Cefas

Radiological Habits Survey: Sizewell, 2005

Public version

Environment Agency

FOOD STANDARDS AGENCY

HSE Health & Safety Executive

2006

Environment Report RL02/06

Radiological Habits Survey: Sizewell, 2005

Public version

(In this version, information potentially leading to a conflict with the Data Protection Act has been black lined)

The Centre for Environment, Fisheries & Aquaculture Science
Lowestoft Laboratory
Pakefield Road
Lowestoft
Suffolk
NR33 0HT

F.J. Clyne, J.R. Tipple and K.A. McTaggart

2006

Peer reviewed by B.D. Smith

The work described in this report was carried out under contract to the Environment Agency, the Food Standards Agency and the Health and Safety Executive.
Cefas contracts C1659, RB103 and C1666 respectively.
EA Project PO070206680, FSA Project RP0183 and HSE Project NS/X/374

FIGURES

TABLES

ANNEXES

SUMMARY

This report presents the results of a survey conducted in 2005 into the habits and consumption patterns of people living, working and pursuing recreational activities in the vicinity of Sizewell A and Sizewell B nuclear power stations. Sizewell A generates electricity from twin Magnox reactors. It is owned by the Nuclear Decommissioning Authority. Magnox Electric Ltd. is responsible for the day-to-day operations of the site. Sizewell B has a Pressurised Water Reactor. It is owned and operated by British Energy Generation Ltd. Sizewell A is licensed to Magnox Electric Ltd. and Sizewell B is licensed to British Energy Generation Ltd. for the purposes of installing and operating certain activities prescribed under the Nuclear Installations Act, 1965 (as amended). Under the Radioactive Substances Act, 1993, the companies are authorised to discharge gaseous radioactive wastes via separate stacks to the atmosphere and liquid radioactive wastes via adjacent outfalls into the North Sea. The Sizewell site also contains sources of direct radiation.

Potential exposure pathways related to the site are:

- consumption of locally sourced aquatic and terrestrial foods
- occupancy of intertidal areas
- handling fishing gear and sediment
- occupancy on or in water
- consumption and/or use of seaweed
- consumption and use of groundwater and surface water
- off-site transfer of contamination by wildlife
- occupancy of buildings and the surrounding areas

The survey investigated all of these pathways. Individuals from the local population were interviewed and the data obtained are presented and discussed. Data for 537 individuals were collected. Gamma dose rate measurements were taken to supplement those made in routine surveillance programmes.

In the marine survey area, the local foods consumed were fish, crustaceans, molluscs and wildfowl. No consumption or use of seaweed was identified. The main activities potentially leading to external exposure included commercial fishing, shore angling, walking, dog walking, working on the shore and wildfowling. One houseboat was identified with two occupants. Observations for individuals handling fishing gear and sediment were made. Water sports such as canoeing and rowing were observed. Sailing was popular in the survey area.

In the terrestrial survey area, up to 5 km from the site, the main activity was arable farming. There was one beef farm, one dairy farm and one pig farm. Farmers and their families were consuming meat and dairy from their farms. Two allotment sites were identified; the allotment holders were producing a variety of fruit and vegetables. High consumption rates were found in the following groups of locally produced foods: green vegetables, other vegetables, root vegetables, cattle meat, poultry, eggs, wild/free foods and venison. For the purposes of this summary, high rates have been defined as when the observed 97.5 percentile rate exceeds the generic 97.5 percentile rate. If there is no observed 97.5 percentile rate because there is only one consumer in the age group, the observed critical group mean consumption rate is compared with the generic 97.5 percentile rate. Other local foods consumed were, potato, domestic fruit, milk, pig meat, sheep meat, rabbits/hares, honey and wild fungi. No consumption of freshwater fish was found. Evidence of the consumption of groundwater was found. One household was using well water as their domestic supply. No evidence of the consumption of surface water was found. No evidence of livestock drinking borehole, spring, and well water was found. Activities on freshwater affected by gaseous discharge were identified at Thorpeness Meare, where boats were hired out to the public in the summer months, and at Minsmere Nature Reserve, where reed cutting was carried out for two weeks of the year.

Transfer of radioactive contamination from the site into the surrounding area by wildlife was investigated. Rabbits and pigeons were considered by the site operators to be a problem within the site fence and culling programmes were in place. Members of the public who lived in the

survey area were consuming pigeons and rabbits that were shot within the terrestrial survey area.

External exposure may occur from direct radiation to those living near the site. Occupancy habits within 1 km of the site perimeter fence included those related to residential, work and recreational activities. The highest occupancies were associated with residences.

The data from the survey are presented in full for each individual in order to assist in assessments of the additive effects of exposures from multiple pathways. Additionally, the information recorded during interviews was processed in two different ways to identify high rates appropriate to the various aquatic and terrestrial pathways. One method estimated a representative figure for each pathway by selecting a group at the upper end of the distribution of observations. The other chose the 97.5 percentile rate from the distribution.

Comparisons are made with the results from previous aquatic, terrestrial and direct radiation surveys.

Suggestions are made for changes to environmental monitoring programmes on the basis of the information collected during the survey.

1 INTRODUCTION

The public may be exposed to radiation as a result of the operations of the Sizewell site either from discharges of liquid or gaseous radioactive wastes into the local environment, or from radiation emanating directly from the site. This report provides information about activities carried out by members of the public which may influence their radiation exposure. The study has been funded by the Environment Agency, the Food Standards Agency and the Health and Safety Executive in order to support their respective roles in protecting the public from the effects of radiation.

1.1 Regulatory framework

The Environment Agency regulates discharges of waste under the Radioactive Substances Act 1993 (RSA 93) (UK Parliament, 1993) as amended by: the Environment Act 1995 (EA 95) (UK Parliament, 1995a); by legislation implementing the European Union (EU) Basic Safety Standards (BSS) Directive 96/29/Euratom (CEC, 1996); and by the Energy Act 2004 (EA 04) (UK Parliament, 2004). The Directive takes account of Recommendations of the International Commission on Radiological Protection (ICRP), particularly ICRP 60 (ICRP, 1991). Authorisations under RSA 93 are issued by the Environment Agency after wide-ranging consultation, including the Food Standards Agency. As well as being a Statutory Consultee, the Food Standards Agency has responsibilities for ensuring that any radioactivity present in food does not compromise food safety and that authorised 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 accepted limits. Consultation papers on Statutory Guidance to the Environment Agency on the regulation of radioactive waste discharges were issued by the Department of the Environment, Transport and the Regions (DETR) (now part of Department for Environment, Food and Rural Affairs (Defra)) in 2000 (DETR, 2000a) and the Welsh Assembly in 2002 (The Welsh Assembly Government, 2002). These draft Guidance documents include, *inter alia*, affirmation that protection of the critical groups of the public is the appropriate radiological protection

methodology to use. This report provides information to support assessments of critical groups.

Installation and operation of certain prescribed activities can only take place on sites if they are licensed under the Nuclear Installations Act 1965 (as amended) (NIA 65) (UK Parliament, 1965). The Nuclear Installations Inspectorate of the Health and Safety Executive implements this legislation and is also responsible for regulating, under the Ionising Radiations Regulations (IRR 99) (UK Parliament, 1999), the restriction of exposure of the public to direct radiation from operations occurring on these sites.

1.2 Radiological protection framework

UK policy on the control of radiation exposure has long been based on the Recommendations of 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 critical group of individuals. This group is defined as those people who, because of where they live and their habits, receive the highest radiation dose due to the operations of a site. It follows that, if the dose to this group is acceptable when compared to relevant dose limits and constraints, other members of the public will receive lower doses, and overall protection is provided for.

Dose standards for the public are embodied in national policy (UK Parliament, 1995b), in guidance from the International Atomic Energy Agency (IAEA) in the Basic Safety Standards for Radiation Protection (IAEA, 1996) and in European Community legislation in the EU BSS Directive 96/29/Euratom. The public dose standards were incorporated into UK law in IRR 99. In order to implement the Directive in England and Wales, the Environment Agency was issued with a direction by the DETR in 2000 (DETR, 2000b). This includes the requirements that the Environment Agency ensure, wherever applicable,

- all public radiation exposures from radioactive waste disposal are kept As Low As Reasonably Achievable (ALARA);

- the sum of such exposures does not exceed the dose limit of 1 mSv a year;

The Environment Agency shall have regard for maximum doses to individuals for use at the planning stage:-

- 0.3 mSv a year from any source;
- 0.5 mSv a year from the discharges from any single site.

The Environment Agency is also required to ensure that the dose estimates made are as realistic as possible for the population as a whole and for reference groups of the population. It is also 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 assessments (i.e. assessments of potential future doses) has been provided by a group of UK public bodies (EA, SEPA, DoENI, NRPB and FSA, 2002). Where relevant, this guidance may also be applied to retrospective assessments (i.e. assessments of doses already received). A discussion paper (Camplin *et al.,* 2002) has considered different ways in which data collected from habits surveys similar to this study may be used to carry out integrated (i.e. combined pathway) dose assessments.

2 THE SURVEY

2.1 Site activity

There are two nuclear power stations next to each other at Sizewell; Sizewell A and Sizewell B. For the purposes of this survey they are considered as a single site. Sizewell A is owned by the Nuclear Decommissioning Authority (NDA). Magnox Electric Ltd. (itself a wholly owned subsidiary of British Nuclear Group (BNG)) is the site licensee company and is responsible for the day-to-day operations of the station. BNG is the site management company who provide employees at management level and where appropriate other levels to Magnox Electric Ltd. All other staff are employed by Magnox Electric Ltd. The station generates electricity from twin Magnox reactors. Sizewell B is owned and operated by British Energy Generation Ltd. and it generates electricity from a Pressurised Water Reactor. The site is located approximately 12 km south of the town of Southwold (see Figure 1).

Under NIA 65, the holder of the site licence for Sizewell A is Magnox Electric Ltd. and for Sizewell B is British Energy Generation Ltd., allowing the installation and operation of certain activities. These companies are responsible for the day-to-day running of the sites. Under RSA 93, they are authorised to discharge gaseous radioactive wastes via separate stacks to the atmosphere and liquid radioactive wastes via adjacent outfalls into the North Sea. Details of the amounts of radioactive waste discharged in 2004 have been published (EA, EHS, FSA and SEPA, 2005). The site also contains sources of direct radiation. The site was fully operational; both stations were generating electricity, whilst the survey fieldwork was being carried out. Sizewell A is due to stop electricity production at the end of 2006. Defuelling will take approximately three years then decommissioning will begin.

2.2 Survey objectives

The Centre for Environment, Fisheries & Aquaculture Science (Cefas) undertook the survey in 2005 on behalf of the Environment Agency, the Food Standards Agency, and the Health

and Safety Executive. The aim of the survey was to obtain integrated habits data related to public radiation exposure from the Sizewell site via aquatic, terrestrial and direct radiation pathways in order to permit realistic assessments of critical group doses.

The last combined aquatic and terrestrial habits survey conducted by Cefas in the Sizewell area was in 2001 (Tipple, J.R., Joyce, A.E., McTaggart, K.A., Sherlock, M. and Camplin, W.C., 2002). Aquatic data from this survey are used for dose assessments for the Sizewell area (e.g. EA, EHS, FSA and SEPA, 2005). The last direct radiation survey conducted by Cefas in the Sizewell area was in 1994.

Fieldwork was undertaken in order to obtain site specific habits survey data. These data were used to establish exposure pathways for the local population and the characteristics of those most exposed. General habits survey information, such as the number and types of farms or number of angling clubs in the area was also obtained.

Investigations were carried out to ascertain the following:

- The consumption rates of aquatic and terrestrial foods from within the survey areas
- The production, use and destination of local produce
- External exposure activities over intertidal substrates
- Occupancy in and on water in the survey areas affected by liquid and gaseous discharges
- The consumption and use of groundwater and surface water in the terrestrial survey area
- The extent of occupancy within 1 km of the site perimeter fence
- The extent of any unusual practices, which may be relevant, such as the use of seaweed as a fertiliser or livestock feed and the transfer of contamination off-site by wildlife

No additional site-specific investigations were identified by the Environment Agency, the Food Standards Agency and the Health and Safety Executive.

2.3 Survey areas

Three survey areas were defined to encompass the dominant activities expected for aquatic, terrestrial and direct radiation pathways.

The aquatic survey area, shown in Figure 1, covered the coastline between Southwold to the north of the site and Orford Ness to the south. Fisheries up to 10 km from the coastline were included. The same area was used in the 2001 survey and was based on hydrographic survey information. The area is relevant to the effect of liquid discharges from the site.

The terrestrial survey area, shown in Figure 2, was defined as the circle to a radius of 5 km from the centre (NGR TM 473 635) of the Sizewell site to encompass the main areas of potential deposition from gaseous discharges. The same area was used in the 2001 survey. Additionally in the 2005 survey, activities relating to groundwater and surface water in the terrestrial area were investigated. Watercourses and areas potentially containing contamination only from washout of gaseous discharges are discussed in the terrestrial sections of this report.

For direct radiation, the survey area is also shown in Figure 2. The Sizewell site comprises two licensed sites containing Sizewell A and Sizewell B. There are separate perimeter fences around the two licensed sites, though in part they are shared. The direct radiation survey area was defined as the area within 1 km of the overall external perimeter fence of the two licensed sites, which thus excluded the shared boundary. The 1994 direct radiation survey area was identified from an inspection of the area and earlier gamma dose measurements. It did not include residences to the south of the site beyond 0.5 km from the external licensed site perimeter fence. Sizewell B was not on line at the time of the 1994 survey.

2.4 Conduct of the survey

The fieldwork component of the survey was carried out from 1st – 10th June 2005, by a survey team of three people, according to techniques described by Leonard *et al.* (1982). One member of the team also carried out follow up fieldwork on 13th June 2005.

A programme of work was sent to the Environment Agency, the Food Standards Agency, and the Health and Safety Executive before the survey for comment. Prior to the start of the fieldwork, discussions were held between the Cefas survey team and representatives from Sizewell A and B, the Environment Agency, the Food Standards Agency and the Health and Safety Executive. These discussions provided an outline of the main aims of the survey and highlighted areas or items, which required special attention or effort by the team. On 1st June a meeting was held between the survey team and a representative of Sizewell A. This served to provide details about Sizewell A site operations, including waste disposal, and information about potential pathways and activities in the area. Further information was sought about wildlife studies and pest control measures in and immediately around the site. Animals could be carriers for transporting radioactive materials off-site and are also potential food items for some individuals. Representatives from Sizewell B were unavailable at the time of the survey and, therefore, relevant information was received by correspondence.

People with a local knowledge of the survey area were contacted for information on any aspects relevant to the various exposure pathways. These included the Environment Agency, local councils, the Tourist Information Centre, beekeeping representatives, allotment representatives, commercial fishermen, local Defra fisheries and field officers, and the local Sea Fisheries Committee.

During the survey, individuals who were identified as having the potential to be exposed to radioactivity from the site were contacted and interviewed. Interviews were used to establish individuals' consumption rates of locally grown terrestrial foods and locally caught seafood, their handling rates of intertidal sediments and commercial fishing gear, their occupancy rates

relevant to external exposure and occupancy rates in and on water. Any general information of possible use to the survey was also obtained. Using the information gained in the interviews, a list of occupations and activities was built up to produce a picture of potential exposure pathways. This then enabled emphasis to be placed on those individuals who were likely to be the most exposed, and included commercial fishermen, boat owners, anglers, farmers, beekeepers and people living and/or working close to the site.

The survey did not involve the whole population in the vicinity of Sizewell, but targeted subsets or groups, chosen in order to identify those individuals potentially most exposed. However, it is possible that even within a subset or group there may be people we did not interview at the time of the survey. Therefore, to aid interpretation, the number of people for whom data were obtained in each group as a percentage of what we estimate to be complete coverage for that group has been calculated. The results are summarised in Table 1. The 'groups' are described and quantified, and the numbers of people for whom data were obtained are given as percentages of the totals. It should be noted that 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 as many people visit from outside or only visit occasionally during the year. In other cases, it may be necessary to estimate the number of individuals from the number of clubs, for example. These cases are explained in Table 1. Overall, although the number of potential interviewees was estimated to be 7900, information was obtained for a significantly smaller number than this. In particular, it should be noted that the survey did not include site employees, or contractors while working on site. Dose standards applicable to people whilst at work are different to those for members of the public.

For each of the three survey areas, the survey targeted pathways primarily relevant to that survey area. For example, people in the terrestrial survey were initially questioned because it was known that they grew significant quantities of terrestrial foodstuffs. However, where possible, every interviewee was asked about pathways in each of the three areas. During interviews with representatives from clubs such as sailing clubs, it was not possible to collect data for all pathways (such as consumption of local foods) for each member. In these cases,

data were limited to those relating to the primary reason for the interview (e.g. in the case of occupancy rates on water for sailing club members, the club secretary could provide data for club members for that pathway only). In Annex 1 and 2 such individuals only have data for the pathways of primary interest.

Thirty-one person-days were spent investigating the survey areas and interviewing individuals who were relevant to the survey. Observations for 537 individuals were recorded. During the survey, gamma dose rate measurements were taken to aid assessment of external exposure pathways.

3 METHODS FOR DATA ANALYSIS

3.1 Data recording

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 rare cases where follow up phone calls were not possible (e.g. interviewees who wished to remain anonymous), the data were accepted at face value. The raw data were entered into a habits survey database where each individual for whom information was obtained was given a unique identifier (the observation number) to assist in maintaining data quality.

During the interviews, people could not always provide consumption rates in kilograms per year for food or litres per year for milk. In these cases, interviewees were asked to provide the information in a different format. For example, some estimated the size and number of items, e.g. eggs consumed per year, whereas others gave the number of plants in a crop or the length and number of rows in which the crop was grown per year. The database converted these data into consumption rates (kg/y for food and l/y for milk) using a variety of conversion factors. These 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. 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.

All consumption and occupancy data in the text of this report are rounded to two significant figures to reflect the authors' judgement on the accuracy of the methods used. In the tables and annexes, the consumption rate data are usually presented to one decimal place. Occasionally this rounding process causes the row totals to appear slightly erroneous ($\pm$ 0.1). Consumption rates less than 0.05 kg/y are presented to two decimal places in order to avoid them appearing as 0.0 kg/y. External exposure data are quoted as integers.

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 fieldwork and data assessment. 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 unusual, they were questioned further in order to double-check the validity of their claims.
- Where possible, interviewees were contacted again to confirm the results of the initial interview if, when final consumption or occupancy rates were calculated, observations were found to be high in relation to our experience of other surveys, taking into account local factors.
- Data were manipulated in a database using a consistent set of conversion factors.
- Data were stored in a database in order to minimise transcription and other errors.
- Draft reports and data tables were formally reviewed by an experienced consultant in radiological protection.
- Final reports were only issued when the Environment Agency, the Food Standards Agency and the Health and Safety Executive were entirely satisfied with the format and content of the draft.

The habits data are structured into groups of activities with similar attributes. For example, when considering terrestrial food consumption, all types of root vegetables are grouped together in a food group called ‘root vegetables’. Similarly, for aquatic food consumption, all crustacean species are grouped as ‘crustaceans’. For external exposure over intertidal sediments, occupancy over a common substrate, (for example, sand) is chosen. The choice of a group of activities is made when it is reasonable to assume that consistent concentrations or dose rates would apply within the group. In addition to grouping of activities, ingestion data are structured into age groups because different dose coefficients (i.e. the factors which convert intakes of radioactivity into dose) can apply to different ages. These age groups are from 0 to 1.0 y of age (called 3 month old); more than 1.0 y to 2.0 y (called 1 year old); more than 2.0 y to 7.0 y (called 5 year old); more than 7.0 y to 12.0 y

(called 10 year old); more than 12.0 y to 17.0 y (called 15 year old). Individuals over 17 years old are treated as adults. These age groupings are consistent with those used in ICRP 72 (1996). For direct radiation pathways, the data are grouped into distance zones from the site perimeter as a coarse indication of the potential dose rate distribution due to this source of exposure. The bands used were: 0 – 0.25 km, 0.25 – 0.5 km and 0.5 – 1 km. These distance bands are also useful when assessing exposure to gaseous discharges.

3.2 Data analysis

The main output of the study is the statement of individuals' consumption, handling and occupancy rates given in Annexes 1 and 2. Annex 3 contains qualitative or estimated data to supplement Annexes 1 and 2. These can be used by those undertaking radiological assessments of the effects of the operation of the Sizewell site – taking into account the concentration and/or dose rate distributions in space and time relevant to the assessment. It is only with the outcome of such an assessment that the critical group can strictly be defined as those most exposed.

In addition to providing these data in the Annexes, we have also analysed them to provide estimates of rates of occupancy, handling and consumption which can be regarded as typical of those most exposed prior to a formal assessment being undertaken. Two approaches are used.

