plots in total) and a few private gardens were identified, each growing a variety of fruit and vegetables. Several individuals kept chickens and ducks for eggs, which were

consumed by their own families or sold from the door. Two individual beekeepers and a representative from a training apiary were interviewed who kept hives in the survey area and the consumption of honey was recorded. One of the beekeepers also kept pigs within the survey area for consumption. Shooting took place on farmland in the area for pest control. A farm in the north-western extent of the survey area grazed sheep in the Vale of Ffestiniog Estuary on salt marsh, but this is outside of the aquatic survey area. The consumption of salt marsh grazed sheep meat from this area was identified.

The consumption of ducks (unspecified species), geese, mallard, pheasants, and rabbits were identified. Wild foods including bilberries, blackberries, damsons, elderberries, elderflowers, hazel nuts, mushrooms and sloes were collected and consumed.

Foods from the terrestrial survey area were consumed from the following food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; cattle meat; pig meat; sheep meat; poultry; eggs; wild/free foods; rabbits/hares; honey; wild fungi; fish; salt marsh grazed sheep meat. 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 11 food groups: green vegetables; other vegetables; root vegetables; domestic fruit; cattle meat; pig meat; sheep meat; poultry; eggs; rabbits/hares; honey.

The consumption of groundwater by humans and livestock was identified in the survey area.

The potential transfer of contamination off-site by wildlife was investigated, since radionuclides could enter the food chain or contaminate the environment through this pathway. Routine pest control was undertaken by bird controllers, who discouraged the nesting of seagulls on the site with the use of a falcon. Since the buildings at the Trawsfynydd are enclosed, it was considered unlikely that wildlife could enter controlled areas.

The direct radiation survey area

The direct radiation survey area (see Figure 2, page 21) covered the land and Lake Trawsfynydd within 1.5 km of the Trawsfynydd 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 that is usually 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 occupancy rates were analysed in zones according to the distance from the Trawsfynydd nuclear licensed site boundary. The zones were 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.5 km. The occupancy rates in the 0 – 0.25 km zone were for people working, and people who were clay pigeon shooting, cycling, dog walking, walking and working. The observations in the >0.25 – 0.5 km zone were for

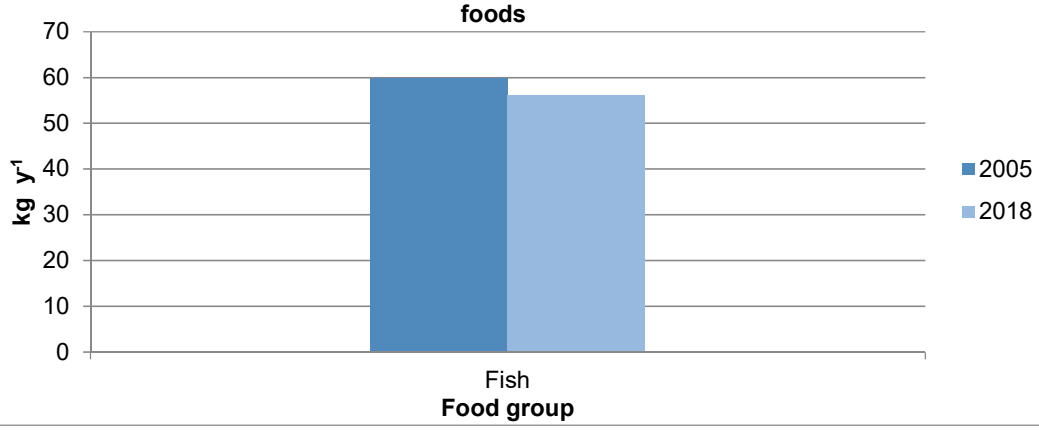
residents, and people who were angling, walking and cycling. The highest indoor, outdoor and total occupancy rates were for residents. Observations in the >0.5 – 1.5 km zone were for residents and for people tending their allotments, boat angling, shore angling, cycling, dog walking, walking, Geocaching, kayaking, swimming, working, and undertaking photography. The highest indoor, outdoor and total occupancy rates in the >0.5 – 1.5 km zone were for residents.

Gamma dose rate measurements were taken 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 Trawsfynydd site centre. The measurements taken indoors and outdoors at the properties were broadly similar with a few higher than the maximum background measurement. Since gamma dose rates are influenced by the nature of building materials, the substrate over which they are taken and many other factors, the measurements taken inside properties are expected to be higher than those taken outdoors.

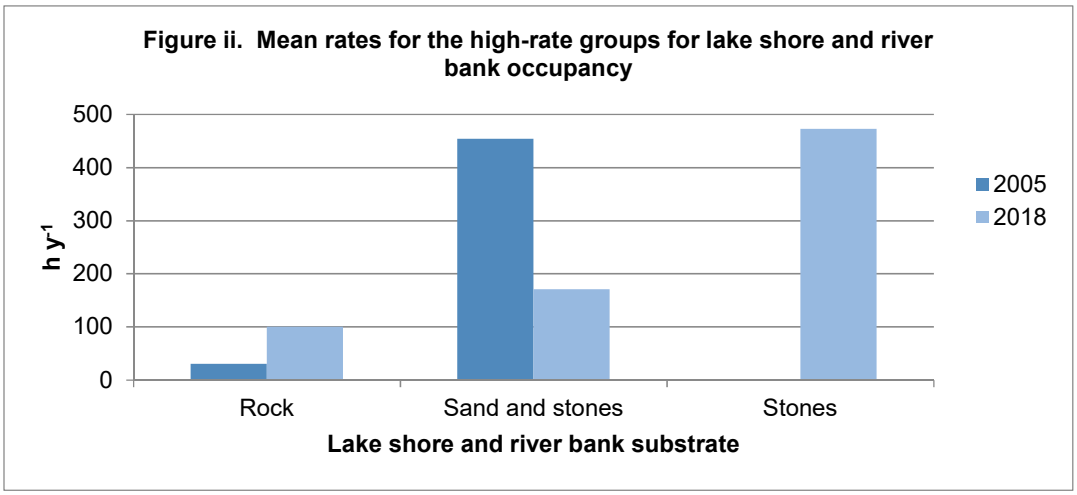
Comparisons with the previous survey

Comparisons were made with the results from the previous Trawsfynydd habits survey in 2005. The only food that was consumed from the aquatic survey area in 2005 and 2018 was fish. The mean consumption rate for fish decreased slightly in 2018 (see Figure i, below).

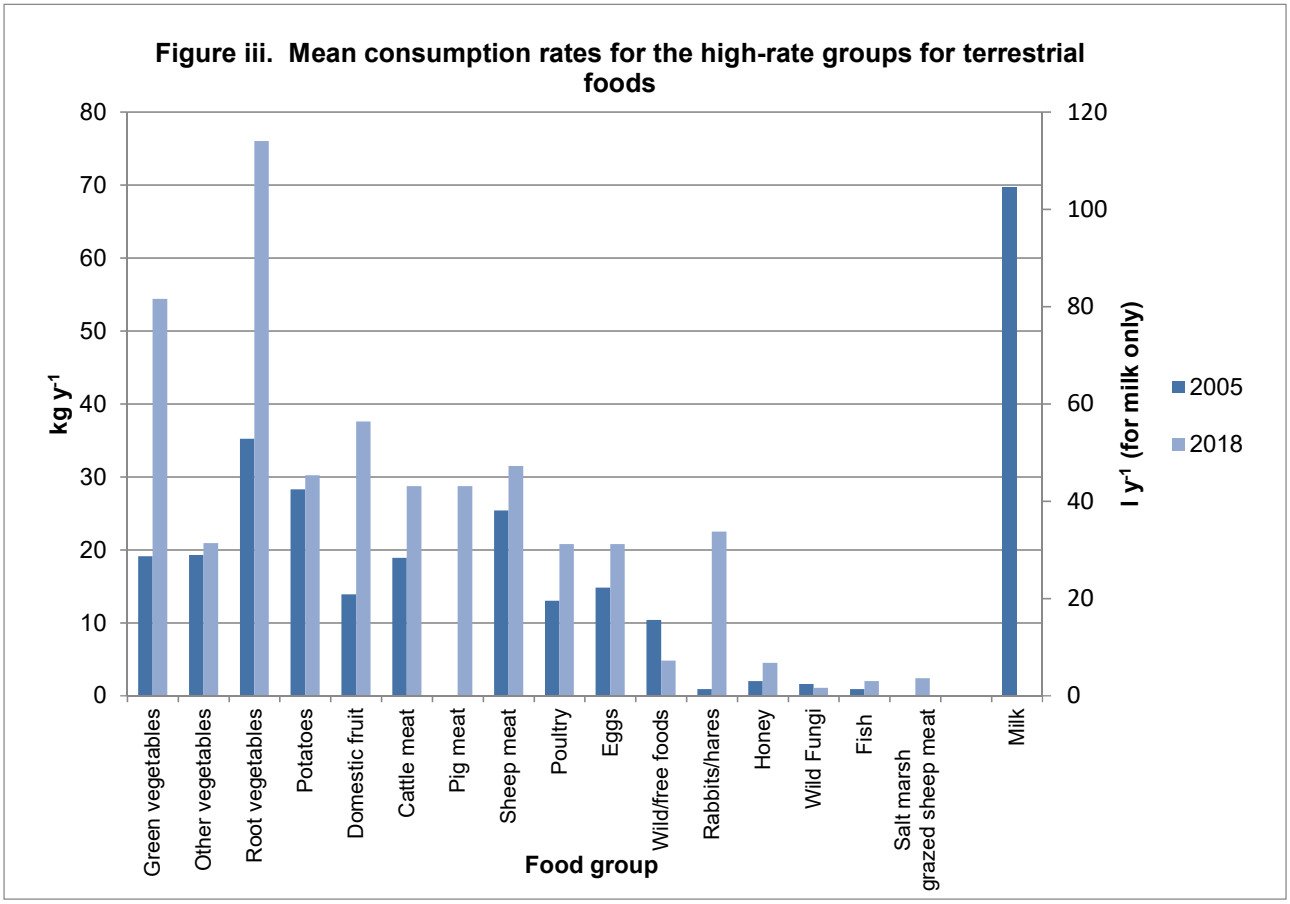
Figure i. Mean consumption rates for the high-rate groups for aquatic foods



The activities on the lake shore and river bank were similar in both years. In 2018, people were undertaking activities at locations around the lake on stones as well as on sand and stones (see Figure ii, page 13). Some of these locations had patches of sand and stones, or stones, and the activities were assigned to the predominant substrate over which they were taking place.



The most notable changes in the consumption rates of terrestrial foods was the large increase in the following food groups: green vegetables, root vegetables, domestic fruit and rabbits/hares. Milk consumption was not identified in 2018, and conversely, pig meat was not identified in 2005 (see Figure iii, below).

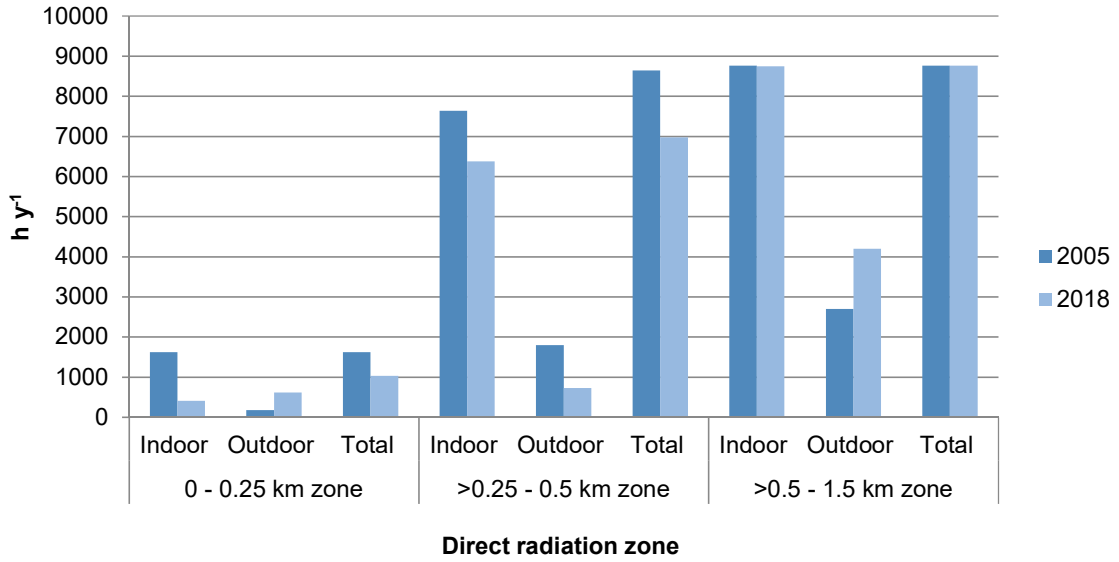


The significant increase in the consumption of rabbits/hares and the increase in the consumption of poultry in 2018 was due to the identification of bird controllers who used a falcon to catch a mixture of

game from the area for their own consumption. The consumption of milk was recorded in 2005 but the only farm producing milk in the survey area had ceased production prior to 2018. In 2018, an individual was identified keeping pigs for their own consumption and a farm in the terrestrial survey area was identified grazing lambs on salt marsh in an estuary and lamb was being consumed.

In the direct radiation survey area, the range of activities undertaken had increased since 2005. The occupancy rates in the direct radiation survey area in 2018 were similar to those in 2005 in the 0 – 0.25 km zone, >0.25 – 0.5 km zone and >0.5 – 1.5 km zone (see Figure iv, below).

Figure iv. Maximum direct radiation occupancy rates



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

The foods and lake shore or river bank locations identified in the 2018 Trawsfynydd 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 10.2 for considering sample selection for the Food Standards Agency monitoring programme. The radiological environmental monitoring programme in Wales is carried out by the Environment Agency on behalf of National Resources Wales, and this adequately covers the Trawsfynydd area, so no changes to this are suggested.

.

1 INTRODUCTION

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

1.1 Regulatory framework

In Wales, Natural Resources Wales regulates the discharges of radioactive waste under the Environmental Permitting (England and Wales) (Amendment) (No. 2) Regulations 2018 (UK Parliament, 2018). These new 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). On behalf of Natural Resources Wales, the Environment Agency is responsible for the Trawsfynydd site compliance activity for the radioactive substances regulation (RSR) environmental permit, and the radiological environment in Wales. 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 Office for Nuclear Regulation (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.

Appropriate discharge limits are set by the Environment Agency after wide-ranging consultations that include the Food Standards Agency. The Food Standards Agency 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 Food Standards Agency also ensures that public radiation exposure via the food chain is within EU acceptable limits.

1.2 Radiological protection framework

Dose standards for the public are embodied in the national policy (UK Parliament, 2009: 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 the Environmental Permitting (England and Wales) (Amendment) (No. 2) Regulations 2018 (UK Parliament, 2018). These require that the environment agencies ensure, wherever applicable, that:

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

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

The environment agencies are also required to ensure that the dose estimates are as realistic as possible for the population as a whole and for reference groups of the population. They are required to take all necessary steps to identify the reference groups of the population taking into account the effective pathways of transmission of radioactive substances. Guidance on the principles underlying prospective radiological assessments (i.e. assessments of potential future doses) 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 (i.e. assessment of doses already received from past discharges) (Allott, 2005) and possible methods of carrying out these assessments using the data from combined habits surveys (Camplin *et al.*, 2005). NDAWG agreed that the optimal method for performing retrospective dose assessments would be to use habits profiles (profiling method) as described in Camplin *et al*. (2005). This approach was adopted in Radioactivity in Food and the Environment (RIFE) publications, (e.g. EA, FSA, FSS, NRW, NIEA and SEPA, 2016). NDAWG published reports on the collection and use of habits survey data in retrospective and prospective dose assessments (NDAWG, 2005; NDAWG 2009); the principles described in these reports are consistent with those used here. The UK environment agencies, Public Health England (formerly, Health Protection Agency) and the Food Standards Agency

jointly produced an update of the 2002 interim guidance and principles for assessing prospective doses (EA, SEPA, NIEA, HPA and FSA, 2012).

2 THE SURVEY

2.1 Site activity

The Trawsfynydd nuclear site is located at Lake Trawsfynydd in north-west Wales, approximately 12 km to the east of Porthmadog. The Trawsfynydd power station was powered by twin Magnox reactors that ceased generating electricity in 1991. The station is undergoing decommissioning and is preparing to enter the Care and Maintenance phase.

The Trawsfynydd site is owned by the Nuclear Decommissioning Authority (NDA), and the management and operations contractor responsible for decommissioning the station under contract to the NDA is Magnox Ltd.

Under the Radioactive Substances Regulation of the Environmental Permitting (England and Wales) (Amendment) (No. 2) Regulations 2018, Magnox Ltd is permitted to undertake radioactive substances activities at the Trawsfynydd nuclear site. The environmental permit is issued and regulated by Natural Resources Wales. This includes permission to discharge gaseous radioactive wastes via stacks to the atmosphere and liquid radioactive wastes via an outfall into Lake Trawsfynydd. The site is licensed for the purposes of operating certain activities prescribed under the Nuclear Installations Act, 1965. 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, 2018.

2.2 Survey objectives

The Centre for Environment, Fisheries & Aquaculture Science (Cefas) undertook the Trawsfynydd habits survey in 2018 on behalf of the Environment Agency, the Food Standards Agency, Natural Resources Wales, and the Office for Nuclear Regulation. The aim of the survey was to obtain comprehensive information on the habits of the public that might lead to their exposure to radiation via gaseous discharges, liquid discharges and direct radiation from the Trawsfynydd nuclear site.

Specifically, investigations were conducted into the following:

- The consumption of food from the aquatic survey area
- Activities and occupancy over lake shore and river bank substrates
- The handling of commercial fishing gear and sediment
- Activities and occupancy in and on water
- The consumption of food from the terrestrial survey area
- The use and destination of produce originating from the survey areas

- The consumption and use of groundwater and surface water in the terrestrial survey area
- The transfer of contamination off-site by wildlife
- Activities and occupancy within the direct radiation survey area
- Any new or unusual exposure pathways

2.3 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 site.

The aquatic survey area (see Figure 1, page 20) covered Lake Trawsfynydd and its shoreline, and the River Prysor from where it leaves the lake at Maentwrog Dam to its confluence with the River Dwyryd. The discharges into the lake are the predominant release point and the aquatic survey area was taken to represent the predominant area of mixing of discharged radionuclides in freshwater. In the case of a rare overflow event, discharges of low-level radioactivity are released via the sewage plant into a small stream to the north east of the site (Nant Gwylan). Overflow releases are very small in volume and activity.

The terrestrial survey area (see Figure 2, page 21) covered the land within 5 km of the site centre (National Grid Reference: SH 691 382), to encompass the main areas of potential deposition from gaseous discharges.

The direct radiation survey area (see Figure 2, page 21) covered the land and waters of Lake Trawsfynydd within 1.5 km of the Trawsfynydd nuclear licensed site boundary. The direct radiation survey area was sparsely populated; therefore, the area was extended to include residences in Gellilydan 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, direct radiation survey areas were used in the previous habits survey, in 2005, conducted by Cefas in the Trawsfynydd area (Tipple *et al.*, 2006).

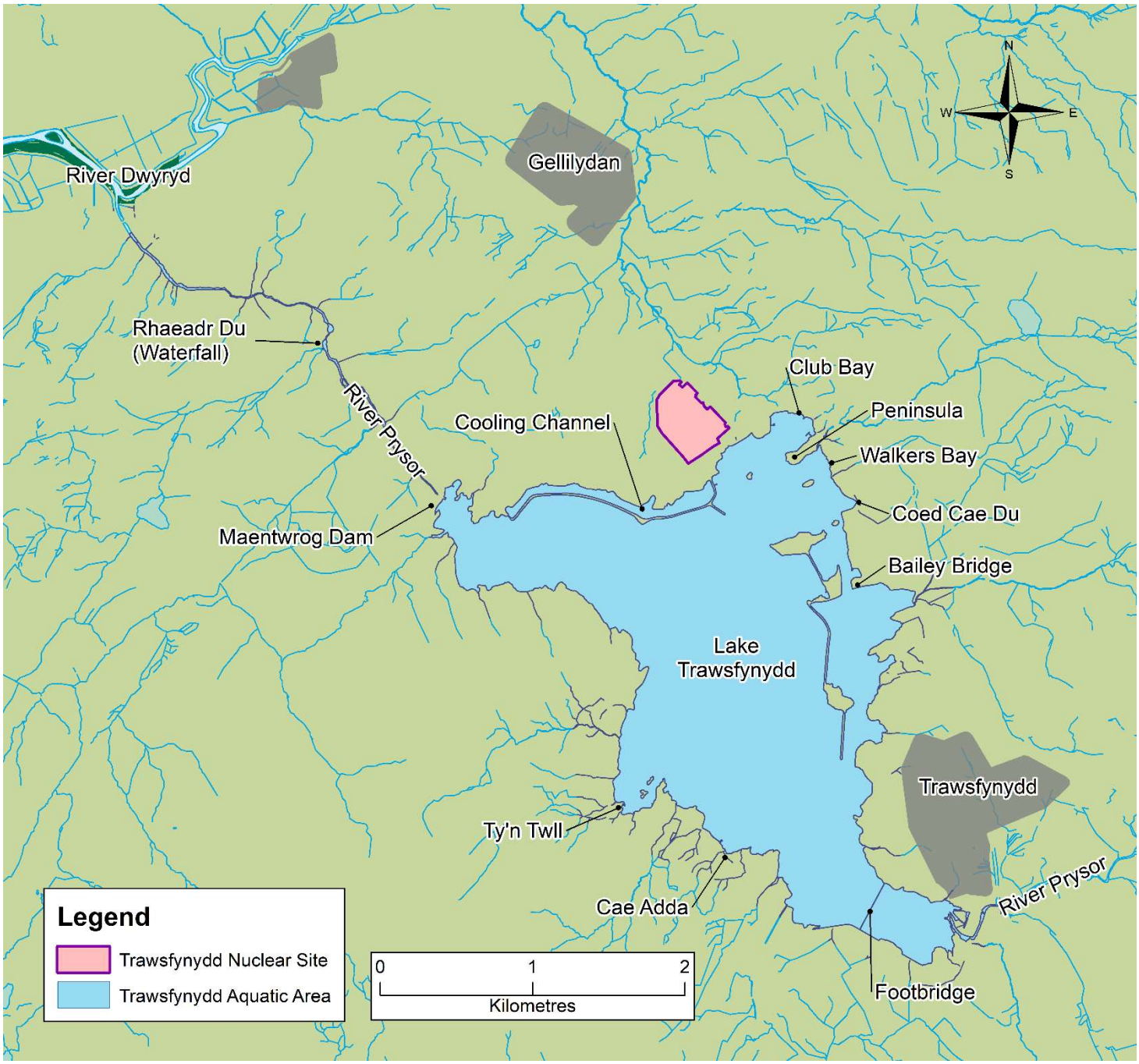


Figure 1. The Trawsfynydd aquatic survey area

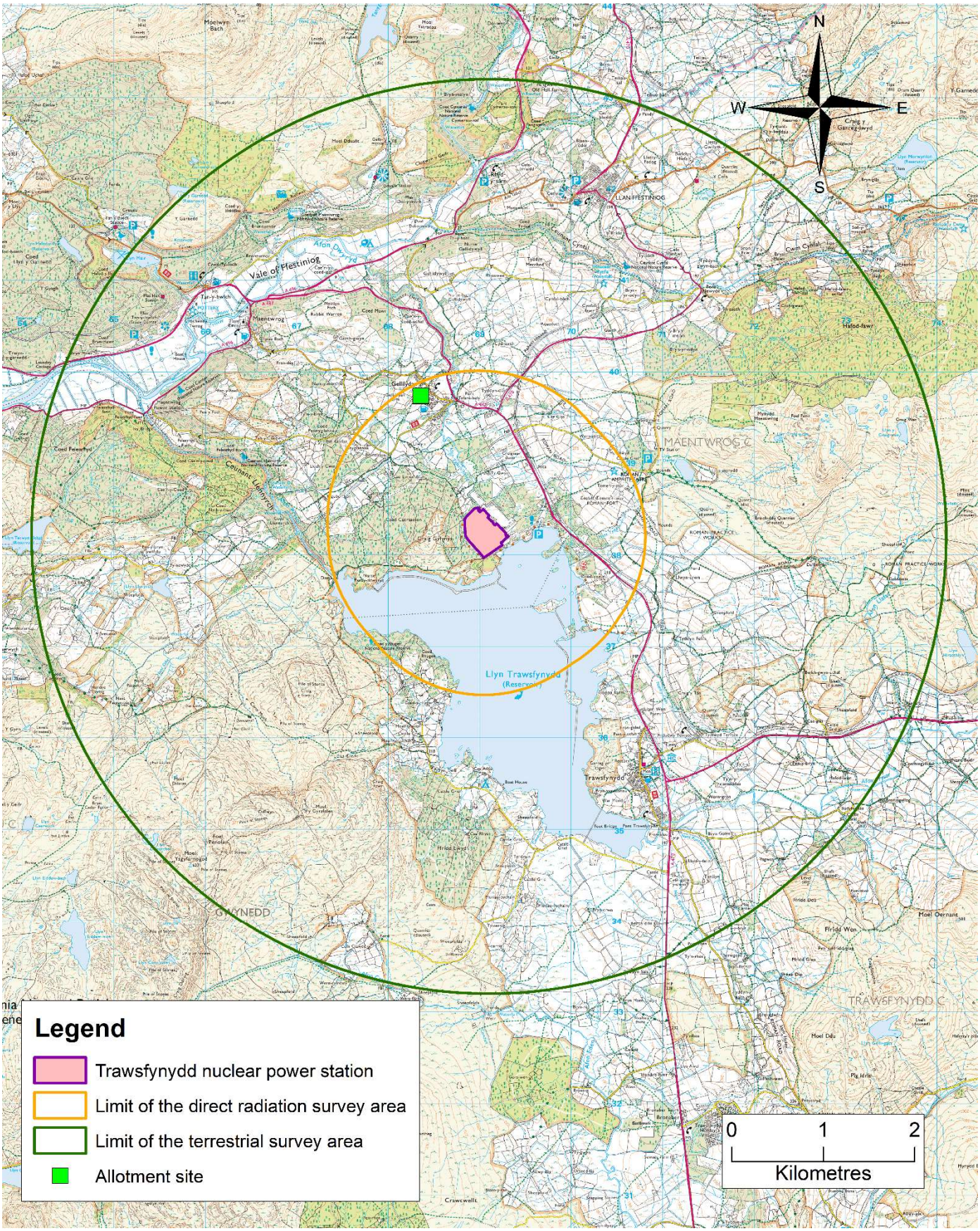


Figure 2. The Trawsfynydd terrestrial and direct radiation survey areas

2.4 Conduct of the survey

As part of the pre-survey preparation, the Environment Agency, the Food Standards Agency, and the Office for Nuclear Regulation were contacted to identify any additional site-specific requirements. Information relating to the activities of people in the aquatic and terrestrial survey areas was obtained from Internet searches, Ordnance Survey maps and from previous habits surveys undertaken around the Trawsfynydd site. People with local knowledge of the survey area were contacted for information relevant to the various exposure pathways. These included representatives from beekeeping associations who provided contacts for local beekeepers, and representatives from the Prysor Angling Association who provided information about Lake Trawsfynydd.

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

The fieldwork was carried out from the 2nd to the 12th July 2018 according to techniques described by Leonard *et al.* (1982). During the fieldwork, a meeting was held between members of the survey team and representatives from Magnox Ltd. This discussion provided details about current site activities, local information, potential exposure pathways and activities in the area, and the potential for transfer of contamination off-site by wildlife.

The following information was obtained during the meeting:

- At the time of the habits survey, routine decommissioning works were being undertaken at the Trawsfynydd site.
- An internal roof has been constructed inside the reactors to allow for the reactor buildings to be lowered.
- The Intermediate Level Waste (ILW) is now stored in vaults. The concrete ponds which were used to store the ILW have been emptied and any contaminated concrete removed from the site.
- The Trawsfynydd nuclear licensed site boundary has not changed since the 2005 habits survey.
- Discouraging the nesting of seagulls on the site by using a bird controller was a control measure taken to limit the possibility that contamination was transferred off-site by wildlife. It was reported that that the buildings are enclosed on the site so it is considered unlikely that wildlife could enter controlled areas.
- Information about potential exposure pathways and activities in the area included angling, boat angling, cycling, clay pigeon shooting and gorge walking.

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, anglers, people spending time on the lake shore and river bank 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 lake shore and river bank substrates in the aquatic area, and indoors and outdoors at many of the 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. Gamma dose rate measurements were taken using two Mini 600 Series Type 6-81 Environmental Radiation Meter with a compensated Geiger-Müller tube and a Thermo RadEye GX Survey Meter with a compensated Geiger-Müller tube.

For practical and resource reasons, the survey did not involve the whole population in the vicinity of the Trawsfynydd site, but targeted subsets or groups, chosen in order to identify those individuals potentially most exposed to radiation pathways. However, it is possible that even within a subset or group there may have been people not interviewed during the survey. Therefore, to aid interpretation, the number of people for whom data were obtained in each group as a percentage of the estimated complete coverage for that group (where it was possible to make such an estimate) has been calculated. The results are summarised in Table 1. 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 UK Office of National Statistics residential data for electoral wards (www.ons.gov.uk) there were approximately 2020 people living in the terrestrial survey area, although information was obtained for a significantly smaller number than this. The survey did not include employees or contractors at the Trawsfynydd nuclear licensed site while they were at work. This is because dose criteria applicable to these people whilst at work and the dose assessment methods are different from those for members of the public. However, data were collected for employees and contractors while outside work if these people were encountered during the survey.

People were initially questioned about their habits relating to the survey area that their first identified activity occurred in and, where possible, they were also asked about their habits relating to the other two survey areas. For example, people in the terrestrial survey were initially questioned because it was known that they grew or produced significant quantities of terrestrial foodstuffs. However, they were also asked about habits that might lead to exposure to liquid discharges or direct radiation. During interviews with representatives from organisations such as local angling associations 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 an angling association, the lake shore and river bank occupancy rates for the members.

3 METHODS FOR DATA ANALYSIS

3.1 Data recording and presentation

Data collected during the fieldwork were recorded in logbooks. On return to the laboratory, the data were examined, and any notably high rates were double-checked, where possible, by way of a follow-up phone call. In cases where follow-up phone calls were not possible (e.g. interviewees who wished to remain anonymous), the data were accepted at face value. The raw data were entered into a 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 aquatic survey area for members of clubs, only a limited number of representative individuals were included in the data entered into the database.

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

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

3.2 Data conversion

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

3.3 Rounding and grouping of data

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

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

Data were structured into age groups because different dose coefficients (i.e. the factors which convert intakes of radioactivity into dose) can apply to different ages. The International Commission on Radiological Protection (ICRP) revised its recommendations for the age groupings to be used in radiological assessments and these recommendations were adopted in the 2010 habits survey reports and thereafter. Consequently, the age ranges used in the habits survey reports prior to 2010 differ from those used currently. The age ranges used in this report and the names used for the age groups, based on the recommendations in ICRP 103 (ICRP, 2007), are shown in Table A below, together with those used in reports prior to 2010, for comparison.

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

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

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

Since there are fewer age groups for children in the current regime, there should, in general, be more observations in each group, resulting in greater robustness in the data. However, data since 2010 will not be directly comparable with data prior to 2010, since the age ranges in the age groups will be different.

For direct radiation pathways, the data were grouped into distance zones from the nuclear site boundary as a coarse indication of the potential dose rate distribution due to this source of exposure. The bands used in this report were: 0 - 0.25 km; >0.25 - 0.5 km; >0.5 - 1.5 km. These distance bands are also useful when assessing exposure to gaseous discharges.

3.4 Approaches for the identification of high rates

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

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

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

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

The mean rates for the high-rate groups for children and infants for consumption, lake shore and river bank occupancy and handling pathways, have been calculated. However, in cases where few child or infant observations were identified, an alternative approach that may be used for assessments is to estimate the mean rates for the high-rate groups for children and infants by applying scaling ratios to the mean rates for the high-rate groups for adults. Ratios for this purpose for the consumption and lake

shore and river bank occupancy pathways, based on generic 97.5th percentile rates, are provided in Annex 4. The age ranges within the age groups in Annex 4 do not correspond exactly with the age ranges within the age groups used throughout the rest of this report, but these ratios are the best available data for estimating child rates and infant rates from adult rates. Adult to child and adult to infant ratios are not available for handling pathways.

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

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

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

The survey data have been analysed to produce profiles of consumption and occupancy rates according to the method described by Camplin *et. al.,* 2005. The profiles for adults are used to assess total dose integrated across all pathways of exposure in the RIFE reports (e.g. EA, FSA, FSS, NRW, NIEA, and SEPA, 2018).

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

3.6 Data quality

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

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

high in relation to our experience of other surveys. Local factors were taken into account in these cases.

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

4 AQUATIC RADIATION PATHWAYS

4.1 Aquatic survey area

The aquatic survey area (see Figure 1, page 20) covered Lake Trawsfynydd and its shoreline, and the River Prysor from where it leaves the lake at Maentwrog Dam to its confluence with the River Dwyryd.

Lake Trawsfynydd was created when the Maentwrog Dam was built in 1928. The land was flooded to make a manmade reservoir, with the purpose of channelling water to the Maentwrog hydroelectric power station, located down river on the River Prysor. In the 1960's, the dam was raised in height to increase the volume of water in Lake Trawsfynydd to provide cooling water for the Trawsfynydd nuclear power station (www.heneb.co.uk). Lake Trawsfynydd's main use until 1995 was to feed the cooling water to the nuclear reactors. The River Prysor enters Lake Trawsfynydd in the south-east and leaves the lake at the Maentwrog Dam to the north-west. Prior to the habits survey, North Wales had experienced weeks without any rainfall, which resulted in the Trawsfynydd Lake water level falling to the lowest in recent history, and water was not channelled to the Maentwrog Dam.

The lake has an irregular shape with numerous bays and peninsulas, and the shore substrate is a mixture of stones, sand and rock. The lake is managed by an angling association, who lease the rights for angling and all other activities undertaken on Lake Trawsfynydd from the Nuclear Decommissioning Authority (NDA). The most popular activity on the lake is angling, both from the shore and from a boat. Day permits are required to undertake angling and other activities such as kayaking and canoeing. From discussion with the owner and operator of the Lake (NDA and Magnox respectively) we understand that there is no general prohibition on swimming, except in proximity to the Maentwrog hydro-electric dam, where signs are posted warning of the danger to life from potential strong currents or under-water structures etc. People were observed swimming in the lake at the southern end near the footbridge and there were reports of people wild swimming in the lake. There is a cycle and walking route around the whole of the lake which provides access to some parts of the lake. For the last four years the lake has been part of the Snowdonia Centre of Excellence, which has encouraged more visitors to the area.

The aquatic survey area is described below, starting at the north-western corner, progressing around Lake Trawsfynydd in a clockwise direction and ending at the River Prysor.

Lake Trawsfynydd - Northern Shore

Maentwrog Dam and Trawsfynydd Nuclear Power Station

The Maentwrog Dam is situated in the north-western corner of Lake Trawsfynydd. There is a car park and access to the lake shore at the eastern side of the dam which was a popular angling location (see Figure 3, below). There is public access along the dam wall and the rocky lake shore can be reached on the western side of the dam. No angling is permitted from the dam wall.

Figure 3. Maentwrog Dam

Immediately to the east of the dam there are a series of promontories and the shore is mainly shelving rock and stones. Approximately 0.3 km to the east of the dam, there is track with vehicular access to a promontory on the lake shore, which was a popular area for anglers due to the easy access to the shore and the sheltered waters. The northern shoreline of the lake is covered with dense vegetation and is largely inaccessible (see Figure 4, page 31). A concrete bund that channelled the cooling water around the northern extent of the lake when the Trawsfynydd nuclear reactors were operational, is disused, but still runs parallel to the northern shore. The Trawsfynydd nuclear site is located next to the shore.

Figure 4. Looking towards the northern shore

Lake Trawsfynydd - Eastern Shore

Club Bay, the Peninsula, Walkers Bay and Bailey Bridge

East of the Trawsfynydd power station, Club Bay (see Figure 5, below) is the main hub of activities in the area. The Prysor Centre is located at Club Bay, which is accessible from the A470 main road and has a large car park. The Prysor Centre is run by an angling association. It has a café, a tackle shop, sells day permits for angling, hires boats for angling and sells permits for activities such as kayaking. The centre and the bay were very popular with local people and tourists, and the activities identified in this location included shore angling, belly boating, boat angling, kayaking, paddling, swimming, playing on the shore, taking photographs and dog walking. Annual cycling events were hosted at the Prysor Centre which attracted many people to the lake.

Figure 5. Club Bay

In front of the centre is a slipway that could be used to launch small boats and kayaks into the lake. The bay's substrate was a mixture of sand and stones. Many people used the centre as their base and spent time on the shore in this area. The angling association operated a trout hatchery at Club Bay and operated a fish farm in the lake which was used to stock the lake with rainbow trout.

Angling boats were moored at a pontoon in Club Bay and this was the only location on Lake Trawsfynydd where boats could be hired. Although boat angling was a popular activity, the numbers of anglers are limited to the number of available boats and only a small number of boats were observed on the lake during the survey (see Figure 6, below).

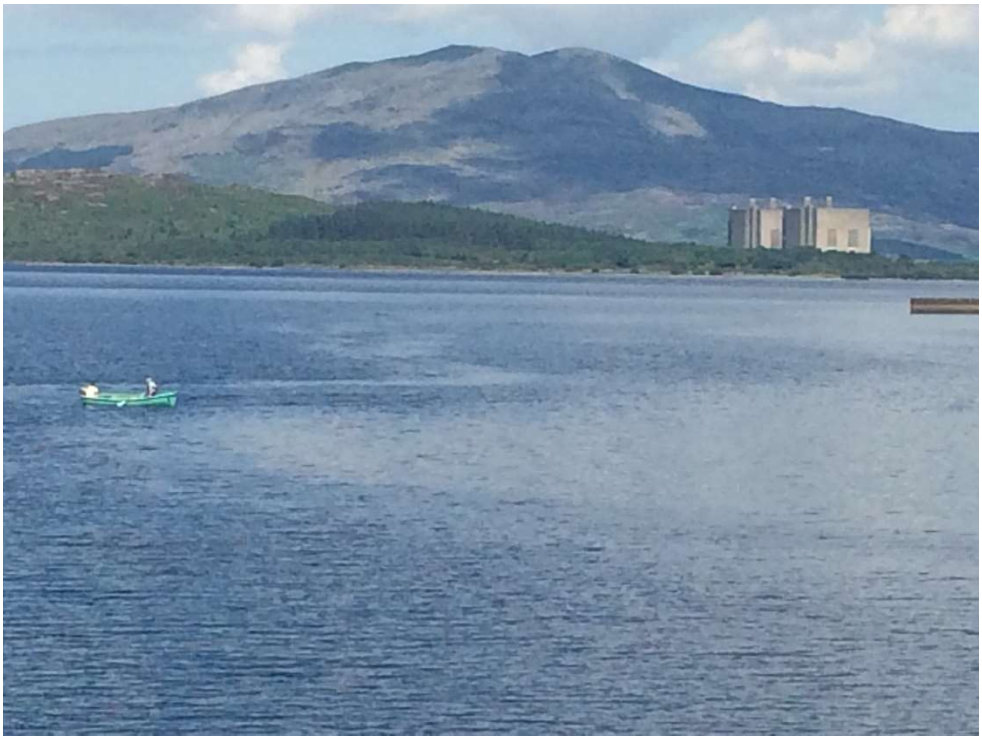


Figure 6. Boat angler on Lake Trawsfynydd

Two public footpaths led south from the Prysor Centre, one through the peninsula and the other along the eastern shore of the lake. The shoreline of the peninsula was popular with shore anglers and their families as the area was sheltered with trees. Access to the southern side of the peninsula, known as Walkers Bay, was possible via a footpath.

On the eastern shore, to the south of the peninsula, the shore is accessible but very few people were observed here during the survey. Further south, there used to be a bridge leading to the islands and concrete bund in the lake, but the bridge (Bailey Bridge) was removed. The area is still known as Bailey Bridge and is primarily used by people to walk the lake path.

From the Bailey Bridge, the cycle and walking route heads east towards the A470 main road, along the main road and through farmland to Trawsfynydd Village.

Lake Trawsfynydd - Southern Shore

The area around the footbridge across the lake

The southern shore could be accessed from Trawsfynydd Village via a footpath or across farm fields. The shore substrate is mainly boulders, stones and areas of mud and sand. It was reported that local children from the village play on the shore and swim in the lake in this area. A footbridge crosses the southern part of Lake Trawsfynydd (see Figure 7, below).

Figure 7. The footbridge from Trawsfynydd Village across the lake

There was a large car park at the opposite end of the footbridge, allowing easy access to the shore. Three people were sunbathing and swimming at this location, but most people sat on the grass bank at the top of the shore. Sheep were observed drinking from the lake in this area (see Figure 8, page 34). Boat angling was not permitted to the south of the footbridge. The River Prysor flows into Lake Trawsfynydd at the south-eastern shore.

Figure 8. South of the footbridge

Lake Trawsfynydd - Western Shore

On the western shore, to the north of the footbridge (see Figure 9, below), there is no public access to the shore except for anglers and landowners. Within this area is Cae Adda, a former farm, now a campsite, where the visitors to the campsite and anglers are permitted access to the shore. Activities identified at this location included shore angling, boat angling and kayaking.

Figure 9. Looking along the western shore

North of Cae Adda, dense woodland lines the majority of the western shore of Lake Trawsfynydd and access to the shore is limited. The public cycle and walking route runs inland through fields and woodland leading to Maentwrog Dam. Between Cae Adda and Ty'n Twll only fly fishing is permitted, and between Ty'n Twll and Maentwrog Dam, shore angling is not permitted.

River Prysor and Rhaeadr Du (waterfall)

The River Prysor leaves Lake Trawsfynydd at the north-western corner at Maentwrog Dam (see Figure 10, below). At the time of the survey, the river side of the dam was dry due to exceptionally low water levels in Lake Trawsfynydd. The banks of the river are very steep and covered in vegetation. A footpath runs along the western bank of the river, along which, there are areas where the river could be accessed via a steep drop. The substrate of the river is rock, boulders and stones.

Figure 10. From Maentwrog Dam looking along the River Prysor

Swimming was reported to be popular at Rhaeadr Du (waterfall) (see Figure 11, page 36) and the area was visited by tourists. Gorge walking was undertaken along the River Prysor.

Figure 11. Waterfall on the River Prysor

Gorge walking involves the use of zip lines at steep sections of the gorge to descend from the top of a waterfall to the pool at the bottom. Most people undertook this activity through organised sessions with outdoor activity centres.

4.2 Commercial fisheries

No commercial fishing activity was permitted on Lake Trawsfynydd or in the River Prysor.

4.3 Angling

At the time of the survey, the angling association leased the rights to all fishing and activities undertaken on Lake Trawsfynydd from the Nuclear Decommissioning Authority. The lake rules include restrictions on fishing locations, bait used, and the size of fish allowed to be taken. Shore anglers are allowed within 1 meter of the high-water mark around the entire lake, with access via public footpaths.

The angling association have approximately 150 members and issue approximately 4000 day permits for boat angling or shore angling per year. The angling association also issue approximately 150 day permits per year for other activities such as kayaking. The angling association operate a hatchery and fish farm to restock Lake Trawsfynydd to maintain a sustainable level of rainbow trout. Boat angling and shore angling were popular at many locations around Lake Trawsfynydd. Club Bay and the shore near Maentwrog Dam were the most popular areas for shore angling. Most of the shore angling took place on stones, with some time spent on sand and stones. The main edible species caught by shore anglers and boat anglers were rainbow trout and brown trout. Two people caught and consumed perch.

4.4 Wildfowling

At the time of the survey wildfowling was not permitted around Lake Trawsfynydd. Wildfowl consumption was not identified in 2005 or 2018.

4.5 Other pathways

Farmland bordered the majority of the southern, western and eastern shores of Lake Trawsfynydd. Beef cattle and sheep were observed spending time on the shore and drinking the lake water.

A company had planned to install an overhead cable system at the lake for kneeboarding. However, the company retracted their plans due to predictions that popularity would be affected by the nuclear power station. A seaplane had been observed landing on Lake Trawsfynydd; however, this was not permitted by the NDA and was an isolated occurrence. Triathlon organisers had considered Lake Trawsfynydd as a possible venue, but the events did not take place. No further developments were planned for any other activities on the lake.

4.6 Food consumption data

Consumption data for aquatic foods are presented in Tables 3 for adults and Table 4 for children. No infants were identified consuming aquatic foods. The mean consumption rates for the high-rate groups and the observed 97.5th percentile rates, calculated as described in Section 3.4, are given at the foot of each table.

Adults' consumption rates

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

Table B (see page 38) presents a summary of the adults' consumption rates for the fish food group. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. For comparison, the table also includes mean consumption rates and 97.5th percentile consumption rates for fish based on national data, which are referred to as 'generic' data in this report.

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

Food group	Number of observations	Number of high-rate consumers	Observed maximum for the high-rate group (kg y^{-1})	Observed minimum for the high-rate group (kg y^{-1})	Observed mean for the high-rate group (kg y^{-1})	Observed 97.5th percentile (kg y^{-1})	Generic mean* (kg y^{-1})	Generic 97.5th percentile* (kg y^{-1})
Fish	44	6	93.2	33.8	56.2	78.2	15.0	40.0

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

The predominant species of fish consumed by adults were rainbow trout and brown trout, with small quantities of perch. The fish were caught at various locations throughout Lake Trawsfynydd. Of the fish consumed by the six people in the high-rate group, the percentage breakdown of species was 90% rainbow trout and 10% brown trout (rounded to the nearest 5%). Perch was not consumed by the members of the high-rate group.

Children's consumption rates

Table C (below) presents a summary of the children's consumption rate for the fish group. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates.