Firstly, the 97.5 percentile rate was calculated for each group using the Excel mathematical function for calculating percentiles. This method accords with precedents used in risk assessment of the safety of food consumption. Mean and 97.5 percentile rates based on national statistics have been derived by the Ministry of Agriculture, Fisheries and Food (MAFF) (now part of Defra) and the Food Standards Agency (Byrom *et al.,* 1995 and FSA, 2002), and these are referred to as generic rates in this report. Secondly, 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 maximum observed rate and all rates

observed within a factor of three of the maximum value (termed the lower threshold value). It accords with the principle expressed by ICRP (ICRP, 1984) that the critical group should be small enough to be reasonably homogeneous with respect to age, diet and those aspects of behaviour that affect the doses received. In this report, the term critical group rate is used to represent the data derived by the 'cut-off' method for ease of presentation. A separate critical group rate was calculated for each food group or activity identified in the survey.

In exceptional cases the 'cut-off' method can result in only one member of the high rate group. In this case, judgement is used as to whether to include other individuals within the group.

In previous aquatic surveys (those undertaken prior to 2002) a factor of 1.5, instead of 3, was used to define the cut-off value for intertidal occupancy and handling. However, it is now considered appropriate that the same factor of 3 as for consumption is used. The factor reflects variations in the doses likely to be received due to natural variations in the interactions of radiations with tissues caused by, for example, differences in anatomy.

For ingestion pathways, high rates for children have been calculated from the survey data. However, because few child consumers were identified, the rates should be viewed with caution. For assessment purposes, an alternative, theoretical approach may be taken which involves scaling the critical group rates for adults by ratios. These ratios are given in Annex 4 and have been calculated using generic 97.5 percentile consumption rates.

Selection of 97.5 percentile and critical group rates for occupancy is not made for the direct radiation pathway. Such an analysis is of limited value without a detailed knowledge of the spatial extent of dose rates due to direct radiation.

For the purposes of assessing total dose integrated across all pathways, the data from the survey can be further analysed to take into account the degree of overlap of each pathway.

This is discussed further in Section 7 and data to undertake a total dose assessment are provided in Annex 5. Data from Annex 3 are not included in Annex 5.

4 AQUATIC RADIATION PATHWAYS

4.1 Aquatic survey area

The aquatic survey covered all intertidal areas between Southwold and Orford Ness, including the Blyth, Alde and Ore Estuaries (Figure 1) and fisheries up to 10 km from the coast.

Southwold

Southwold is a busy seaside town situated approximately 12 km north of the Sizewell site. There was good access to a long sand and shingle beach, which was popular with locals and tourists. Southwold Harbour is located near the mouth of the Blyth Estuary, approximately 1 km south of Southwold. It was a busy harbour with commercial fishing boats, charter boats operating river and sea angling trips, pleasure boats, a sailing club and a RNLI lifeboat station. Fishermen were selling their catch from huts in the harbour. Three houseboats were moored at the harbour; the occupants of one houseboat were interviewed. Shore anglers were observed in this area.

River Blyth

The area surrounding the tidal part of the River Blyth, which extends past Blythburgh, is predominantly mud flats and salt marsh. Several anglers were interviewed who were angling on salt marsh for bass (*Dicentrarchus labrax*). One individual was farming Pacific oysters (*Crassostrea gigas*) non-commercially in the river. A Suffolk Wildlife Trust warden was identified reed cutting on the River Blyth.

Walberswick

A small passenger ferry operated by one individual was observed transporting people across the Blyth Estuary between Southwold Harbour and the village of Walberswick. The mouth of

the Blyth Estuary was noted to be a popular place for crabbing for non-edible green shore crabs, although no one was observed at the time of the survey. The coastline between Walberswick and Dunwich, approximately 4 km in length, is a sand and shingle beach. The only road access was from Walberswick or Dunwich so the public used this stretch of coastline infrequently. A shingle bank separated the beach from Dingle Marsh and Corporation Marsh. The marshes were predominantly freshwater, however, the lagoons and marsh area approximately 100 meters inland from the shingle bank were saline because of seawater seepage through the shingle, sea spray, and the breaching of the shingle banks on very high tides. The only commercial reed cutting identified on the marshes was in freshwater areas.

Dunwich

Dunwich is a popular coastal village with easy access and a large car park. The sand and shingle beach was popular with tourists and locals for walking, dog walking and angling. One commercial fisherman operated from the beach and hauled his boat onto the beach above the high water mark. Approximately 3 km south of Dunwich is the Royal Society for the Protection of Birds (RSPB) Minsmere Nature Reserve, which includes the coastal and wetland areas. This is a freshwater wetland, though it was reported that on very high tides the banks breach and the area floods with seawater. The Minsmere coastal area attracts many birdwatchers and walkers.

Sizewell and Thorpeness

The hamlet of Sizewell is situated just south of the Sizewell site. This was a busy area with good access and large car park at Sizewell. The sand and shingle beach was popular with anglers, walkers and dog walkers. Several people were interviewed who went swimming at Sizewell. One commercial fisherman and one hobby fisherman were identified launching their boats from the beach. As at Dunwich, the fishermen hauled their boats up onto the shore

above the high water mark. Thorpeness is situated approximately 3 km south of Sizewell. The beach is sand and shingle and is popular with tourists and locals for walking and angling.

Aldeburgh

Aldeburgh is a busy seaside town with a sand and shingle beach. There was good access and parking and the area was popular with walkers and anglers. Angling took place on the beach by the town and at Martello Tower to the south. Four commercial fishermen were identified who launched their boats from Aldeburgh Beach and had huts on the beach to sell their fish.

River Alde

The upper tidal reaches of the River Alde extend to Snape Maltings. The river area between Snape Maltings and Aldeburgh is dominated by mud flats and marshland. South of Aldeburgh, the river runs parallel to the beach, and is separated from the sea by a flood embankment. There was vehicular access on the embankment between Slaughden and the Martello Tower. South of the Martello Tower the beach was only accessible on foot. Two sailing clubs and two boat yards were located on the River Alde near Slaughden. Three commercial fishermen were identified who were moored in this area and were fishing in the River Alde for Dover sole (*Solea solea*), grey mullet (*Chelon labrosus*) and bass. It was reported that several mussel beds were in this section of the river. A couple of individuals were interviewed who collected and consumed mussels (*Mytilus edulis*) on a small scale, however no commercial collection of mussels was identified. A local wildfowling club was contacted whose members were shooting on the salt marsh along the River Alde, Lantern Marshes, Town Marshes and Westrow Marshes. Down stream, the River Alde becomes the River Ore at the town of Orford.

Orford, Orford Ness and River Ore

Orford is a busy tourist area. There were many boats moored at Orford including pleasure boats, charter boats and river cruisers and three commercial fishing boats. The commercial fishermen were fishing between Orford Ness and Aldeburgh or Sizewell. The anglers on the charter boat fishing trips were fishing for bass in the River Ore and for cod offshore of Orford Ness. One commercial oyster farm was located on a tributary of the River Ore. Orford Ness is a National Nature Reserve managed by the National Trust, with varied habitats such as a vegetated shingle spit, mudflats, salt marsh and grazing marsh. Orford Ness is mainly accessed by boat from Orford Quay; it is also possible to walk along the beach from Aldeburgh. Wildfowling on salt marsh and angling on the banks of the River Ore on Orford Ness were popular. Dairy and beef cattle are grazed on King's Marshes on Orford Ness. Havergate Island is an RSPB reserve in the River Ore; the island is only accessible by boat.

4.2 Commercial fisheries

Commercial fishing activity in the survey area had decreased since the last Sizewell habits survey in 2001. Twenty-four boats, all less than 10 meters in length were identified operating throughout the whole of the survey area. The majority of the commercial fishing boats were based at Southwold Harbour. A small number were operating from Dunwich, Aldeburgh Beach, the River Alde, Sizewell and Orford. Boats were moored at Southwold Harbour, the River Alde and Orford, whereas they hauled up onto the beach above the high water mark at Dunwich, Aldeburgh and Sizewell. The main commercial fish species targeted in the winter were cod (*Gadus morhua*), bass, thornback ray (*Raja clavata*) and herring (*Clupea harengus*). In the summer, fishermen caught Dover sole thornback ray, bass, grey mullet and flounder (*Platichthys flesus*). Fish were caught using drift nets, longlines, trawls, gill nets and trammel nets.

Several boats were potting for crab (*Cancer pagurus*) and lobster (*Homarus gammarus*), offshore of Southwold and between Sizewell and Orford. Two boats were trawling for brown

shrimp (*Crangon crangon*) offshore of Southwold. The only mollusc species collected commercially was Pacific oyster, which was being farmed on a tributary of the River Ore. Oyster farming was no longer taking place commercially on the River Blyth.

4.3 Angling and hobby fishing

Shore angling was popular on many of the beaches in the survey area. People were observed angling at Southwold, the River Blyth, Dunwich, Sizewell, Thorpeness and Aldeburgh. A small number of boat anglers were interviewed during the survey, however, many more boats were moored at Southwold Harbour and Orford. Three angling charter boats operated from Orford and reported that they made regular angling trips both in the River Ore and at sea. One sea angling charter boat also operated from Southwold Harbour.

The most abundant fish species caught by shore anglers in the area were cod, dogfish (*Scyliorhinus canicula*), whiting (*Merlangius merlangus*), sole, bass and dab (*Limanda limanda*). Boat anglers were catching bass, as well as cod, herring, mackerel (*Scomber scombrus*) and thornback ray.

One hobby fisherman who hauled his boat above the high water mark at Sizewell Beach was fishing on a recreational basis. He was netting for herring, sole and mackerel and potting for crab and lobster. The catch was being used for his own and his families consumption.

A small amount of molluscs was being collected non-commercially. These were mussels from the River Alde and Pacific oysters from the River Blyth.

4.4 Wholesalers and retailers

Fish from the survey area was either sold to Lowestoft fish market or sold locally. At Southwold, a small number of boats sold their catch from huts in the harbour. At Dunwich, the fisherman was selling to the local fish and chip shop as well as from his home. At Aldeburgh, fishermen had huts on the beach and at Orford, one fisherman had a hut on the quay. These fishermen sold fish from their boats to the public. At Sizewell, fish was being sold directly from a fisherman's home. Fish landed at Aldeburgh and Orford were also being sold to local hotels and restaurants.

4.5 Wildfowl

One wildfowling club was identified that was shooting in the area between Aldeburgh and Orford. This area included salt marsh along the River Alde, Town Marshes, Westrow Marshes, and Lantern Marshes. The main species being shot were mallard (*Anas platyrhynchus*), teal (*Anas crecca*), wigeon (*Anas penelope*), pintail (*Anas acuta*), greylag goose (*Anser anser*) and Canada goose (*Branta canadensis)*. The River Alde was a good shooting area for duck species. Town Marshes and Westrow Marshes were good shooting areas for goose species.

Although no consumption rates were obtained during the survey, information regarding bag returns and numbers caught for the club show that there was an average of two birds per member per trip. Club members and their families were consuming the caught wildfowl.

4.6 Other Pathways

No one was identified consuming or using seaweed as fertilizer or animal feed and no other unusual pathways were identified.

4.7 Internal exposure

Consumption data for locally caught aquatic foodstuffs are presented in Tables 3 to 6 for adults and in Tables 7 to 9 for children. The tables include the mean consumption rates of the critical groups together with the observed 97.5 percentile rates calculated as described in Section 3.2. No adult or child consumers of marine plants and algae were observed. For purposes of comparison, the data are summarised in Table 10 for adults and Tables 11 to 14 for children (15 year olds, 10 year olds, 5 year olds and 1 year olds respectively). No children in the 3 month old age group were noted to be consuming locally caught seafood or wildfowl. No children in the 15 year old, 10 year old and 1 year old age groups were noted to be consuming molluscs or wildfowl. No children in the 5 year old and 1 year old age groups were noted to be consuming crustaceans and no children in the 5 year old age group were noted to be consuming molluscs. The summary tables also include mean rates and 97.5 percentile rates based on national data (referred to as 'generic' data in this report). No generic data are available for the 5 year old and 1 year old age groups.

Adult consumption rates

The people consuming the greatest quantities of food from the aquatic survey area were commercial fishermen, shore anglers and families of these people.

The predominant species of fish consumed by adults were cod, Dover sole, dab, thornback ray, bass and herring together with smaller quantities of whiting, flounder, mackerel, grey mullet and plaice (*Pleuronectes platessa*). A critical group of 24 individuals was identified with a maximum consumption rate of 47 kg/y and a mean of 23 kg/y. The observed 97.5 percentile rate based on 128 observations was 29 kg/y. This compares with the adult generic mean and 97.5 percentile consumption rates for fish of 15 kg/y and 40 kg/y respectively. The percentage breakdown of species eaten by the critical group was 30% Dover sole, 15% dab, 15% cod, 5% thornback ray, 5% herring and 30% other species as named in Table 3. These

percentages, rounded to the nearest 5%, are based on the total amount of fish consumed by this critical group and exclude observations for ‘mixed fish’.

The predominant species of crustaceans consumed by adults were crab and lobster. A critical group of four individuals was identified with a maximum consumption rate of 22 kg/y and a mean of 11 kg/y. The observed 97.5 percentile rate based on 50 observations was 7.8 kg/y. This compares with the adult generic mean and 97.5 percentile consumption rates for crustaceans of 3.5 kg/y and 10 kg/y respectively. The percentage breakdown of species eaten by the critical group, rounded to the nearest 5%, was 80% crab and 20% lobster.

The only species of molluscs consumed by adults were Pacific oyster and mussel. A critical group of three individuals was identified with a maximum consumption rate of 6.6 kg/y and a mean of 5.1 kg/y. The observed 97.5 percentile rate based on eight observations was 6.2 kg/y. This compares with the adult generic mean and 97.5 percentile consumption rates for molluscs of 3.5 kg/y and 10 kg/y respectively. The percentage breakdown of species eaten by the critical group was 85% mussel and 15% Pacific oyster.

The only species of wildfowl consumed by adults were duck and goose. A critical group of six individuals was identified with a maximum consumption rate of 30 kg/y and a mean of 21 kg/y. The observed 97.5 percentile rate based on eight observations was 30 kg/y. No generic data are available for this food group. The percentage breakdown of species eaten by the critical group was 60% duck and 40% goose.

Children's consumption rates

15 year old age group

For fish, a critical group of two individuals was identified with a maximum consumption rate of 10 kg/y and a mean of 7.2 kg/y. The observed 97.5 percentile rate based on eight observations was 9.2 kg/y. This compares with the generic mean and 97.5 percentile consumption rates for fish of 6.5 kg/y and 20 kg/y respectively.

For crustaceans, a critical group of six individuals was identified with a maximum consumption rate of 0.70 kg/y and a mean of 0.50 kg/y. The observed 97.5 percentile rate based on seven observations was 0.70 kg/y. This compares with the generic mean and 97.5 percentile consumption rates for crustaceans of 2.5 kg/y and 6.0 kg/y respectively.

10 year old age group

For fish, a critical group of three individuals was identified with a maximum consumption rate of 24 kg/y and a mean of 13 kg/y. The observed 97.5 percentile rate based on nine observations was 21 kg/y. This compares with the generic mean and 97.5 percentile consumption rates for fish of 6.0 kg/y and 20 kg/y respectively.

For crustaceans, a critical group of two individuals was identified with a maximum consumption rate of 0.10 kg/y and a mean of 0.10 kg/y. The observed 97.5 percentile rate based on two observations was 0.10 kg/y. This compares with the generic mean and 97.5 percentile consumption rates for crustaceans of 2.5 kg/y and 7.0 kg/y respectively.

5 year old age group

For fish, a critical group of two individuals was identified with a maximum consumption rate of 24 kg/y and a mean of 18 kg/y. The observed 97.5 percentile rate based on five observations was 23 kg/y. No generic consumption rates have been derived for this age group.

For wildfowl, a critical group of one individual was identified with a consumption rate of 0.50 kg/y. The observed 97.5 percentile is not applicable for one observation. No generic consumption rates have been derived for this age group.

1 year old age group

For fish, a critical group of one individual was identified with a consumption rate of 5.4 kg/y. The observed 97.5 percentile is not applicable for one observation. No generic consumption rates have been derived for this age group.

4.8 External exposure

Intertidal occupancy

Table 15 shows the intertidal occupancy data recorded during the survey. The four types of intertidal substrate in the survey area, where public occupancy was identified, were mud, salt marsh, sand and sand and stone.

The maximum occupancy rate recorded over mud was 720 h/y for an oyster farmer. No other individuals had occupancy rates within a factor of three of this, so this is taken as the critical group occupancy rate.

The maximum occupancy rate recorded over salt marsh was 420 h/y for two anglers. No other individuals had occupancy rates within a factor of three of this, so the mean occupancy rate for this group is 420 h/y.

The maximum occupancy rate recorded over sand was 660 h/y for an angler. Three other anglers and three dog walkers had occupancy rates within a factor of three of this. This gives a mean occupancy rate for this group of 420 h/y.

The maximum occupancy rate recorded over sand and stone was 1300 h/y for a commercial fisherman working on the shore. Two other commercial fishermen working on the shore and three dog walkers had occupancy rates within a factor of three of this. This gives a mean occupancy rate for this group of 820 h/y.

Handling

Handling sediment, while bait digging or mollusc collecting, or handling commercial fishing gear, which has become entrained with fine sediment particles, can give rise to skin exposure from beta radiation. This needs consideration even though the annual dose limit for skin is a factor of 50 times higher than that for effective dose. There is also a contribution to effective dose due to skin exposure (ICRP, 1991).

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

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

Table 16 shows the times spent handling fishing gear and intertidal sediment recorded during the survey.

The maximum fishing gear handling rate recorded was 2100 h/y for a commercial fisherman. Fourteen other commercial fishermen had fishing gear handling rates that came within a factor of three of this. This gives a mean handling rate for this group of 1300 h/y.

The maximum sediment handling rate recorded was 720 h/y for one oyster farmer. No other individuals had occupancy rates within a factor of three of this, so this is taken as the critical group occupancy rate.

Gamma dose rate measurements

Representative gamma dose rate measurements at 1 m above the substrate were taken over mud, salt marsh, sand, and sand and stone. These measurements (shown in Table 17) ranged from 0.050 to 0.056 μGy/h over mud, 0.069 μGy/h over salt marsh, 0.045 to 0.048 μGy/h over sand and 0.048 to 0.054 μGy/h over sand and stone. Natural levels of around 0.05 and 0.07 μGy/h are expected over sand and mud respectively. A value of 0.06 μGy/h is expected for all other substrate types.

4.9 Water based activities

Activities taking place in or on the water can lead to ingestion of water and/or inhalation of spray. These pathways are generally considered to be minor in comparison with other exposure pathways such as the ingestion of foods produced in the vicinity of a nuclear site. However, in order to allow for their assessment, relevant data have been collected. Occupancy rates for activities taking place in or on water potentially affected by liquid discharge around Sizewell are shown in Table 18. The observations for occupancy in water include five children. No further manipulation of the data (for example, calculating critical group rates) has been carried out. It should be noted that a lot of the data was gained

through interviews with representatives from sailing clubs, the RNLI and a canoe club, providing generic figures for their members.

Activities in the water

The only activity found to be taking in the water around Sizewell was swimming. Nine observations were recorded with the highest occupancy rate of 13 h/y.

Activities on the water

Activities taking place on the water around Sizewell included commercial fishing, boat dwelling, working on a boat, oyster farming, sailing, angling, boating, rowing, canoeing and reed cutting. Two hundred and nine observations were recorded. The highest occupancy rate was 4600 h/y for an individual who lived on a houseboat and was a commercial fisherman.

5 TERRESTRIAL RADIATION PATHWAYS

5.1 Terrestrial survey area

The terrestrial survey area covered all land and watercourses within 5 km of the site centre (NGR TM 473 635) as shown in Figure 2.

The area around the Sizewell site was predominantly agricultural. Within the survey area, the town of Leiston is located to the south-west of the site and the villages of Thorpeness, Coldfair Green and Theberton are located to the south, south-west and north-west respectively. The hamlet of Sizewell is located to the south of the site.

Eleven working farms were located in the area. Of these, six were arable farms, three produced cattle, one was a dairy farm and one farm produced pigs for breeding. One of these farms also produced small numbers of piglets, calves and ewes. Arable crops included wheat, barley, beans, oil seed rape, sugar beet, potatoes, onions, carrots, peas, parsnips, turnips, asparagus and grass for animal feed. One smallholding was identified in the survey area, which kept a small amount of cattle, ewes, a pig and chickens. Suffolk Wildlife Trust grazed sheep on land that they managed to the north of the site. Two farmers from outside the survey area grazed cattle on land managed by Suffolk Wildlife Trust within the survey area. Two farmers, one from inside and one from outside the area were also grazing cattle on the freshwater marsh area at Minsmere Nature Reserve.

Cattle were sold in the survey area to a butcher as well as outside the area to a butcher, abattoirs and sold privately. Ewes were sold to Norwich market and an abattoir outside the area, piglets were sold to Watton abattoir and both ewes and piglets were sold to local customers from a farm within the survey area. Pigs were sold nationally for breeding. Milk was sold to First Milk, milk and cream were also sold directly from a farm. Arable crops were sold to national distributors and supermarkets. Sugar beet was sold to British Sugar.

Farmers and their families were noted to be consuming beef, lamb, pork, chicken, milk and cream from their own farms.

Two allotment sites were located at Leiston in the survey area. People were growing a range of fruit and vegetables, as well as keeping chickens, ducks and geese for eggs. Several private gardens with a range of fruit and vegetables were noted.

Two beekeepers were identified in the survey area with four hives each at Aldringham. The average production of honey per hive per year was 14 kg/y. One beekeeper and his family consumed honey from his hives and excess was sold outside the survey area.

The consumption of wild foods included blackberries, sloes, blueberries, hazelnuts and mushrooms. Game was consumed from within the survey area; this included partridge, pheasant, pigeon, woodcock, rabbit, hare and venison. Pheasant and partridge were being reared and shot on a farm in the area.

One household was using well water as their domestic supply, no one was found drinking spring or borehole water. No livestock were identified as drinking borehole, well, spring or surface water.

There were two main freshwater bodies affected by gaseous discharge in the survey area, Minsmere and Thorpeness Meare. Minsmere was an RSPB nature reserve; therefore boating and angling were not permitted. The only activity on the water was reed cutting; this was carried out using machinery rather than cutting reeds by hand, for two weeks of the year. Thorpeness Meare is an artificial lake where rowing boats were rented out to the public, boating was reported to be very popular mainly with holidaymakers in the summer months. Swimming was not permitted in the meare. Coarse fishing was permitted, but fish were not being consumed.

The transfer of contamination from Sizewell by wildlife was investigated. Representatives from Sizewell A and Sizewell B were asked about wildlife that could act as carriers for the transfer of radioactivity off site. At Sizewell A, rabbits were observed on site but not considered a problem because the numbers were relatively low. There was not a culling programme in place for rabbits. Pigeons were numerous and were considered to be a problem. They were controlled by a falconer, and eggs and nests were also being removed. At Sizewell B, rabbits were numerous so there was a culling programme in place. Pigeons were not considered to be a problem so there was no culling programme in place. Neither site measured radioactivity in rabbits or pigeons. Members of the public who lived in the survey area were consuming pigeons and rabbits that were shot within the terrestrial survey area.

5.2 Wholesalers and retailers

Retailers were interviewed in order to find out whether they were selling produce from within the survey area. Approximately 14 retail outlets were visited. They included; a farm shop, a nursery, a village shop, several greengrocers, bakers, several butchers, a delicatessen and a market. One butcher was selling honey and game from the survey area; another butcher was selling a small amount of beef from the survey area. A village shop and two greengrocers were selling vegetables from the survey area. A nursery in the survey area was growing and selling a wide range of vegetables.

5.3 Internal exposure

Consumption data for locally produced foodstuffs potentially affected by gaseous discharges are presented in Tables 19 to 34 for adults and Tables 35 to 48 for children. These tables include the mean consumption rates of the critical groups together with the observed 97.5 percentile rates calculated as described in Section 3.2. For purposes of comparison, the data are summarised in Table 10 for adults and in Tables 11 to 14 for children (15 year olds, 10 year olds, 5 year olds and 1 year olds respectively). No children in the 3 month old age

groups were noted to be consuming locally produced foods potentially affected by gaseous discharges.

In order to provide information relevant to surveillance and assessments studies, the consumption rate data collected during the survey were analysed to indicate which food types most commonly contributed to each food group. The data are summarised in Table 49. Those food types shown in bold and labelled with an asterisk were sampled as part of the 2004 Food Standards Agency monitoring programme (EA, EHS, FSA and SEPA, 2005).

Adult consumption rates

Consumption of locally produced foods was identified in the following 16 food groups: green vegetables, other vegetables, root vegetables, potato, domestic fruit, milk, cattle meat, pig meat, sheep meat, poultry, eggs, wild/free foods, rabbits/hares, honey, wild fungi and venison. No consumption of freshwater fish or local cereals was identified.

Critical group mean consumption rates were found to be greater than the generic 97.5 percentile consumption rates in the following food groups: other vegetables, root vegetables and wild/free foods. Nine critical group mean consumption rates exceeded the generic mean consumption rates. These were for green vegetables, potato, domestic fruit, milk, cattle meat, pig meat, poultry, eggs and rabbits/hares. Five observed 97.5 percentile consumption rates exceeded the generic 97.5 percentile consumption rates. These were for other vegetables, root vegetables, cattle meat, eggs and wild/free foods.

Children's consumption rates

15 year old age group

Nineteen children in this age group were identified to be eating locally produced food. Consumption was identified in the following 14 food groups: green vegetables, other vegetables, root vegetables, potato, domestic fruit, milk, cattle meat, pig meat, sheep meat, poultry, eggs, wild/free foods, wild fungi and venison. No consumption was identified for rabbits/hares, honey, freshwater fish and local cereals. The critical group mean consumption rate exceeded the generic 97.5 percentile consumption rate for green vegetables, root vegetables and poultry. A further six critical group mean consumption rates exceeded the generic mean consumption rates. These were for other vegetables, domestic fruit, milk, cattle meat, pig meat and eggs. The observed 97.5 percentile consumption rates exceed the generic 97.5 percentile consumption rates for green vegetables, root vegetables, cattle meat and poultry.

10 year old age group

Four children in this age group were identified as eating locally produced food. Consumption was identified in the following 11 food groups: green vegetables, other vegetables, root vegetables, potato, domestic fruit, milk, cattle meat, pig meat, sheep meat, eggs and wild/free foods. No consumption was identified for the following food groups: poultry, rabbits/hares, honey, wild fungi, venison, freshwater fish and local cereals. No critical group mean consumption rates exceed the generic 97.5 percentile consumption rates. In five food groups, the critical mean consumption rates were higher than the generic mean consumption rates, these were other vegetables, root vegetables, milk, cattle meat and pig meat. No observed 97.5 percentile consumption rates were greater than the generic 97.5 percentile consumption rates.

5 year old age group

Three children in this age group were identified as eating locally produced food. Consumption was identified in the following seven food groups: green vegetables, other vegetables, root vegetables, potato, domestic fruit, poultry and venison. No consumption was identified for the following food groups: milk, cattle meat, pig meat, sheep meat, eggs, wild/free foods, rabbits/hares, honey, wild fungi, freshwater fish and local cereals. No generic 97.5 percentile or generic mean consumption rates have been determined for this age group so no comparisons with the corresponding observed rates are possible.

1 year old age group

One child in this age group was identified as eating locally produced food. Consumption was identified in the following two food groups: root vegetables and potato. No consumption was identified for the following food groups: green vegetables, other vegetables, domestic fruit, milk, cattle meat, pig meat, sheep meat, poultry, eggs, wild/free foods, rabbits/hares, honey, wild fungi, venison, freshwater fish and local cereals. No generic 97.5 percentile or generic mean consumption rates have been determined for this age group so no comparisons with the corresponding observed rates are possible.

6 DIRECT RADIATION PATHWAYS

6.1 Direct radiation survey area

The direct radiation survey area is shown in Figure 2. It covered all land within 1 km of the Sizewell site perimeter fence, which delineates the external boundary of the Sizewell A and B licensed sites.

To the north and north-west of the site, the survey area is woodland and fields, and was managed by Suffolk Wildlife Trust. The woodland had nature trails that were popular with walkers and dog walkers. Cattle and sheep were being grazed on the fields.

To the west of the site, the survey area is marshland, woodland, meadows and a few fields. Suffolk Wildlife Trust also managed the west of the site, which includes Sizewell Belts Nature Reserve, a Site of Special Scientific Interest. The nature trails in the Sizewell Belts were popular with walkers and dog walkers. Cattle were grazed on the fields adjacent to the west of the site.

South of the site is a picnic area and a car park with good access to the beach. Also to the south of the site is a caravan park, Sizewell Hall and the hamlet of Sizewell which comprises a small number of houses, a café and a pub. Some of the area to the south and south-west of the site is arable farmland.

The perimeter fence to the east of the site backs on to dunes and a sand and shingle beach. The Suffolk Coastal Path runs parallel with the beach. The dunes and the beach were popular areas for both locals and tourists for walking and dog walking.

6.2 Residential activities

The direct radiation survey area was sparsely populated with 24 residences. These comprised 15 domestic houses, four holiday homes (three were occupied at the time of the survey), a residence within a pub, two residences at a caravan park and two residences at a conference centre. Nine out of the 11 residences within the 0 – 0.25 km zone were interviewed, three out of the five residences in the 0.25 – 0.5 km zone were interviewed and seven out of the eight residences in the 0.5 – 1.0 km zone were interviewed. Of the 24 residences within 1 km, 19 were interviewed. Three households were families with children.

6.3 Leisure activities

Leisure activities were popular with locals and tourists on Sizewell Beach and along the Suffolk Coastal Path. These activities included angling, walking, dog walking, bird watching and swimming. Many people walked their dogs daily along the path on the dunes close to the site fence.

Sizewell Belts, a nature reserve to the west of the site, was reported to be very popular with walkers. A caravan site to the south of the site accommodated approximately 60 static caravans, and touring caravans and tents. A conference centre also to the south of the site had rooms and camping facilities. The conference centre accommodated approximately 5500 people per year from outside the area, who stayed for a maximum of two weeks per time. The café and the pub were popular with locals and tourists. The Sizewell Visitors Centre was no longer open to the public.

6.4 Commercial activities

Commercial activities within the direct radiation survey area included farming, commercial fishing, and people working for the Suffolk Wildlife Trust, the pub, the café, the conference centre and the caravan site. One farmer from outside the area farmed arable land to the

south-west and south of the site. Suffolk Wildlife Trust managed fields to the west and north of the site. Employees and contractors of the Sizewell site were not included in the survey.

6.5 Occupancy rates

Table 50 presents indoor, outdoor and total occupancy data for adults and children and includes distances from the site perimeter fence where these occupancies took place. An analysis of the data by distance zones and occupancy rates is shown in Table 51.

0 - 0.25 km from the site perimeter fence

Occupancy data were collected for 65 individuals in the 0.0 to 0.25 km zone. The observations were mainly residents, pub staff, walkers and anglers. A resident had the highest total occupancy rate of 8500 h/y.

0.25 – 0.5 km from the site perimeter fence

Occupancy data were collected for 11 people in the 0.25 to 0.5 km zone. The observations were mainly for residents. A resident had the highest total occupancy rate of 8100 h/y.

0.5 – 1.0 km from the site perimeter fence

Occupancy data were collected for 22 people in the 0.5 to 1.0 km zone. The majority of observations were for residents. A resident had the highest total occupancy rate of 7800 h/y.

6.6 Gamma dose rate measurements

Table 52 presents gamma dose rate measurements for the Sizewell direct radiation survey. Representative gamma dose rate measurements were taken at a height of 1 meter both inside and outside a selection of residences and at outdoor background locations outside the

area. Outdoor measurements were taken approximately 5 to 10 metres from the nearest buildings. It should be noted that the measurements have not been adjusted for natural background dose rates.

In the survey area, outdoor measurements taken over grass ranged from 0.050 to 0.067 μGy/h. Indoor measurements ranged from 0.067 to 0.090 μGy/h and were higher than the corresponding outdoor measurements. This is more likely to be due to natural radioactivity in the building materials than to any artificial sources.

Outside the survey area, background readings ranged from 0.053 to 0.083 μGy/h. At the time of the survey, the outdoor measurements were within range of the background measurements.

Comprehensive studies of background radiation have been carried out on a national scale by the National Radiological Protection Board (since 1st April 2005 the Radiation Protection Division of the Health Protection Agency), the most recent of these being a review conducted during 1999 (Hughes, 1999). The results from these could be used for comparison.

Table 53 presents gamma dose rate measurements made outside the eastern site perimeter fence in front of Sizewell A and Sizewell B. Measurements were taken on the east side as this beach area was popular with members of the public and people were able to walk close to the site fence. The measurements were taken 1 meter above the ground, over grass and sand. They ranged from 0.075 to 0.54 μGy/h in front of Sizewell A and from 0.061 to 0.089 μGy/h in front of Sizewell B. The site was fully operational, with both reactors at full power, whilst the survey fieldwork was being carried out.

7 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 Annexes 1 and 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. 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 critical groups. Such assumptions will depend on the assessment in question but some initial observations are provided here as a starting point for those undertaking assessments.

The most extensive combinations of pathways for adult dose assessment are shown in Table 54. Each of the 27 combinations shown in Table 54 represents an actual individual (or individuals) from Annex 1 who has positive data (irrespective of the magnitude), for each pathway marked with an asterisk. It should be noted that combination numbers in Table 54 do not correlate directly with observation numbers in Annex 1. Other individuals from Annex 1 have combinations that are not listed in Table 54 because they have fewer pathways and a dose assessment for them would be adequately covered by one of the 27 listed combinations.

Combinations of pathways at critical group rates may be achieved by considering the data in Annexes 1 and 2. Although critical group rates are not given in the annexes, the rates for individuals making up the groups are shown emboldened. Possible combinations of pathways and their associated critical group rates are therefore apparent.

The Environment Agencies and the Food Standards Agency have considered ways of using habits data to calculate total dose retrospectively. The adopted approach is to use the adult consumption and occupancy data collected in each habits survey to create a matrix with a series of habits profiles for each site. The relevant matrix for the Sizewell adults' profiled habits data is shown in Annex 5. The National Dose Assessment Working Group (NDAWG) has considered this approach to assessing retrospective total doses (Camplin *et al*, 2005) and

has agreed that using habits profiles is an appropriate approach. Retrospective total doses around Sizewell will in future be made using these profiles and reported in the Radioactivity in Food and the Environment Reports (See Appendix 7. EA, EHS, FSA and SEPA, 2005).

8 CONCLUSIONS AND SUGGESTIONS

8.1 Survey findings

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

- Discharges of liquid radioactive waste to the North Sea
- Discharges of gaseous radioactive waste to the atmosphere
- Emitters of direct radiation

Data were collected for 537 individuals including commercial fishermen, anglers, people pursuing water sports, farmers, allotment holders and people spending time within 1 km of the site. These people were targeted because their habits and where they live may cause them to be exposed to radioactivity from the site. However, it should be noted that the most exposed people can only be defined with the outcome of a dose assessment.

All consumption rates recorded in this report are only for locally produced or caught foods.

The adult mean critical group rates (as defined in Section 3.2) for the separate local aquatic consumption pathways were:

- 23 kg/y for fish
- 11 kg/y for crustaceans
- 5.1 kg/y for molluscs
- 21 kg/y for wildfowl

The predominant aquatic species consumed by the respective groups were Dover sole, dab and cod; crab and lobster; mussels and oysters; duck and goose.

The consumption and use of seaweed was not identified in the survey area.

The mean critical group occupancy rates over the separate intertidal substrates were:

- 720 h/y for mud
- 420 h/y for salt marsh
- 420 h/y for sand
- 820 h/y for sand and stone

The mean critical group rate for handling fishing gear was 1300 h/y and for handling sediment was 720 h/y.

The maximum occupancy rate in water was 13 h/y and the maximum occupancy rate for time spent on water was 4600 h/y.

The adult mean critical group rates for the separate local consumption pathways for foods affected by gaseous discharges were:

- 29 kg/y for green vegetables
- 55 kg/y for other vegetables
- 48 kg/y for root vegetables
- 74 kg/y for potato
- 42 kg/y for domestic fruit
- 210 l/y for milk
- 28 kg/y for cattle meat
- 22 kg/y for pig meat
- 2.4 kg/y for sheep meat
- 19 kg/y for poultry
- 16 kg/y for eggs
- 32 kg/y for wild/free foods
- 6.4 kg/y for rabbits/hares
- 1.8 kg/y for honey
- 1.8 kg/y for wild fungi
- 31 kg/y for venison

No consumption of freshwater fish or local cereals was identified. Consumption of foodstuffs by children was also recorded. Combinations of food groups (both aquatic and terrestrial) consumed at critical group rates, together with external pathway exposures, may be derived from the data for individuals in Annexes 1 and 2. Rates for individuals making up the critical groups are presented in bold type.

The consumption of groundwater was identified at one household. This was being used as their domestic supply. No evidence of the consumption of surface water was found. Activities on freshwater affected by gaseous discharge were identified at Thorpeness Meare, where boats were hired out to the public in the summer months, and at Minsmere Nature Reserve, where reed cutting was carried out for two weeks of the year using machinery rather than cutting by hand.

Transfer of radioactive contamination from the site into the surrounding area by wildlife was investigated. Pigeons were considered to be a problem at Sizewell A and rabbits were considered to be a problem at Sizewell B. Relevant culling programmes were in place at Sizewell A and B. Members of the public who lived in the survey area were consuming pigeons and rabbits that were shot within the terrestrial survey area.

For occupancy by members of the public within 1 km of the Sizewell site perimeter fence, the highest rates (indoors plus outdoors) were:

- 8500 h/y for the 0 to 0.25 km zone
- 8100 h/y for the 0.25 to 0.5 km zone
- 7800 h/y for the 0.5 to 1.0 km zone

In all three zones, the highest occupancy rates were for residents.

8.2 Comparisons with previous surveys

The results from this survey can be compared with results from the last direct radiation survey and the last combined aquatic and terrestrial habits survey undertaken at Sizewell in 1994 and 2001 respectively. The same areas were used in this survey as the 2001 survey. The 1994 direct radiation survey covered a smaller area; which had been identified from an inspection of the area and earlier gamma dose measurements. Sizewell B was not on line at the time of the 1994 survey.

In 2001, the critical group mean consumption rate for fish was 40 kg/y for a group of 22 people, and the maximum consumption rate was 76 kg/y. The main species of fish consumed by the critical group were cod, Dover sole, thornback ray and plaice. In 2005, the critical group consumption rate decreased significantly to 23 kg/y, the maximum consumption rate also decreased significantly to 47 kg/y, and the number in the critical group was similar at 24. The main species consumed by the critical group were Dover sole, dab and cod.

In 2001, the critical group mean consumption rate for crustaceans was 8.4 kg/y, the maximum consumption rate was 17 kg/y and the number of people in the critical group was 10. In 2005, the critical group consumption rate increased slightly to 11 kg/y, the maximum consumption rate also increased slightly to 21.7 kg/y and the number in the critical group decreased to four. In 2001 and 2005, the main species of crustaceans consumed by the critical group were crab and lobster.

In 2001, the critical group mean consumption rate for molluscs was 6.4 kg/y, the maximum consumption rate was 8.1 kg/y and the number of people in the critical group was three. In 2005, the critical group consumption rate was similar at 5.1 kg/y, though the maximum consumption rate decreased to 6.6 kg/y and the critical group was also three. The main species consumed in 2001 and 2005 were mussels and Pacific oysters.

A comparison of wildfowl consumption rates cannot be made because in the 2001 survey wildfowl was included in the poultry group. It was not possible to differentiate between poultry and wildfowl in the 2001 data.

For occupancy of intertidal substrates recorded in 2001 and 2005, the three that can be compared are mud, salt marsh, and sand and stone.

For external pathways, it should be noted that the methodology for determining the critical group has changed since the 2001 survey (see Section 3.2) so care is needed when comparing results. In the following paragraphs, the critical group rates from the 2001 survey have been recalculated using the current method and the rates in brackets were calculated using the original method.

The 2001 critical group mean and maximum intertidal occupancy rate over mud was 1000 h/y for two oyster farmers, this was the same using the 2001 methodology. The 2005 critical group mean intertidal occupancy rate over mud was 720 h/y for one oyster farmer.

The 2001 critical group mean and maximum intertidal occupancy rate over salt marsh was 830 h/y for two people doing boat maintenance and reed cutting, this was the same using the 2001 methodology. The 2005 critical group mean and maximum intertidal occupancy rate over salt marsh was half this at 420 h/y for two anglers. No reed cutting was identified over salt marsh in 2005.

The 2001 critical group mean intertidal occupancy rate over sand and stone using the 2005 methodology was 700 h/y for seven commercial fishermen, two anglers, one bird watcher and one National Trust employee (2400 h/y for one angler), the maximum rate being 1200 h/y. The 2005 critical group mean intertidal occupancy rate over sand and stone was 820 h/y for three people working on the shore and three dog walkers, the maximum rate being 1300 h/y.

In 2001, the critical group mean handling rate for commercial fishing gear using the 2005 methodology was 1100 h/y for 21 fishermen (1300 h/y for 13 fishermen), with a maximum handling rate of 1600 h/y. The 2005 critical group mean handling rate for commercial fishing gear was very similar at 1200 h/y for 15 fishermen, the maximum rate being 2100 h/y.

In 2001, the critical group mean handling rate for sediment was 310 h/y for four oyster farmers, this was the same using the 2001 methodology, with a maximum handling rate of 360 h/y. The 2005 critical group mean handling rate for sediment was 720 h/y for one oyster farmer.

A comparison of occupancy rates in and on water cannot be made because this pathway was not investigated in the 2001 survey.

For terrestrial food groups, the critical group mean consumption rates (kg/y and l/y) in the 2005 survey are tabulated below, together with those of the 2001 survey for ease of comparison:

	2001	2005
• Green vegetables	68	29
• Other vegetables	56	55
• Root vegetables	55	48
• Potato	71	74
• Domestic fruit	39	42
• Milk	300	210
• Cattle meat	58	28
• Pig meat	21	22
• Sheep meat	16	2.4
• Poultry	*	19
• Eggs	28	16
• Wild/free foods	2.1	32
• Rabbits/hares	13	6.4

• Honey	8.8	1.8
• Wild fungi	2.3	1.8
• Venison	0	31

* The critical group mean consumption rate for poultry in the 2001 terrestrial survey was 19 kg/y. A comparison of poultry consumption rates cannot be made because in the 2001 survey wildfowl was included in the poultry group. It was not possible to differentiate between poultry and wildfowl in the 2001 data.