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

Food group	Number of observations	Number of high-rate consumers	Observed maximum for the high-rate group (kg y^{-1} or l y^{-1})	Observed minimum for the high-rate group (kg y^{-1} or l y^{-1})	Observed mean for the high-rate group (kg y^{-1} or l y^{-1})	Observed 97.5th percentile (kg y^{-1} or l y^{-1})
Child age group (6 - 15 years old)						
Fish	3	3	0.7	0.5	0.6	0.7

The predominant species of fish consumed by children were rainbow trout and perch. The fish were caught at various locations throughout Lake Trawsfynydd. Of the fish consumed by the three people in the high-rate group, the percentage breakdown of species, rounded to the nearest 5%, was 75% rainbow trout and 25% perch.

4.7 Lake shore and river bank occupancy

Lake shore and river bank occupancy rates are presented in Table 5 for adults and in Table 6 for children. Some of the locations around the lake had patches of sand and stones as well as stones. Activities are assigned to the predominant substrate over which they were taking place.

Adults' lake shore and river bank occupancy rates

Table D (below) presents a summary of the adults' lake shore and river bank occupancy rates in the aquatic survey area. The table includes the mean occupancy rates for the high-rate groups and the observed 97.5th percentile rates.

Table D. Summary of adults' lake shore and river bank occupancy rates

Lake shore and river bank substrate	Number of observations	Number of people in the high-rate group	Maximum of the high-rate group (h y^{-1})	Mean of the high-rate group (h y^{-1})	97.5th percentile (h y^{-1})
Rock	2	2	100	100	100
Sand and stones	4	4	214	171	214
Stones	54	7	716	473	653

The activities undertaken by people in the adult high-rate groups for occupancy over each of the lake shore and river bank substrates were:

- For rock: gorge walking and canyoning in the River Prysor.
- For sand and stones: angling at Club Bay and Maentwrog Dam.
- For stones: angling at Club Bay, Maentwrog Dam and the Peninsula; dog walking at Club Bay.

Children's lake shore and river bank occupancy rates

Table E (below) presents a summary of the children's lake shore and river bank occupancy rates in the aquatic survey area. The table includes the mean occupancy rates for the high-rate groups and the observed 97.5th percentile rates.

Table E. Summary of children's and infants' lake shore and river bank occupancy rates

Lake shore and river bank substrate	Number of observations	Number of people in the high-rate group	Maximum of the high-rate group (h y^{-1})	Mean of the high-rate group (h y^{-1})	97.5th percentile (h y^{-1})
Child age group (6 – 15 years old)					
Stones	8	3	48	47	48

The activities undertaken by individuals in the child high-rate group for occupancy over stones were angling at various locations around Lake Trawsfynydd and playing at Club Bay.

4.8 Gamma dose rate measurements

Gamma dose rate measurements were taken over two lake shore and river bank substrates. All measurements were taken at a height of 1 metre above the substrate. The results are presented in Table 7 and are summarised in Table F (see page 40).

Table F. Summary of gamma dose rate measurements taken over lake shore and river bank substrates			
Substrate	**Number of measurements taken**	**Minimum gamma dose rate at 1 metre[a] ($\mu Gy\ h^{-1}$)**	**Maximum gamma dose rate at 1 metre[a] ($\mu Gy\ h^{-1}$)**
Rock	1	0.093	0.093
Sand and stones	2	0.091	0.100
Stones	6	0.085	0.108

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

For comparison, natural background levels have been estimated at 0.05 $\mu Gy\ h^{-1}$ over sand, 0.07 $\mu Gy\ h^{-1}$ over mud, and 0.06 $\mu Gy\ h^{-1}$ over other substrates (EA, FSA, FSS, NRW, NIEA and SEPA, 2018).

4.9 Handling of commercial fishing gear and sediment

Handling commercial fishing gear that has become entrained with fine sediment particles, during use can potentially give rise to skin exposure from beta radiation. Doses to the skin are considered within the dose limitation system (ICRP, 1992). Commercial 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 lake shore and river bank areas. No handling of commercial fishing gear or handling sediment was identified for adults, children or infants during the survey. Handling of angling equipment is not considered to be a significant pathway. Therefore, as in previous surveys, data for this pathway were not collected.

4.10 Water based activities

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

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

Occupancy rates for activities taking place 'in water' and 'on water' in the aquatic survey area are presented in Table 8 and Table 9 for adults and children, respectively. No activities in or on water were identified for infants. Where generic data for groups of people were collected, for example members of angling 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 belly boating, canyoning, gorge walking, kayaking and swimming. Kayaking is classified as an 'in water' activity since it is likely to lead to the ingestion of lake water. Sixty-seven observations were recorded for adults and five observations were recorded for the child age group. The highest occupancy rate for adults was 600 h y^{-1} for two individuals who were employees of an activity centre that regularly undertook gorge walking and canyoning sessions on the River Prysor. The highest occupancy rate for the child age group was 18 h y^{-1} for four children who were kayaking at Lake Trawsfynydd.

Activities on water

The activities taking place on water in the aquatic survey area were boat angling, paddling and working. Forty-two observations were recorded for adults, five observations were recorded for the child age group. The highest occupancy rate for adults was 720 h y^{-1} for two individuals who were boat angling at Lake Trawsfynydd. The highest occupancy rate for the child age group was 44 h y^{-1} for a child who was paddling at Club Bay.

5 TERRESTRIAL RADIATION PATHWAYS

5.1 Terrestrial survey area

The terrestrial survey area (see Figure 2, page 21) covered the land within 5 km of the site centre (National Grid Reference: SH 691 381).

The land is varied in the terrestrial survey area. Land located to the south, south-east, north and north-west is predominantly agricultural. From the north-west to the south-west of the Trawsfynydd site, the land is mountainous with patches of woodland. Lake Trawsfynydd is located directly south of the Trawsfynydd nuclear site. Three rivers flow into the River Dwyryd in the Vale of Ffestiniog, these are, the River Cynfal, the River Prysor and the River Tafarn-helyg. The main population centres are the villages of: Gellilydan, situated to the north of the Trawsfynydd site, Llan Ffestiniog which is situated to the north-west, and Trawsfynydd, located to the south-east.

Twenty-three working farms were identified in the Trawsfynydd terrestrial survey area. Of these farms:

- One produced beef cattle
- Seven produced beef cattle and lambs
- One produced beef cattle, lambs and chicken eggs
- Eleven produced lambs
- Three produced lambs and store cattle

Grass was grown for silage and haylage for animal feed on some of the farms. Farmers and their families were consuming beef, lambs and chicken eggs produced commercially on their own farms.

Two smallholdings were identified in the terrestrial survey area. Of these smallholdings, one produced beef cattle, lambs and eggs that were shared between family and friends, and one produced chicken eggs and small amounts of fruit and vegetables which were sold at Dolgellau Market.

People at one allotment site (with a total of four individual plots) and several private gardens were growing a wide variety of fruit and vegetables. Several people kept chickens and ducks for eggs, that were consumed by their own families or sold from the door.

Two beekeepers and a training apiary were identified with a total of 18 hives in the survey area. Eight hives were located at the training apiary and nine hives were located in Llan Ffestiniog. One hive was located in the Vale of Ffestiniog which was kept for conservation purposes with no honey harvested for consumption. The average production of honey per hive ranged from 16 kg y^{-1} to 60 kg y^{-1}. The honey that was harvested was consumed by the beekeepers, their families and friends.

The wild foods that were collected from within the survey area and consumed were bilberries, blackberries, damsons, elderberries, elderflowers, hazel nuts, mushrooms and sloes.

Rough shooting took place on many of the farms within the survey area for pest control. A falcon was used to catch ducks (unidentified species), geese, mallard, pheasants, and rabbits, which were being consumed.

Human consumption of groundwater including spring water, stream water and well water was identified at most farms and some residences. Some of the properties did not have mains water. Livestock were identified drinking spring water, borehole water and stream water. The consumption rates of groundwater were not investigated since representative water intake values for assessment purposes are available (Smith and Jones, 2003).

The soil classification on farms where interviews were conducted was mainly rock, peat or loam.

5.2 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 in North Wales, and to the local abattoir within the survey area, and beef was sold to food processing company.
- Lambs were sold at a range of livestock markets in North Wales, to the local abattoir, and to food processing company.
- Chicken eggs were sold to local shops, hotels and from the door within the survey area.
- Honey was sold at an environmental study centre.

5.3 The potential transfer of contamination off-site by wildlife

The potential transfer of contamination off-site by wildlife was investigated as radionuclides could enter the food chain or contaminate the environment through this pathway. Routine pest control was undertaken by bird controllers, who discouraged the nesting of seagulls on the site with the use of a falcon. Since the buildings at the Trawsfynydd are enclosed, it was considered unlikely that wildlife could enter controlled areas.

5.4 Food consumption data

Consumption data for locally produced foodstuffs potentially affected by deposition of gaseous discharges are presented in Tables 10 to 25 for adults and Tables 26 to 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 3.4, 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 35.

Adults' consumption rates

Consumption of locally produced foods was identified in the following 16 food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; cattle meat; pig meat; sheep meat; poultry; eggs; wild/free foods; rabbits/hares; honey; wild fungi; fish; salt marsh grazed sheep meat. No consumption of milk was identified.

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

Food group	Number of observations	Number of high-rate consumers	Observed maximum for the high-rate group (kg y^{-1})	Observed minimum for the high-rate group (kg y^{-1})	Observed mean for the high-rate group (kg y^{-1})	Observed 97.5th percentile (kg y^{-1})	Generic mean* (kg y^{-1})	Generic 97.5th percentile* (kg y^{-1})
Green vegetables	23	6	76.7	31.9	54.4	72.9	15.0	45.0
Other vegetables	19	10	29.2	10.7	20.9	27.5	20.0	50.0
Root vegetables	12	4	113.5	50.7	76.0	104.5	10.0	40.0
Potato	22	15	54.6	18.2	30.2	46.9	50.0	120.0
Domestic fruit	36	6	57.5	23.2	37.6	57.5	20.0	75.0
Cattle meat	14	9	47.3	23.2	28.7	47.2	15.0	45.0
Pig meat	2	2	25.3	25.3	25.3	25.3	15.0	40.0
Sheep meat	41	7	48.6	18.0	31.5	37.7	8.0	25.0
Poultry	6	2	21.3	20.4	20.8	21.2	10.0	30.0
Eggs	64	19	41.6	16.3	20.8	25.6	8.5	25.0
Wild/free foods	40	13	7.6	3.6	4.8	5.7	7.0	25.0
Rabbits/hares	2	2	31.5	13.5	22.5	31.0	6.0	15.0
Honey	12	2	5.4	3.6	4.5	4.9	2.5	9.5
Wild fungi	6	6	1.4	0.5	1.1	1.4	3.0	10.0
Fish	6	2	2.0	2.0	2.0	2.0	Not determined	Not determined
Salt marsh grazed sheep meat	5	5	2.4	2.4	2.4	2.4	Not determined	Not determined

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

Four of the mean consumption rates for the high-rate groups were greater than the generic 97.5th percentile consumption rates. These were for green vegetables, root vegetables, sheep meat and rabbits/hares. Eleven 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, rabbits/hares and honey. Six of the observed 97.5th percentile consumption rates exceeded the generic 97.5th percentile consumption rates. These were for green vegetables, root vegetables, cattle meat, sheep meat, eggs and rabbits/hares.

Children's and infants' consumption rates

Nine individuals in the child age group and two individuals in the infant age group were identified consuming foods from the terrestrial survey area. Table H (below) presents a summary of children's and infants' consumption rates. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. No generic data have been determined for the child or infant age groups. In the child age group, no consumption of foods from the following food groups was identified: milk; cattle meat; pig meat; poultry; fish; salt marsh grazed sheep meat. In the infant age group, no consumption of foods from the following food groups was identified: green vegetables; other vegetables; root vegetables; potato; domestic fruit; pig meat; milk; cattle meat; sheep meat; poultry; wild/free foods; rabbits/hares; honey; wild fungi; fish; salt marsh grazed sheep meat.

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

Food group	Number of observations	Number of high-rate consumers	Observed maximum for the high-rate group (kg y^{-1} or l y^{-1})	Observed minimum for the high-rate group (kg y^{-1} or l y^{-1})	Observed mean for the high-rate group (kg y^{-1} or l y^{-1})	Observed 97.5th percentile (kg y^{-1} or l y^{-1})
Child age group (6 - 15 years old)						
Green vegetables	1	1	9.6	9.6	9.6	Not applicable
Other vegetables	1	1	2.9	2.9	2.9	Not applicable
Root vegetables	1	1	14.2	14.2	14.2	Not applicable
Potato	1	1	6.8	6.8	6.8	Not applicable
Domestic fruit	1	1	3.5	3.5	3.5	Not applicable
Sheep meat	2	2	11.5	7.0	9.2	11.3
Eggs	5	1	19.2	19.2	19.2	17.9
Wild/free foods	1	1	0.5	0.5	0.5	Not applicable
Honey	2	2	0.1	0.1	0.1	0.1
Infant age group (0 - 5 years old)						
Eggs	2	1	12.8	12.8	12.8	12.5

6 DIRECT RADIATION PATHWAYS

6.1 Direct radiation survey area

The direct radiation survey area (see Figure 2, page 21) covered the land and waters of Lake Trawsfynydd within 1.5 km of the Trawsfynydd nuclear licensed site boundary. The direct radiation survey area was sparsely populated, and therefore to increase the number of observations, the survey area was extended from the 1 km area usually used in direct radiation 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.

Most of the land in the direct radiation survey area to the north and east of the Trawsfynydd site is agricultural and the farmers live in the survey area. The village of Gellilydan is located to the north-west of the nuclear power station and consisted of residential properties, an allotment site, a park, and a primary school, which most of the children from the village attend.

The Trawsfynydd site is located on the northern edge of Lake Trawsfynydd and a large area of the southern part of the direct radiation survey area is taken up by the waters of the lake. A road, also used as part of the cycle track, runs along the shore from Club Bay, past the Trawsfynydd site and electricity substation, to Maentwrog Dam. This road provides locals and visitors easy access to the northern shore of the lake and to the woodland footpaths. There are many footpaths in the area through woodland in the northern part of the direct radiation survey area. The footpaths and cycle track were regularly used by dog walkers, walkers and cyclists.

The Prysor Centre at Club Bay, with the café, tackle shop, boat hire and slipway, was the main hub of activities in the direct radiation survey area. It was very popular with local people and tourists, including people who were shore angling, boat angling, launching kayaks and small craft, walking, playing on the shore, dog walking and cycling. Annual cycling events were hosted at the Prysor Centre which attracted many people to the lake for the day. The angling association operated a rainbow trout hatchery at Club Bay and a fish farm that was located in the lake. The shore to the south of Club Bay was popular with anglers and the footpaths around the peninsular were popular with people walking, dog walking and cycling.

6.2 Residential activities

The residential properties within the direct radiation survey area were mostly located in the >0.5 – 1.5 km zone, and one residence was located in the >0.25 – 0.5 km zone. The direct radiation area was populated with approximately 90 properties identified. Interviews were conducted at

22 residences, one of which was located to the north-east of the site, three were located to the north-west, one was located to the south-east and 17 were located to the north of the site.

6.3 Leisure activities

A range of activities took place within the direct radiation area. In the 0 – 0.25 km zone, clay pigeon shooting, cycling, dog walking and walking took place. The activities that took place in the >0.25 – 0.5 km zone were belly boating, boat angling, cycling, shore angling and walking. The >0.5 – 1.5 km area was the most popular area, with activities including boat angling, cycling, dog walking, Geocaching, kayaking, paddling, playing, photography, shore angling, swimming. The cycle track stretched across the direct radiation area and cycling was identified across all zones. Shore angling primarily took place at Club Bay and around Maentwrog Dam.

6.4 Commercial activities

The land in the north and eastern part of the direct radiation survey area is mostly agricultural and farming was identified within the >0.25 – 0.5 km zone and the >0.5 – 1.5 km zone. A public house and a touring caravan park were located in the village of Gellilydan. Interviews were conducted with ten businesses located within the direct radiation survey area, and four businesses which visited the survey area. An electricity substation was located directly east of the nuclear site boundary. A tourist centre consisting of a café, a tackle shop and boat hire, and a fish farm and hatchery were located at Club Bay.

The Gellilydan primary school was contacted for an interview, but they were unable to provide occupancy rates for children and staff at the school.

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

6.5 Occupancy rates

Table 36 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 37. A summary of occupancy rates in the direct radiation survey area is presented in Table I, see page 48.

Table I. Summary of direct radiation occupancy rates

Zone	Number of observations	Highest indoor occupancy (h y^{-1})	Highest outdoor occupancy (h y^{-1})	Highest total occupancy (h y^{-1})
0 - 0.25 km	34	411	617	1029
>0.25 - 0.5 km	9	6373	730	6791
>0.5 - 1.5 km	229	8748	4188	8760

0 - 0.25 km from the nuclear licensed site boundary

Occupancy data were collected for 34 individuals in the 0 - 0.25 km zone. The observations were for seventeen people who were working, ten people who were clay pigeon shooting (one of whom was also angling), one person who was cycling and dog walking, two people who were dog walking, and four people who were walking. No indoor occupancy rates were recorded since there were no residential properties within this zone and the activities in this area were all undertaken outdoors. The highest outdoor and total occupancy rate was for someone who was working in the area.

>0.25 - 0.5 km from the nuclear licensed site boundary

Occupancy data were collected for nine people in the >0.25 - 0.5 km zone. The observations were for three residents, three people who were angling, two people who were walking and one person who was walking and cycling. There was one property with three residents in this zone. The highest indoor and total occupancy rate was for one of the residents. The highest outdoor rate was for another resident who was spending time farming their land.

>0.5 - 1.5 km from the nuclear licensed site boundary

Occupancy data were collected for 230 people in the >0.5 - 1.5 km zone. The observations were for 63 residents, 35 workers, two people tending their allotments, 27 people boat angling, ten people who were cycling, 20 people who were visiting the caravan park, four people who were dog walking, one person who was Geocaching, 26 people who were kayaking, four people who were playing and swimming, one person who was undertaking photography, 27 people who were shore angling, four people who were shore angling and boat angling, and four people who were walking. A resident had the highest indoor occupancy rate. One farmer had the highest outdoor occupancy rates and another farmer had the highest total occupancy rates.

6.6 Gamma dose rate measurements

Gamma dose rate measurements were taken indoors and outdoors at most of the properties where interviews were conducted in the Trawsfynydd direct radiation survey area. Outdoor measurements

were taken approximately 5 to 10 metres from the nearest building, and where possible, were taken over grass. Gamma dose rate measurements over grass were taken at locations further than 5 km from the site centre to obtain background dose rates. All measurements were taken at a height of 1 metre above the substrate either using a Mini 600 Series Type 6-81 Environmental Radiation Meter with a compensated Geiger-Müller tube or a Thermo RadEye GX Survey Meter with a compensated Geiger-Müller tube. The indoor and outdoor measurements have not been adjusted for background dose rates. The results are presented in Table 38 and are summarised in Table J (below).

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

Substrate	Number of measurements taken	Minimum gamma dose rate at 1 metre ($\mu Gy\ h^{-1}$)	Maximum gamma dose rate at 1 metre ($\mu Gy\ h^{-1}$)
Indoor measurements[a]			
Concrete	11	0.078	0.143
Wood	5	0.090	0.103
Stone	5	0.080	0.110
Outdoor measurements[a]			
Grass	18	0.056	0.101
Concrete	3	0.066	0.088
Stone	1	0.086 (one result only)	
Background measurements			
Grass	3	0.076	0.089

Notes

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

Of the maximum gamma dose measurements, all of the indoor and one of the outdoor measurements were higher than the background measurement and two of the outdoor measurements were lower than the background measurement.

The gamma dose rate measurements can be compared with readings taken by the RIMNET programme, which continuously monitors radiation levels at a network of 93 fixed monitors and 84 mobile monitors distributed throughout the UK (www.gov.uk). The nearest RIMNET station to Trawsfynydd is at Lake Vyrnwy, which is approximately 35 km away. The ambient (*i.e.* background) gamma dose rates at Lake Vyrnwy between July and September 2018 ranged from 0.100 $\mu Gy\ h^{-1}$ to 0.160 $\mu Gy\ h^{-1}$. All of the gamma dose rate measurements taken at properties during the Trawsfynydd habits survey were within or below this range.

7 USES OF HABITS DATA FOR DOSE ASSESSMENTS

7.1 Combined pathways

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

The most extensive combinations of pathways for adult dose assessment are shown in Table 39. Each of the 18 combinations shown in Table 39 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 39 because they have fewer pathways and a dose assessment for them would be adequately covered by one of the 18 listed combinations.

7.2 Foetal dose assessment

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

7.3 Total dose assessment

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

assessing retrospective total doses (Camplin *et al*, 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 (e.g. EA, FSA, FSS, NRW, NIEA and SEPA, 2018).

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

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8 COMPARISONS WITH THE PREVIOUS SURVEY

The results from this 2018 survey are compared below with results from the last habits survey undertaken at Trawsfynydd in 2005. The same aquatic, terrestrial and direct radiation survey areas were used in both surveys. The comparison of occupancy rates in the direct radiation area is for all age groups combined. All other comparisons are for adults only.

8.1 Aquatic survey area

Since the 2005 survey, there have been several developments in the area to increase tourism around Lake Trawsfynydd. A cycle and walking route has been extended around the whole of the lake and reopened, whilst kayaking and canoeing are permitted on the lake. The area is also part of the Snowdonia Centre of Excellence, which has increased the number of visitors.

The main activities in the aquatic survey area in 2018 were similar to those in 2005, for example, shore angling and boat angling. However, in 2018 the lake and the river were being used by more people for more outdoor activities such as kayaking, canoeing, gorge walking and canyoning.

The main species of fish consumed by the adult high-rate group in 2005 was rainbow trout, and in 2018, the main species consumed were brown trout and rainbow trout. The consumption of freshwater crustaceans, molluscs, wildfowl was not identified in the 2005 and 2018 surveys.

A comparison between the 2005 and 2018 data for the consumption of aquatic foods is presented in Table K, below.

Table K. Comparison between 2005 and 2018 consumption rates of aquatic food groups for adults

	2005			2018		
Food group	**Number in high-rate group**	**Maximum consumption rate (kg y^{-1})**	**Mean consumption rate for the high-rate group (kg y^{-1})**	**Number in high-rate group**	**Maximum consumption rate (kg y^{-1})**	**Mean consumption rate for the high-rate group (kg y^{-1})**
Fish	1	59.8	59.8	6	93.2	56.2

In 2018, compared with 2005, there was a slight decrease in the mean consumption rate for the adult high-rate group for fish. At the time of the survey, the water level of Lake Trawsfynydd was lower than average levels due to low rainfall and hot weather. The lake was less popular due to the fishing conditions, reducing the number of anglers observed at the time of the survey compared to 2005. However, several of the anglers that were interviewed were catching large quantities of fish.

In 2005, lake shore and river bank occupancy for adults was recorded over rock, and over sand and stones. In 2018, activities were recorded over rock, over sand and stones, and over stones.

The following activities were undertaken by the individuals in the adult high-rate groups for occupancy over lake shore and river bank substrates:

- In 2005: angling and working on the bank.
- In 2018: angling and dog walking.

In 2005 and 2018 no individuals were identified handling commercial fishing gear and sediment.

A comparison between the 2005 and 2018 data for occupancy over lake shore and river bank substrates for adults is shown in Table L, below.

Table L. Comparison between 2005 and 2018 lake shore and river bank occupancy rates for adults

	2005			2018		
Lake shore and river bank substrate	**Number in high-rate group**	**Maximum occupancy rate (h y^{-1})**	**Mean occupancy rate for the high-rate group (h y^{-1})**	**Number in high-rate group**	**Maximum occupancy rate (h y^{-1})**	**Mean occupancy for the high-rate group (h y^{-1})**
Sand and stones	12	700	454	4	214	171
Stones	-	-	-	7	716	473
Rock	2	30	30	2	100	100

The accessible parts of the shore around Lake Trawsfynydd mainly comprise areas of sand and stones, and areas of stones. In 2018, more people were identified spending time over stones and less people were spending time over sand and stones, compared with in 2005. The activities were assigned to the predominant substrate over which they were taking place.

Occupancy over rock in the River Prysor was identified 2005 and 2018, and the occupancy rates increased significantly in 2018. In 2005 the only activity identified on rock was gorge walking, whereas in 2018 canyoning was also identified. The increase in the occupancy rate in 2018 was due to two instructors regularly taking groups of people along the River Prysor for gorge walking and canyoning. Over recent years, gorge walking and other adrenaline activities, such as canyoning, have increased in popularity in the area.

For activities taking place in the water in the aquatic survey area, the maximum adult occupancy rate in both years was for two gorge walking instructors. This increased from 160 h y^{-1} in 2005 to 600 h y^{-1} in 2018. Kayaking is classified as an 'in water' activity since it is likely to lead to the ingestion of water. For activities taking place on the water in the aquatic survey area, the maximum adult occupancy rate in both years was for boat anglers at Lake Trawsfynydd. This increased from 440 h y^{-1} in 2005 to 720 h y^{-1} in 2018 due to identification of two keen boat anglers.

8.2 Terrestrial survey area

Farming activities in the terrestrial survey area in 2018 were broadly similar to those in 2005. The principal types of farm produce within the area continued to be a mix of beef cattle, lambs and chicken eggs. Grass was grown for silage and haylage.

The growing of fruit and vegetables in gardens and on allotment sites, beekeeping and the collection of wild foods were identified in both surveys. The mean consumption rates for the adult high-rate groups for terrestrial food groups from the 2005 and 2018 surveys are shown in Table M, below.

Table M. Comparison between 2005 and 2018 mean consumption rates for the adult high-rate groups for terrestrial food groups (kg y^{-1} and l y^{-1})

Food group	2005	2018
Green vegetables	19.1	54.4
Other vegetables	19.3	20.9
Root vegetables	35.2	76.0
Potato	28.3	32.0
Domestic fruit	13.9	37.6
Milk	104.5	Not identified during the survey
Cattle meat	18.9	28.7
Pig meat	Not identified during the survey	25.3
Sheep meat	25.4	31.5
Poultry	13.0	20.8
Eggs	14.8	20.8
Wild/free foods	10.4	4.8
Rabbits/hares	0.9	22.5
Honey	2.0	4.5
Wild fungi	1.6	1.1
Fish	0.9	2.0
Salt marsh grazed sheep meat	Not identified during the survey	2.4

In 2018, compared to 2005, the mean consumption rates for the adult high-rate groups decreased in the following two groups: wild/free foods; wild fungi. The mean consumption rates for the adult high-

rate groups increased in 2018 in the following food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; cattle meat; sheep meat; poultry; eggs; rabbits/hares; honey; fish. The consumption of milk was identified in 2005 but not in 2018. Conversely, the consumption of pig meat and salt marsh grazed sheep meat were identified in 2018, but not in 2005.

The most significant increases in the mean consumption rate for the adult high-rate groups in 2018 were for green vegetables, root vegetables, domestic fruit, rabbits/hares, honey and fish. The increase in the consumption of green vegetables, root vegetables and domestic fruit was due to the identification of families who were consuming larger quantities of home grown produce from their gardens or allotment plots than in 2005. The consumption of poultry and rabbits/hares increased in 2018 due to the identification of two people who caught a mixture of game from the area for their own consumption. The increase in consumption of honey was due to new apiarists being identified who consumed large quantities of honey. The increase in consumption of fish was due to the identification of the consumption of salmon from the River Dwyryd in addition to brown trout.

The consumption of milk was recorded in 2005 but the farm ceased production, so no milk consumption was identified in 2018. The consumption of pig meat was recorded in 2018 due to an individual keeping pigs for consumption. In 2018, a farm in the terrestrial area was identified grazing sheep and lambs on the estuary of the River Dwyryd that was not within the aquatic survey area. No specific reasons were identified for the other changes in consumption rates.

The consumption of groundwater by humans and livestock was identified in 2018. Both were identified consuming well water, stream water and spring water.

8.3 Direct radiation survey area

Activities identified in the direct radiation survey area in 2005 and 2018 were similar and included people residing, working, and undertaking recreational activities.

A comparison between the 2005 and 2018 direct radiation occupancy rates for all age groups combined, by zone, is presented in Table N, see page 56.

Table N. Comparison between 2005 and 2018 direct radiation occupancy rates for all age groups combined (h y^{-1})		
	2005	**2018**
0 - 0.25 km zone		
Highest indoor	1620	411
Highest outdoor	180	617
Highest total	1800	1029
>0.25 - 0.5 km zone		
Highest indoor	6840	6373
Highest outdoor	1800	730
Highest total	6840	6791
>0.5 - 1.5 km zone		
Highest indoor	8760	8748
Highest outdoor	2700	4188
Highest total	8760	8760

The highest outdoor and total occupancy rates in the 0 – 0.25 km zone in 2018 were for two workers. The highest indoor, outdoor and total occupancy rates in the >0.25 – 0.5 km zone in 2018 and 2005 were for residents of a farm. The highest indoor, outdoor and total occupancy rates in the >0.5 – 1.5 km zone in both 2005 and 2018 were for people living in the area.

In the Trawsfynydd direct radiation survey area, six sets of gamma dose rate measurements taken in 2018 can be compared with those taken at the same properties in 2005. These data are shown in Table O, see below.

Table O. Comparison between 2005 and 2018 gamma dose rates (µGy h^{-1})				
	Indoor		**Outdoor**	
Location	**2005**	**2018**	**2005**	**2018**
Residence 2	0.100	0.081	0.083	0.087
Residence 3	0.079	0.113	0.101	0.056
Residence 6	0.110	0.105	0.092	0.093
Residence 14	0.148	0.143	0.083	0.097
Residence 15	0.071	-	0.086	0.083
Residence 18	0.138	0.130	0.082	0.090

Notes
These measurements have not been adjusted for background dose rates.
The locations correspond to those in Table 36.

Where the gamma dose rate measurements taken at the same properties in both years can be compared, for the indoor measurements, one was higher in 2018 and four were lower, and for the outdoor measurements, four were higher and two were lower in 2018.

9 MAIN FINDINGS

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

- Discharges of liquid radioactive waste into Lake Trawsfynydd
- 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 lake shore and river bank 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 434 individuals are presented in this report. All consumption rates recorded are only for foods produced, collected or caught from within the aquatic and terrestrial survey areas as defined in Section 2.3.

9.1 Aquatic survey area

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

- 56 kg y^{-1} for fish

The predominant foods consumed by the people in the adult high-rate group for fish was rainbow trout and brown trout.

The mean occupancy rates for the adult high-rate groups over the separate lake shore and river bank substrates were:

- 100 h y^{-1} for rock
- 170 h y^{-1} for sand and stones
- 470 h y^{-1} for stones

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

- 600 h y^{-1} for ‘in water’
- 720 h y^{-1} for ‘on water’

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

9.2 Terrestrial survey area

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

- 54 kg y^{-1} for green vegetables
- 21 kg y^{-1} for other vegetables
- 76 kg y^{-1} for root vegetables
- 30 kg y^{-1} for potato
- 38 kg y^{-1} for domestic fruit
- 29 kg y^{-1} for cattle meat
- 25 kg y^{-1} for pig meat
- 31 kg y^{-1} for sheep meat
- 21 kg y^{-1} for poultry
- 21 kg y^{-1} for eggs
- 4.8 kg y^{-1} for wild/free foods
- 23 kg y^{-1} for rabbits/hares
- 4.5 kg y^{-1} for honey
- 1.1 kg y^{-1} for wild fungi
- 2.0 kg y^{-1} for fish
- 2.4 kg y^{-1} for salt marsh grazed sheep meat

The consumption of milk was not recorded. The consumption of terrestrial foodstuffs by individuals in the child and infant age groups was also recorded.

The potential transfer of contamination off-site by wildlife was investigated as radionuclides could enter the food chain or contaminate the environment through this pathway. Routine pest control was undertaken around the Trawsfynydd site, including discouraging nesting of seagulls on the site with the use of a falcon. Since the buildings at the Trawsfynydd are enclosed, it was considered unlikely that wildlife could enter controlled areas.

9.3 Direct radiation survey area

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

0 - 0.25 km zone

- 410 h y^{-1} for the indoor occupancy rate
- 620 h y^{-1} for the outdoor occupancy rate
- 1000 h y^{-1} for the total occupancy rate

>0.25 - 0.5 km zone

- 6400 h y^{-1} for the indoor occupancy rate
- 730 h y^{-1} for the outdoor occupancy rate
- 6800 h y^{-1} for the total occupancy rate

>0.5 - 1.5 km zone

- 8700 h y^{-1} for the indoor occupancy rate
- 4200 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, outdoor and total occupancy rates were for an individual who was working in the area. There were no residential properties in the 0 - 0.25 km zone. The highest indoor and total occupancy rate in the >0.25 - 0.5 km zone was for a resident, and the highest outdoor occupancy rate was for another resident. In the >0.5 - 1.5 km zone the highest indoor, outdoor and total occupancy rates were for three different residents.

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

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

In England and Wales, the monitoring programme for radioactivity in food is undertaken by the Food Standards Agency, and the monitoring programme for radioactivity in the environment is conducted by the Environment Agency, on behalf of Natural Resources Wales. The results of these programmes are published annually in the RIFE reports (e.g. EA, FSA, FSS, NRW, NIEA and SEPA, 2018).

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

10.1 Summary of the monitoring programmes for Trawsfynydd

The 2018 monitoring programmes relevant to the Trawsfynydd site included the samples and measurements listed below. The location names, foods and substrate classifications are taken directly from RIFE 23 (EA, FSA, FSS, NRW, NIEA and SEPA, 2018). Some of the samples and measurements taken for the monitoring programmes may be from outside the survey areas used for the 2018 Trawsfynydd habits survey.

Aquatic samples

Food and environmental samples

Sample	***Location***
Rainbow trout	Trawsfynydd Lake
Sediment	Pipeline
Sediment	Lake shore near café
Sediment	1.5km SE of power station
Sediment	SE of footbridge
Sediment	Cae Adda
Freshwater	Pipeline
Freshwater	Gwylan Stream
Freshwater	Afon Prysor
Freshwater	1.5km SE of power station
Freshwater	Afon Tafarn-helyg

Gamma dose rate measurements over lake shore substrates

Location	*Substrate*
Lake shore (pipeline)	Pebbles and stones
Lake shore (SE of footbridge)	Grass and rock
Lake shore (SE of footbridge)	Pebbles and stones
Lake shore (1.5 km SE)	Grass and shingle
Lake shore (1.5 km SE)	Pebbles and stones
Cae Adda	Pebbles and stones
Cae Adda	Shingle
Lake shore	Pebbles and rock
Lake shore	Pebbles and stones

Terrestrial samples

Milk
Potatoes
Grass

10.2 Information from the 2018 Trawsfynydd habits survey for use in the selection of samples and measurements for monitoring programmes

Food Standards Agency monitoring

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

Food	*Food Group*
Rainbow trout	Fish
Cabbage	Green vegetables
Runner bean	Other vegetables
Onion	Root vegetables
Potato	Potato
Apple	Domestic fruit
Beef	Cattle meat
Pork	Pig meat
Lamb	Sheep meat
Goose	Poultry
Chicken egg	Eggs
Blackberry	Wild/free foods
Rabbit	Rabbits/hares
Honey	Honey
Mushroom	Wild fungi
Salmon	Fish
Salt marsh lamb	Salt marsh grazed sheep meat

Environment Agency monitoring on behalf of Natural Resources Wales

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

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Table 1. Survey coverage

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
SUMMARY OF ALL PATHWAYS					
All potential interviewees in the Trawsfynydd aquatic, terrestrial and direct radiation survey areas.	Number of people resident in the terrestrial survey area (excluding those resident in the direct radiation survey area) (See **(B) TERRESTRIAL PATHWAYS**)	2020[a]	99[b]	5%	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**)	250	56[b]	22%	Interviews were conducted at 22 residences out of an estimated total of 90 permanent residences.
	Number of people working, visiting and undertaking recreational activities in the direct radiation survey area (See **(C) DIRECT RADIATION PATHWAYS**)	U	113[b]	U	Excluding employees and contractors at the nuclear licensed site and farmers tending their fields in the direct radiation area.
	Number of people effected by liquid discharges (excluding those assigned to other categories above) (See **(A) AQUATIC PATHWAYS**)	U	166[b]	U	Where generalised data for groups of people were obtained, for example members of angling associations, only a limited number of representative individuals have been included.
	Total for aquatic, terrestrial and direct radiation survey areas	U	434[b]	U	
(A) AQUATIC PATHWAYS					
Commercial fishermen	Number of commercial fishermen fishing in the aquatic survey area	0	0	Not applicable	
People undertaking activities in or on water (*e.g.* boat anglers)	Number of people undertaking activities in or on water in the aquatic survey area	U	118	U	Where generalised data for groups of people were obtained, for example members of angling associations, only a limited number of representative individuals have been included.
People using the shore (e.g. dog walkers, shore anglers, people playing, etc.)	Number of people undertaking activities on the shore in the aquatic survey area	U	68	U	
Fish consumers	Number of people consuming fish from the aquatic survey area	U	47	U	
Crustacean consumers	Number of people consuming crustaceans from the aquatic survey area	0	0	Not applicable	
Mollusc consumers	Number of people consuming molluscs from the aquatic survey area	0	0	Not applicable	

Table 1. Survey coverage continued

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
(B) TERRESTRIAL PATHWAYS					
Farmers	Number of farmers and their family members consuming food from the terrestrial survey area	102	73	72%	Interviews were conducted at 25 farms out of an estimated total of 34 farms in the terrestrial survey area.
Allotment holders and gardeners	Number of allotment holders and gardeners and their family members consuming food from the terrestrial survey area	U	13	U	
Honey consumers	Number of people consuming honey produced in the survey area	U	9	U	Three beekeepers were interviewed.
(C) DIRECT RADIATION PATHWAYS					
Residents	Number of residents in the survey area	250	62	25%	Interviews were conducted at 22 residences out of a total of 90 permanent residences.
Workers	Number of people working in the survey area	U	56	U	Not including farmers who are resident in the direct radiation survey area.
Visitors (people undertaking recreational activities or visiting relatives)	Number of people visiting the survey area	U	155	U	
BREAKDOWN OF AGE GROUPS FOR PEOPLE RESIDENT IN THE 5 km TERRESTRIAL SURVEY AREA					
Adult	16-year-old and over	1686[a]	403	23%	
Child	6-year-old to 15-year-old	225[a]	28	12%	
Infant	0 to 5-year-old	106[a]	3	3%	

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 shore angling and consumes the catch.

U - Unknown

Table 2. Typical food groups used in habits surveys

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

Notes

[a] Including offal

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

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

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

Person ID number	Brown trout	Perch	Rainbow trout	Total
1757/1/1	**-**	**-**	**93.2**	**93.2**
1836/2/1	**4.2**	**-**	**76.4**	**80.7**
1761/1/1	**15.9**	**-**	**31.8**	**47.8**
1761/2/1	**15.9**	**-**	**31.8**	**47.8**
1835/1/1	**-**	**-**	**33.8**	**33.8**
1835/2/1	**-**	**-**	**33.8**	**33.8**
1761/3/1	7.8	-	15.6	23.4
1761/4/1	7.8	-	15.6	23.4
2237/1/1	-	-	21.2	21.2
1827/1/1	1.4	-	19.1	20.4
1827/2/1	1.4	-	19.1	20.4
2095/1/1	-	-	15.6	15.6
2291/9/1	1.4	-	11.3	12.7
1831/4/1	-	-	10.7	10.7
1831/5/1	-	-	10.7	10.7
1831/6/1	-	-	10.7	10.7
1831/7/1	-	-	10.7	10.7
2215/3/1	0.7	-	6.4	7.1
2215/3/2	0.7	-	6.4	7.1
2215/3/3	0.7	-	6.4	7.1
2215/3/4	0.7	-	6.4	7.1
2215/3/5	0.7	-	6.4	7.1
2215/3/6	0.7	-	6.4	7.1
2215/4/1	0.7	-	6.4	7.1
2215/4/2	0.7	-	6.4	7.1
2215/4/3	0.7	-	6.4	7.1
2215/4/4	0.7	-	6.4	7.1
2215/4/5	0.7	-	6.4	7.1
2215/4/6	0.7	-	6.4	7.1
1806/1/1	-	-	6.4	6.4
1806/2/1	-	-	6.4	6.4
1735/1/1	5.4	0.2	-	5.7
2291/8/1	-	-	4.8	4.8
2291/10/1	-	-	4.8	4.8
2291/11/1	-	-	4.8	4.8
1809/1/1	-	-	2.7	2.7
1809/2/1	-	-	2.7	2.7
2215/1/1	0.6	-	2.1	2.7
2215/2/1	0.6	-	2.1	2.7
1797/2/1	-	-	1.8	1.8
1801/1/1	-	-	1.8	1.8
2291/1/1	-	-	0.9	0.9
2291/2/1	-	-	0.9	0.9
1829/3/1	-	-	0.7	0.7

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish for adults based on the 6 high-rate consumers is 56.2 kg y^{-1}

The observed 97.5th percentile rate based on 44 observations is 78.2 kg y^{-1}

Table 4. Children's and infants' consumption rates of fish from the Trawsfynydd aquatic survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Perch	Rainbow trout	Total
1829/1/1	12	-	0.7	0.7
1829/2/1	10	-	0.7	0.7
1844/5/1	11	0.5	-	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish for the child age group based on the 3 high-rate consumers is 0.6 kg y^{-1}

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

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 5. Adults' lake shore and river bank occupancy rates in the Trawsfynydd aquatic survey area (h y $^{-1}$)

Person ID number	Location	Activity	Rock	Sand and stones	Stones
2268/1/1	**River Prysor**	**Gorge walking and canyoning**	**100**	**-**	**-**
2268/2/1	**River Prysor**	**Gorge walking and canyoning**	**100**	**-**	**-**
1836/2/1	**Near Maentwrog Dam**	**Angling**	**-**	**214**	**-**
1836/1/1	**Near Maentwrog Dam**	**Angling**	**-**	**209**	**-**
2215/1/1	**Club Bay**	**Angling**	**-**	**132**	**-**
	Maentwrog Dam		**-**		**-**
2215/2/1	**Maentwrog Dam**	**Angling**	**-**	**132**	**-**
	Club Bay		**-**		**-**
1757/1/1	**Club Bay**	**Angling**	**-**	**-**	**716**
1757/2/1	**Club Bay**	**Angling**	**-**	**-**	**716**
1772/2/1	**Club Bay**	**Angling**	**-**	**-**	**521**
1831/1/1	**Club Bay**	**Angling**	**-**	**-**	**454**
	Maentwrog Dam		**-**	**-**	
2292/1/1	**Club Bay**	**Dog walking**	**-**	**-**	**334**
1835/1/1	**Maentwrog Dam**	**Angling**	**-**	**-**	**286**
1835/2/1	**Maentwrog Dam**	**Angling**	**-**	**-**	**286**
1831/2/1	Club Bay	Angling	-	-	234
	Maentwrog Dam		-	-	
	Club Bay	Sitting on the shore	-	-	
	Maentwrog Dam		-	-	
1806/1/1	Club Bay	Angling	-	-	176
1806/2/1	Club Bay	Angling	-	-	176
2237/1/1	Club Bay	Angling	-	-	153
2095/1/1	Club Bay	Angling	-	-	144
1824/2/1	Lake Trawsfynydd	Angling	-	-	139
1761/1/1	Between Maentwrog Dam and Club Bay	Angling	-	-	135
1761/2/1	Between Maentwrog Dam and Club Bay	Angling	-	-	135
2095/2/1	Club Bay	Angling	-	-	88
1772/1/1	Club Bay	Angling	-	-	87

Table 5. Adults' lake shore and river bank occupancy rates in the Trawsfynydd aquatic survey area (h y $^{-1}$)

Person ID number	Location	Activity	Rock	Sand and stones	Stones
2220/1/1	Maentwrog Dam	Angling	-	-	72
2220/2/1	Maentwrog Dam	Angling	-	-	72
1827/1/1	Maentwrog Dam	Angling	-	-	66
1827/2/1	Maentwrog Dam	Angling	-	-	66
1761/3/1	Between Maentwrog Dam and Club Bay	Angling	-	-	63
1761/4/1	Between Maentwrog Dam and Club Bay	Angling	-	-	63
1824/1/1	Lake Trawsfynydd	Angling	-	-	52
1824/1/2	Lake Trawsfynydd	Angling	-	-	52
1824/1/3	Lake Trawsfynydd	Angling	-	-	52
1824/1/4	Lake Trawsfynydd	Angling	-	-	52
1824/1/5	Lake Trawsfynydd	Angling	-	-	52
1824/1/6	Lake Trawsfynydd	Angling	-	-	52
1824/1/7	Lake Trawsfynydd	Angling	-	-	52
1824/1/8	Lake Trawsfynydd	Angling	-	-	52
1824/1/9	Lake Trawsfynydd	Angling	-	-	52
1824/1/10	Lake Trawsfynydd	Angling	-	-	52
1824/1/11	Lake Trawsfynydd	Angling	-	-	52
1824/1/12	Lake Trawsfynydd	Angling	-	-	52
1829/3/1	Lake Trawsfynydd	Angling	-	-	48
2090/1/1	Club Bay	Angling	-	-	24
2090/2/1	Club Bay	Angling	-	-	24
2095/4/1	Club Bay	Angling	-	-	15
1778/1/1	Club Bay	Dog walking	-	-	13
1778/2/1	Club Bay	Dog walking	-	-	13
1801/1/1	Club Bay	Angling	-	-	10
1822/1/1	Near the footbridge	Sunbathing	-	-	8
1822/2/1	Near the footbridge	Sunbathing	-	-	8
1822/3/1	Near the footbridge	Sunbathing	-	-	8
2243/1/1	Club Bay	Playing	-	-	4
2243/2/1	Club Bay	Playing	-	-	4

Table 5. Adults' lake shore and river bank occupancy rates in the Trawsfynydd aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Rock	Sand and stones	Stones
1792/1/1	Club Bay	Angling	-	-	4
1816/1/1	Lake Trawsfynydd	Walking	-	-	4
1821/1/1	Club Bay	Walking	-	-	4
1816/2/1	Lake Trawsfynydd	Walking	-	-	4
1821/2/1	Club Bay	Walking	-	-	4
1753/1/1	Club Bay	Photography	-	-	3
2243/3/1	Club Bay	Playing	-	-	2

Notes

Emboldened observations are the high-rate individuals

The mean river bank occupancy rate over rock for adults based on 2 high-rate observations is 100 h y^{-1}

The observed 97.5th percentile rate based on 2 observations is 100 h y^{-1}

The mean lake shore occupancy rate over sand and stones for adults based on 4 high-rate observations is 171 h y^{-1}

The observed 97.5th percentile rate based on 4 observations is 214 h y^{-1}

The mean lake shore occupancy rate over stones for adults based on 7 high-rate observations is 473 h y^{-1}

The observed 97.5th percentile rate based on 54 observations is 653 h y^{-1}

Some of the locations around the lake had patches of sand and stones as well as stones. Activities are assigned to the predominant substrate over which they were taking place.