Consumption rates had increased in 2005 in the following food groups: potato, domestic fruit, pig meat, wild/free foods and venison, though apart from wild/free and venison, only slightly. Consumption rates had decreased in 2005 in the following food groups: green vegetables, other vegetables, root vegetables, milk, cattle meat, sheep meat, eggs, rabbits/hares, honey and wild fungi. There were large reductions in green vegetables, milk, cattle meat, sheep meat and honey.

A comparison of the 1994 and 2005 direct radiation survey results can be made. In 2005 the direct radiation survey area covered all land within 1 km of the site perimeter fence. The 1994 direct radiation survey area was identified from an inspection of the area and earlier gamma dose measurements; the survey area did not include residences to the south of the site beyond 0.5 km from the site perimeter fence. In 1994 the highest recorded occupancy rate was 8760 h/y for a person who lived and worked in the 0 – 0.25 km zone. In the 2005 survey, the highest occupancy rate was 8500 h/y for a person who also lived in the 0 – 0.25 km zone.

Commercial activities noted in 1994 and still being carried out in 2005 were people working at the café and at the pub. Leisure activities in both surveys included angling, walking dog walking and bird watching.

Gamma dose rate measurements for six residences in 2005 can be compared with gamma dose rate measurements taken at similar locations in 1994. For these locations, gamma dose measurements in 1994 ranged from 0.079 to 0.086 μGy/h indoors and from 0.061 to 0.064

μGy/h outdoors. Gamma dose measurements in 2005 ranged from 0.066 to 0.090 μGy/h indoors and from 0.050 to 0.067 μGy/h outdoors. It should be noted that at the time of the 1994 survey, Sizewell B was not on line but Sizewell A was operating during the 1994 and 2005 surveys.

8.3 Suggestions for environmental monitoring

The 2004 monitoring programmes operated by the Environment Agency and the Food Standards Agency included the following samples and measurements (EA, EHS, FSA and SEPA, 2005):

Aquatic surveillance

- Cod from Sizewell
- Sole from Sizewell
- Crabs from Sizewell
- Shrimps from Sizewell
- Oysters from Blyth Estuary
- Mussels from River Alde
- Sand from Aldeburgh
- Sediment from rifle range, Aldeburgh and Southwold
- Seawater from Aldeburgh and Sizewell

Gamma dose rate measurements

- Pebbles and shingle at Sizewell Beach
- Pebbles, and pebbles and shingle at Dunwich
- Pebbles and sand, and pebbles and shingle at Rifle Range
- Sand and stones, pebbles and sand, pebbles and shingle at Aldeburgh
- Mud and pebbles, and salt marsh and mud at Southwold Harbour

Terrestrial surveillance

- Milk
- Apples
- Blackberries
- Bovine muscle
- Bovine offal
- Cabbage
- Carrots
- Honey
- Ovine muscle
- Ovine offal
- Potatoes
- Runner beans
- Wheat
- Freshwater

The following lists are suggestions for changes to the current environmental monitoring programmes. It should be noted that the suggestions are based on the findings of this survey. They are not the outcome of any form of assessment. It is suggested that samples currently monitored, which are not listed below, remain unchanged in the monitoring programme.

(1) Environment Agency monitoring

- Gamma dose rate measurements could be introduced at the Pacific Oyster farm on the tributary of the River Ore because an individual had high occupancy rates over mud.
- A sediment sample could also be introduced at the Pacific Oyster farm on the tributary of the River Ore.

(2) Food Standards Agency monitoring

- Brown shrimps could be replaced with lobster because they were consumed at a slightly higher rate.
- A commercial Pacific oyster farm was identified in a tributary of the River Ore. A sample of Pacific oyster from the farm could be introduced.
- Carrots could be replaced with onions in the root vegetables group because they were more commonly consumed.
- Lamb could be replaced with venison because it was being consumed at higher rates.
- A sample of rabbit and pigeon could be introduced as they were being consumed from the terrestrial survey area and could be potential carriers of off-site transfer of radioactive materials.

9 ACKNOWLEDGEMENTS

Gratitude is expressed to representatives of local authorities and associations and members of the public who offered helpful advice and information during the survey. This survey was undertaken on behalf of the Environment Agency, the Food Standards Agency and the Health and Safety Executive. The project officers for these organisations gave considerable help during the planning of the survey and the drafting of the report.

10 REFERENCES

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

Camplin, W.C., Brownless, G.P., Round, G.D., Winpenny, K. and Hunt, G.J., 2002. Radioactivity in Food and the Environment: calculations of UK radiation doses using integrated assessment methods. J. Radiol. Prot. 2002. Vol. 22 No. 4 pp371-388.

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

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

DETR, 2000a. Statutory Guidance on the Regulation of Radioactive Discharges into the Environment from Nuclear Licensed Sites. A consultation paper. DETR, London.

DETR, 2000b. Radioactive Substances (Basic Safety Standards) (England and Wales) Direction 2000. DETR, London.

EA, EHS, FSA and SEPA, 2005. Radioactivity in Food and the Environment, 2004. EA, EHS, FSA and SEPA, Warrington, Belfast, London and Stirling. RIFE(10).

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

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

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

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

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

Hughes, J.S., 1999. Ionising radiation exposure of the UK population: 1999 review. NRPB-R311, Chilton.

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

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

ICRP, 1984. A Compilation of the Major Concepts and Quantities in use by ICRP. Pergamon Press, Oxford, (ICRP Publ. 42.).

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

ICRP, 1996. Age-dependent doses to members of the public from intake of radionuclides. Annal. ICRP 26 (1). Elsevier Science, Oxford, (ICRP Publ. (72)).

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

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

The Welsh Assembly Government, 2002. Statutory Guidance on the Regulation of Radioactive Discharges into the Environment from Nuclear Licensed Sites in Wales. A consultation paper. The Welsh Assembly Government, Cardiff.

Tipple, J.R., Joyce, A.E., McTaggart, K.A., Sherlock, M. and Camplin, W.C., 2002. Radiological Habits Survey: Sizewell, 2001. FSA, London.

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

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

UK Parliament, 1995a. Environment Act, 1995. HMSO, London.

UK Parliament, 1995b. Review of Radioactive Waste Management Policy. HMSO, London, 55pp. (Cm 2919).

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

UK Parliament, 2004. Energy Act, 2004. HMSO, London.

www.statistics.gov.uk

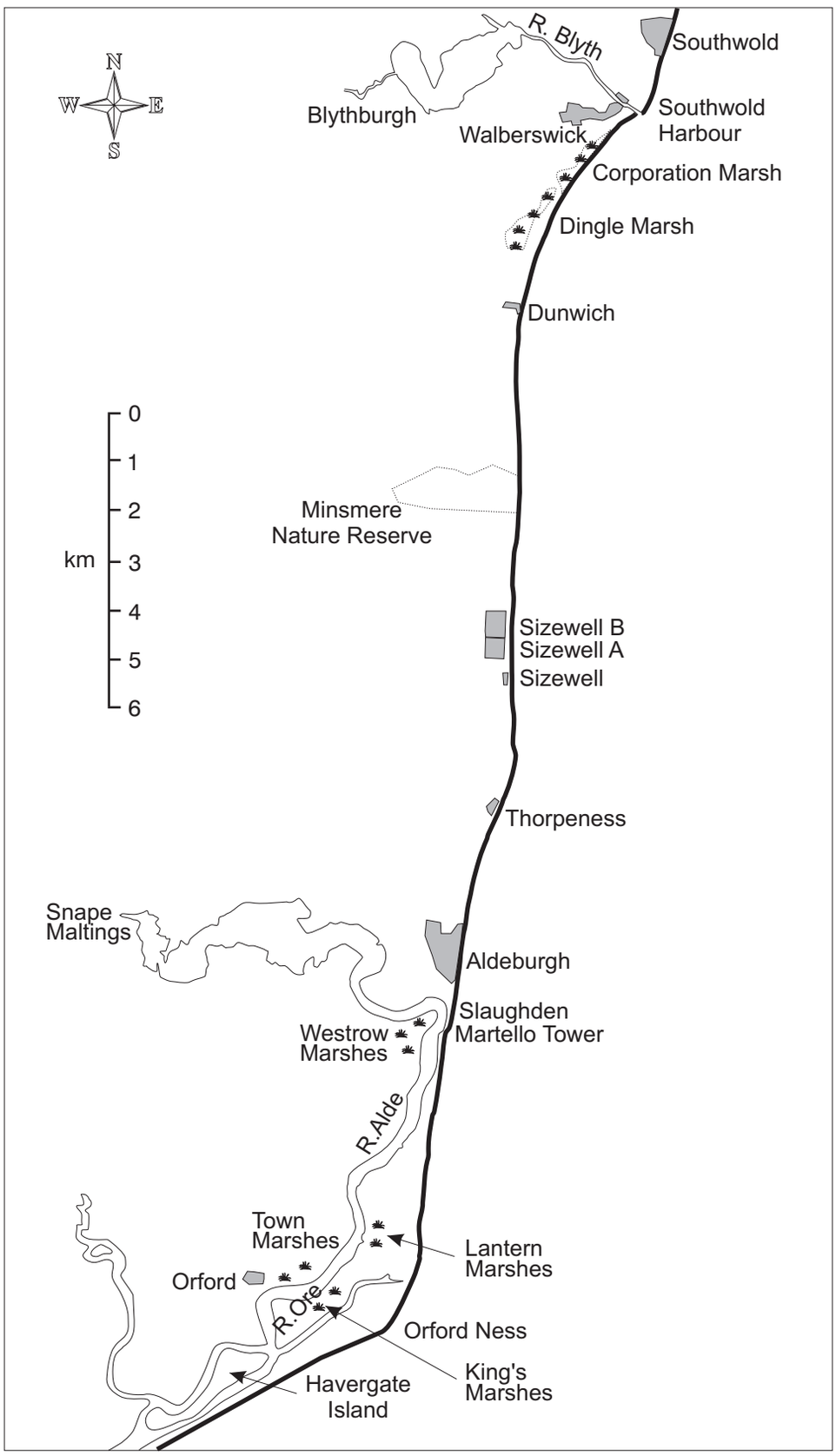

Figure 1. The Sizewell aquatic survey area

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

- Sizewell site centre
- 1 Valley Road Allotments
- 2 Haylings Road Allotments

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 people in Sizewell aquatic, terrestrial and direct radiation survey areas	Number of people resident in terrestrial survey area (excluding those resident in the direct radiation survey area) (See (B) terrestrial pathways)	7900^	147^^	*	Not all people resident in the 5 km area were interviewed. The survey targeted individuals who were potentially the most exposed (See Section 2.4), mostly producers of local food (farmers and allotment holders). The number for whom positive data was obtained includes data for 37 people who only consumed terrestrial foods but lived outside 5 km and 3 people who live in the terrestrial survey area but are affected by liquid discharge.
	Number of people resident in the direct radiation survey area (See (C) direct radiation pathways)	60	49	*****	The number for whom positive data was obtained includes 11 people that also work in the direct radiation survey area
	Number of people employed but not resident in the direct radiation survey area (See (C) direct radiation pathways)	15	11	****	Excluding employees and contractors of Magnox Electric Ltd. and British Energy Generation Ltd., and people living in the direct radiation survey area
	Number of people visiting residents (See (C) direct radiation pathways)	U	7	U	
	Number of people affected by liquid discharges (excluding people resident in the terrestrial survey area) (See (A) aquatic pathways)	U	323^^	U	
	Approximate total for aquatic, terrestrial and direct radiation survey areas	U	537^^	U	In the Summary of All Pathways section each interviewee has only been counted once. This is in the section where their predominant activities took place
(A) AQUATIC PATHWAYS					
Commercial fishermen	Number of commercial fishermen actively fishing in survey area	27	24	*****	
Boat anglers and hobby fishermen	Number seen or heard of during survey	U	5	U	
Shore anglers and other beach users	Number seen in action or spoken to during survey	U	45	U	
Watersports enthusiasts and sailing clubs	Members of clubs in survey area and people seen in action or spoken to during survey period	U	123	U	Interview with a canoeing club representative provided generic data for 10 people and interviews with 2 sailing clubs provided generic data for 113 people
Houseboats	Number of people living on houseboats in the area	6	2	**	

Table 1. Survey coverage

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
(B) TERRESTRIAL PATHWAYS^^^					
Farms	Number of farmers and their family members consuming food from the survey area	40	37	*****	Estimate of 12 farms in the area, of which 11 farmers were interviewed
Allotments	Number of allotment holder and their family members consuming food from the survey area	200	92	***	Two allotment sites in the area, 26 allotment holders were interviewed
Bee keepers	Number of people consuming honey in survey area	U	5	U	Estimate of 2 beekeeper in the area, one of which was interviewed
(C) DIRECT RADIATION PATHWAYS					
Occupancy of area	Number with occupancies > 100 hours (excluding site employees)	150	83	***	
Residences	Number of residents in the survey area	60	49	*****	Estimate of 22 occupied houses in the area (including 3 holiday homes), 16 households were interviewed
Employees	Number of people predominantly based in survey area (>500 hours)	20	15	****	
People visiting residents	Number of people visiting residents (>500 hours)	U	3	U	Excluding 4 people who visit residents in the direct radiation area < 500 hours
BREAKDOWN OF AGE GROUPS					
Adults	Individuals over 17	U	483	U	
15 year old	More than 12.0 year old to 17.0 year old	U	26	U	
10 year old	More than 7.0 year old to 12.0 year old	U	17	U	
5 year old	More than 2.0 year old to 7.0 year old	U	10	U	
1 year old	More than 1.0 year old to 2.0 year old	U	1	U	
3 months old	From 0 to 1.0 year old	U	0	U	

Notes

^ - Data from www.statistics.gov.uk were used to estimate this figure for people resident in the 5 km survey area

^^ - The number of people for whom positive data was obtained, for pathways (A) and (B), will not equal the relevant totals in the summary of all pathways. This is because some individuals, for example someone who fishes from a boat and the shore and digs their own bait, will be counted three times within the pathway, whereas others, such as the families of fishermen, will not be counted at all.

^^^ - 14 shops were visited during the survey

U - Unknown

Coverage

* = >0-20% ** = 20 - 40% *** = 40 - 60% **** = 60-80% ***** =80-100%

Table 2. Typical food groups used in habits surveys

Green vegetables	Globe artichoke, asparagus, broccoli, brussel sprout, cabbage, calabrese, cauliflower, chard, courgettes, cucumber, gherkin, herbs, kale, leaf beet, lettuce, marrow, spinach
Other vegetables	Aubergine, broad bean, chilli pepper, french bean, mangetout, pea, pepper, runner bean, sweetcorn, tomato
Root vegetables	Jerusalem artichoke, beetroot, carrot, celeriac, celery, chicory, fennel, garlic, kohl rabi, leek, onion, parsnip, radish, shallot, spring onion, swede, turnip
Potato	
Domestic fruit	Apple, apricot, blackberry, blackcurrant, boysenberry, cherry, damson, fig, gooseberry, grapes, greengages, huckleberry, loganberry, melon, nectarines, peach, pear, plum, pumpkin, raspberry, redcurrants, rhubarb, rowanberry, strawberry, tayberry, whitecurrant
Milk	Milk, butter, cream, cheese, yoghurt, goats milk
Cattle meat †	
Pig meat †	
Sheep meat †	
Poultry	Chicken, duck, goose, grouse, guinea fowl, partridge, pheasant, pigeon, snipe, turkey, woodcock
Eggs	Chicken egg, duck egg, goose egg
Wild/free foods	Blackberry, blackcurrant, chestnut, crab apple, damson, dandelion root, elderberry, nettle, raspberry, rowanberry, samphire, sloe, strawberry, watercress, wild apple
Honey	
Wild Fungi	Mushrooms
Rabbits/Hare	Hare, rabbit
Venison †	
Fish (sea)	Bass, brill, cod, common ling, dab, Dover sole, flounder, gurnard, haddock, hake, herring, lemon sole, mackerel, monkfish, mullet, plaice, pollack, witch saithe, salmon, sea trout, squid*, cuttlefish*, rays, turbot, whitebait, whiting
Fish (freshwater)	Brown trout, rainbow trout, perch, pike, salmon (river), eels
Crustaceans	Brown crab, spider crab, crawfish, lobster, *Nephrops*, squat lobster, prawn, shrimp
Molluscs	Cockles, limpets, mussels, oysters, queens, scallops, razor shell, whelks, winkles

Notes:
* Although squid and cuttlefish are molluscs, radiologically they are more akin to fish
† Including offal

Table 3. Adults' consumption rates of fish in the Sizewell area (kg/y)

Observation number	Bass	Cod	Common ling	Dab	Dover sole	Flounder	Grey mullet	Haddock	Herring	Lemon sole	Lesser spotted dogfish	Mackerel	Mixed fish	Plaice	Sprat	Spurdog	Thornback ray	Whiting	Total
146		**11.7**			**11.0**				**13.1**								**11.7**		**47.4**
33													**35.4**						**35.4**
391	**4.1**	**4.1**			**4.1**	**4.1**						**19.0**							**35.4**
246	**2.7**					**9.4**	**9.4**		**4.7**								**3.6**		**29.9**
374														**3.6**			**20.7**		**24.3**
31													**23.6**						**23.6**
59-60		**11.8**		**11.8**															**23.6**
108-109				**23.6**															**23.6**
150		**12.0**			**11.2**														**23.2**
121		**13.6**							**7.4**										**21.0**
247	**2.0**					**7.1**	**7.1**		**4.7**										**20.9**
375					**17.2**					**1.7**									**18.8**
91-96					**18.6**														**18.6**
445		**2.4**																**15.5**	**17.9**
82-83		**3.7**		**8.5**														**4.5**	**16.8**
147		**3.9**			**3.7**				**4.4**								**3.9**		**15.8**
129-130		15.3																	15.3
61	6.6				6.6														13.2
134-135				2.8	5.8									4.0					12.6
195-196		3.9		3.9	3.9														11.8
264	2.3	2.3		2.3		2.3		2.3											11.3
126-128					5.5												5.8		11.3
44-47	0.9	7.2		2.3															10.4
77													10.2						10.2
79-80													10.2						10.2
382-383	0.9	3.3		4.5														1.3	10.1
141-143		3.6			2.8					1.1				1.3					8.9
535-537	1.4	4.0																3.4	8.9
509	5.6								0.6								2.6		8.8
172-173	0.9	3.9			3.7														8.5
429-430													7.9						7.9
152-153		5.9			2.0														7.9
85-86				3.4														3.9	7.3
104-107		6.7																	6.7
63-64	6.6																		6.6

Table 3. Adults' consumption rates of fish in the Sizewell area (kg/y)

Observation number	Bass	Cod	Common ling	Dab	Dover sole	Flounder	Grey mullet	Haddock	Herring	Lemon sole	Lesser spotted dogfish	Mackerel	Mixed fish	Plaice	Sprat	Spurdog	Thornback ray	Whiting	Total
502-503		6.0																	6.0
251-252	2.7	2.7																	5.4
385	1.9				1.3	2.3													5.4
479									2.3						2.9				5.2
97					5.1														5.1
529-530													5.0						5.0
531													5.0						5.0
501		2.2															2.2		4.5
506-507		2.2															2.2		4.5
51	1.6	1.8			0.8														4.2
53	1.6	1.8			0.8														4.2
475-485	0.5	1.1	0.5								1.1							0.6	4.0
480									1.0						2.9				3.9
29-30		3.1																	3.1
160-161					2.5				0.4										2.9
203-204		1.4			1.4														2.7
98-103									2.7										2.7
136-137									2.7										2.7
15-16																2.6			2.6
18																2.6			2.6
446		2.4																	2.4
371-373	1.1	1.1																	2.3
395-396	0.9				1.1														2.0
41-42		1.8																	1.8
221-222		0.5							1.2										1.8
87-88		0.9																0.8	1.7
90		0.9																0.8	1.7
525-526		1.5																	1.5
481-483		1.3																	1.3
39-40		1.2																	1.2
55-56													1.1						1.1
75-76				1.1															1.1
253-254				1.1															1.1
455-456															0.2				0.2

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of fish based on the 24 highest adult consumers is 23.0 kg/y

The observed 97.5 percentile rate based on 128 observations is 28.9 kg/y

Table 4. Adults' consumption rates of crustaceans in the Sizewell area (kg/y)