Table 6. Children's and infants' lake shore and river bank occupancy rates in the Trawsfynydd aquatic survey area (h y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Location	Activity	Stones
1829/1/1	**12**	**Various locations around Lake Trawsfynydd**	**Angling**	**48**
1829/2/1	**10**	**Various locations around Lake Trawsfynydd**	**Angling**	**48**
2095/3/1	**8**	**Club Bay**	**Playing**	**44**
1844/4/1	15	Near the Footbridge	Angling	8
1844/5/1	11	Near the Footbridge	Angling	8
1844/6/1	8	Near the Footbridge	Angling	8
2095/5/1	10	Club Bay	Playing	8
2243/4/1	8	Club Bay	Playing	2

Notes

Emboldened observations are the high-rate individuals

The mean lake shore occupancy rate over stones for the child age group based on 3 high-rate observations is 47 h y^{-1}

The observed 97.5th percentile rate based on 8 observations is 48 h y^{-1}

Infant age group (0 - 5 years old)

No occupancy rate data obtained for this group.

Table 7. Gamma dose rate measurements over lake shore and river bank substrates in the Trawsfynydd aquatic survey area (μGyh^{-1})

Location	National Grid Reference	Substrate	Gamma dose rate at 1 metre[a]
Club Bay	SH 698 382	Stones	0.096
Peninsula	SH 698 380	Stones	0.108
Walkers Bay	SH 700 376	Stones	0.099
Shore near Coed Cae Du	SH 700 373	Stones	0.085
Near the southern end of the footbridge	SH 703 348	Stones	0.093
Stone spit by Footbridge	SH 702 349	Stones	0.088
East of Maentwrog Dam	SH 675 378	Sand and stones	0.100
River Prysor	SH 653 395	Rock	0.093
Near the Maentwrog Dam	SH 678 376	Sand and stones	0.091

Notes

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

Table 8. Adults' occupancy rates in and on water in the Trawsfynydd aquatic survey area (h y^{-1})

Person ID number	Location	Activity	In water	On water
2268/1/1	River Prysor	Gorge walking and canyoning	600	-
2268/2/1	River Prysor	Gorge walking and canyoning	600	-
1772/1/1	Lake Trawsfynydd	Belly boating	261	-
		Boat angling	-	87
1720/1/1	River Prysor	Gorge walking	150	-
1720/1/2	River Prysor	Gorge walking	150	-
1720/1/3	River Prysor	Gorge walking	150	-
1720/1/4	River Prysor	Gorge walking	150	-
1720/1/5	River Prysor	Gorge walking	150	-
1720/1/6	River Prysor	Gorge walking	150	-
1720/1/7	River Prysor	Gorge walking	150	-
1720/1/8	River Prysor	Gorge walking	150	-
1720/1/9	River Prysor	Gorge walking	150	-
1720/1/10	River Prysor	Gorge walking	150	-
1720/2/1	River Prysor	Gorge walking	150	-
1729/1/1	River Prysor	Gorge walking	30	-
1729/1/2	River Prysor	Gorge walking	30	-
1729/1/3	River Prysor	Gorge walking	30	-
1729/1/4	River Prysor	Gorge walking	30	-
1729/2/1	River Prysor	Gorge walking	30	-
1729/2/2	River Prysor	Gorge walking	30	-
1729/2/3	River Prysor	Gorge walking	30	-
1824/6/1	Lake Trawsfynydd	Kayaking	18	-
1824/6/2	Lake Trawsfynydd	Kayaking	18	-
1760/1/1	Lake Trawsfynydd	Kayaking	15	-
1760/2/1	Lake Trawsfynydd	Kayaking	15	-
1760/3/1	Lake Trawsfynydd	Kayaking	15	-
1760/4/1	Lake Trawsfynydd	Kayaking	15	-
1760/5/1	Lake Trawsfynydd	Kayaking	15	-

Table 8. Adults' occupancy rates in and on water in the Trawsfynydd aquatic survey area (h y^{-1})

Person ID number	Location	Activity	In water	On water
1760/6/1	Lake Trawsfynydd	Kayaking	15	-
1824/3/1	Lake Trawsfynydd	Kayaking	10	-
1824/3/2	Lake Trawsfynydd	Kayaking	10	-
1824/3/3	Lake Trawsfynydd	Kayaking	10	-
1824/3/4	Lake Trawsfynydd	Kayaking	10	-
1824/3/5	Lake Trawsfynydd	Kayaking	10	-
1824/3/6	Lake Trawsfynydd	Kayaking	10	-
1824/3/7	Lake Trawsfynydd	Kayaking	10	-
1824/3/8	Lake Trawsfynydd	Kayaking	10	-
1824/3/9	Lake Trawsfynydd	Kayaking	10	-
1824/3/10	Lake Trawsfynydd	Kayaking	10	-
1822/1/1	Lake Trawsfynydd	Swimming	8	-
1822/2/1	Lake Trawsfynydd	Swimming	8	-
1822/3/1	Lake Trawsfynydd	Swimming	8	-
2243/3/1	Club Bay	Swimming	2	-
1783/1/1	Lake Trawsfynydd	Kayaking	2	-
1783/1/2	Lake Trawsfynydd	Kayaking	2	-
1783/1/3	Lake Trawsfynydd	Kayaking	2	-
1783/1/4	Lake Trawsfynydd	Kayaking	2	-
1783/1/5	Lake Trawsfynydd	Kayaking	2	-
1783/1/6	Lake Trawsfynydd	Kayaking	2	-
1783/1/7	Lake Trawsfynydd	Kayaking	2	-
1783/1/8	Lake Trawsfynydd	Kayaking	2	-
1783/1/9	Lake Trawsfynydd	Kayaking	2	-
1783/1/10	Lake Trawsfynydd	Kayaking	2	-
1783/1/11	Lake Trawsfynydd	Kayaking	2	-
1783/1/12	Lake Trawsfynydd	Kayaking	2	-
1783/1/13	Lake Trawsfynydd	Kayaking	2	-
1783/1/14	Lake Trawsfynydd	Kayaking	2	-
1783/1/15	Lake Trawsfynydd	Kayaking	2	-

Table 8. Adults' occupancy rates in and on water in the Trawsfynydd aquatic survey area (h y $^{-1}$)

Person ID number	Location	Activity	In water	On water
1783/1/16	Lake Trawsfynydd	Kayaking	2	-
1783/1/17	Lake Trawsfynydd	Kayaking	2	-
1783/1/18	Lake Trawsfynydd	Kayaking	2	-
1783/1/19	Lake Trawsfynydd	Kayaking	2	-
1783/1/20	Lake Trawsfynydd	Kayaking	2	-
1811/1/1	River Prysor	Swimming	2	-
1811/1/2	River Prysor	Swimming	2	-
1811/2/1	River Prysor	Swimming	2	-
1811/2/2	River Prysor	Swimming	2	-
1757/1/1	Lake Trawsfynydd	Boat angling	-	716
1757/2/1	Lake Trawsfynydd	Boat angling	-	716
2291/8/1	Lake Trawsfynydd	Servicing fish farm and boat angling	-	671
1772/3/1	Lake Trawsfynydd	Boat angling	-	477
2291/1/1	Lake Trawsfynydd	Servicing fish farm	-	429
1782/1/1	Lake Trawsfynydd	Boat angling	-	382
1782/1/2	Lake Trawsfynydd	Boat angling	-	382
1782/1/3	Lake Trawsfynydd	Boat angling	-	382
1782/1/4	Lake Trawsfynydd	Boat angling	-	382
1782/1/5	Lake Trawsfynydd	Boat angling	-	382
1782/1/6	Lake Trawsfynydd	Boat angling	-	382
1782/1/7	Lake Trawsfynydd	Boat angling	-	382
1782/1/8	Lake Trawsfynydd	Boat angling	-	382
1782/1/9	Lake Trawsfynydd	Boat angling	-	382
1782/1/10	Lake Trawsfynydd	Boat angling	-	382
1782/1/11	Lake Trawsfynydd	Boat angling	-	382
1782/1/12	Lake Trawsfynydd	Boat angling	-	382
1782/1/13	Lake Trawsfynydd	Boat angling	-	382
1782/1/14	Lake Trawsfynydd	Boat angling	-	382
1782/1/15	Lake Trawsfynydd	Boat angling	-	382
1782/1/16	Lake Trawsfynydd	Boat angling	-	382

Table 8. Adults' occupancy rates in and on water in the Trawsfynydd aquatic survey area (h y $^{-1}$)

Person ID number	Location	Activity	In water	On water
1782/1/17	Lake Trawsfynydd	Boat angling	-	382
1782/2/1	Lake Trawsfynydd	Boat angling	-	382
1782/2/2	Lake Trawsfynydd	Boat angling	-	382
1782/2/3	Lake Trawsfynydd	Boat angling	-	382
2291/9/1	Lake Trawsfynydd	Boat angling	-	182
2291/6/1	Lake Trawsfynydd	Servicing fish farm	-	43
1765/1/1	Lake Trawsfynydd	Boat angling	-	40
2091/1/1	Lake Trawsfynydd	Boat angling	-	36
1766/1/1	Lake Trawsfynydd	Boat angling	-	20
1766/2/1	Lake Trawsfynydd	Boat angling	-	20
1824/7/1	Lake Trawsfynydd	Boat angling	-	18
1824/7/2	Lake Trawsfynydd	Boat angling	-	18
2215/1/1	Lake Trawsfynydd	Boat angling	-	18
2215/2/1	Lake Trawsfynydd	Boat angling	-	18
1763/1/1	Lake Trawsfynydd	Boat angling	-	10
1763/2/1	Lake Trawsfynydd	Boat angling	-	10
1763/3/1	Lake Trawsfynydd	Boat angling	-	10
1763/4/1	Lake Trawsfynydd	Boat angling	-	10
2093/1/1	River Prysor	Paddling	-	1
2093/2/1	River Prysor	Paddling	-	1

Table 9. Children's and infants' occupancy rates in and on water in the Trawsfynydd aquatic survey area (h y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Location	Activity	In water	On water
1824/4/1	14	Lake Trawsfynydd	Kayaking	18	-
1824/4/2	14	Lake Trawsfynydd	Kayaking	18	-
1824/5/1	14	Lake Trawsfynydd	Kayaking	18	-
1824/5/2	14	Lake Trawsfynydd	Kayaking	18	-
2243/4/1	8	Club Bay	Swimming	2	-
2095/3/1	8	Club Bay	Paddling	-	44
2091/2/1	9	Lake Trawsfynydd	Boat angling	-	36
2095/5/1	10	Club Bay	Paddling	-	8
2093/3/1	10	River Prysor	Paddling	-	1
2093/4/1	8	River Prysor	Paddling	-	1

Infant age group (0 - 5 years old)

No occupancy rate data obtained for this group.

Table 10. Adults' consumption rates of green vegetables from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Asparagus	Broccoli	Brussel sprout	Cabbage	Calabrese	Cauliflower	Chard	Courgette	Cucumber	Herbs	Kale	Lettuce	Marrow	Pak choi	Rocket	Spinach	Total
1730/1/1	**-**	**29.9**	**-**	**36.5**	**-**	**7.5**	**-**	**-**	**2.7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**76.7**
1821/1/1	**0.3**	**1.4**	**2.7**	**42.5**	**1.4**	**3.4**	**0.3**	**5.0**	**3.4**	**-**	**1.8**	**-**	**-**	**5.0**	**1.0**	**1.7**	**69.8**
1821/2/1	**0.3**	**1.4**	**2.7**	**42.5**	**1.4**	**3.4**	**0.3**	**5.0**	**3.4**	**-**	**1.8**	**-**	**-**	**5.0**	**1.0**	**1.7**	**69.8**
2227/1/1	**-**	**6.7**	**9.0**	**8.4**	**-**	**-**	**5.2**	**5.5**	**-**	**-**	**9.0**	**-**	**-**	**-**	**-**	**-**	**43.9**
1785/1/1	**-**	**-**	**-**	**3.4**	**-**	**-**	**-**	**22.1**	**8.5**	**-**	**-**	**0.4**	**-**	**-**	**-**	**-**	**34.4**
2227/2/1	**-**	**4.9**	**6.6**	**6.1**	**-**	**-**	**3.8**	**4.0**	**-**	**-**	**6.6**	**-**	**-**	**-**	**-**	**-**	**31.9**
1736/1/1	-	-	-	-	-	-	-	-	25.5	-	-	-	-	-	-	-	25.5
2100/1/1	-	3.4	-	5.1	-	-	-	7.4	-	-	-	1.0	8.0	-	-	-	24.9
2100/2/1	-	3.4	-	5.1	-	-	-	7.4	-	-	-	1.0	8.0	-	-	-	24.9
1730/2/1	-	3.7	-	4.6	-	0.9	-	-	0.3	-	-	-	-	-	-	-	9.6
1808/1/1	-	-	-	-	-	-	-	-	6.8	-	-	-	-	-	-	-	6.8
1808/2/1	-	-	-	-	-	-	-	-	6.8	-	-	-	-	-	-	-	6.8
2227/3/1	-	0.6	0.8	0.8	-	-	0.5	0.5	-	-	0.8	-	-	-	-	-	4.0
1833/1/1	-	-	-	-	-	-	-	-	0.8	-	-	0.6	-	-	-	-	1.4
1833/2/1	-	-	-	-	-	-	-	-	0.8	-	-	0.6	-	-	-	-	1.4
1809/1/1	-	-	-	-	-	-	-	-	-	-	-	0.6	-	-	-	-	0.6
1809/2/1	-	-	-	-	-	-	-	-	-	-	-	0.6	-	-	-	-	0.6
2228/1/1	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	0.02
2228/2/1	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	0.02
2228/3/1	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	0.02
2228/4/1	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	0.02
2228/5/1	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	0.02
2228/6/1	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	0.02

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 54.4 kg y^{-1}

The observed 97.5th percentile rate based on 23 observations is 72.9 kg y^{-1}

Table 11. Adults' consumption rates of other vegetables from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Broad bean	French bean	Mangetout	Pea	Pepper	Runner bean	Sweetcorn	Tomato	Total
1785/1/1	**0.8**	**5.4**	**-**	**8.1**	**1.0**	**10.9**	**-**	**3.0**	**29.2**
1804/1/1	**-**	**-**	**-**	**-**	**-**	**25.5**	**-**	**-**	**25.5**
1804/2/1	**-**	**-**	**-**	**-**	**-**	**25.5**	**-**	**-**	**25.5**
1808/1/1	**-**	**9.1**	**-**	**-**	**-**	**9.1**	**-**	**6.8**	**24.9**
1808/2/1	**-**	**9.1**	**-**	**-**	**-**	**9.1**	**-**	**6.8**	**24.9**
1736/1/1	**-**	**-**	**-**	**-**	**-**	**2.0**	**-**	**21.6**	**23.6**
1730/1/1	**-**	**3.2**	**-**	**1.5**	**-**	**7.3**	**-**	**10.9**	**22.8**
2227/1/1	**2.8**	**2.8**	**-**	**2.8**	**-**	**2.8**	**-**	**-**	**11.0**
1821/1/1	**1.5**	**1.0**	**-**	**-**	**-**	**1.0**	**1.2**	**6.0**	**10.7**
1821/2/1	**1.5**	**1.0**	**-**	**-**	**-**	**1.0**	**1.2**	**6.0**	**10.7**
2227/2/1	2.0	2.0	-	2.0	-	2.0	-	-	8.0
2100/1/1	0.4	0.3	0.7	0.04	-	0.8	-	5.4	7.6
2100/2/1	0.4	0.3	0.7	0.04	-	0.8	-	5.4	7.6
2214/1/1	-	-	-	-	-	-	-	5.4	5.4
2214/2/1	-	-	-	-	-	-	-	5.4	5.4
1730/2/1	-	0.4	-	0.2	-	0.9	-	1.4	2.9
1809/1/1	1.4	-	-	-	-	1.4	-	-	2.7
1809/2/1	1.4	-	-	-	-	1.4	-	-	2.7
2227/3/1	0.3	0.3	-	0.3	-	0.3	-	-	1.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables for adults based on the 10 high-rate consumers is 20.9 kg y^{-1}

The observed 97.5th percentile rate based on 19 observations is 27.5 kg y^{-1}

Table 12. Adults' consumption rates of root vegetables from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Beetroot	Carrot	Celeriac	Garlic	Horseradish	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Turnip	Total
1730/1/1	**9.0**	**-**	**-**	**-**	**-**	**54.0**	**28.8**	**-**	**-**	**-**	**-**	**10.9**	**10.8**	**113.5**
2227/1/1	**2.2**	**28.6**	**-**	**-**	**-**	**-**	**50.2**	**-**	**-**	**-**	**-**	**-**	**-**	**81.0**
2227/2/1	**1.6**	**20.8**	**-**	**-**	**-**	**-**	**36.5**	**-**	**-**	**-**	**-**	**-**	**-**	**58.9**
1785/1/1	**13.5**	**9.0**	**2.1**	**-**	**-**	**9.0**	**15.1**	**-**	**-**	**-**	**2.0**	**-**	**-**	**50.7**
1821/1/1	-	2.5	-	0.8	0.3	4.5	11.0	2.7	1.2	6.0	-	1.5	1.0	31.4
1821/2/1	-	2.5	-	0.8	0.3	4.5	11.0	2.7	1.2	6.0	-	1.5	1.0	31.4
1730/2/1	1.1	-	-	-	-	6.8	3.6	-	-	-	-	1.4	1.4	14.2
2100/1/1	2.7	2.7	-	-	-	-	2.2	-	-	-	0.9	4.1	-	12.6
2100/2/1	2.7	2.7	-	-	-	-	2.2	-	-	-	0.9	4.1	-	12.6
2227/3/1	0.2	2.6	-	-	-	-	4.6	-	-	-	-	-	-	7.4
1809/1/1	2.5	-	-	-	-	-	0.2	-	-	-	-	-	-	2.7
1809/2/1	2.5	-	-	-	-	-	0.2	-	-	-	-	-	-	2.7

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 76.0 kg y^{-1}

The observed 97.5th percentile rate based on 12 observations is 104.5 kg y^{-1}

Table 13. Adults' consumption rates of potato from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Potato
1730/1/1	**54.6**
1785/1/1	**40.0**
1821/1/1	**40.0**
1821/2/1	**40.0**
1722/1/1	**33.3**
1722/2/1	**33.3**
1722/3/1	**33.3**
2227/1/1	**28.6**
1809/1/1	**26.1**
1809/2/1	**26.1**
2227/2/1	**20.8**
1808/1/1	**20.0**
1808/2/1	**20.0**
2100/1/1	**18.2**
2100/2/1	**18.2**
1730/2/1	6.8
1736/1/1	6.1
1726/1/1	2.7
1726/2/1	2.7
2227/3/1	2.6
1733/1/1	0.5
1733/2/1	0.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of potato for adults based on the 15 high-rate consumers is 30.2 kg y^{-1}

The observed 97.5th percentile rate based on 22 observations is 46.9 kg y^{-1}

Table 14. Adults' consumption rates of domestic fruit from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Apple	Blackcurrant	Blueberry	Damson	Fig	Gooseberry	Grapes	Loganberry	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	Tayberry	White currant	Total
1821/1/1	**40.0**	**3.0**	**-**	**0.5**	**-**	**-**	**-**	**-**	**0.5**	**1.0**	**2.5**	**-**	**5.0**	**5.0**	**-**	**-**	**57.5**
1821/2/1	**40.0**	**3.0**	**-**	**0.5**	**-**	**-**	**-**	**-**	**0.5**	**1.0**	**2.5**	**-**	**5.0**	**5.0**	**-**	**-**	**57.5**
1808/1/1	**9.1**	**1.1**	**11.8**	**-**	**-**	**-**	**-**	**1.4**	**-**	**-**	**1.1**	**-**	**4.5**	**0.9**	**-**	**-**	**29.9**
1808/2/1	**9.1**	**1.1**	**11.8**	**-**	**-**	**-**	**-**	**1.4**	**-**	**-**	**1.1**	**-**	**4.5**	**0.9**	**-**	**-**	**29.9**
1730/1/1	**3.6**	**-**	**-**	**-**	**-**	**-**	**11.2**	**-**	**-**	**-**	**-**	**-**	**12.9**	**-**	**-**	**-**	**27.8**
1785/1/1	**-**	**10.0**	**-**	**-**	**-**	**3.0**	**-**	**-**	**-**	**-**	**-**	**-**	**9.2**	**1.0**	**-**	**-**	**23.2**
1804/1/1	-	2.8	-	-	-	-	-	-	-	1.1	1.0	2.8	5.0	3.0	-	2.8	18.4
1804/2/1	-	2.8	-	-	-	-	-	-	-	1.1	1.0	2.8	5.0	3.0	-	2.8	18.4
1833/1/1	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8
1833/2/1	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8
2100/1/1	3.0	-	0.2	-	-	-	-	-	0.3	-	0.5	0.8	1.1	0.2	0.8	-	6.8
2100/2/1	3.0	-	0.2	-	-	-	-	-	0.3	-	0.5	0.8	1.1	0.2	0.8	-	6.8
1809/1/1	4.5	-	-	-	0.2	0.2	-	-	-	-	0.2	-	1.1	-	-	-	6.3
1809/2/1	4.5	-	-	-	0.2	0.2	-	-	-	-	0.2	-	1.1	-	-	-	6.3
2227/1/1	-	-	0.6	-	-	0.6	-	-	-	-	0.6	0.3	2.8	0.6	-	0.3	5.5
2227/2/1	-	-	0.4	-	-	0.4	-	-	-	-	0.4	0.2	2.0	0.4	-	0.2	4.0
1730/2/1	0.5	-	-	-	-	-	1.4	-	-	-	-	-	1.6	-	-	-	3.5
1722/1/1	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-	1.5
1722/2/1	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-	1.5
1722/3/1	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-	1.5
1733/1/1	-	-	-	-	-	-	-	-	-	-	0.3	-	1.0	-	-	-	1.3
1733/2/1	-	-	-	-	-	-	-	-	-	-	0.3	-	1.0	-	-	-	1.3
1723/1/1	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	0.7
1723/2/1	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	0.7
1723/3/1	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	0.7
1723/4/1	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	0.7
1723/5/1	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	0.7
2227/3/1	-	-	0.05	-	-	0.1	-	-	-	-	0.1	0.03	0.3	0.1	-	0.03	0.5
2228/1/1	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3
2228/2/1	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3
2228/3/1	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3
2228/4/1	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3
2228/5/1	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3
2228/6/1	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3
1841/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	0.2
1841/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for adults based on the 6 high-rate consumers is 37.6 kg y^{-1}

The observed 97.5th percentile rate based on 36 observations is 57.5 kg y^{-1}

Table 15. Adults' consumption rates of cattle meat from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Beef
1833/1/1	**47.3**
1833/2/1	**47.3**
2099/1/1	**24.0**
2099/2/1	**24.0**
2228/1/1	**23.2**
2228/2/1	**23.2**
2228/3/1	**23.2**
2228/4/1	**23.2**
2228/6/1	**23.2**
1722/1/1	15.7
1722/2/1	15.7
1722/3/1	15.7
1721/1/1	6.0
1721/2/1	6.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of cattle meat for adults based on the 9 high-rate consumers is 28.7 kg y^{-1}

The observed 97.5th percentile rate based on 14 observations is 47.2 kg y^{-1}

Table 16. Adults' consumption rates of pig meat from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Pork
1802/1/1	**25.3**
1802/2/1	**25.3**

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 25.3 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 25.3 kg y^{-1}

Table 17. Adults' consumption rates of sheep meat from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Lamb	Mutton	Total
2230/1/1	**22.6**	**26.0**	**48.6**
1731/1/1	**37.7**	**-**	**37.7**
1731/2/1	**37.7**	**-**	**37.7**
1731/3/1	**37.7**	**-**	**37.7**
1737/1/1	**22.6**	**-**	**22.6**
1721/1/1	**18.0**	**-**	**18.0**
1721/2/1	**18.0**	**-**	**18.0**
2229/1/1	15.3	-	15.3
2229/2/1	15.3	-	15.3
1725/1/1	15.2	-	15.2
1725/2/1	15.2	-	15.2
1725/3/1	15.2	-	15.2
1725/4/1	15.2	-	15.2
1725/5/1	15.2	-	15.2
1725/6/1	15.2	-	15.2
1833/1/1	14.0	-	14.0
1833/2/1	14.0	-	14.0
1722/1/1	13.0	-	13.0
1722/2/1	13.0	-	13.0
1722/3/1	13.0	-	13.0
1809/1/1	11.3	-	11.3
1809/2/1	11.3	-	11.3
1735/1/1	9.3	-	9.3
1735/2/1	9.3	-	9.3
1735/3/1	9.3	-	9.3
1735/4/1	9.3	-	9.3
1735/5/1	9.3	-	9.3
1735/6/1	9.3	-	9.3
2228/1/1	7.6	-	7.6
2228/2/1	7.6	-	7.6
2228/3/1	7.6	-	7.6
2228/4/1	7.6	-	7.6
2228/6/1	7.6	-	7.6
1832/1/1	7.1	-	7.1
1832/2/1	7.1	-	7.1
1832/3/1	7.1	-	7.1
1832/4/1	7.1	-	7.1
1812/1/1	7.0	-	7.0
1812/2/1	7.0	-	7.0
1814/1/1	7.0	-	7.0
1814/2/1	7.0	-	7.0

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sheep meat for adults based on the 7 high-rate consumers is 31.5 kg y^{-1}

The observed 97.5^{tn} percentile rate based on 41 observations is 37.7 kg y^{-1}

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

Person ID number	Duck	Goose	Mallard	Pheasant	Total
1837/1/1	**2.9**	**14.3**	**3.1**	**0.9**	**21.3**
1837/2/1	**2.9**	**14.3**	**3.1**	**-**	**20.4**
1832/1/1	-	-	-	0.4	0.4
1832/2/1	-	-	-	0.4	0.4
1832/3/1	-	-	-	0.4	0.4
1832/4/1	-	-	-	0.4	0.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of poultry for adults based on the 2 high-rate consumers is 20.8 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 21.2 kg y^{-1}

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

Person ID number	Chicken egg	Duck egg	Total
2228/1/1	**41.6**	**-**	**41.6**
2231/1/1	**25.6**	**-**	**25.6**
2231/2/1	**25.6**	**-**	**25.6**
1821/1/1	**8.6**	**16.9**	**25.5**
1821/2/1	**8.6**	**16.9**	**25.5**
1788/1/1	**20.8**	**-**	**20.8**
1788/2/1	**20.8**	**-**	**20.8**
1721/1/1	**17.8**	**-**	**17.8**
1723/1/1	**17.8**	**-**	**17.8**
1723/2/1	**17.8**	**-**	**17.8**
1723/3/1	**17.8**	**-**	**17.8**
1723/4/1	**17.8**	**-**	**17.8**
1723/5/1	**17.8**	**-**	**17.8**
1784/1/1	**17.8**	**-**	**17.8**
2228/2/1	**17.8**	**-**	**17.8**
2228/5/1	**17.8**	**-**	**17.8**
1814/1/1	**16.8**	**-**	**16.8**
1814/2/1	**16.8**	**-**	**16.8**
2227/1/1	**16.3**	**-**	**16.3**
1721/2/1	11.9	-	11.9
1722/1/1	11.9	-	11.9
1722/2/1	11.9	-	11.9
1722/3/1	11.9	-	11.9
2227/2/1	11.9	-	11.9
1804/1/1	8.9	-	8.9
1804/2/1	8.9	-	8.9
1808/1/1	8.9	-	8.9
1808/2/1	8.9	-	8.9
2100/1/1	7.5	-	7.5
2100/2/1	7.5	-	7.5
2099/1/1	6.8	-	6.8
2099/2/1	6.8	-	6.8
1809/1/1	4.5	2.0	6.5
1809/2/1	4.5	2.0	6.5
1803/1/1	5.9	-	5.9
1803/2/1	5.9	-	5.9
1803/3/1	5.9	-	5.9
2228/3/1	5.9	-	5.9
2228/4/1	5.9	-	5.9
2228/6/1	5.9	-	5.9
2289/2/1	5.9	-	5.9
1844/1/1	5.9	-	5.9
1844/2/1	5.9	-	5.9
1844/3/1	5.9	-	5.9
1802/1/1	5.2	-	5.2
1802/2/1	5.2	-	5.2
1734/1/1	5.0	-	5.0
1734/2/1	5.0	-	5.0
1734/3/1	5.0	-	5.0
2289/1/1	5.0	-	5.0
2289/3/1	5.0	-	5.0
2290/1/1	4.1	-	4.1
2290/2/1	4.1	-	4.1
1725/1/1	3.8	-	3.8
1725/2/1	3.8	-	3.8
1725/3/1	3.8	-	3.8

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

Person ID number	Chicken egg	Duck egg	Total
1725/4/1	3.8	-	3.8
1725/5/1	3.8	-	3.8
1725/6/1	3.8	-	3.8
1733/1/1	2.1	-	2.1
1733/2/1	2.1	-	2.1
1735/1/1	2.1	-	2.1
1735/2/1	2.1	-	2.1
2227/3/1	1.5	-	1.5

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for adults based on the 19 high-rate consumers is 20.8 kg y^{-1}

The observed 97.5th percentile rate based on 64 observations is 25.6 kg y^{-1}

Table 20. Adults' consumption rates of wild/free foods from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Bilberry	Blackberry	Damson	Elderberry	Elderflower	Hazel nut	Sloe	Total
2228/1/1	**0.2**	**4.7**	**2.7**	**-**	**-**	**-**	**-**	**7.6**
1837/1/1	**1.8**	**3.6**	**-**	**-**	**-**	**0.3**	**-**	**5.7**
1812/1/1	**-**	**5.0**	**-**	**-**	**-**	**-**	**-**	**5.0**
1812/2/1	**-**	**5.0**	**-**	**-**	**-**	**-**	**-**	**5.0**
2228/2/1	**0.2**	**4.7**	**-**	**-**	**-**	**-**	**-**	**4.9**
2228/3/1	**0.2**	**4.7**	**-**	**-**	**-**	**-**	**-**	**4.9**
2228/4/1	**0.2**	**4.7**	**-**	**-**	**-**	**-**	**-**	**4.9**
2228/6/1	**0.2**	**4.7**	**-**	**-**	**-**	**-**	**-**	**4.9**
1821/1/1	**1.5**	**2.5**	**-**	**-**	**-**	**-**	**-**	**4.0**
1821/2/1	**1.5**	**2.5**	**-**	**-**	**-**	**-**	**-**	**4.0**
1837/2/1	**2.7**	**0.9**	**-**	**-**	**-**	**0.3**	**-**	**3.9**
1833/1/1	**0.5**	**2.3**	**-**	**0.5**	**0.5**	**-**	**-**	**3.6**
1833/2/1	**0.5**	**2.3**	**-**	**0.5**	**0.5**	**-**	**-**	**3.6**
1724/1/1	-	1.8	-	-	-	-	-	1.8
1724/2/1	-	1.8	-	-	-	-	-	1.8
1841/1/1	0.5	1.1	-	-	-	-	0.2	1.8
1841/2/1	0.5	1.1	-	-	-	-	0.2	1.8
1797/2/1	-	1.5	-	-	-	-	-	1.5
1797/3/1	-	1.5	-	-	-	-	-	1.5
1809/1/1	-	1.1	-	-	-	-	-	1.1
1809/2/1	-	1.1	-	-	-	-	-	1.1
1792/1/1	-	0.9	-	-	-	-	-	0.9
1832/1/1	-	0.5	-	-	-	-	0.5	0.9
1832/2/1	-	0.5	-	-	-	-	0.5	0.9
1832/3/1	-	0.5	-	-	-	-	0.5	0.9
1832/4/1	-	0.5	-	-	-	-	0.5	0.9
1723/1/1	-	0.7	-	-	-	-	-	0.7
1723/2/1	-	0.7	-	-	-	-	-	0.7
1723/3/1	-	0.7	-	-	-	-	-	0.7
1723/4/1	-	0.7	-	-	-	-	-	0.7
1723/5/1	-	0.7	-	-	-	-	-	0.7
2229/1/1	-	0.7	-	-	-	-	-	0.7
2229/2/1	-	0.7	-	-	-	-	-	0.7
1814/1/1	0.2	0.4	-	-	-	-	-	0.6
1733/1/1	-	0.5	-	-	-	-	-	0.5
1733/2/1	-	0.5	-	-	-	-	-	0.5
1722/1/1	-	0.5	-	-	-	-	-	0.5
1722/2/1	-	0.5	-	-	-	-	-	0.5
1722/3/1	-	0.5	-	-	-	-	-	0.5
1814/2/1	-	0.4	-	-	-	-	-	0.4

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 4.8 kg y^{-1}

The observed 97.5th percentile rate based on 40 observations is 5.7 kg y^{-1}

Table 21. Adults' consumption rates of rabbits/hares from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Rabbit
1837/1/1	**31.5**
1837/2/1	**13.5**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of rabbits/hares for adults based on the 2 high-rate consumers is 22.5 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 31.0 kg y^{-1}

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

Person ID number	Honey
1802/2/1	**5.4**
1802/1/1	**3.6**
1784/1/1	0.7
2100/1/1	0.5
2100/2/1	0.5
1780/6/1	0.5
2289/1/1	0.2
2289/2/1	0.2
2289/3/1	0.2
1780/1/1	0.1
1780/2/1	0.1
1780/3/1	0.1

Notes

Emboldened observations are the high-rate consumers

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

The observed 97.5th percentile rate based on 12 observations is 4.9 kg y^{-1}

Table 23. Adults' consumption rates of wild fungi from the Trawsfynydd terrestrial survey area (kg y^{-1})

Person ID number	Mushrooms
2228/1/1	**1.4**
2228/2/1	**1.4**
2228/6/1	**1.4**
1837/2/1	**1.4**
1837/1/1	**0.9**
1792/1/1	**0.5**

Notes

Emboldened observations are the high-rate consumers

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

The observed 97.5th percentile rate based on 6 observations is 1.4 kg y^{-1}

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

Person ID number	Brown trout[a]	Salmon[a]	Total
1837/1/1	**-**	**2.0**	**2.0**
1837/2/1	**-**	**2.0**	**2.0**
1832/1/1	0.2	-	0.2
1832/2/1	0.2	-	0.2
1832/3/1	0.2	-	0.2
1832/4/1	0.2	-	0.2

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of fish for adults based on the 2 high-rate consumers is 2.0 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 2.0 kg y^{-1}

[a] Fish that are caught in the River Dwyryd within the terrestrial survey area, that are not included in the aquatic survey area.

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

Person ID number	Salt marsh lamb[a]
2228/1/1	2.4
2228/2/1	2.4
2228/3/1	2.4
2228/4/1	2.4
2228/6/1	2.4

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of salt marsh grazed sheep meat for adults based on the 5 high-rate consumers is 2.4 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 2.4 kg y^{-1}

[a] Salt marsh grazed lamb that was grazed on an estuary salt marsh in the terrestrial survey area that was not in the aquatic survey area.

Table 26. Children's and infants' consumption rates of green vegetables from the Trawsfynydd terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Broccoli	Cabbage	Cauliflower	Cucumber	Total
1730/3/1	15	3.7	4.6	0.9	0.3	9.6

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of green vegetables for the child age group based on 1 high-rate consumer is 9.6 kg y^{-1}

The observed 97.5^{tn} percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 27. Children's and infants' consumption rates of other vegetables from the Trawsfynydd terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	French bean	Pea	Runner bean	Tomato	Total
1730/3/1	15	0.4	0.2	0.9	1.4	2.9

Notes

The emboldened observation is the high-rate consumer

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

The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 28. Children's and infants' consumption rates of root vegetables from the Trawsfynydd terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Beetroot	Leek	Onion	Swede	Turnip	Total
1730/3/1	15	1.1	6.8	3.6	1.4	1.4	14.2

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of root vegetables for the child age group based on 1 high-rate consumer is 14.2 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 29. Children's and infants' consumption rates of potato from the Trawsfynydd terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Potato
1730/3/1	15	6.8

Notes

The emboldened observation is the high-rate consumer
The mean consumption rate of potato for the child age group based on 1 high-rate consumer is 6.8 kg y^{-1}
The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 30. Children's and infants' consumption rates of domestic fruit from the Trawsfynydd terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Apple	Grapes	Rhubarb	Total
1730/3/1	15	0.5	1.4	1.6	3.5

Notes

The emboldened observation is the high-rate consumer
The mean consumption rate of domestic fruit for the child age group based on 1 high-rate consumer is 3.5 kg y^{-1}
The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 31. Children's and infants' consumption rates of sheep meat from the Trawsfynydd terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Lamb
2229/3/1	**7**	**11.5**
1725/7/1	**10**	**7.0**

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of sheep meat for the child age group based on the 2 high-rate consumers is 9.2 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 11.3 kg y^{-1}

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

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

Child age group (6 - 15 years old)

Person ID number	Age	Chicken egg
2231/3/1	**7**	**19.2**
1844/4/1	15	5.9
1844/5/1	11	5.9
1844/6/1	8	4.4
1725/7/1	10	3.8

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for the child age group based on the 1 high-rate consumers is 19.2 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 17.9 kg y^{-1}

Infant age group (0 - 5 years old)

Person ID number	Age	Chicken egg
2231/4/1	**4**	**12.8**
1844/7/1	3	1.9

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of eggs for the infant age group based on the 1 high-rate consumers is 12.8 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 12.5 kg y^{-1}

Table 33. Children's and infants' consumption rates of wild/free foods from the Trawsfynydd terrestrial survey area (kg y^{-1})

Child age group (6 - 15 years old)

Person ID number	Age	Blackberry
2229/3/1	7	0.5

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of wild/free foods for the child age group based on 1 high-rate consumer is 0.5 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

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

Child age group (6 - 15 years old)

Person ID number	Age	Honey
1780/4/1	14	0.1
1780/5/1	6	0.1

Notes

Emboldened observations are the high-rate consumers

The mean consumption rate of honey 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}

Infant age group (0 - 5 years old)

No consumption data obtained for this food group.

Table 35. Percentage contribution each food type makes to its terrestrial food group for adults

Green vegetables	
Cabbage	35.8 %
Cucumber	13.1 %
Courgette	13.6 %
Broccoli	12.8 %
Brussel sprout	5.0 %
Kale	4.6 %
Marrow	3.7 %
Cauliflower	3.5 %
Chard	2.3 %
Pak choi	2.3 %
Lettuce	1.1 %
Spinach	0.8 %
Calabrese	0.6 %
Rocket	0.5 %
Herbs	0.1 %
Asparagus	0.1 %

Other vegetables	
Runner bean	40.3 %
Tomato	33.4 %
French bean	13.7 %
Pea	5.9 %
Broad bean	4.9 %
Pepper	0.9 %
Sweetcorn	0.5 %
Mangetout	0.4 %

Root vegetables	
Onion	39.5 %
Leek	18.8 %
Carrot	17.0 %
Beetroot	9.1 %
Swede	5.6 %
Turnip	3.4 %
Shallot	2.9 %
Parsnip	1.3 %
Spring onion	0.9 %
Radish	0.6 %
Celeriac	0.5 %
Garlic	0.4 %
Horseradish	0.1 %

Potato	
Potato	100.0 %

Domestic fruit	
Apple	39.8 %
Rhubarb	21.5 %
Blackcurrant	7.6 %
Blueberry	7.2 %
Strawberry	6.3 %
Raspberry	3.8 %
Grapes	3.7 %
Redcurrant	2.4 %
Plum	2.3 %
White currant	1.8 %
Gooseberry	1.4 %
Loganberry	0.8 %
Pear	0.5 %
Tayberry	0.5 %
Damson	0.3 %
Fig	0.1 %

Cattle meat	
Beef	100.0 %

Pig meat	
Pork	100.0 %

Sheep meat	
Lamb	95.7 %
Mutton	4.3 %

Poultry	
Goose	65.8 %
Mallard	14.5 %
Duck	13.5 %
Pheasant	6.2 %

Eggs	
Chicken egg	94.3 %
Duck egg	5.7 %

Wild/free foods	
Blackberry	79.7 %
Bilberry	12.0 %
Damson	3.1 %
Sloe	2.6 %
Elderberry	1.0 %
Elderflower	1.0 %
Hazel nut	0.6 %

Rabbits/hares	
Rabbit	100.0 %

Honey	
Honey	100.0 %

Wild fungi	
Mushrooms	100.0 %

Fish[a]	
Salmon	84.7 %
Brown trout	15.3 %

Salt marsh grazed sheep meat[b]	
Lamb	100 %

[a] Fish that are caught in the River Dwyryd within the terrestrial survey area, that are not included in the aquatic survey area.

[b] Salt marsh grazed lamb that was grazed on an estuary salt marsh in the terrestrial survey area that was not in the aquatic survey area.

Table 36. Direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
0 to 0.25 km zone				
2300/1/1	Working	411	617	1029
1837/1/1	Working	-	417	417
2300/2/1	Working	114	174	288
2300/3/1	Working	114	174	288
2300/2/2	Working	114	174	288
2300/3/2	Working	114	174	288
2300/2/3	Working	114	174	288
2300/2/4	Working	114	174	288
2300/2/5	Working	114	174	288
2300/2/6	Working	114	174	288
2300/2/7	Working	114	174	288
2300/2/8	Working	114	174	288
2300/2/9	Working	114	174	288
2300/2/10	Working	114	174	288
1841/1/1	Dog Walking	-	209	209
1841/2/1	Dog Walking	-	209	209
1807/1/1	Clay pigeon shooting	-	115	115
1807/1/2	Clay pigeon shooting	-	115	115
1807/1/3	Clay pigeon shooting	-	115	115
1807/1/4	Clay pigeon shooting	-	115	115
1807/1/5	Clay pigeon shooting	-	115	115
1807/1/6	Clay pigeon shooting	-	115	115
1807/1/7	Clay pigeon shooting	-	115	115
1807/1/8	Clay pigeon shooting	-	115	115
1795/1/1	Topographical survey	-	60	60
1795/2/1	Topographical survey	-	60	60
1723/5/1	Clay pigeon shooting and shore angling	-	45	53
1837/2/1	Working	-	48	48
1819/1/1	Walking	-	39	39

Table 36. Direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
1819/2/1	Walking	-	39	39
1838/1/1	Dog walking and cycling	-	39	39
1828/1/1	Walking	-	18	18
1828/2/1	Walking	-	18	18
1807/2/1	Clay pigeon shooting	-	12	12
>0.25 to 0.5 km zone				
1735/4/1	Working	6373	418	6791
1735/5/1	Residing	5944	730	6674
1735/3/1	Residing	5922	730	6652
1772/2/1	Belly boating, boat angling and shore angling	-	477	477
1772/1/1	Shore angling	-	436	436
1772/3/1	Shore angling	-	286	286
1758/1/1	Walking and cycling	-	3	3
1758/2/1	Walking	-	2	2
1758/3/1	Walking	-	2	2
>0.5 to 1.5 km zone				
2289/3/1	Residing	7665	1095	8760
1813/1/1	Residing	8748	2	8750
1774/1/1	Residing	8660	60	8720
1735/1/1	Residing	6958	1698	8656
1773/2/1	Residing	8449	191	8640
1740/1/1	Residing	7142	1462	8604
1735/2/1	Residing	8168	392	8560
1833/2/1	Residing and working	7619	914	8533
2129/1/1	Residing	8365	104	8469
1722/1/1	Residing and farming	6374	2086	8460
1722/2/1	Residing	8356	104	8460
1722/3/1	Residing	8356	104	8460
2289/4/1	Residing	7421	1003	8424
1769/1/1	Residing	8223	201	8424

Table 36. Direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
1769/2/1	Residing	8223	201	8424
1833/1/1	Residing and farming	4440	3834	8274
1736/1/1	Residing	7638	601	8239
1745/4/1	Residing	7275	940	8216
2099/1/1	Residing and farming	4797	3337	8134
1789/1/1	Residing	6661	1462	8123
1789/2/1	Residing	6661	1462	8123
1744/3/1	Residing	7635	392	8027
1744/4/1	Residing	7635	392	8027
1744/1/1	Residing	7686	244	7930
1745/2/1	Residing	7438	457	7895
2289/1/1	Residing and farming	3876	3876	7752
2229/1/1	Residing and farming	5534	2142	7676
2229/3/1	Residing	6327	1349	7676
1787/1/1	Residing	6952	678	7630
1792/1/1	Residing	7467	102	7569
1733/1/1	Residing	7425	118	7543
1794/1/1	Residing	7432	52	7485
1832/2/1	Residing	5013	2457	7470
1832/1/1	Residing and farming	3188	4188	7376
2289/5/1	Residing	7020	351	7371
1739/1/1	Residing	6935	261	7196
1793/1/1	Residing	7144	52	7196
2214/1/1	Residing	6449	719	7168
1773/1/1	Residing	6598	191	6789
1745/3/1	Residing	6337	274	6611
2099/2/1	Residing	6314	156	6470
2229/2/1	Residing	6088	364	6452
1784/1/1	Residing	6149	39	6189
2289/6/1	Residing	5332	836	6168
2289/7/1	Residing	5332	836	6168