Observation number	Brown shrimp	Crab	Lobster	Total
374		**21.7**		**21.7**
108		**4.4**	**3.4**	**7.8**
109		**4.4**	**3.4**	**7.8**
391		**6.3**	**1.3**	**7.6**
160		4.3		4.3
161		4.3		4.3
506		1.2	2.2	3.4
507		1.2	2.2	3.4
32		3.1		3.1
385		2.4	0.6	3.1
441		3.0		3.0
375			3.0	3.0
501		2.4		2.4
134	0.1	0.7	1.3	2.1
135	0.1	0.7	1.3	2.1
98	2.0			2.0
99	2.0			2.0
100	2.0			2.0
101	2.0			2.0
102	2.0			2.0
103	2.0			2.0
479		0.8		0.8
480		0.8		0.8
121			0.8	0.8
15		0.7		0.7
16		0.7		0.7
18		0.7		0.7
29		0.7		0.7
30		0.7		0.7
142		0.7		0.7
246		0.7		0.7
371		0.6		0.6
372		0.6		0.6
373		0.6		0.6
126	0.3		0.2	0.5
127	0.3		0.2	0.5
128	0.3		0.2	0.5
152			0.4	0.4
153			0.4	0.4
33		0.4		0.4
35		0.4		0.4
455	0.3	0.1		0.4
456	0.3	0.1		0.4
203		0.4		0.4
204		0.4		0.4
77		0.2	0.2	0.3
79		0.2	0.2	0.3
80		0.2	0.2	0.3
221		0.1		0.1
222		0.1		0.1

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of crustaceans based on the 4 highest adult consumers is 11.2 kg/y

The observed 97.5 percentile rate based on 50 observations is 7.8 kg/y

Table 5. Adults' consumption rates of molluscs in the Sizewell area (kg/y)

Observation number	Mussel	Pacific oyster	Total
374	**4.5**	**2.0**	**6.6**
375	**4.5**		**4.5**
385	**4.0**	**0.1**	**4.1**
533		1.7	1.7
534		1.7	1.7
529		0.1	0.1
530		0.1	0.1
531		0.1	0.1

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of molluscs based on the 3 highest adult consumers is 5.1 kg/y

The observed 97.5 percentile rate based on 8 observations is 6.2 kg/y

Table 6. Adults' consumption rates of wildfowl in the Sizewell area (kg/y)

Observation number	Duck	Goose	Total
82	**15.0**	**14.7**	**29.7**
83	**15.0**	**14.7**	**29.7**
84	**15.0**	**14.7**	**29.7**
15	**11.3**		**11.3**
16	**11.3**		**11.3**
522	**9.0**	**2.2**	**11.2**
497	0.7	3.3	4.0
498	0.7	3.3	4.0

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of wildfowl based on the 6 highest adult consumers is 20.5 kg/y

The observed 97.5 percentile rate based on 8 observations is 29.7 kg/y

Table 7. Children's consumption rates of fish in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Bass	Cod	Dover sole	Flounder	Grey mullet	Herring	Mixed fish	Spurdog	Thornback ray	Whiting	Total
81	**16**							**10.2**				**10.2**
54	**14**	**1.6**	**1.8**	**0.8**								**4.2**
205	14		1.4	1.4								2.7
206	12		1.4	1.4								2.7
19	16								2.6			2.6
17	14								2.6			2.6
223	14		0.5				1.2					1.8
484	12		1.3									1.3

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of fish based on the 2 highest 15 year old age group consumers is 7.2 kg/y

The observed 97.5 percentile rate based on 8 observations is 9.2 kg/y

10 year old age group

Observation number	Age	Bass	Cod	Dover sole	Flounder	Grey mullet	Herring	Mixed fish	Spurdog	Thornback ray	Whiting	Total
148	**8**		**5.8**	**5.5**			**6.5**			**5.8**		**23.7**
38	**10**							**8.2**				**8.2**
37	**8**							**8.2**				**8.2**
504	11		3.0									3.0
224	11		0.5				1.2					1.8
225	11		0.5				1.2					1.8
89	9		0.9								0.8	1.7
57	11							1.1				1.1
58	10							1.1				1.1

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of fish based on the 3 highest 10 year old age group consumers is 13.3 kg/y

The observed 97.5 percentile rate based on 9 observations is 20.6 kg/y

Table 7. Children's consumption rates of fish in the Sizewell area (kg/y)

5 year old age group

Observation number	Age	Bass	Cod	Dover sole	Flounder	Grey mullet	Herring	Mixed fish	Spurdog	Thornback ray	Whiting	Total
149	**6**		**5.8**	**5.5**			**6.5**			**5.8**		**23.7**
248	**4**	**1.4**			**4.7**	**4.7**				**1.8**		**12.6**
131	5		6.0									6.0
132	2		1.7									1.7
505	5		1.5									1.5

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of fish based on the 2 highest 5 year old age group consumers is 18.1 kg/y
The observed 97.5 percentile rate based on 5 observations is 22.6 kg/y

1 year old age group

Observation number	Age	Bass	Cod	Dover sole	Flounder	Grey mullet	Herring	Mixed fish	Spurdog	Thornback ray	Whiting	Total
249	**1**	**0.7**			**2.4**	**2.4**						**5.4**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of fish based on the only 1 year old age group consumer is 5.4 kg/y
The observed 97.5 percentile is not applicable for 1 observation

Table 8. Children's consumption rates of crustaceans in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Crab	Lobster	Total
19	**16**	**0.7**		**0.7**
17	**14**	**0.7**		**0.7**
36	**15**	**0.4**		**0.4**
205	**14**	**0.4**		**0.4**
206	**12**	**0.4**		**0.4**
81	**16**	**0.2**	**0.2**	**0.3**
223	14	0.1		0.1

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of crustaceans based on the 6 highest 15 year old age group consumers is 0.5 kg/y
The observed 97.5 percentile rate based on 7 observations is 0.7 kg/y

10 year old age group

Observation number	Age	Crab	Lobster	Total
224	**11**	**0.1**		**0.1**
225	**11**	**0.1**		**0.1**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of crustaceans based on the 2 highest 10 year old age group consumers is 0.1 kg/y
The observed 97.5 percentile rate based on 2 observations is 0.1 kg/y

Table 9. Children's consumption rates of wildfowl in the Sizewell area (kg/y)

5 year old age group

Observation number	Age	Duck
523	**6**	**0.5**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of wildfowl based on the only 5 year old age group consumer is 0.5 kg/y
The observed 97.5 percentile is not applicable for 1 observation

Table 10. Summary of adults' consumption rates in the Sizewell area (kg/y or l/y)

Food group	Number of observations	No. higher rate consumers	Observed maximum critical group consumption rate	Observed minimum critical group consumption rate	Observed mean critical group consumption rate	Observed 97.5 %ile consumption rate	Generic mean consumption rate	Generic 97.5 %ile consumption rate
Fish	128	24	47.4	15.8	23.0	28.9	15.0	40.0
Crustaceans	50	4	21.7	7.6	11.2	7.8	3.5	10.0
Molluscs	8	3	6.6	4.1	5.1	6.2	3.5	10.0
Wildfowl	8	6	29.7	11.2	20.5	29.7	ND	ND
Green vegetables	98	40	50.0	16.7	28.6	38.6	15.0	45.0
Other vegetables	99	19	106.9	36.3	55.2	71.8	20.0	50.0
Root vegetables	102	28	86.2	29.5	47.7	86.2	10.0	40.0
Potato	96	48	127.4	45.5	73.9	117.9	50.0	120.0
Domestic fruit	75	7	63.9	25.2	41.8	63.9	20.0	75.0
Milk	6	6	210.4	207.4	208.4	210.4	95.0	240.0
Cattle meat	10	8	47.3	17.5	28.0	47.3	15.0	45.0
Pig meat	10	10	25.3	19.0	22.0	25.3	15.0	40.0
Sheep meat	6	6	2.8	2.3	2.4	2.8	8.0	25.0
Poultry	23	7	28.5	10.5	19.2	28.5	10.0	30.0
Eggs	29	19	25.4	8.9	15.5	25.4	8.5	25.0
Wild/free foods	39	3	32.1	32.1	32.1	32.1	7.0	25.0
Rabbits/hares	8	4	9.0	3.2	6.4	8.6	6.0	15.0
Honey	5	5	2.7	1.2	1.8	2.7	2.5	9.5
Wild fungi	9	3	1.8	1.8	1.8	1.8	3.0	10.0
Venison	9	4	36.3	13.6	30.6	36.3	ND	ND
Fish (freshwater)	NC	NC	NC	NC	NC	NC	15.0	40.0

ND = not determined
NC = not consumed

Table 11. Summary of 15 year old children's consumption rates in the Sizewell area (kg/y or l/y)

Food group	Number of observations	No. higher rate consumers	Observed maximum critical group consumption rate	Observed minimum critical group consumption rate	Observed mean critical group consumption rate	Observed 97.5 %ile consumption rate	Generic mean consumption rate	Generic 97.5 %ile consumption rate
Fish	8	2	10.2	4.2	7.2	9.2	6.5	20.0
Crustaceans	7	6	0.7	0.3	0.5	0.7	2.5	6.0
Molluscs	NC	NC	NC	NC	NC	NC	2.5	6.0
Wildfowl	NC	NC	NC	NC	NC	NC	ND	ND
Green vegetables	14	5	34.9	22.8	30.4	34.9	9.0	25.0
Other vegetables	14	12	18.0	9.1	11.7	18.0	10.0	30.0
Root vegetables	18	6	36.8	14.9	26.4	36.8	7.5	20.0
Potato	14	12	79.6	27.3	49.6	78.1	60.0	130.0
Domestic fruit	15	4	19.7	10.4	16.3	19.7	15.0	50.0
Milk	2	2	210.4	207.4	208.9	210.3	110.0	260.0
Cattle meat	3	3	47.3	17.5	27.4	45.8	15.0	35.0
Pig meat	2	2	20.2	19.0	19.6	20.2	10.0	30.0
Sheep meat	2	2	2.8	2.3	2.5	2.8	5.5	15.0
Poultry	5	2	28.5	24.7	26.6	28.1	6.5	20.0
Eggs	9	7	14.2	6.7	10.0	14.2	7.0	25.0
Wild/free foods	4	4	0.9	0.3	0.8	0.9	3.0	13.0
Rabbits/hares	NC	NC	NC	NC	NC	NC	ND	ND
Honey	NC	NC	NC	NC	NC	NC	2.0	5.0
Wild fungi	5	2	1.8	1.8	1.8	1.8	2.0	5.5
Venison	2	2	36.3	36.3	36.3	36.3	ND	ND
Fish (freshwater)	NC	NC	NC	NC	NC	NC	6.5	20.0

ND = not determined
NC = not consumed

Table 12. Summary of 10 year old children's consumption rates in the Sizewell area (kg/y or l/y)

Food group	Number of observations	No. higher rate consumers	Observed maximum critical group consumption rate	Observed minimum critical group consumption rate	Observed mean critical group consumption rate	Observed 97.5 %ile consumption rate	Generic mean consumption rate	Generic 97.5 %ile consumption rate
Fish	9	3	23.7	8.2	13.3	20.6	6.0	20.0
Crustaceans	2	2	0.1	0.1	0.1	0.1	2.5	7.0
Molluscs	NC	NC	NC	NC	NC	NC	2.5	7.0
Wildfowl	NC	NC	NC	NC	NC	NC	ND	ND
Green vegetables	2	2	2.3	1.2	1.8	2.2	6.0	20.0
Other vegetables	2	2	11.6	5.7	8.7	11.5	8.0	25.0
Root vegetables	2	1	16.5	16.5	16.5	16.2	6.0	20.0
Potato	1	1	36.4	36.4	36.4	NA	45.0	85.0
Domestic fruit	2	1	7.7	7.7	7.7	7.5	15.0	50.0
Milk	2	2	210.4	210.4	210.4	210.4	110.0	240.0
Cattle meat	2	2	23.7	23.7	23.7	23.7	15.0	30.0
Pig meat	2	2	9.5	9.5	9.5	9.5	8.5	25.0
Sheep meat	2	2	1.4	1.4	1.4	1.4	4.0	10.0
Poultry	NC	NC	NC	NC	NC	NC	5.5	15.0
Eggs	3	3	3.0	2.2	2.7	3.0	6.5	20.0
Wild/free foods	2	2	0.9	0.9	0.9	0.9	3.0	11.0
Rabbits/hares	NC	NC	NC	NC	NC	NC	ND	ND
Honey	NC	NC	NC	NC	NC	NC	2.0	7.5
Wild fungi	NC	NC	NC	NC	NC	NC	1.5	4.5
Venison	NC	NC	NC	NC	NC	NC	ND	ND
Fish (freshwater)	NC	NC	NC	NC	NC	NC	6.0	20.0

Notes
ND = not determined
NC = not consumed
NA = not applicable

For 1 observation, the terms maximum, minimum and mean are not strictly valid

Table 13. Summary of 5 year old children's consumption rates in the Sizewell area (kg/y or l/y)

Food group	Number of observations	No. higher rate consumers	Observed maximum critical group consumption rate	Observed minimum critical group consumption rate	Observed mean critical group consumption rate	Observed 97.5 %ile consumption rate	Generic mean consumption rate	Generic 97.5 %ile consumption rate
Fish	5	2	23.7	12.6	18.1	22.6	ND	ND
Crustaceans	NC	NC	NC	NC	NC	NC	ND	ND
Molluscs	NC	NC	NC	NC	NC	NC	ND	ND
Wildfowl	1	1	0.5	0.5	0.5	NA	ND	ND
Green vegetables	1	1	1.2	1.2	1.2	NA	ND	ND
Other vegetables	1	1	5.7	5.7	5.7	NA	ND	ND
Root vegetables	2	2	7.6	2.2	4.9	7.5	ND	ND
Potato	1	1	13.6	13.6	13.6	NA	ND	ND
Domestic fruit	1	1	7.7	7.7	7.7	NA	ND	ND
Milk	NC	NC	NC	NC	NC	NC	ND	ND
Cattle meat	NC	NC	NC	NC	NC	NC	ND	ND
Pig meat	NC	NC	NC	NC	NC	NC	ND	ND
Sheep meat	NC	NC	NC	NC	NC	NC	ND	ND
Poultry	1	1	1.1	1.1	1.1	NA	ND	ND
Eggs	NC	NC	NC	NC	NC	NC	ND	ND
Wild/free foods	NC	NC	NC	NC	NC	NC	ND	ND
Rabbits/hares	NC	NC	NC	NC	NC	NC	ND	ND
Honey	NC	NC	NC	NC	NC	NC	ND	ND
Wild fungi	NC	NC	NC	NC	NC	NC	ND	ND
Venison	1	1	0.7	0.7	0.7	NA	ND	ND
Fish (freshwater)	NC	NC	NC	NC	NC	NC	ND	ND

Notes

ND = not determined
NC = not consumed
NA = not applicable

For 1 observation, the terms maximum, minimum and mean are not strictly valid

Table 14. Summary of 1 year old children's consumption rates in the Sizewell area (kg/y or l/y)

Food group	Number of observations	No. higher rate consumers	Observed maximum critical group consumption rate	Observed minimum critical group consumption rate	Observed mean critical group consumption rate	Observed 97.5 %ile consumption rate	Generic mean consumption rate	Generic 97.5 %ile consumption rate
Fish	1	1	5.4	5.4	5.4	NA	ND	ND
Crustaceans	NC	NC	NC	NC	NC	NC	ND	ND
Molluscs	NC	NC	NC	NC	NC	NC	ND	ND
Wildfowl	NC	NC	NC	NC	NC	NC	ND	ND
Green vegetables	NC	NC	NC	NC	NC	NC	ND	ND
Other vegetables	NC	NC	NC	NC	NC	NC	ND	ND
Root vegetables	1	1	3.8	3.8	3.8	NA	ND	ND
Potato	1	1	6.8	6.8	6.8	NA	ND	ND
Domestic fruit	NC	NC	NC	NC	NC	NC	ND	ND
Milk	NC	NC	NC	NC	NC	NC	ND	ND
Cattle meat	NC	NC	NC	NC	NC	NC	ND	ND
Pig meat	NC	NC	NC	NC	NC	NC	ND	ND
Sheep meat	NC	NC	NC	NC	NC	NC	ND	ND
Poultry	NC	NC	NC	NC	NC	NC	ND	ND
Eggs	NC	NC	NC	NC	NC	NC	ND	ND
Wild/free foods	NC	NC	NC	NC	NC	NC	ND	ND
Rabbits/hares	NC	NC	NC	NC	NC	NC	ND	ND
Honey	NC	NC	NC	NC	NC	NC	ND	ND
Wild fungi	NC	NC	NC	NC	NC	NC	ND	ND
Venison	NC	NC	NC	NC	NC	NC	ND	ND
Fish (freshwater)	NC	NC	NC	NC	NC	NC	ND	ND

Notes
ND = not determined
NC = not consumed
NA = not applicable

For 1 observation, the terms maximum, minimum and mean are not strictly valid

Table 15. Intertidal occupancy rates in the Sizewell area (h/y)

Observation number	Location*	Activity*	Mud	Salt marsh	Sand	Sand and stone
531	**Tributary of River Ore**	**Oyster farming**	**720**			
371	River Alde	Fixing moorings	150			
374	River Alde	Fixing moorings	150			
511-513	Orford	Working on the shore	100			
510	Orford	Fixing moorings	45			
533	Blythburgh/Various beaches	Oyster farming/Dog walking	10			160
51-52	**River Blyth**	**Angling**		**420**		
85	River Blyth/Orford	Angling		120	120	
110	Havergate Island	Marsh warden		100		
82	**Orford**	Wildfowling/**Angling**		88	**400**	
87	River Blyth/Orford	Angling		88	88	
536	River Blyth/Southwold, Thorpeness and Orford	Angling		70		270
111-120	Havergate Island	Monitoring work		61		
44	**Dunwich Beach**	**Angling**			**663**	
129	**Thorpeness and Orford**	**Angling**			**542**	
83	**Orford**	**Angling**			**400**	
43	**Dunwich Beach**	**Dog walking**			**350**	
48-49	**Dunwich Beach**	**Dog walking**			**300**	
502	Orford	Angling			200	
75-76	Aldeburgh Beach	Angling			192	
39	Dunwich Beach	Angling			120	
41	Dunwich Beach	Angling			120	
55	Southwold Beach	Angling			105	
514-515	Orford	Working on the shore			80	
396	Sizewell Beach	Walking			50	
152	**Aldeburgh Beach**	**Working on the shore**				**1264**
226-227	**Aldeburgh Beach**	**Working on the shore**				**840**
160	**Sizewell Beach**	**Dog walking**				**730**

Table 15. Intertidal occupancy rates in the Sizewell area (h/y)

Observation number	Location*	Activity*	Mud	Salt marsh	Sand	Sand and stone
166	**Sizewell Beach**	**Dog walking**				**700**
246	**Aldeburgh Beach**	**Dog walking**				**520**
382	Aldeburgh and Dunwich	Angling				416
187	Sizewell Beach	Dog walking and photography				365
188-194	Sizewell Beach	Dog walking				365
524	Sizewell Beach	Dog walking				340
172	Sizewell and Aldeburgh	Angling and walking				330
141-143	Sizewell Beach	Walking				288
535	Thorpeness and Orford	Angling				270
436	Sizewell Beach	Dog walking				245
388	Various beaches	Dog walking and nature reserve warden				243
173	Sizewell and Aldeburgh	Dog walking				220
445	Sizewell Beach	Angling				200
391	Sizewell and Aldeburgh	Socialising				183
134	Sizewell Beach	Walking and angling				165
509	Sizewell Beach	Angling				160
527-528	Sizewell Beach	Dog walking				160
394	Aldeburgh and Dunwich	Bird watching, photography and walking				156
162-165	Sizewell Beach	Playing				104
195-196	Various beaches	Walking				100
434	Sizewell Beach	Dog walking				100
460-462	Sizewell and Aldeburgh	Walking				100
481-482	Sizewell and Aldeburgh	Angling				100
432-433	Sizewell Beach	Dog walking				80
439-440	Sizewell Beach	Dog walking				80
203-206	Sizewell Beach	Walking				78
264	Various beaches	Dog walking and photography				78
214-215	Various beaches	Walking				72

Table 15. Intertidal occupancy rates in the Sizewell area (h/y)

Observation number	Location*	Activity*	Mud	Salt marsh	Sand	Sand and stone
496	Sizewell Beach	Working on the shore				70
135	Sizewell Beach	Walking				65
154-159	Sizewell Beach	Walking				52
386-387	Various beaches	Walking				52
465-468	Sizewell, Thorpeness and Aldburgh	Walking				50
389	Sizewell and Aldeburgh	Working on the shore				42
262	Various beaches	Walking and angling				40
251	Aldeburgh and Thorpeness	Angling				34
485-486	Aldeburgh and Orford	Angling				30
392-393	Sizewell Beach	Dog walking				26
167-168	Various beaches	Sunbathing				15
250	Aldeburgh Beach	Walking				10
263	Various beaches	Walking				10
169-171	Various beaches	Playing				9
390	Sizewell Beach	Working on the shore				8

Notes

Emboldened observations are the critical group members

The critical group intertidal occupancy rate over mud based on 1 observation is 720 h/y

The observed 97.5 percentile rate based on 8 observations for mud is 818 h/y

The critical group intertidal occupancy rate over salt marsh based on 2 observations is 420 h/y

The observed 97.5 percentile rate based on 17 observations for salt marsh is 420 h/y

The critical group intertidal occupancy rate over sand based on 7 observations is 422 h/y

The observed 97.5 percentile rate based on 18 observations for sand is 612 h/y

The critical group intertidal occupancy over sand and stone based on 6 observations is 816 h/y

The observed 97.5 percentile rate based on 85 observations for sand and stone is 829 h/y