Table 36. Direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
2289/8/1	Residing	5332	836	6168
2289/9/1	Residing	5332	836	6168
1774/2/1	Residing	6003	60	6063
1787/2/1	Residing	5219	678	5896
1832/3/1	Residing	5501	391	5892
2290/3/1	Residing and working	3407	2433	5840
2290/4/1	Residing and working	5180	487	5666
1733/2/1	Residing	5492	71	5563
2214/2/1	Residing	4837	626	5462
1745/1/1	Residing	4963	268	5232
1744/2/1	Residing	5056	49	5104
2290/1/1	Residing and working	2851	1947	4797
2290/2/1	Residing and working	3824	973	4797
1739/3/1	Residing	3556	391	3947
1739/4/1	Residing	3422	261	3682
2291/1/1	Working	1724	1719	3442
1832/4/1	Residing	1586	1825	3411
2289/2/1	Residing	3232	140	3372
2291/2/1	Working, dog walking and kayaking	2507	852	3359
1739/2/1	Residing	3318	28	3346
1833/3/1	Working	1903	476	2378
1833/3/2	Working	1903	476	2378
1833/3/3	Working	1903	476	2378
1833/3/4	Working	1903	476	2378
1833/3/5	Working	1903	476	2378
1833/3/6	Working	1903	476	2378
1833/3/7	Working	1903	476	2378
2291/8/1	Working	1738	429	2166
2291/6/1	Working	1747	257	2004
2213/1/1	Working	1647	261	1908
2213/2/1	Working	1647	261	1908

Table 36. Direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
2213/1/2	Working	1647	261	1908
2213/2/2	Working	1647	261	1908
2213/1/3	Working	1647	261	1908
2213/2/3	Working	1647	261	1908
2213/1/4	Working	1647	261	1908
2291/3/1	Working	1565	144	1709
2291/4/1	Working	1565	144	1709
2289/10/1	Working	-	1173	1173
2289/11/1	Working	-	1173	1173
1843/1/1	Dog walking	-	912	912
1785/1/1	Tending allotment	-	552	552
1730/1/1	Tending allotment	-	549	549
2291/5/1	Working at the café	490	20	511
1831/1/1	Shore angling	-	454	454
2216/1/1	Working	-	445	445
2216/1/2	Working	-	445	445
2216/1/3	Working	-	445	445
2216/1/4	Working	-	445	445
1833/4/1	Farming	-	417	417
2292/1/1	Dog walking	-	334	334
2291/7/1	Working	225	82	306
1800/1/1	Working	208	70	278
1800/1/2	Working	208	70	278
2215/1/1	Boat angling and shore angling	-	275	275
2215/2/1	Boat angling and shore angling	-	275	275
1764/2/1	Cycling	-	261	261
1757/1/1	Boat angling and shore angling	-	239	239
1757/2/1	Boat angling and shore angling	-	239	239
1782/1/1	Boat angling	-	239	239
1782/2/1	Boat angling	-	239	239
1782/1/2	Boat angling	-	239	239

Table 36. Direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
1782/2/2	Boat angling	-	239	239
1782/1/3	Boat angling	-	239	239
1782/2/3	Boat angling	-	239	239
1782/1/4	Boat angling	-	239	239
1782/1/5	Boat angling	-	239	239
1782/1/6	Boat angling	-	239	239
1782/1/7	Boat angling	-	239	239
1782/1/8	Boat angling	-	239	239
1782/1/9	Boat angling	-	239	239
1782/1/10	Boat angling	-	239	239
1782/1/11	Boat angling	-	239	239
1782/1/12	Boat angling	-	239	239
1782/1/13	Boat angling	-	239	239
1782/1/14	Boat angling	-	239	239
1782/1/15	Boat angling	-	239	239
1782/1/16	Boat angling	-	239	239
1782/1/17	Boat angling	-	239	239
1836/2/1	Shore angling	-	214	214
2216/2/1	Working	-	210	210
1836/1/1	Shore angling	-	209	209
1820/1/1	Walking	-	209	209
1820/2/1	Walking	-	209	209
1831/2/1	Shore angling	-	182	182
1806/1/1	Shore angling	-	176	176
1806/2/1	Shore angling	-	176	176
2095/1/1	Shore angling	-	176	176
2290/5/1	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/2	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/3	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/4	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/5	Coed Y Llwyn Campsite tourists	140	28	168

Table 36. Direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
2290/5/6	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/7	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/8	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/9	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/10	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/11	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/12	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/13	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/14	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/15	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/16	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/17	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/18	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/19	Coed Y Llwyn Campsite tourists	140	28	168
2290/5/20	Coed Y Llwyn Campsite tourists	140	28	168
2237/1/1	Shore angling	-	153	153
1761/1/1	Shore angling	-	135	135
1761/2/1	Shore angling	-	135	135
2291/9/1	Boat angling	-	105	105
2095/2/1	Shore angling	-	88	88
2095/3/1	Shore angling	-	88	88
1778/1/1	Dog walking	-	78	78
1778/2/1	Dog walking	-	78	78
2099/3/1	Working	-	78	78
1800/2/1	Working	-	70	70
1827/1/1	Shore angling	-	66	66
1827/2/1	Shore angling	-	66	66
2099/4/1	Farming	-	63	63
1761/3/1	Shore angling	-	63	63
1761/4/1	Shore angling	-	63	63
1831/3/1	Shore angling	-	61	61

Table 36. Direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
2091/1/1	Shore angling	-	27	27
2091/2/1	Shore angling	-	27	27
1765/1/1	Boat angling	-	26	26
2090/1/1	Shore angling	-	24	24
2090/2/1	Shore angling	-	24	24
2095/4/1	Shore angling	-	15	15
2095/5/1	Shore angling	-	15	15
1766/1/1	Boat angling	-	13	13
1766/2/1	Boat angling	-	13	13
1801/1/1	Shore angling	-	10	10
1763/1/1	Boat angling	-	10	10
1763/2/1	Boat angling	-	10	10
1763/3/1	Boat angling	-	10	10
1763/4/1	Boat angling	-	10	10
1829/1/1	Shore angling	-	8	8
1829/2/1	Shore angling	-	8	8
1829/3/1	Shore angling	-	8	8
1760/1/1	Kayaking	-	8	8
1760/2/1	Kayaking	-	8	8
1760/3/1	Kayaking	-	8	8
1760/4/1	Kayaking	-	8	8
1760/5/1	Kayaking	-	8	8
1760/6/1	Kayaking	-	8	8
2243/1/1	Playing and swimming	-	5	5
2243/2/1	Playing and swimming	-	5	5
2243/3/1	Playing and swimming	-	5	5
2243/4/1	Playing and swimming	-	5	5
1842/1/1	Geocaching	-	5	5
1753/1/1	Photography	-	3	3
1764/1/1	Cycling	-	2	2
1816/1/1	Walking	-	2	2

Table 36. Direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
1816/2/1	Walking	-	2	2
1764/1/2	Cycling	-	2	2
1764/1/3	Cycling	-	2	2
1764/1/4	Cycling	-	2	2
1764/1/5	Cycling	-	2	2
1764/1/6	Cycling	-	2	2
1764/1/7	Cycling	-	2	2
1764/1/8	Cycling	-	2	2
1764/1/9	Cycling	-	2	2
1764/1/10	Cycling	-	2	2
1783/1/1	Kayaking	-	2	2
1783/1/2	Kayaking	-	2	2
1783/1/3	Kayaking	-	2	2
1783/1/4	Kayaking	-	2	2
1783/1/5	Kayaking	-	2	2
1783/1/6	Kayaking	-	2	2
1783/1/7	Kayaking	-	2	2
1783/1/8	Kayaking	-	2	2
1783/1/9	Kayaking	-	2	2
1783/1/10	Kayaking	-	2	2
1783/1/11	Kayaking	-	2	2
1783/1/12	Kayaking	-	2	2
1783/1/13	Kayaking	-	2	2
1783/1/14	Kayaking	-	2	2
1783/1/15	Kayaking	-	2	2
1783/1/16	Kayaking	-	2	2
1783/1/17	Kayaking	-	2	2
1783/1/18	Kayaking	-	2	2
1783/1/19	Kayaking	-	2	2
1783/1/20	Kayaking	-	2	2

Table 37. Analysis of direct radiation occupancy rates for adults, children and infants in the Trawsfynydd area (h y^{-1})

0 to 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	1
0 to 1000	33
0 to 8760	**34**

>0.25 to 0.5 km zone	
Number of hours	**Number of observations**
>8000 to 8760	0
>7000 to 8000	0
>6000 to 7000	3
>5000 to 6000	0
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	0
>1000 to 2000	0
0 to 1000	6
0 to 8760	**9**

>0.5 to 1.1 km zone	
Number of hours	**Number of observations**
>8000 to 8760	24
>7000 to 8000	14
>6000 to 7000	10
>5000 to 6000	8
>4000 to 5000	2
>3000 to 4000	7
>2000 to 3000	9
>1000 to 2000	11
0 to 1000	144
0 to 8760	**229**

Table 38. Gamma dose rate measurements for the Trawsfynydd direct radiation survey area (μGyh^{-1})

Residences

Location	Indoor substrate	Indoor gamma dose rate at 1 metre[a]	Outdoor substrate	Outdoor gamma dose rate at 1 metre[a]
Residence 1	Stone	0.090	Grass	0.096
Residence 2	Stone	0.081	Grass	0.087
Residence 3	Concrete	0.113	Grass	0.056
Residence 4	Wood	0.103	Grass	0.101
Residence 5	Wood	0.090	Stone	0.086
Residence 6	Stone	0.105	Grass	0.093
Residence 7	Concrete	0.078	Grass	0.079
Residence 8	Wood	0.091	Concrete	0.088
Residence 9	Concrete	0.079	Grass	0.068
Residence 10	Concrete	0.088	Concrete	0.066
Residence 11	Concrete	0.099	Concrete	0.080
Residence 12	Concrete	0.100	Grass	0.085
Residence 13	Concrete	0.132	Grass	0.088
Residence 14	Concrete	0.143	Grass	0.097
Residence 15	Not taken	Not Taken	Grass	0.083
Residence 16	Concrete	0.097	Grass	0.095
Residence 17	Stone	0.080	Grass	0.076
Residence 18	Concrete	0.130	Grass	0.090
Residence 19	Wood	0.099	Grass	0.080
Residence 20	Wood	0.090	Grass	0.083
Residence 21	Stone	0.110	Grass	0.083

Backgrounds

	Location	National Grid Reference	Substrate	Gamma dose rate at 1 metre[a]
Background 1	North West	SH 641 399	Grass	0.089
Background 2	North East	SH 743 418	Grass	0.076
Background 3	South West	SH 720 328	Grass	0.083
Background 4	South	SH 708 305	Grass	0.088

Notes

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

Table 39. Combinations of adult pathways for consideration in dose assessments in the Trawsfynydd area

Combination number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1											X			X									X	X
2	X																				X		X	X
3								X			X			X										
4																		X			X			
5		X	X	X	X	X					X			X										
6		X	X	X	X	X																	X	X
7	X																		X			X	X	X
8	X								X		X												X	X
9	X																			X		X	X	X
10																				X	X	X	X	X
11		X				X	X		X			X											X	X
12					X	X	X		X		X	X											X	X
13									X	X		X				X							X	X
14	X	X	X	X	X	X			X		X	X												
15		X	X	X	X	X					X	X								X				
16										X		X	X		X	X							X	X
17		X				X	X		X		X	X			X		X							
18												X			X					X			X	X

Notes

The food groups and external pathways marked with a cross are combined for the corresponding combination number. For example, combination number 1 represents an individual (or individuals) from Annex 1 who had positive data for the following pathways: eggs, honey, indoor occupancy within 1.5 km of the licensed site boundary, outdoor occupancy within 1.5 km of the licensed site boundary.

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1720/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/1/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/1/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1720/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1721/1/1	-	-	-	-	-	-	6.0	-	**18.0**	-	**17.8**	-	-	-	-	-	-	-	-	-	-	-	-	-
1721/2/1	-	-	-	-	-	-	6.0	-	**18.0**	-	11.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1722/1/1	-	-	-	-	**33.3**	1.5	15.7	-	13.0	-	11.9	0.5	-	-	-	-	-	-	-	-	-	-	6374	2086
1722/2/1	-	-	-	-	**33.3**	1.5	15.7	-	13.0	-	11.9	0.5	-	-	-	-	-	-	-	-	-	-	8356	104
1722/3/1	-	-	-	-	**33.3**	1.5	15.7	-	13.0	-	11.9	0.5	-	-	-	-	-	-	-	-	-	-	8356	104
1723/1/1	-	-	-	-	-	0.7	-	-	-	-	**17.8**	0.7	-	-	-	-	-	-	-	-	-	-	-	-
1723/2/1	-	-	-	-	-	0.7	-	-	-	-	**17.8**	0.7	-	-	-	-	-	-	-	-	-	-	-	-
1723/3/1	-	-	-	-	-	0.7	-	-	-	-	**17.8**	0.7	-	-	-	-	-	-	-	-	-	-	-	-
1723/4/1	-	-	-	-	-	0.7	-	-	-	-	**17.8**	0.7	-	-	-	-	-	-	-	-	-	-	-	-
1723/5/1	-	-	-	-	-	0.7	-	-	-	-	**17.8**	0.7	-	-	-	-	-	-	-	-	-	-	-	45
1724/1/1	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-	-	-	-	-	-
1724/2/1	-	-	-	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	-	-	-	-	-	-	-
1725/1/1	-	-	-	-	-	-	-	-	15.2	-	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-
1725/2/1	-	-	-	-	-	-	-	-	15.2	-	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-
1725/3/1	-	-	-	-	-	-	-	-	15.2	-	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-
1725/4/1	-	-	-	-	-	-	-	-	15.2	-	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-
1725/5/1	-	-	-	-	-	-	-	-	15.2	-	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-
1725/6/1	-	-	-	-	-	-	-	-	15.2	-	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-
1726/1/1	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1726/2/1	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1729/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1729/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1729/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1729/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1729/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1729/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1729/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1730/1/1	-	**76.7**	**22.8**	**113.5**	**54.6**	**27.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	549
1730/2/1	-	9.6	2.9	14.2	6.8	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1731/1/1	-	-	-	-	-	-	-	-	**37.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1731/2/1	-	-	-	-	-	-	-	-	**37.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1731/3/1	-	-	-	-	-	-	-	-	**37.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1733/1/1	-	-	-	-	0.5	1.3	-	-	-	-	2.1	0.5	-	-	-	-	-	-	-	-	-	-	7425	118
1733/2/1	-	-	-	-	0.5	1.3	-	-	-	-	2.1	0.5	-	-	-	-	-	-	-	-	-	-	5492	71
1734/1/1	-	-	-	-	-	-	-	-	-	-	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
1734/2/1	-	-	-	-	-	-	-	-	-	-	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
1734/3/1	-	-	-	-	-	-	-	-	-	-	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-
1735/1/1	5.7	-	-	-	-	-	-	-	9.3	-	2.1	-	-	-	-	-	-	-	-	-	-	-	6958	1698
1735/2/1	-	-	-	-	-	-	-	-	9.3	-	2.1	-	-	-	-	-	-	-	-	-	-	-	8168	392
1735/3/1	-	-	-	-	-	-	-	-	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	5922	730
1735/4/1	-	-	-	-	-	-	-	-	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	6373	418
1735/5/1	-	-	-	-	-	-	-	-	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	5944	730
1735/6/1	-	-	-	-	-	-	-	-	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1736/1/1	-	25.5	**23.6**	-	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7638	601
1737/1/1	-	-	-	-	-	-	-	-	**22.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1739/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6935	261
1739/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3318	28
1739/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3422	261
1740/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7142	1462
1744/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7686	244
1744/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5056	49
1745/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4963	268
1745/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7438	457
1753/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	3
1757/1/1	**93.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**716**	-	716	-	239
1757/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**716**	-	716	-	239
1758/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
1758/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1758/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1760/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	8
1760/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	8

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1760/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	8
1760/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	8
1760/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	8
1760/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	8
1761/1/1	**47.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135	-	-	-	135
1761/2/1	**47.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135	-	-	-	135
1761/3/1	23.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	-	-	-	63
1761/4/1	23.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	-	-	-	63
1763/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	10
1763/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	10
1763/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	10
1763/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	10
1764/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/1/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/1/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1764/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	261
1765/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	26
1766/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	13
1766/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	13
1769/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8223	201
1769/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8223	201
1772/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87	261	87	-	436
1772/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**521**	-	-	-	477
1772/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	477	-	286
1773/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6598	191
1773/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8449	191
1774/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8660	60
1774/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6003	60
1778/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	78

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1778/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	78
1780/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
1780/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
1780/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-
1780/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-
1782/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/1/17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1783/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1783/1/12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1783/1/20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
1784/1/1	-	-	-	-	-	-	-	-	-	-	**17.8**	-	-	0.7	-	-	-	-	-	-	-	-	6149	39
1785/1/1	-	**34.4**	**29.2**	**50.7**	**40.0**	**23.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	552
1787/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6952	678
1787/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5219	678
1788/1/1	-	-	-	-	-	-	-	-	-	-	**20.8**	-	-	-	-	-	-	-	-	-	-	-	-	-
1788/2/1	-	-	-	-	-	-	-	-	-	-	**20.8**	-	-	-	-	-	-	-	-	-	-	-	-	-
1789/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6661	1462
1789/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6661	1462
1792/1/1	-	-	-	-	-	-	-	-	-	-	-	0.9	-	-	**0.5**	-	-	-	-	4	-	-	7467	102
1793/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7144	52
1794/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7432	52
1795/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60
1795/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60
1797/2/1	1.8	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-
1797/3/1	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-
1800/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	208	70
1800/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	208	70
1800/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70
1801/1/1	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	10
1802/1/1	-	-	-	-	-	-	-	**25.3**	-	-	5.2	-	-	**3.6**	-	-	-	-	-	-	-	-	-	-
1802/2/1	-	-	-	-	-	-	-	**25.3**	-	-	5.2	-	-	**5.4**	-	-	-	-	-	-	-	-	-	-
1803/1/1	-	-	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1803/2/1	-	-	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1803/3/1	-	-	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1804/1/1	-	-	**25.5**	-	-	18.4	-	-	-	-	8.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1804/2/1	-	-	**25.5**	-	-	18.4	-	-	-	-	8.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1806/1/1	6.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	176	-	-	-	176

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1806/2/1	6.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	176	-	-	-	176
1807/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115
1807/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115
1807/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115
1807/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115
1807/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115
1807/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115
1807/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115
1807/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115
1807/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
1808/1/1	-	6.8	**24.9**	-	**20.0**	**29.9**	-	-	-	-	8.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1808/2/1	-	6.8	**24.9**	-	**20.0**	**29.9**	-	-	-	-	8.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1809/1/1	2.7	0.6	2.7	2.7	**26.1**	6.3	-	-	11.3	-	6.5	1.1	-	-	-	-	-	-	-	-	-	-	-	-
1809/2/1	2.7	0.6	2.7	2.7	**26.1**	6.3	-	-	11.3	-	6.5	1.1	-	-	-	-	-	-	-	-	-	-	-	-
1811/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
1811/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
1811/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
1811/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
1812/1/1	-	-	-	-	-	-	-	-	7.0	-	-	**5.0**	-	-	-	-	-	-	-	-	-	-	-	-
1812/2/1	-	-	-	-	-	-	-	-	7.0	-	-	**5.0**	-	-	-	-	-	-	-	-	-	-	-	-
1813/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8748	2
1814/1/1	-	-	-	-	-	-	-	-	7.0	-	**16.8**	0.6	-	-	-	-	-	-	-	-	-	-	-	-
1814/2/1	-	-	-	-	-	-	-	-	7.0	-	**16.8**	0.4	-	-	-	-	-	-	-	-	-	-	-	-
1816/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	2
1816/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	2
1819/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39
1819/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39
1820/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	209
1820/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	209
1821/1/1	-	**69.8**	**10.7**	31.4	**40.0**	**57.5**	-	-	-	-	**25.5**	**4.0**	-	-	-	-	-	-	-	4	-	-	-	-
1821/2/1	-	**69.8**	**10.7**	31.4	**40.0**	**57.5**	-	-	-	-	**25.5**	**4.0**	-	-	-	-	-	-	-	4	-	-	-	-
1822/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8	-	-	-
1822/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8	-	-	-
1822/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8	-	-	-
1824/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1824/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/1/12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-
1824/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	139	-	-	-	-
1824/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/3/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/3/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/3/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/3/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/3/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/3/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/3/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/3/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-
1824/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-
1824/6/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-
1824/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-
1824/7/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-
1827/1/1	20.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66	-	-	-	66
1827/2/1	20.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66	-	-	-	66
1828/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
1828/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
1829/3/1	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	8
1831/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**454**	-	-	-	454
1831/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	234	-	-	-	182
1831/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61
1831/4/1	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1831/5/1	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1831/6/1	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1831/7/1	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1832/1/1	-	-	-	-	-	-	-	-	7.1	0.4	-	0.9	-	-	-	0.2	-	-	-	-	-	-	3188	4188
1832/2/1	-	-	-	-	-	-	-	-	7.1	0.4	-	0.9	-	-	-	0.2	-	-	-	-	-	-	5013	2457
1832/3/1	-	-	-	-	-	-	-	-	7.1	0.4	-	0.9	-	-	-	0.2	-	-	-	-	-	-	5501	391
1832/4/1	-	-	-	-	-	-	-	-	7.1	0.4	-	0.9	-	-	-	0.2	-	-	-	-	-	-	1586	1825
1833/1/1	-	1.4	-	-	-	6.8	**47.3**	-	14.0	-	-	**3.6**	-	-	-	-	-	-	-	-	-	-	4440	3834
1833/2/1	-	1.4	-	-	-	6.8	**47.3**	-	14.0	-	-	**3.6**	-	-	-	-	-	-	-	-	-	-	7619	914
1833/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1903	476
1833/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1903	476
1833/3/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1903	476
1833/3/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1903	476
1833/3/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1903	476
1833/3/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1903	476
1833/3/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1903	476
1833/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	417
1835/1/1	**33.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**286**	-	-	-	-
1835/2/1	**33.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**286**	-	-	-	-
1836/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**209**	-	-	-	-	209
1836/2/1	**80.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**214**	-	-	-	-	214
1837/1/1	-	-	-	-	-	-	-	-	-	**21.3**	-	**5.7**	**31.5**	-	**0.9**	**2.0**	-	-	-	-	-	-	-	417
1837/2/1	-	-	-	-	-	-	-	-	-	**20.4**	-	**3.9**	**13.5**	-	**1.4**	**2.0**	-	-	-	-	-	-	-	48
1838/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39
1841/1/1	-	-	-	-	-	0.2	-	-	-	-	-	1.8	-	-	-	-	-	-	-	-	-	-	-	209
1841/2/1	-	-	-	-	-	0.2	-	-	-	-	-	1.8	-	-	-	-	-	-	-	-	-	-	-	209
1842/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
1843/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	912
1844/1/1	-	-	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1844/2/1	-	-	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-
1844/3/1	-	-	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-
2090/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	24
2090/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	24
2091/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	-	27
2093/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
2093/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
2095/1/1	15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	144	-	-	-	176
2095/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	-	-	-	88