*The forward slash (/), separates the locations of, and activities taking place on, the separate substrates for that individual

Table 16. Handling rates of fishing gear and sediment in the Sizewell area (h/y)

Observation number	Location*	Activity*	Fishing gear	Sediment
77	**Southwold**	**Gear handling**	**2100**	
78	**Southwold**	**Gear handling**	**2100**	
121	**Southwold**	**Gear handling**	**1568**	
246	**Aldeburgh**	**Gear handling**	**1560**	
395	**Sizewell**	**Gear handling**	**1460**	
397	**Sizewell**	**Gear handling**	**1460**	
374	**Aldeburgh/**River Alde	**Gear handling/**Fixing moorings	**1333**	150
385	**Aldeburgh**	**Gear handling**	**1332**	
146	**Aldeburgh**	**Gear handling**	**1300**	
150	**Aldeburgh**	**Gear handling**	**1300**	
31	**Southwold**	**Gear handling**	**825**	
33	**Southwold**	**Gear handling**	**800**	
34	**Southwold**	**Gear handling**	**800**	
152	**Aldeburgh**	**Gear handling**	**768**	
151	**Aldeburgh Beach**	**Gear handling**	**741**	
61	Southwold	Gear handling	600	
62	Southwold	Gear handling	600	
50	Dunwich	Gear handling	420	
501	Orford to Aldeburgh	Gear handling	380	
108	Southwold	Gear handling	350	
506	Orford to Sizewell	Gear handling	350	
507	Orford to Sizewell	Gear handling	350	
32	Southwold	Gear handling	220	
97	Southwold	Gear handling	198	
207	Aldeburgh	Gear handling	183	
208	Aldeburgh	Gear handling	183	
59	Southwold	Gear handling	154	
98	Southwold	Gear handling	137	
126	Southwold	Gear handling	117	
496	Sizewell	Gear handling	80	
533	Unknown/Blythburgh	Gear handling/Oyster farming	15	10
91	Southwold	Gear handling	10	
92	Southwold	Gear handling	10	
93	Southwold	Gear handling	10	
531	**Tributary of River Ore**	**Oyster farming**		**720**
371	River Alde	Fixing moorings		150
82	Orford	Wildfowling		88
510	Orford	Fixing moorings		45

Notes

Emboldened observations are the critical group members

The critical group fishing gear handling rate based on 15 observations is 1297 h/y

The observed 97.5 percentile rate based on 34 observations for fishing gear is 2100 h/y

The critical group sediment handling rate based on the only observation is 720 h/y

The observed 97.5 percentile rate based on 6 observations for sediment is 859 h/y

*The forward slash (/), separates the locations of, and activities, fishing gear and sediment handling

Table 17. Gamma dose rate measurements over intertidal substrates in the Sizewell area (µGy/h)

Location	NGR	Substrate	Gamma dose rate at 1 metre
Southwold	TM 496 753	Mud	0.056
River Blyth	TM 494 757	Salt marsh	0.069
Walberswick	TM 500 751	Mud	0.050
Dunwich Beach	TM 479 706	Sand	0.047
Sizewell Beach	TM 476 627	Sand	0.048
Sizewell Beach	TM 476 627	Sand and stone	0.049
Thorpeness Beach	TM 474 595	Sand	0.045
Aldeburgh Beach	TM 466 568	Sand and stone	0.054
Aldeburgh Beach	TM 463 548	Sand and stone	0.048
Orford	TM 424 494	Mud	0.055

Table 18. Occupancy rates in and on water potentially affected by liquid discharges in the Sizewell area (h/y)

Observation number	Location	Activity**	In water	On water
203-204	Sizewell Beach	Swimming	13	
205*-206*	Sizewell Beach	Swimming	13	
186	Aldeburgh	Swimming/Boating and rowing	10	202
187	Sizewell Beach	Swimming	10	
169*, 170*, 171*	Various beaches	Swimming	6	
108	Southwold	Boat dwelling and commercial fishing		4600
109	Southwold	Boat dwelling		4200
77-78	Southwold	Commercial fishing		2100
395	Sizewell	Commercial fishing		1825
397	Sizewell Beach	Commercial fishing		1825
246	Aldeburgh	Commercial fishing		1800
121	Southwold	Commercial fishing		1638
152	Aldeburgh	Commercial fishing		1536
146	Aldeburgh	Commercial fishing		1482
150	Aldeburgh	Commercial fishing		1482
508	Orford	Charter boat skipper		1350
365-367	River Alde	Working in the river		1344
502	Orford	Angling and charter boat skipper		1100
501	Orford to Aldeburgh	Commercial fishing		1000
531	Tributary of River Ore	Oyster farming		960
506-507	Orford to Sizewell	Commercial fishing		900
50	Dunwich	Commercial fishing		840
31	Southwold	Commercial fishing		825
33-34	Southwold	Commercial fishing		800
61-64	Southwold	Commercial fishing		800
374	Aldeburgh	Commercial fishing		800
384	River Alde	Working on a boat		728
385	Aldeburgh	Commercial fishing		724
529	Orford to Sizewell	Commercial fishing		640
532	Orford to Sizewell	Commercial fishing		640
511-513	Orford	Working on a boat		480
371-373	River Alde	Working on a boat		450
368	River Alde	Boating		432
59	Southwold	Commercial fishing		308
376	River Alde	Boating		249
174-185	Aldeburgh	Sailing		234
32	Southwold	Commercial fishing		220
509	Orford	Angling		200
97	Southwold	Commercial fishing		198
226-227	Aldeburgh	Working on a boat		189
265-364	Aldeburgh	Sailing		176
207-208	Aldeburgh	Commercial fishing		175
65-74	Southwold Beach	Canoeing		140
98	Southwold	Commercial fishing		137
496	Sizewell	Angling		130
126	Southwold	Commercial fishing		117
228-245	Aldeburgh	Working on a boat		100
369-370	River Alde	Working in the river		100
91-93	Southwold	Commercial fishing		88
104-105	Southwold	Angling		78
514-515	Orford	Working on a boat		50
388	River Blyth	Reed cutting		40
533	Blythburgh	Boating		36
377-381	River Alde	Working on a boat		20

Notes

* Observation numbers 169, 170, 171, 205 and 206 are for children aged 11, 9, 3, 14 and 12 respectively

**The forward slash (/), separates the activities taking place in and on water for that individual

Table 19. Adults' consumption rates of green vegetables in the Sizewell area (kg/y)

Observation number	Asparagus	Broccoli	Brussel sprout	Cabbage	Calabrese	Cauliflower	Chard	Courgettes	Cucumber	Herbs	Lettuce	Marrow	Rocket	Spinach	Total
201-202	**9.5**		**6.8**	**20.6**		**2.8**		**5.5**					**2.3**	**2.6**	**50.0**
431		**16.8**		**13.7**				**0.9**	**1.7**		**2.3**	**4.5**			**39.9**
491-492		**18.7**		**15.2**							**3.0**				**36.9**
520-521		**3.7**	**9.1**	**6.1**		**3.7**			**3.4**		**3.0**	**3.6**		**3.4**	**36.1**
209-213			**10.9**	**15.3**					**6.1**			**3.6**			**35.9**
20-21				**27.4**					**6.4**		**1.1**				**34.9**
494-495				**24.4**				**2.4**	**3.4**		**1.2**				**31.3**
469				**3.0**					**4.3**	**2.0**	**4.5**	**9.0**	**1.5**	**6.8**	**31.1**
487		**3.7**		**12.8**		**0.9**		**3.7**	**0.9**	**0.8**	**4.5**			**3.4**	**30.6**
203-204	**6.7**	**12.0**		**4.9**		**1.5**					**3.2**			**1.4**	**29.6**
422			**9.0**	**20.1**											**29.1**
470-471				**24.4**											**24.4**
465-466				**22.8**											**22.8**
468				**22.8**											**22.8**
493		**7.5**	**4.6**	**6.1**							**4.5**				**22.6**
195-196				**9.6**				**5.5**			**7.5**				**22.6**
29-30					**4.4**			**3.7**	**5.0**	**0.2**	**3.9**	**3.6**			**20.8**
141-143		**2.3**		**4.5**	**0.5**			**7.6**			**2.7**			**2.3**	**19.8**
479-480				**6.1**		**13.1**					**0.5**				**19.7**
472				**12.2**							**6.0**				**18.2**
488		**3.7**				**0.9**		**3.7**	**0.9**	**0.8**	**4.5**			**3.4**	**17.9**
516-517				**15.2**							**1.5**				**16.7**
518-519				7.3		4.5					3.6				15.4
489-490		1.9		6.4		0.5		1.8	0.4	0.4	2.3			1.7	15.3
455-456				7.3						0.5	5.4				13.2
214-220	1.8		1.0	2.6		0.8	0.7	1.2	1.8		1.9				11.8
457-459	0.1		3.0	4.1		2.5					2.0				11.7
423-428			3.0	6.7		1.2									10.9
253				10.2											10.2
197-200		1.4	2.0	5.1				0.6				1.1			10.2

Table 19. Adults' consumption rates of green vegetables in the Sizewell area (kg/y)

Observation number	Asparagus	Broccoli	Brussel sprout	Cabbage	Calabrese	Cauliflower	Chard	Courgettes	Cucumber	Herbs	Lettuce	Marrow	Rocket	Spinach	Total
413		5.6	0.9	2.3				0.6			0.6				9.9
416		5.6	0.9	2.3				0.6			0.6				9.9
418-419		5.6	0.9	2.3				0.6			0.6				9.9
412		5.6	0.9	2.3							0.6				9.3
417		5.6	0.9	2.3							0.6				9.3
445-446									1.7		4.5				6.2
429-430												1.8		3.4	5.2
420-421				4.6											4.6
460-461				3.0							1.5				4.5
464				3.0							1.5				4.5
473-474				2.0							1.0				3.0
476-478				2.0							1.0				3.0
15-16	2.7														2.7
18	2.7														2.7
447-450									1.1		1.3				2.5
136-139											1.0				1.0

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of green vegetables based on the 40 highest adult consumers is 28.6 kg/y

The observed 97.5 percentile rate based on 98 observations is 38.6 kg/y

Table 20. Adults' consumption rates of other vegetables in the Sizewell area (kg/y)

Observation number	Broad bean	French bean	Mangetout	Pea	Pepper	Runner bean	Sweetcorn	Tomato	Total
29-30	**12.5**	**5.4**	**23.6**	**35.1**	**2.0**	**5.0**		**23.4**	**106.9**
494-495	**36.3**	**7.1**				**22.5**		**5.9**	**71.8**
472		**14.4**		**18.0**		**31.8**		**7.2**	**71.4**
469	**24.9**			**4.5**		**9.1**		**12.7**	**51.2**
201-202	**6.8**	**1.1**		**6.8**		**30.6**	**5.2**		**50.5**
520-521	**9.1**			**4.5**		**22.7**		**12.7**	**49.0**
195-196	**22.5**					**16.8**	**2.3**	**2.7**	**44.4**
209-213	**10.9**	**7.3**				**20.4**		**3.2**	**41.8**
479-480	**9.1**			**4.5**		**22.7**			**36.3**
516-517	9.1					22.7		2.7	34.5
470-471	14.5					18.1			32.7
491-492	9.1					22.7			31.8
422	6.0	3.6		2.2		15.0			26.7
518-519	8.2			8.1		8.2			24.4
460-461		1.8		9.0	0.2	11.3		0.9	23.3
464		1.8		9.0	0.2	11.3		0.9	23.3
487-488	5.7	1.8		2.3		11.3	1.4		22.4
431		6.8				5.7	5.8	2.3	20.4
141-143	1.5			0.6		7.6		9.1	18.7
20-21	6.8	4.1		1.7				5.4	18.0
445-446	2.9	4.1		1.6		4.1		4.5	17.2
455-456	5.4			2.7		8.2			16.3
457-459	6.0			6.0					12.0
1-2	2.7							9.1	11.8
214-220		0.8		1.9	0.2	5.8	1.5	1.4	11.6
447-450	2.0	2.7		1.0		2.7		3.0	11.5
489-490	2.8	0.9		1.1		5.7	0.7		11.2
203-204	3.6			1.8			1.1	4.3	10.9
473-474		1.2		3.0		5.3		1.2	10.7
476-478		1.2		3.0		5.3		1.2	10.7
420-421						10.2			10.2
197-200		4.1				4.1	1.0	0.7	9.9

Table 20. Adults' consumption rates of other vegetables in the Sizewell area (kg/y)

Observation number	Broad bean	French bean	Mangetout	Pea	Pepper	Runner bean	Sweetcorn	Tomato	Total
412-413	3.4	2.0		2.5		1.7			9.7
416-419	3.4	2.0		2.5		1.7			9.7
3								9.1	9.1
423-428	2.0	1.2		0.7		5.0			8.9
493		3.6		4.5					8.1
134-135						1.4		5.4	6.8
465-466	5.7								5.7
468	5.7								5.7
136-139	1.3			0.9		1.3		1.8	5.3
429-430						2.3			2.3

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of other vegetables based on the 19 highest adult consumers is 55.2 kg/y

The observed 97.5 percentile rate based on 99 observations is 71.8 kg/y

Table 21. Adults' consumption rates of root vegetables in the Sizewell area (kg/y)

Observation number	Beetroot	Carrot	Celeriac	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Turnip	Total
209-213	**15.2**	**4.1**				**34.6**	**4.1**		**3.8**		**24.5**		**86.2**
201-202	**6.8**	**13.5**		**0.2**		**21.6**	**5.4**		**2.4**		**10.2**		**60.1**
29	**3.4**	**6.0**	**1.0**	**2.0**	**3.6**	**25.0**	**2.3**		**9.6**	**2.6**			**55.6**
469	**6.8**	**2.3**		**4.5**		**19.8**	**3.6**	**0.9**				**8.1**	**45.9**
494-495	**5.9**	**5.9**			**3.0**	**14.3**	**4.8**		**10.6**				**44.4**
195-196		**16.7**					**8.9**				**16.8**		**42.4**
516-517	**11.3**				**2.3**	**16.2**	**5.4**	**4.5**		**0.8**			**40.4**
20-21	**1.7**	**10.1**		**1.0**	**1.7**	**14.9**	**2.7**		**4.8**				**36.8**
487-488	**0.6**	**2.3**			**1.1**	**12.6**	**3.6**		**1.6**		**13.6**		**35.3**
460	**4.5**	**4.5**				**7.2**	**1.8**	**0.5**		**1.0**	**13.6**		**33.1**
464	**4.5**	**4.5**				**7.2**	**1.8**	**0.5**		**1.0**	**13.6**		**33.1**
479-480	**4.5**					**14.4**	**7.2**		**6.4**				**32.5**
518-519	**5.4**	**8.1**				**13.0**				**4.8**			**31.3**
30	**3.4**	**6.0**	**1.0**	**2.0**	**3.6**		**2.3**		**9.6**	**2.6**			**30.6**
470-471	**7.2**	**10.8**				**11.5**							**29.5**
461		4.5				7.2	1.8	0.5		1.0	13.6		28.6
422	4.5	4.5			8.9	5.3	5.3						28.5
472	4.5	4.5				16.2			3.2				28.4
203-204	1.8	5.4			5.4	8.6	2.9		2.6				26.7
420-421	3.4	3.4				13.5			4.8				25.1
455-456						23.8	1.0						24.8
493	4.5	2.3			6.8	5.4			4.8				23.7
431		5.1			6.8	6.8			1.2				19.8
520-521	6.8	4.5				7.2		0.9					19.4
489-490	0.3	1.1			0.6	6.3	1.8		0.8		6.8		17.7
246		7.6			7.6								15.2
465-466	1.4				8.4	4.5				0.6			14.9
468	1.4				8.4	4.5				0.6			14.9
141-143		0.6			6.7	4.5			0.6				12.4
247		5.7			5.7								11.4
491-492	6.8	4.5											11.3
214-220	1.9	1.9		0.3		4.6	1.5			0.4			10.7

Table 21. Adults' consumption rates of root vegetables in the Sizewell area (kg/y)

Observation number	Beetroot	Carrot	Celeriac	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Turnip	Total
1-3						10.2							10.2
412-413	0.8	2.5				5.4	0.7			0.4			9.8
416-419	0.8	2.5				5.4	0.7			0.4			9.8
15-16						9.1							9.1
18						9.1							9.1
423-428	1.5	1.5				1.8	1.8						6.5
445-446		2.9				2.3			1.1				6.4
6-7						5.9							5.9
473-474	0.8	0.8				2.7			0.5				4.7
476-478	0.8	0.8				2.7			0.5				4.7
447-450		2.0				1.6			0.7	0.03			4.4
253							3.6						3.6
136-139	1.4	0.8						1.1					3.3
197-200	1.8				1.4								3.2
429-430	2.3												2.3

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of root vegetables based on the 28 highest adult consumers is 47.7 kg/y

The observed 97.5 percentile rate based on 102 observations is 86.2 kg/y

Table 22. Adults' consumption rates of potato in the Sizewell area (kg/y)

Observation number	Potato
494-495	**127.4**
13-14	**117.9**
472	**113.8**
1-2	**86.5**
29-30	**82.8**
197-200	**82.6**
479-480	**81.9**
465-466	**79.6**
468	**79.6**
6-7	**75.0**
460-461	**72.8**
464	**72.8**
470-471	**72.8**
516-517	**72.8**
518-519	**71.0**
491-492	**68.3**
209-213	**65.5**
201-202	**54.6**
412-413	**51.2**
416-419	**51.2**
15-16	**48.0**
18	**48.0**
493	**45.5**
431	41.0
203-204	38.2
141-143	33.3
195-196	30.0
20-21	27.3
487-488	27.3
246	27.2
136-139	25.4
457-459	24.3
247	20.4
473-474	19.0
476-478	19.0
420-421	18.2
214-220	14.2
489-490	13.7
455-456	10.9
253-254	4.5
422	4.5
423-428	1.5

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of potato based on the 48 highest adult consumers is 73.9 kg/y

The observed 97.5 percentile rate based on 96 observations is 117.9 kg/y

Table 23. Adults' consumption rates of domestic fruit in the Sizewell area (kg/y)

Observation number	Apple	Blackberry	Blackcurrant	Cherry	Fig	Gooseberry	Pear	Plum	Pumpkin	Raspberry	Redcurrant	Rhubarb	Strawberry	Total
141-143	**50.0**		**3.8**	**0.8**				**0.9**		**2.3**		**5.4**	**0.8**	**63.9**
29-30	**11.3**			**3.4**						**4.5**			**6.1**	**25.4**
518-519			**11.4**			**6.5**					**7.3**			**25.2**
253	10.4							9.1			0.9			20.4
203-204	2.7												17.0	19.7
447-450	3.8	2.5				1.2				2.3		5.0	0.6	15.4
445-446	2.7	3.9				0.7				3.4		3.4	0.9	15.0
122-125	12.7													12.7
469										3.4		1.7	4.8	9.9
144-145	0.9						6.8	1.8						9.5
201-202												1.7	7.1	8.9
457-459												1.5	6.3	7.9
214-220	1.0												5.8	6.8
420-421										5.1		1.2		6.2
431								5.0						5.0
487-488			2.8								1.1			4.0
1-3													3.6	3.6
195-196									1.5			1.2	0.7	3.3
20-21	2.3													2.3
134-135					0.2								2.0	2.2
489-490			1.4								0.6			2.0
422												1.5		1.5
15-16	1.4													1.4
18	1.4													1.4
493												1.3		1.3
460-461												1.2		1.2
464												1.2		1.2
6-7										0.9				0.9
423-428												0.5		0.5
412-413												0.5		0.5
416-419												0.5		0.5
13-14		0.5												0.5

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of domestic fruit based on the 7 highest adult consumers is 41.8 kg/y

The observed 97.5 percentile rate based on 75 observations is 63.9 kg/y

Table 24. Adults' consumption rates of milk in the Sizewell area (l/y)

Observation number	Cream	Milk	Total
221	**3.0**	**207.4**	**210.4**
222	**3.0**	**207.4**	**210.4**
136		**207.4**	**207.4**
137		**207.4**	**207.4**
138		**207.4**	**207.4**
139		**207.4**	**207.4**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of milk based on the 6 highest adult consumers is 208.4 l/y
The observed 97.5 percentile rate based on 6 observations is 210.4 l/y

Table 25. Adults' consumption rates of cattle meat in the Sizewell area (kg/y)

Observation number	Beef
221	**47.3**
222	**47.3**
255	**23.7**
256	**23.7**
257	**23.7**
258	**23.7**
20	**17.5**
21	**17.5**
392	1.1
393	1.1

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of cattle meat based on the 8 highest adult consumers is 28.0 kg/y
The observed 97.5 percentile rate based on 10 observations is 47.3 kg/y

Table 26. Adults' consumption rates of pig meat in the Sizewell area (kg/y)

Observation number	Pork
408	**25.3**
409	**25.3**
410	**25.3**
411	**25.3**
136	**20.2**
137	**20.2**
138	**20.2**
139	**20.2**
221	**19.0**
222	**19.0**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of pig meat based on the 10 highest adult consumers is 22.0 kg/y
The observed 97.5 percentile rate based on 10 observations is 25.3 kg/y

Table 27. Adults' consumption rates of sheep meat in the Sizewell area (kg/y)