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
2095/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	15
2099/1/1	-	-	-	-	-	-	**24.0**	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-	-	4797	3337
2099/2/1	-	-	-	-	-	-	**24.0**	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-	-	6314	156
2099/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78
2099/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63
2100/1/1	-	24.9	7.6	12.6	**18.2**	6.8	-	-	-	-	7.5	-	-	0.5	-	-	-	-	-	-	-	-	-	-
2100/2/1	-	24.9	7.6	12.6	**18.2**	6.8	-	-	-	-	7.5	-	-	0.5	-	-	-	-	-	-	-	-	-	-
2129/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8365	104
2213/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2213/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2213/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2213/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2213/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2213/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2213/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2214/1/1	-	-	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6449	719
2214/2/1	-	-	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4837	626
2215/1/1	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**132**	-	-	18	-	275
2215/2/1	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**132**	-	-	18	-	275
2215/3/1	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/3/2	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/3/3	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/3/4	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/3/5	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/3/6	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/1	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/2	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/3	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/4	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/5	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/6	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2216/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	445
2216/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	445
2216/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	445
2216/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	445
2216/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
2220/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-
2220/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-
2227/1/1	-	**43.9**	**11.0**	**81.0**	**28.6**	5.5	-	-	-	-	**16.3**	-	-	-	-	-	-	-	-	-	-	-	-	-
2227/2/1	-	**31.9**	8.0	**58.9**	**20.8**	4.0	-	-	-	-	11.9	-	-	-	-	-	-	-	-	-	-	-	-	-
2227/3/1	-	4.0	1.2	7.4	2.6	0.5	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
2228/1/1	-	0.02	-	-	-	0.3	**23.2**	-	7.6	-	**41.6**	**7.6**	-	-	**1.4**	-	**2.4**	-	-	-	-	-	-	-
2228/2/1	-	0.02	-	-	-	0.3	**23.2**	-	7.6	-	**17.8**	**4.9**	-	-	**1.4**	-	**2.4**	-	-	-	-	-	-	-
2228/3/1	-	0.02	-	-	-	0.3	**23.2**	-	7.6	-	5.9	**4.9**	-	-	-	-	**2.4**	-	-	-	-	-	-	-
2228/4/1	-	0.02	-	-	-	0.3	**23.2**	-	7.6	-	5.9	**4.9**	-	-	-	-	**2.4**	-	-	-	-	-	-	-
2228/5/1	-	0.02	-	-	-	0.3	-	-	-	-	**17.8**	-	-	-	-	-	-	-	-	-	-	-	-	-
2228/6/1	-	0.02	-	-	-	0.3	**23.2**	-	7.6	-	5.9	**4.9**	-	-	**1.4**	-	**2.4**	-	-	-	-	-	-	-
2229/1/1	-	-	-	-	-	-	-	-	15.3	-	-	0.7	-	-	-	-	-	-	-	-	-	-	5534	2142
2229/2/1	-	-	-	-	-	-	-	-	15.3	-	-	0.7	-	-	-	-	-	-	-	-	-	-	6088	364
2230/1/1	-	-	-	-	-	-	-	-	**48.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2231/1/1	-	-	-	-	-	-	-	-	-	-	**25.6**	-	-	-	-	-	-	-	-	-	-	-	-	-
2231/2/1	-	-	-	-	-	-	-	-	-	-	**25.6**	-	-	-	-	-	-	-	-	-	-	-	-	-
2237/1/1	21.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	153	-	-	-	153
2243/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	5
2243/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	5
2243/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	5
2268/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**100**	-	-	600	-	-	-
2268/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**100**	-	-	600	-	-	-
2289/1/1	-	-	-	-	-	-	-	-	-	-	5.0	-	-	0.2	-	-	-	-	-	-	-	-	3876	3876
2289/2/1	-	-	-	-	-	-	-	-	-	-	5.9	-	-	0.2	-	-	-	-	-	-	-	-	3232	140
2289/3/1	-	-	-	-	-	-	-	-	-	-	5.0	-	-	0.2	-	-	-	-	-	-	-	-	7665	1095
2289/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7421	1003
2289/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7020	351
2289/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5332	836
2289/10/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1173
2289/11/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1173
2290/1/1	-	-	-	-	-	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	2851	1947
2290/2/1	-	-	-	-	-	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	3824	973
2290/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3407	2433
2290/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5180	487
2290/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
2290/5/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2290/5/20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	28
2291/1/1	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	429	1724	1719
2291/2/1	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2507	852
2291/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1565	144
2291/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1565	144
2291/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	490	20
2291/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	1747	257
2291/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	82
2291/8/1	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	671	1738	429
2291/9/1	12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	182	-	105
2291/10/1	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2291/11/1	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2292/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**334**	-	-	-	334
2300/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	411	617
2300/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/2/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/2/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	River bank occupancy over rock	Lake shore occupancy over sand and stones	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
2300/2/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/2/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/2/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/2/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/2/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174

Notes

Emboldened observations are the high-rate individuals

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

Person ID number	Fish (from aquatic survey area)	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Sheep meat	Eggs	Wild/free foods	Honey	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
Child age group (6 - 15 years old)															
1725/7/1	-	-	-	-	-	-	**7.0**	3.8	-	-	-	-	-	-	-
1730/3/1	-	**9.6**	**2.9**	**14.2**	**6.8**	**3.5**	-	-	-	-	-	-	-	-	-
1739/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	3556	391
1744/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	7635	392
1744/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	7635	392
1745/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	6337	274
1745/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	7275	940
1780/4/1	-	-	-	-	-	-	-	-	-	**0.1**	-	-	-	-	-
1780/5/1	-	-	-	-	-	-	-	-	-	**0.1**	-	-	-	-	-
1824/4/1	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-
1824/4/2	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-
1824/5/1	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-
1824/5/2	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-
1829/1/1	**0.7**	-	-	-	-	-	-	-	-	-	**48**	-	-	-	8
1829/2/1	**0.7**	-	-	-	-	-	-	-	-	-	**48**	-	-	-	8
1844/4/1	-	-	-	-	-	-	-	5.9	-	-	8	-	-	-	-
1844/5/1	**0.5**	-	-	-	-	-	-	5.9	-	-	8	-	-	-	-
1844/6/1	-	-	-	-	-	-	-	4.4	-	-	8	-	-	-	-
2091/2/1	-	-	-	-	-	-	-	-	-	-	-	-	36	-	27
2093/3/1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
2093/4/1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
2095/3/1	-	-	-	-	-	-	-	-	-	-	**44**	-	44	-	88
2095/5/1	-	-	-	-	-	-	-	-	-	-	8	-	8	-	15
2229/3/1	-	-	-	-	-	-	**11.5**	-	**0.5**	-	-	-	-	6327	1349
2231/3/1	-	-	-	-	-	-	-	**19.2**	-	-	-	-	-	-	-
2243/4/1	-	-	-	-	-	-	-	-	-	-	2	2	-	-	5
2289/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	5332	836
2289/8/1	-	-	-	-	-	-	-	-	-	-	-	-	-	5332	836
Infant age group (0 - 5 years old)															
1844/7/1	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-
2231/4/1	-	-	-	-	-	-	-	**12.8**	-	-	-	-	-	-	-
2289/9/1	-	-	-	-	-	-	-	-	-	-	-	-	-	5332	836

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

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

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

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

Notes

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

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

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

[d]Game includes rabbits/hares and venison.

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

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Potato	Domestic fruit	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1720/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
1722/3/1	-	-	33.3	1.5	15.7	13.0	-	11.9	0.5	-	-	-	-	-	-	-	8356	104
1723/4/1	-	-	-	0.7	-	-	-	17.8	0.7	-	-	-	-	-	-	-	-	-
1725/4/1	-	-	-	-	-	15.2	-	3.8	-	-	-	-	-	-	-	-	-	-
1725/6/1	-	-	-	-	-	15.2	-	3.8	-	-	-	-	-	-	-	-	-	-
1729/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1729/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1729/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1729/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-
1733/2/1	-	-	0.5	1.3	-	-	-	2.1	0.5	-	-	-	-	-	-	-	5492	71
1734/3/1	-	-	-	-	-	-	-	5.0	-	-	-	-	-	-	-	-	-	-
1735/6/1	-	-	-	-	-	9.3	-	-	-	-	-	-	-	-	-	-	-	-
1739/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6935	261
1739/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3422	261
1745/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7438	457
1758/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1780/3/1	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-
1782/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239
1782/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	382	-	239

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Potato	Domestic fruit	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
1811/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
1811/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
1816/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	2
1831/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61
1831/5/1	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1831/7/1	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1832/3/1	-	-	-	-	-	7.1	0.4	-	0.9	-	-	0.2	-	-	-	-	5501	391
1843/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	912
1844/2/1	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-
1844/3/1	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-
2099/2/1	-	-	-	-	24.0	-	-	6.8	-	-	-	-	-	-	-	-	6314	156
2213/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2213/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2213/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2213/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1647	261
2215/4/1	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/2	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/3	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/4	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/5	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2215/4/6	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2228/3/1	-	0.02	-	0.3	23.2	7.6	-	5.9	4.9	-	-	-	2.4	-	-	-	-	-

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

Person ID number	Fish (from the aquatic survey area)	Green vegetables	Potato	Domestic fruit	Cattle meat	Sheep meat	Poultry	Eggs	Wild/free foods	Honey	Wild fungi	Fish (from the terrestrial survey area)	Salt marsh grazed sheep meat (from the terrestrial survey area)	Lake shore occupancy over stones	Occupancy in water	Occupancy on water	Indoor occupancy within 1.5 km of the licensed site boundary	Outdoor occupancy within 1.5 km of the licensed site boundary
2228/6/1	-	0.02	-	0.3	23.2	7.6	-	5.9	4.9	-	1.4	-	2.4	-	-	-	-	-
2231/2/1	-	-	-	-	-	-	-	25.6	-	-	-	-	-	-	-	-	-	-
2243/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	5
2243/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	5
2289/2/1	-	-	-	-	-	-	-	5.9	-	0.2	-	-	-	-	-	-	3232	140
2289/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7020	351
2291/2/1	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2507	852
2291/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	490	20
2291/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	82
2300/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174
2300/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	174

Notes

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

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

Profile Name	Number of individuals	Pathway Name: Direct	Eggs	Fish - Affected by gaseous discharges	Fish - Affected by liquid discharges	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sand and Stones	Honey	Meat - Cow	Meat - Game	Meat - Pig	Meat - Poultry	Meat - Sheep	Meat - Salt Marsh Grazed Sheep (Affected by gaseous discharges)	Mushrooms	Occupancy in water	Occupancy on water	Plume (IN; 0-0.25 km)	Plume (MID; 0.25-0.5 km)	Plume (OUT; 0.5-1.5 km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
Notes:		1		2	3			4			5				6				7	7	7				
Units:		-	kg	kg	kg	kg	kg	h	kg	kg	kg	kg	kg	kg	kg	kg	h	h	h	h	h	kg	kg	kg	kg
Occupants for Direct Radiation	255	1.00	0.44	0.02	1.8	0.28	0.11	20	<0.01	0.74	0.18	-	0.17	0.68	-	0.01	2	44	26	84	1640	0.55	0.34	0.79	0.64
Egg Consumers	19	0.11	20.8	-	-	6.6	1.3	<1	0.04	2.8	-	-	-	2.5	0.25	0.14	-	-	3	-	330	9.7	1.7	5.7	7.6
Consumers of Fish Affected by Gaseous Discharges	2	1.00	-	2.0	-	-	4.8	-	-	-	22.5	-	20.8	-	-	1.1	-	-	230	-	-	-	-	-	-
Consumers of Fish Affected by Liquid Discharges	6	0.67	-	-	56.2	-	-	300	-	-	-	-	-	-	-	-	-	120	-	-	120	-	-	-	-
Domestic Fruit Consumers	6	0.33	11.5	-	-	37.6	1.3	1	-	-	-	-	-	-	-	-	-	-	-	-	180	44.0	20.5	35.8	37.8
Wild Fruit and Nut Consumers	13	0.31	9.9	0.30	-	10.0	4.8	<1	-	16.2	3.5	-	3.2	6.1	0.91	0.49	-	-	36	-	1290	11.0	1.6	6.2	4.8
Occupants over Sediment	7	0.71	-	-	23.0	-	-	470	-	-	-	-	-	-	-	-	-	200	-	68	180	-	-	-	-
Honey Consumers	2	-	5.2	-	-	-	-	-	4.5	-	-	25.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Cattle Meat Consumers	9	0.44	10.1	-	-	1.7	3.8	-	-	28.7	-	-	-	7.3	1.3	0.45	-	-	-	-	3490	0.31	-	-	-
Game Meat Consumers	2	1.00	-	2.0	-	-	4.8	-	-	-	22.5	-	20.8	-	-	1.1	-	-	230	-	-	-	-	-	-
Pig Meat Consumers	2	-	5.2	-	-	-	-	-	4.5	-	-	25.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Poultry Meat Consumers	2	1.00	-	2.0	-	-	4.8	-	-	-	22.5	-	20.8	-	-	1.1	-	-	230	-	-	-	-	-	-
Sheep Meat Consumers	7	-	4.2	-	-	-	-	-	-	1.7	-	-	-	31.5	-	-	-	-	-	-	-	-	-	-	-
Consumers of Meat From Salt Marsh Grazed Sheep (Affected by gaseous discharges)	5	-	15.5	-	-	0.30	5.5	-	-	23.2	-	-	-	7.6	2.4	0.82	-	-	-	-	-	0.02	-	-	-
Mushroom Consumers	6	0.50	10.9	0.65	-	0.15	4.7	<1	-	11.6	7.5	-	6.9	3.8	1.2	1.1	-	-	78	-	1260	<0.01	-	-	-
Occupants In Water	3	0.33	-	-	-	-	-	29	-	-	-	-	-	-	-	-	490	29	-	150	-	-	-	-	-
Occupants On Water	25	1.00	-	-	4.0	-	-	57	-	-	-	-	-	-	-	-	-	430	-	11	430	-	-	-	-
Local Inhabitants (0 - 0.25 km)	2	1.00	-	0.98	-	-	2.8	-	-	-	15.7	-	10.6	-	-	0.45	-	-	720	-	-	-	-	-	-
Local Inhabitants (0.25 - 0.5 km)	3	1.00	-	-	-	-	-	-	-	-	-	-	-	9.3	-	-	-	-	-	6710	-	-	-	-	-
Local Inhabitants (0.5 - 1.5 km)	51	1.00	1.9	0.01	0.15	0.36	0.28	<1	0.03	3.7	-	-	0.04	2.8	-	<0.01	-	8	-	-	7030	0.55	0.68	2.1	-
Green Vegetable Consumers	6	0.33	13.2	-	-	29.2	1.3	1	-	-	-	-	-	-	-	-	-	-	-	-	180	54.4	15.4	37.3	61.1
Other Domestic Vegetable Consumers	10	0.30	10.3	-	-	26.8	0.80	<1	-	-	-	-	-	-	-	-	-	-	-	-	930	33.4	20.9	24.9	30.8
Potato Consumers	15	0.33	10.7	-	0.36	17.7	0.78	<1	0.07	3.1	-	-	-	4.1	-	-	-	-	-	-	1770	26.1	10.9	30.2	26.5
Root Vegetable Consumers	4	0.50	7.1	-	-	15.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	280	46.7	17.8	36.0	76.0

Notes

1. Direct radiation is expressed as proportion of group who are present within 1.5 km of site perimeter
2. Fish - Affected by gaseous discharges represents freshwater fish sourced from the upper reaches of the River Dwyryd and freshwater bodies within the terrestrial survey area
3. Fish - Affected by liquid discharges represents freshwater fish sourced from the aquatic survey area
4. Gamma ext - Sand and Stones represents occupancy over sand and stones on the lake shore and river bank
5. Meat - Game includes consumption of rabbits/hares
6. Meat - Salt Marsh Grazed Sheep (Affected by gaseous discharges) represents salt marsh grazed sheep outside the aquatic survey area
7. 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 highlighted on the diagonal

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

Profile Name	Number of individuals	Pathway Name: Direct	Eggs	Fish - Affected by liquid discharges	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sand and Stones	Honey	Meat - Sheep	Occupancy in water	Occupancy on water	Plume (OUT; 0.5-1.5 km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
Notes:		1		2			3					4				
Units:		-	kg	kg	kg	kg	h	kg	kg	h	h	h	kg	kg	kg	kg
Occupants for Direct Radiation	14	1.00	-	0.10	-	0.04	11	-	0.82	<1	6	3930	-	-	-	-
Egg Consumers	1	-	19.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumers of Fish Affected by Liquid Discharges	3	0.67	2.0	0.62	-	-	35	-	-	-	-	5	-	-	-	-
Domestic Fruit Consumers	1	-	-	-	3.5	-	-	-	-	-	-	-	9.6	2.9	6.8	14.2
Wild Fruit and Nut Consumers	1	1.00	-	-	-	0.49	-	-	11.5	-	-	7680	-	-	-	-
Occupants over Sediment	3	1.00	-	0.47	-	-	47	-	-	-	15	35	-	-	-	-
Honey Consumers	2	-	-	-	-	-	-	0.08	-	-	-	-	-	-	-	-
Sheep Meat Consumers	2	0.50	1.9	-	-	0.25	-	-	9.2	-	-	3840	-	-	-	-
Occupants In Water	4	-	-	-	-	-	-	-	-	18	-	-	-	-	-	-
Occupants On Water	2	1.00	-	-	-	-	22	-	-	-	40	58	-	-	-	-
Local Inhabitants (0.5 - 1.5 km)	8	1.00	-	-	-	0.06	-	-	1.4	-	-	6850	-	-	-	-
Green Vegetable Consumers	1	-	-	-	3.5	-	-	-	-	-	-	-	9.6	2.9	6.8	14.2
Other Domestic Vegetable Consumers	1	-	-	-	3.5	-	-	-	-	-	-	-	9.6	2.9	6.8	14.2
Potato Consumers	1	-	-	-	3.5	-	-	-	-	-	-	-	9.6	2.9	6.8	14.2
Root Vegetable Consumers	1	-	-	-	3.5	-	-	-	-	-	-	-	9.6	2.9	6.8	14.2

Notes

1. Direct radiation is expressed as proportion of group who are present within 1.5 km of site perimeter
2. Fish - Affected by liquid discharges represents freshwater fish sourced from the aquatic survey area
3. Gamma ext - Sand and Stones represents occupancy over sand and stones on the lake shore
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 highlighted on the diagonal

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

Profile Name	Number of individuals	Pathway Name: Direct	Eggs	Plume (OUT; 0.5-1.5 km)
Notes:		1		2
Units:		-	kg	h
Occupants for Direct Radiation	1	1.00	-	6170
Egg Consumers	1	-	12.8	-
Local Inhabitants (0.5 - 1.5 km)	1	1.00	-	6170

Notes

1. Direct radiation is expressed as proportion of group who are present within 1.5 km of site perimeter
2. 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 highlighted on the diagonal

Annex 9. Summary of profiles for women of childbearing age in the Trawsfynydd area, for use in the assessment of total dose to the foetus

Profile Name	Number of individuals	Pathway Name: Direct	Eggs	Fish - Affected by gaseous discharges	Fish - Affected by liquid discharges	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sand and Stones	Honey	Meat - Cow	Meat - Poultry	Meat - Sheep	Meat - Salt Marsh Grazed Sheep (Affected by gaseous discharges)	Mushrooms	Occupancy in water	Occupancy on water	Plume (IN; 0-0.25 km)	Plume (MID; 0.25-0.5 km)	Plume (OUT; 0.5-1.5 km)	Vegetables - Green	Vegetables - Potatoes
Notes:		1		2	3			4					5					6	6		
Units:		-	kg	kg	kg	kg	kg	h	kg	kg	kg	kg	kg	kg	h	h	h	h	h	kg	kg
Occupants for Direct Radiation	25	1.00	0.99	<0.01	0.03	0.10	0.07	<1	<0.01	1.5	0.02	0.74	-	-	<1	42	21	<1	2570	-	1.3
Egg Consumers	3	0.33	18.4	-	-	0.75	0.39	-	-	5.2	-	4.3	-	-	-	-	-	-	2820	-	11.1
Consumers of Fish Affected by Gaseous Discharges	1	1.00	-	0.18	-	-	0.91	-	-	-	0.45	7.1	-	-	-	-	-	-	5890	-	-
Consumers of Fish Affected by Liquid Discharges	8	-	-	-	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Domestic Fruit Consumers	3	0.67	10.6	-	-	1.2	0.56	-	-	5.2	-	4.3	-	-	-	-	-	-	4670	-	11.3
Wild Fruit and Nut Consumers	2	-	5.9	-	-	0.30	4.9	-	-	23.2	-	7.6	2.4	0.68	-	-	-	-	-	0.02	-
Occupants over Sediment	3	1.00	-	-	-	-	-	4	-	-	-	-	-	-	<1	-	-	-	4	-	-
Honey Consumers	2	0.50	2.9	-	-	-	-	-	0.16	-	-	-	-	-	-	-	-	-	1690	-	-
Cattle Meat Consumers	4	0.50	7.7	-	-	0.53	2.6	-	-	21.5	-	7.0	1.2	0.34	-	-	-	-	3730	<0.01	8.3
Poultry Meat Consumers	1	1.00	-	0.18	-	-	0.91	-	-	-	0.45	7.1	-	-	-	-	-	-	5890	-	-
Sheep Meat Consumers	7	0.29	4.5	0.03	-	0.30	1.6	-	-	8.9	0.06	10.7	0.68	0.19	-	-	-	-	2050	<0.01	4.8
Consumers of Meat From Salt Marsh Grazed Sheep (Affected by gaseous discharges)	2	-	5.9	-	-	0.30	4.9	-	-	23.2	-	7.6	2.4	0.68	-	-	-	-	-	0.02	-
Mushroom Consumers	1	-	5.9	-	-	0.30	4.9	-	-	23.2	-	7.6	2.4	1.4	-	-	-	-	-	0.02	-
Occupants In Water	1	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-
Occupants On Water	3	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	380	-	-	240	-	-
Local Inhabitants (0 - 0.25 km)	2	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	290	-	-	-	-
Local Inhabitants (0.25 - 0.5 km)	1	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Local Inhabitants (0.5 - 1.5 km)	10	1.00	2.7	0.02	0.09	0.28	0.19	-	0.02	4.0	0.04	2.0	-	-	-	-	-	-	5930	-	3.4
Green Vegetable Consumers	2	-	5.9	-	-	0.30	4.9	-	-	23.2	-	7.6	2.4	0.68	-	-	-	-	-	0.02	-
Potato Consumers	1	1.00	11.9	-	-	1.5	0.45	-	-	15.7	-	13.0	-	-	-	-	-	-	8460	-	33.3

Notes

1. Direct radiation is expressed as proportion of group who are present within 1.5 km of site perimeter
2. Fish - Affected by gaseous discharges represents freshwater fish sourced from the upper reaches of the River Dwyryd and freshwater bodies within the terrestrial survey area
3. Fish - Affected by liquid discharges represents freshwater fish sourced from the aquatic survey area
4. Gamma ext - Sand and Stones represents occupancy over sand and stones on the lake shore
5. Meat - Salt Marsh Grazed Sheep (Affected by gaseous discharges) represents salt marsh grazed sheep outside the aquatic survey area
6. 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 highlighted on the diagonal

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