Observation number	Lamb
221	**2.8**
222	**2.8**
136	**2.3**
137	**2.3**
138	**2.3**
139	**2.3**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of sheep meat based on the 6 highest adult consumers is 2.4 kg/y
The observed 97.5 percentile rate based on 6 observations is 2.8 kg/y

Table 28. Adults' consumption rates of poultry in the Sizewell area (kg/y)

Observation number	Chicken	Partridge	Pheasant	Pigeon	Woodcock	Total
15		**6.0**	**18.6**	**3.8**		**28.5**
16		**6.0**	**18.6**	**3.8**		**28.5**
18		**6.0**	**18.6**			**24.7**
522		**14.0**	**7.2**			**21.2**
253		**1.5**	**9.0**		**0.4**	**10.9**
152		**1.5**	**9.0**			**10.5**
254		**1.5**	**9.0**			**10.5**
497		0.5	2.3	1.3		4.0
498		0.5	2.3	1.3		4.0
222		0.3	2.7	0.7	0.2	3.9
221		0.3	2.7	0.7		3.7
13			2.7			2.7
413			2.7			2.7
138	0.5	0.4	0.9	0.3		2.0
139	0.5	0.4	0.9	0.3		2.0
136	0.5	0.4	0.9	0.3		2.0
137	0.5	0.4	0.9	0.3		2.0
445			0.5	0.8		1.3
455				0.5		0.5
456				0.5		0.5
441			0.5			0.5
6			0.3			0.3
7			0.3			0.3

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of poultry based on the 7 highest adult consumers is 19.2 kg/y
The observed 97.5 percentile rate based on 23 observations is 28.5 kg/y

Table 29. Adults' consumption rates of eggs in the Sizewell area (kg/y)

Observation number	Chicken egg	Duck egg	Goose egg	Total
197	**10.0**	**13.2**	**2.2**	**25.4**
198	**10.0**	**13.2**	**2.2**	**25.4**
199	**10.0**	**13.2**	**2.2**	**25.4**
200	**10.0**	**13.2**	**2.2**	**25.4**
152	**19.8**			**19.8**
137	**10.4**		**8.8**	**19.2**
472	**17.8**			**17.8**
395	**14.3**			**14.3**
15	**14.2**			**14.2**
16	**14.2**			**14.2**
18	**14.2**			**14.2**
455	**11.9**			**11.9**
136	**10.4**			**10.4**
138	**10.4**			**10.4**
139	**10.4**			**10.4**
6	**8.9**			**8.9**
7	**8.9**			**8.9**
520	**8.9**			**8.9**
521	**8.9**			**8.9**
203	6.7			6.7
204	6.7			6.7
396	5.7			5.7
460	4.4			4.4
461	4.4			4.4
464	4.4			4.4
221	3.0			3.0
222	3.0			3.0
144		2.7		2.7
145		2.7		2.7

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of eggs based on the 19 highest adult consumers is 15.5 kg/y

The observed 97.5 percentile rate based on 29 observations is 25.4 kg/y

Table 30. Adults' consumption rates of wild/free foods in the Sizewell area (kg/y)

Observation number	Blackberry	Bullace plum	Damson	Hazelnut	Sloe	Total
1	**30.2**	**1.8**				**32.1**
2	**30.2**	**1.8**				**32.1**
3	**30.2**	**1.8**				**32.1**
253	0.9	4.5	2.3	1.8		9.5
152	1.4				5.1	6.4
520	2.0					2.0
521	2.0					2.0
141	1.5					1.5
142	1.5					1.5
143	1.5					1.5
197	1.5					1.5
198	1.5					1.5
199	1.5					1.5
200	1.5					1.5
153	1.4					1.4
455	0.5	0.5			0.5	1.4
456	0.5	0.5			0.5	1.4
524	1.3					1.3
525	1.3					1.3
526	1.3					1.3
214	1.0					1.0
215	1.0					1.0
216	1.0					1.0
217	1.0					1.0
218	1.0					1.0
219	1.0					1.0
220	1.0					1.0
203	0.9					0.9
204	0.9					0.9
221	0.9					0.9
222	0.9					0.9
134	0.2				0.2	0.5
135	0.2				0.2	0.5
136	0.3					0.3
137	0.3					0.3
138	0.3					0.3
139	0.3					0.3
195	0.2					0.2
196	0.2					0.2

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of wild/free foods based on the 3 highest adult consumers is 32.1 kg/y

The observed 97.5 percentile rate based on 39 observations is 32.1 kg/y

Table 31. Adults' consumption rates of rabbits/hares in the Sizewell area (kg/y)

Observation number	Hare	Rabbit	Total
522		**9.0**	**9.0**
253		**6.8**	**6.8**
254		**6.8**	**6.8**
15	**3.2**		**3.2**
222		1.4	1.4
455		1.0	1.0
456		1.0	1.0
152		0.9	0.9

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of rabbits/hares based on the 4 highest adult consumers is 6.4 kg/y
The observed 97.5 percentile rate based on 8 observations is 8.6 kg/y

Table 32. Adults' consumption rates of honey in the Sizewell area (kg/y)

Observation number	Honey
499	**2.7**
500	**2.7**
141	**1.2**
142	**1.2**
143	**1.2**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of honey based on the 5 highest adult consumers is 1.8 kg/y
The observed 97.5 percentile rate based on 5 observations is 2.7 kg/y

Table 33. Adults' consumption rates of wild fungi in the Sizewell area (kg/y)

Observation number	Mushrooms
15	**1.8**
16	**1.8**
18	**1.8**
20	0.5
21	0.5
136	0.5
137	0.5
138	0.5
139	0.5

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of wild fungi based on the 3 highest adult consumers is 1.8 kg/y
The observed 97.5 percentile rate based on 9 observations is 1.8 kg/y

Table 34. Adults' consumption rates of venison in the Sizewell area (kg/y)

Observation number	Venison
15	**36.3**
16	**36.3**
18	**36.3**
522	**13.6**
221	0.9
222	0.9
214	0.7
215	0.7
219	0.7

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of venison based on the 4 highest adult consumers is 30.6 kg/y

The observed 97.5 percentile rate based on 9 observations is 36.3 kg/y

Table 35. Children's consumption rates of green vegetables in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Asparagus	Broccoli	Brussel sprout	Cabbage	Cauliflower	Courgettes	Cucumber	Lettuce	Spinach	Total
22	**16**				**27.4**			**6.4**	**1.1**		**34.9**
23	**14**				**27.4**			**6.4**	**1.1**		**34.9**
206	**12**	**6.7**	**12.0**		**4.9**	**1.5**			**3.2**	**1.4**	**29.6**
205	**14**	**6.7**	**12.0**		**4.9**	**1.5**			**3.2**	**1.4**	**29.6**
467	**16**				**22.8**						**22.8**
414	16		5.6	0.9	2.3		0.6		0.6		9.9
415	16		5.6	0.9	2.3		0.6		0.6		9.9
475	16				2.0				1.0		3.0
19	16	2.7									2.7
17	14	2.7									2.7
451	16							1.1	1.3		2.5
452	14							1.1	1.3		2.5
462	13				1.5				0.8		2.3
140	12								1.0		1.0

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of green vegetables based on the 5 highest 15 year old age group consumers is 30.4 kg/y

The observed 97.5 percentile rate based on 14 observations is 34.9 kg/y

10 year old age group

Observation number	Age	Asparagus	Broccoli	Brussel sprout	Cabbage	Cauliflower	Courgettes	Cucumber	Lettuce	Spinach	Total
463	**11**				**1.5**				**0.8**		**2.3**
453	**8**							**0.6**	**0.7**		**1.2**

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of green vegetables based on the 2 highest 10 year old age group consumers is 1.8 kg/y

The observed 97.5 percentile rate based on 2 observations is 2.2 kg/y

Table 35. Children's consumption rates of green vegetables in the Sizewell area (kg/y)

5 year old age group

Observation number	Age	Asparagus	Broccoli	Brussel sprout	Cabbage	Cauliflower	Courgettes	Cucumber	Lettuce	Spinach	Total
454	**4**							**0.6**	**0.7**		**1.2**

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of green vegetables based on the only 5 year old age group consumer is 1.2 kg/y

The observed 97.5 percentile is not applicable for 1 observation

Table 36. Children's consumption rates of other vegetables in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Broad bean	French bean	Pea	Pepper	Runner bean	Sweetcorn	Tomato	Total
22	**16**	**6.8**	**4.1**	**1.7**				**5.4**	**18.0**
23	**14**	**6.8**	**4.1**	**1.7**				**5.4**	**18.0**
462	**13**		**0.9**	**4.5**	**0.1**	**5.7**		**0.5**	**11.6**
451	**16**	**2.0**	**2.7**	**1.0**		**2.7**		**3.0**	**11.5**
452	**14**	**2.0**	**2.7**	**1.0**		**2.7**		**3.0**	**11.5**
205	**14**	**3.6**		**1.8**			**1.1**	**4.3**	**10.9**
206	**12**	**3.6**		**1.8**			**1.1**	**4.3**	**10.9**
475	**16**		**1.2**	**3.0**		**5.3**		**1.2**	**10.7**
414	**16**	**3.4**	**2.0**	**2.5**		**1.7**			**9.7**
415	**16**	**3.4**	**2.0**	**2.5**		**1.7**			**9.7**
4	**15**							**9.1**	**9.1**
5	**13**							**9.1**	**9.1**
467	16	5.7							5.7
140	12	1.3		0.9		1.3		1.8	5.3

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of other vegetables based on the 12 highest 15 year old age group consumers is 11.7 kg/y

The observed 97.5 percentile rate based on 14 observations is 18.0 kg/y

10 year old age group

Observation number	Age	Broad bean	French bean	Pea	Pepper	Runner bean	Sweetcorn	Tomato	Total
463	**11**		**0.9**	**4.5**	**0.1**	**5.7**		**0.5**	**11.6**
453	**8**	**1.0**	**1.4**	**0.5**		**1.4**		**1.5**	**5.7**

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of other vegetables based on the 2 highest 10 year old age group consumers is 8.7 kg/y

The observed 97.5 percentile rate based on 2 observations is 11.5 kg/y

Table 36. Children's consumption rates of other vegetables in the Sizewell area (kg/y)

5 year old age group

Observation number	Age	Broad bean	French bean	Pea	Pepper	Runner bean	Sweetcorn	Tomato	Total
454	**4**	**1.0**	**1.4**	**0.5**		**1.4**		**1.5**	**5.7**

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of other vegetables based on the only 5 year old age group consumer is 5.7 kg/y

The observed 97.5 percentile is not applicable for 1 observation

Table 37. Children's consumption rates of root vegetables in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Beetroot	Carrot	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Total
22	**16**	**1.7**	**10.1**	**1.0**	**1.7**	**14.9**	**2.7**		**4.8**			**36.8**
23	**14**	**1.7**	**10.1**	**1.0**	**1.7**	**14.9**	**2.7**		**4.8**			**36.8**
205	**14**	**1.8**	**5.4**		**5.4**	**8.6**	**2.9**		**2.6**			**26.7**
206	**12**	**1.8**	**5.4**		**5.4**	**8.6**	**2.9**		**2.6**			**26.7**
462	**13**	**2.3**	**2.3**			**3.6**	**0.9**	**0.2**		**0.5**	**6.8**	**16.5**
467	**16**	**1.4**			**8.4**	**4.5**				**0.6**		**14.9**
4	15					10.2						10.2
5	13					10.2						10.2
414	16	0.8	2.5			5.4	0.7			0.4		9.8
415	16	0.8	2.5			5.4	0.7			0.4		9.8
19	16					9.1						9.1
17	14					9.1						9.1
9	14					5.9						5.9
8	12					5.9						5.9
475	16	0.8	0.8			2.7			0.5			4.7
451	16		2.0			1.6			0.7	0.03		4.4
452	14		2.0			1.6			0.7	0.03		4.4
140	12	1.4	0.8					1.1				3.3

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of root vegetables based on the 6 highest 15 year old age group consumers is 26.4 kg/y

The observed 97.5 percentile rate based on 18 observations is 36.8 kg/y

Table 37. Children's consumption rates of root vegetables in the Sizewell area (kg/y)

10 year old age group

Observation number	Age	Beetroot	Carrot	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Total
463	**11**	**2.3**	**2.3**			**3.6**	**0.9**	**0.2**		**0.5**	**6.8**	**16.5**
453	8		1.0			0.8			0.3	0.02		2.2

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of root vegetables based on the highest 10 year old age group consumers is 16.5 kg/y
The observed 97.5 percentile rate based on 2 observations is 16.2 kg/y

5 year old age group

Observation number	Age	Beetroot	Carrot	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Total
248	**4**		**3.8**		**3.8**							**7.6**
454	4		1.0			0.8			0.3	0.02		2.2

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of root vegetables based on the highest 5 year old age group consumers is 7.6 kg/y
The observed 97.5 percentile rate based on 2 observations is 7.5 kg/y

1 year old age group

Observation number	Age	Beetroot	Carrot	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Total
249	**1**		**1.9**		**1.9**							**3.8**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of root vegetables based on the only 1 year old age group consumer is 3.8 kg/y
The observed 97.5 percentile is not applicable for 1 observation

Table 38. Children's consumption rates of potato in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Potato
467	**16**	**79.6**
9	**14**	**75.0**
8	**12**	**75.0**
414	**16**	**51.2**
415	**16**	**51.2**
19	**16**	**48.0**
17	**14**	**48.0**
205	**14**	**38.2**
206	**12**	**38.2**
462	**13**	**36.4**
22	**16**	**27.3**
23	**14**	**27.3**
140	12	25.4
475	16	19.0

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of potato based on the 12 highest 15 year old age group consumers is 49.6 kg/y
The observed 97.5 percentile rate based on 14 observations is 78.1 kg/y

10 year old age group

Observation number	Age	Potato
463	**11**	**36.4**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of potato based on the only 10 year old age group consumer is 36.4 kg/y
The observed 97.5 percentile is not applicable for 1 observation

5 year old age group

Observation number	Age	Potato
248	**4**	**13.6**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of potato based on the only 5 year old age group consumer is 13.6 kg/y
The observed 97.5 percentile is not applicable for 1 observation

1 year old age group

Observation number	Age	Potato
249	**1**	**6.8**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of potato based on the only 1 year old age group consumer is 6.8 kg/y
The observed 97.5 percentile is not applicable for 1 observation

Table 39. Children's consumption rates of domestic fruit in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Apple	Blackberry	Gooseberry	Raspberry	Rhubarb	Strawberry	Total
205	**14**	**2.7**					**17.0**	**19.7**
206	**12**	**2.7**					**17.0**	**19.7**
452	**14**	**3.8**	**2.5**	**1.2**	**2.3**	**5.0**	**0.6**	**15.4**
451	**16**	**3.8**	**2.5**	**1.2**	**2.3**		**0.6**	**10.4**
4	15						3.6	3.6
5	13						3.6	3.6
22	16	2.3						2.3
23	14	2.3						2.3
19	16	1.4						1.4
17	14	1.4						1.4
9	14				0.9			0.9
8	12				0.9			0.9
462	13					0.6		0.6
414	16					0.5		0.5
415	16					0.5		0.5

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of domestic fruit based on the 4 highest 15 year old age group consumers is 16.3 kg/y

The observed 97.5 percentile rate based on 15 observations is 19.7 kg/y

10 year old age group

Observation number	Age	Apple	Blackberry	Gooseberry	Raspberry	Rhubarb	Strawberry	Total
453	**8**	**1.9**	**1.2**	**0.6**	**1.1**	**2.5**	**0.3**	**7.7**
463	11					0.6		0.6

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of domestic fruit based on the highest 10 year old age group consumer is 7.7 kg/y

The observed 97.5 percentile rate based on 2 observations is 7.5 kg/y

5 year old age group

Observation number	Age	Apple	Blackberry	Gooseberry	Raspberry	Rhubarb	Strawberry	Total
454	**4**	**1.9**	**1.2**	**0.6**	**1.1**	**2.5**	**0.3**	**7.7**

Notes

Emboldened observations are the critical group consumers

The critical group consumption rate of domestic fruit based on the only 5 year old age group consumer is 7.7 kg/y

The observed 97.5 percentile is not applicable for 1 observation

Table 40. Children's consumption rates of milk in the Sizewell area (l/y)

15 year old age group

Observation number	Age	Cream	Milk	Total
223	**14**	**3.0**	**207.4**	**210.4**
140	**12**		**207.4**	**207.4**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of milk based on the 2 highest 15 year old age group consumers is 208.9 l/y
The observed 97.5 percentile rate based on 2 observations is 210.3 l/y

10 year old age group

Observation number	Age	Cream	Milk	Total
224	**11**	**3.0**	**207.4**	**210.4**
225	**11**	**3.0**	**207.4**	**210.4**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of milk based on the 2 highest 10 year old age group consumers is 210.4 l/y
The observed 97.5 percentile rate based on 2 observations is 210.4 l/y

Table 41. Children's consumption rates of cattle meat in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Beef
223	**14**	**47.3**
22	**16**	**17.5**
23	**14**	**17.5**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of cattle meat based on the 3 highest 15 year old age group consumers is 27.4 kg/y
The observed 97.5 percentile rate based on 3 observations is 45.8 kg/y

10 year old age group

Observation number	Age	Beef
224	**11**	**23.7**
225	**11**	**23.7**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of cattle meat based on the 2 highest 10 year old age group consumers is 23.7 kg/y
The observed 97.5 percentile rate based on 2 observations is 23.7 kg/y

Table 42. Children's consumption rates of pig meat in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Pork
140	**12**	**20.2**
223	**14**	**19.0**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of pig meat based on the 2 highest 15 year old age group consumers is 19.6 kg/y
The observed 97.5 percentile rate based on 2 observations is 20.2 kg/y

10 year old age group

Observation number	Age	Pork
224	**11**	**9.5**
225	**11**	**9.5**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of pig meat based on the 2 highest 10 year old age group consumers is 9.5 kg/y
The observed 97.5 percentile rate based on 2 observations is 9.5 kg/y

Table 43. Children's consumption rates of sheep meat in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Lamb
223	**14**	**2.8**
140	**12**	**2.3**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of sheep meat based on the 2 highest 15 year old age group consumers is 2.5 kg/y
The observed 97.5 percentile rate based on 2 observations is 2.8 kg/y

10 year old age group

Observation number	Age	Lamb
224	**11**	**1.4**
225	**11**	**1.4**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of sheep meat based on the 2 highest 10 year old age group consumers is 1.4 kg/y
The observed 97.5 percentile rate based on 2 observations is 1.4 kg/y

Table 44. Children's consumption rates of poultry in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Chicken	Partridge	Pheasant	Pigeon	Total
17	**14**		**6.0**	**18.6**	**3.8**	**28.5**
19	**16**		**6.0**	**18.6**		**24.7**
140	12	0.5	0.4	0.9	0.3	2.0
9	14			0.3		0.3
8	12			0.3		0.3

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of poultry based on the 2 highest 15 year old age group consumers is 26.6 kg/y
The observed 97.5 percentile rate based on 5 observations is 28.1 kg/y

5 year old age group

Observation number	Age	Chicken	Partridge	Pheasant	Pigeon	Total
523	**6**		**0.7**	**0.4**		**1.1**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of poultry based on the only 5 year old age group consumer is 1.1 kg/y
The observed 97.5 percentile is not applicable for 1 observation

Table 45. Children's consumption rates of eggs in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Chicken egg
19	**16**	**14.2**
17	**14**	**14.2**
140	**12**	**10.4**
9	**14**	**8.9**
8	**12**	**8.9**
205	**14**	**6.7**
206	**12**	**6.7**
223	14	3.0
462	13	2.2

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of eggs based on the 7 highest 15 year old age group consumers is 10.0 kg/y
The observed 97.5 percentile rate based on 9 observations is 14.2 kg/y

10 year old age group

Observation number	Age	Chicken egg
224	**11**	**3.0**
225	**11**	**3.0**
463	**11**	**2.2**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of eggs based on the 3 highest 10 year old age group consumers is 2.7 kg/y
The observed 97.5 percentile rate based on 3 observations is 3.0 kg/y

Table 46. Children's consumption rate of wild/free foods in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Blackberry
205	**14**	**0.9**
223	**14**	**0.9**
206	**12**	**0.9**
140	**12**	**0.3**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of wild/free foods based on the 4 highest 15 year old age group consumers is 0.8 kg/y
The observed 97.5 percentile rate based on 4 observations is 0.9 kg/y

10 year old age group

Observation number	Age	Blackberry
224	**11**	**0.9**
225	**11**	**0.9**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of wild/free foods based on the 2 highest 10 year old age group consumers is 0.9 kg/y
The observed 97.5 percentile rate based on 2 observations is 0.9 kg/y

Table 47. Children's consumption rates of wild fungi in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Mushrooms
19	**16**	**1.8**
17	**14**	**1.8**
22	16	0.5
23	14	0.5
140	12	0.5

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of wild fungi based on the 2 highest 15 year old age group consumers is 1.8 kg/y
The observed 97.5 percentile rate based on 5 observations is 1.8 kg/y

Table 48. Children's consumption rates of venison in the Sizewell area (kg/y)

15 year old age group

Observation number	Age	Venison
19	**16**	**36.3**
17	**14**	**36.3**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of venison based on the 2 highest 15 year old age group consumers is 36.3 kg/y
The observed 97.5 percentile rate based on 2 observations is 36.3 kg/y

5 year old age group

Observation number	Age	Venison
523	**6**	**0.7**

Notes
Emboldened observations are the critical group consumers
The critical group consumption rate of venison based on the only 5 year old age group consumer is 0.7 kg/y
The observed 97.5 percentile is not applicable for 1 observation

Table 49. Percentage contribution each food type makes to its terrestrial food group for adults

Green vegetables	
***Cabbage**	44.1 %
Lettuce	9.6 %
Broccoli	9.2 %
Brussel sprout	9.0 %
Cucumber	7.4 %
Courgettes	5.0 %
Cauliflower	4.6 %
Marrow	3.3 %
Asparagus	3.3 %
Spinach	2.8 %
Calabrese	0.6 %
Rocket	0.4 %
Herbs	0.3 %
Chard	0.3 %

Other vegetables	
***Runner bean**	39.7 %
Broad bean	23.4 %
Pea	12.4 %
Tomato	12.1 %
French bean	8.0 %
Mangetout	2.1 %
Sweetcorn	1.9 %
Pepper	0.3 %

Root vegetables	
Onion	36.5 %
***Carrot**	14.6 %
Swede	14.4 %
Beetroot	13.9 %
Parsnip	6.8 %
Shallot	5.5 %
Leek	5.3 %
Spring onion	1.2 %
Radish	0.8 %
Garlic	0.6 %
Turnip	0.4 %
Celeriac	0.1 %

Domestic fruit	
***Apple**	40.3 %
Strawberry	21.5 %
Rhubarb	10.1 %
Raspberry	6.9 %
Blackcurrant	6.2 %
Plum	3.0 %
Gooseberry	2.8 %
Redcurrants	2.7 %
Blackberry	2.7 %
Pear	2.0 %
Cherry	1.3 %
Pumpkin	0.4 %
Fig	0.1 %

Milk	
***Milk**	99.5 %
Cream	0.5 %

Poultry	
Pheasant	66.2 %
Partridge	23.8 %
Pigeon	8.6 %
Chicken	1.1 %
Woodcock	0.4 %

Eggs	
Chicken egg	77.5 %
Duck egg	17.3 %
Goose egg	5.2 %

Wild/free foods	
***Blackberry**	85.5 %
Bullace plum	7.4 %
Sloe	4.4 %
Damson	1.5 %
Hazelnut	1.2 %

Rabbits/hares	
Rabbit	89.3 %
Hare	10.7 %

Notes
Food types asterisked and emboldened were monitored by FSA in 2004 (EA, EHS, FSA and SEPA, 2005)
Other foods monitored were bovine muscle and offal, honey, ovine muscle and offal, potato and wheat
Percentages are based on the consumption of all adults in the survey consuming that particular food group

Table 50. Occupancy rates in the Sizewell direct radiation survey area for adults and children (h/y)

Observation number	Age (in years) (U if unknown)	Distance from site perimeter fence (km)	Indoor occupancy	Outdoor occupancy	Total occupancy
0 to 0.25 km zone					
434	91	0.20	7988	500	8488
10	55	0.25	7724	700	8424
1	63	0.10	6621	1729	8350
11	55	0.25	7974	350	8324
3	37	0.10	6952	1274	8226
435	80	0.20	7664	500	8164
161	71	0.25	7323	365	7688
157	16	0.13	7050	458	7508
160	62	0.25	6842	663	7505
4	15	0.10	6758	728	7486
5	13	0.10	6758	728	7486
2	62	0.10	6442	910	7352
156	18	0.13	6750	458	7208
154	39	0.13	7073	130	7203
395	52	0.15	4675	2000	6675
155	42	0.13	6103	275	6378
438	41	0.20	5844	500	6344
159	7	0.13	5881	458	6339
158	11	0.13	5737	458	6195
436	60	0.20	5676	500	6176
396	56	0.15	5758	370	6128
439	18	0.20	4636	500	5136
440	16	0.20	4636	500	5136
437	45	0.20	4424	500	4924
259	32	0.13	2200	50	2250
429	64	0.10	1448	400	1848
430	63	0.10	1448	400	1848
432	63	0.10	1538	310	1848
433	68	0.10	1618	230	1848
12	28	0.25	720		720
166	75	0.10		700	700
162	10	0.25	312	104	416
163	7	0.25	312	104	416
164	4	0.25	312	104	416
165	3	0.25	312	104	416
187	75	0.10		365	365
188	U	0.10		365	365
189	U	0.10		365	365
190	U	0.10		365	365
191	U	0.10		365	365
192	U	0.10		365	365
193	U	0.10		365	365
194	U	0.10		365	365
141	63	0.10		288	288
142	56	0.10		288	288
143	27	0.10		288	288
388	U	0.10		208	208
394	56	0.10		183	183
260	17	0.13	182		182
261	19	0.13	182		182
172	62	0.10		100	100

Table 50. Occupancy rates in the Sizewell direct radiation survey area for adults and children (h/y)

Observation number	Age (in years) (U if unknown)	Distance from site perimeter fence (km)	Indoor occupancy	Outdoor occupancy	Total occupancy
173	60	0.10		100	100
203	57	0.10		91	91
204	45	0.10		91	91
205	14	0.10		91	91
206	12	0.10		91	91
392	68	0.13		52	52
393	71	0.13		52	52
195	72	0.10		50	50
196	72	0.10		50	50
214	59	0.10		36	36
215	53	0.10		36	36
264	76	0.10		30	30
262	U	0.10		10	10
263	U	0.10		10	10
0.25 to 0.5 km zone					
525	56	0.50	7944	160	8104
524	49	0.50	7832	270	8102
441	67	0.30	6040	1200	7240
526	25	0.50	6136	330	6466
442	93	0.30	2979	45	3024
443	86	0.30	2979	45	3024
134	55	0.33	1265	165	1430
135	55	0.33	1265	165	1430
389	15	0.50		1250	1250
390	U	0.50		759	759
444	15	0.30	616	44	660
0.5 to 1 km zone					
29	66	0.65	5845	1911	7756
30	65	0.65	5845	1911	7756
25	60	0.65	6880	728	7608
24	60	0.65	6602	910	7512
133	62	0.65	7176	200	7376
398	U	0.90	6322	1000	7322
399	U	0.90	6322	1000	7322
400	U	0.90	6322	1000	7322
401	U	0.90	6322	1000	7322
27	45	0.65	5240	520	5760
28	30	0.65	5240	520	5760
407	U	0.90	1780	100	1880
26	45	0.65		1470	1470
402	U	0.90	220	50	270
403	U	0.90	220	50	270
404	U	0.90	220	50	270
405	U	0.90	220	50	270
406	U	0.90	220	50	270

Table 51. Analysis of occupancy rates in the Sizewell direct radiation survey area

0 to 0.25 km zone	
Number of hours per year	Number of observations
8000 to 8760	6
7000 to 8000	8
6000 to 7000	7
5000 to 6000	2
4000 to 5000	1
3000 to 4000	0
2000 to 3000	1
1000 to 2000	4
0 to 1000	36

0.25 to 0.5 km zone	
Number of hours per year	Number of observations
8000 to 8760	2
7000 to 8000	1
6000 to 7000	1
5000 to 6000	0
4000 to 5000	0
3000 to 4000	2
2000 to 3000	0
1000 to 2000	3
0 to 1000	2

0.5 to 1 km zone	
Number of hours per year	Number of observations
8000 to 8760	0
7000 to 8000	11
6000 to 7000	0
5000 to 6000	2
4000 to 5000	2
3000 to 4000	0
2000 to 3000	0
1000 to 2000	2
0 to 1000	5

Table 52. Gamma dose rate measurements for the Sizewell direct radiation survey (µGy/h)

Location	Distance (km)	NGR	Outdoor substrate	Gamma dose rate at 1 metre	Indoor substrate	Gamma dose rate at 1 metre
House 1	0.10	TM 470 629	Grass	0.063	Concrete	0.087
House 2	0.10	TM 470 629	Grass	0.067	Wood	0.085
House 3	0.13	TM 474 628	Grass	0.061		0.072
House 4	0.15	TM 474 628	Grass	0.065	Wood	0.083
House 5	0.20	TM 474 627	Grass	0.061	Concrete	0.084
House 6	0.25	TM 474 627	Grass	0.063	Wood	0.067
House 7	0.25	TM 474 627	Grass	0.060		
House 8	0.30	TM 475 626	Grass	0.061	Wood	0.090
House 9	0.33	TM 475 626	Grass	0.058	Brick	0.085
House 10	0.65	TM 473 623	Grass	0.058	Concrete	0.086
House 11	0.65	TM 475 623	Grass	0.050	Concrete	0.079
House 12	0.65	TM 462 634	Grass	0.059	Concrete	0.074
House 13	0.85	TM 461 633	Grass	0.060	Concrete	0.090
Background 1	5.20	TR 417 636	Arable field	0.078		
Background 2	4.00	TR 429 638	Grass field	0.083		
Background 3	4.60	TM 452 593	Grass	0.053		

Table 53. Gamma dose rate measurements along the east side of the Sizewell site perimeter fence (µGy/h)

Location	NGR	Substrate	Gamma dose rate at 1 metre
East of Sizewell A			
Position 1	TM 475 630	Grass and sand	0.075
Position 2	TM 475 631	Grass and sand	0.26
Position 3	TM 475 631	Grass and sand	0.53
Position 4	TM 475 632	Grass and sand	0.54
Position 5	TM 475 633	Grass and sand	0.18
East of Sizewell B			
Position 6	TM 475 634	Grass and sand	0.089
Position 7	TM 475 635	Grass and sand	0.069
Position 8	TM 475 636	Grass and sand	0.061

Table 54. Examples of food groups eaten and external exposure combinations by adults for consideration for dose assessment puposes

Combination number	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
1						*	*	*	*							*													*	*
2	*	*		*	*		*	*	*					*	*		*		*	*										
3					*	*	*	*	*		*								*											
4	*	*			*	*	*	*	*																				*	*
5	*	*												*	*	*	*						*		*			*		
6	*			*																			*		*		*			
7	*	*				*			*							*							*						*	*
8	*				*	*	*	*		*		*	*	*	*	*			*											
9	*	*			*	*	*	*	*							*		*					*							*
10																											*	*		
11	*	*			*	*	*	*	*						*	*							*				*			*
12					*	*	*	*	*							*				*			*							*
13	*	*								*	*	*	*	*	*	*	*			*										
14	*	*					*	*															*		*			*		
15	*				*		*	*	*					*		*	*													
16	*	*	*																		*				*	*		*		
17																							*					*		*
18											*												*							*
19	*														*										*			*	*	*
20	*														*							*							*	*
21					*	*	*	*	*					*																
22		*												*															*	*
23	*				*	*	*		*					*									*							
24	*	*			*	*	*	*						*	*	*	*													
25	*																					*						*		
26			*																		*		*		*	*		*		
27	*																						*	*						

Notes

The food groups and external exposure pathways marked with an asterisk are combined for the corresponding combination number.
For example, combination number 1 represents an individual from Annex 1 who had positive data in the following pathways; other vegetables, root vegetables, potato, domestic fruit, wild/free foods, indoor occupancy and outdoor occupancy.

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
1	M	63	0.1						11.8	10.2	**86.5**	3.6							**32.1**													6621	1729
2	F	62	0.1						11.8	10.2	**86.5**	3.6							**32.1**													6442	910
3	F	37	0.1						9.1	10.2		3.6							**32.1**													6952	1274
6	M	46	2.4							5.9	**75.0**	0.9					0.3	**8.9**															
7	F	45	2.4							5.9	**75.0**	0.9					0.3	**8.9**															
10	M	55	0.3																													7724	700
11	F	55	0.3																													7974	350
12	F	28	U																													720	
13	M	51	5.5								**117.9**	0.5					2.7																
14	F	50	5.5								**117.9**	0.5																					
15	M	46	3.0	2.6	0.7		**11.3**	2.7		9.1	**48.0**	1.4					**28.5**	**14.2**		**3.2**		**1.8**	**36.3**										
16	F	44	3.0	2.6	0.7		**11.3**	2.7		9.1	**48.0**	1.4					**28.5**	**14.2**				**1.8**	**36.3**										
18	F	18	3.0	2.6	0.7			2.7		9.1	**48.0**	1.4					**24.7**	**14.2**				**1.8**	**36.3**										
20	M	48	3.3					**34.9**	18.0	**36.8**	27.3	2.3		**17.5**								0.5												
21	F	48	3.3					**34.9**	18.0	**36.8**	27.3	2.3		**17.5**								0.5												
24	M	60	0.7																													6602	910
25	M	60	0.7																													6880	728
26	M	45	0.7																														1470
27	F	45	0.7																													5240	520
28	F	30	0.7																													5240	520
29	M	66	0.7	3.1	0.7			**20.8**	**106.9**	**55.6**	**82.8**	**25.4**																					5845	1911
30	F	65	0.7	3.1	0.7			**20.8**	**106.9**	**30.6**	**82.8**	**25.4**																					5845	1911
31	M	64	U	**23.6**																								**825**			825		
32	M	59	U		3.1																							220			220		
33	M	48	U	**35.4**	0.4																							**800**			800		
34	M	U	U																									**800**			800		
35	F	48	U		0.4																												
39	M	45	U	1.2																					120								
40	F	45	U	1.2																													
41	M	45	U	1.8																					120								

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
42	F	45	U	1.8																													
43	M	56	U																						**350**								
44	M	51	U	10.4																					**663**								
45	F	51	U	10.4																													
46	M	U	U	10.4																													
47	F	U	U	10.4																													
48	M	35	U																						**300**								
49	F	35	U																						**300**								
50	M	67	U																									420			840		
51	M	35	U	4.2																							**420**						
52	M	30	U																								**420**						
53	F	35	U	4.2																													
55	M	48	U	1.1																					105								
56	F	47	U	1.1																													
59	M	62	U	**23.6**																								154			308		
60	F	62	U	**23.6**																													
61	M	45	U	13.2																								600			800		
62	M	24	U																									600			800		
63	F	44	U	6.6																											800		
64	F	18	U	6.6																											800		
65	M	28	U																												140		
66-74	M	25	U																												140		
75	M	50	U	1.1																					192								
76	F	49	U	1.1																					192								
77	M	51	U	10.2	0.3																							**2100**			2100		
78	M	45	U																									**2100**			2100		
79	F	51	U	10.2	0.3																												
80	M	17	U	10.2	0.3																												
82	M	54	U	**16.8**			**29.7**																		**400**		88		**88**				
83	F	52	U	**16.8**			**29.7**																		**400**								

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
84	M	U	U				**29.7**																										
85	M	35	U	7.3																					120		120						
86	M	35	U	7.3																													
87	M	42	U	1.7																					88		88						
88	F	42	U	1.7																													
90	F	U	U	1.7																													
91	M	60	U	**18.6**																								10			88		
92	M	30	U	**18.6**																								10			88		
93	M	32	U	**18.6**																								10			88		
94	F	60	U	**18.6**																													
95	F	30	U	**18.6**																													
96	F	31	U	**18.6**																													
97	M	55	U	5.1																								198			198		
98	M	68	U	2.7	2.0																							137			137		
99	F	67	U	2.7	2.0																												
100-101	M	U	U	2.7	2.0																												
102-103	F	U	U	2.7	2.0																												
104	M	51	U	6.7																											78		
105	M	46	U	6.7																											78		
106	F	51	U	6.7																													
107	F	46	U	6.7																													
108	M	45	U	**23.6**	**7.8**																							350			4600		
109	F	45	U	**23.6**	**7.8**																										4200		
110	M	U	U																								100						
111-115	M	U	U																								61						
116-120	F	U	U																								61						
121	M	53	U	**21.0**	0.8																							**1568**			1638		
122	M	56										12.7																				6853	668
123	F	55										12.7																				6730	668
124	M	26										12.7																				4398	208

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
125	F	24										12.7																				4398	208
126	M	60	U	11.3	0.5																							117			117		
127	F	60	U	11.3	0.5																												
128	M	85	U	11.3	0.5																												
129	M	40	U	15.3																					**542**								
130	F	40	U	15.3																													
133	M	62	0.7																													7176	200
134	M	55	0.3	12.6	2.1				6.8			2.2							0.5							165							1265	165
135	F	55	0.3	12.6	2.1				6.8			2.2							0.5							65							1265	165
136	F	73	4.5	2.7				1.0	5.3	3.3	25.4		**207.4**		**20.2**	**2.3**	2.0	**10.4**	0.3			0.5												
137	M	72	4.5	2.7				1.0	5.3	3.3	25.4		**207.4**		**20.2**	**2.3**	2.0	**19.2**	0.3			0.5												
138	F	46	4.5					1.0	5.3	3.3	25.4		**207.4**		**20.2**	**2.3**	2.0	**10.4**	0.3			0.5												
139	M	45	4.5					1.0	5.3	3.3	25.4		**207.4**		**20.2**	**2.3**	2.0	**10.4**	0.3			0.5												
141	F	63	3.3	8.9				**19.8**	18.7	12.4	33.3	**63.9**							1.5		**1.2**					288								288
142	M	56	3.3	8.9	0.7			**19.8**	18.7	12.4	33.3	**63.9**							1.5		**1.2**					288								288
143	M	27	3.3	8.9				**19.8**	18.7	12.4	33.3	**63.9**							1.5		**1.2**					288								288
144	M	53	3.8									9.5						2.7															
145	F	51	3.8									9.5						2.7															
146	M	41	6.5	**47.4**																								**1300**			1482		
147	F	26	6.5	**15.8**																													
150	M	27	U	**23.2**																								**1300**			1482		
151	M	68	U																									**741**					
152	M	U	2.0	7.9	0.4												**10.5**	**19.8**	6.4	0.9						**1264**		**768**			1536		
153	F	U	2.0	7.9	0.4														1.4														
154	F	39	0.1																							52						7073	130
155	M	42	0.1																							52						6103	275
156	M	18	0.1																							52						6750	458
160	F	62	0.3	2.9	4.3																					**730**						6842	663
161	M	71	0.3	2.9	4.3																											7323	365
166	F	75	9.0																							**700**							700

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
167	F	U	70.0																							15							
168	M	U	70.0																							15							
172	M	62	40.0	8.5																						330							100
173	F	60	40.0	8.5																						220							100
174-185	U	U	U																												234		
186	F	U	7.0																											10	202		
187	F	75	9.0																							365				10			365
188-194	U	U	U																							365							365
195	M	72	3.5	11.8				**22.6**	**44.4**	**42.4**	30.0	3.3							0.2							100							50
196	F	72	3.5	11.8				**22.6**	**44.4**	**42.4**	30.0	3.3							0.2							100							50
197	M	61	3.5					10.2	9.9	3.2	**82.6**							**25.4**	1.5														
198	F	59	3.5					10.2	9.9	3.2	**82.6**							**25.4**	1.5														
199	M	30	3.5					10.2	9.9	3.2	**82.6**							**25.4**	1.5														
200	M	63	3.5					10.2	9.9	3.2	**82.6**							**25.4**	1.5														
201	M	58	3.5					**50.0**	**50.5**	**60.1**	**54.6**	8.9																					
202	F	52	3.5					**50.0**	**50.5**	**60.1**	**54.6**	8.9																					
203	M	57	3.5	2.7	0.4			**29.6**	10.9	26.7	38.2	19.7						6.7	0.9							78				13			91
204	F	45	3.5	2.7	0.4			**29.6**	10.9	26.7	38.2	19.7						6.7	0.9							78				13			91
207	M	40	6.0																									183			175		
208	M	36	U																									183			175		
209	M	U	3.5					**35.9**	**41.8**	**86.2**	**65.5**																						
210	F	U	3.5					**35.9**	**41.8**	**86.2**	**65.5**																						
211	M	40	3.5					**35.9**	**41.8**	**86.2**	**65.5**																						
212	M	32	3.5					**35.9**	**41.8**	**86.2**	**65.5**																						
213	F	49	3.5					**35.9**	**41.8**	**86.2**	**65.5**																						
214	M	59	3.5					11.8	11.6	10.7	14.2	6.8							1.0				0.7			72							36
215	F	53	3.5					11.8	11.6	10.7	14.2	6.8							1.0				0.7			72							36
216	F	30	3.5					11.8	11.6	10.7	14.2	6.8							1.0														
217	F	26	3.5					11.8	11.6	10.7	14.2	6.8							1.0														
218	F	74	3.5					11.8	11.6	10.7	14.2	6.8							1.0														

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
219	M	40	3.5					11.8	11.6	10.7	14.2	6.8							1.0				0.7										
220	M	25	3.5					11.8	11.6	10.7	14.2	6.8							1.0														
221	F	43	4.5	1.8	0.1								**210.4**	**47.3**	**19.0**	**2.8**	3.7	3.0	0.9				0.9										
222	M	42	4.5	1.8	0.1								**210.4**	**47.3**	**19.0**	**2.8**	3.9	3.0	0.9	1.4			0.9										
226	M	35	U																							**840**					189		
227	M	27	U																							**840**					189		
228-245	M	U	U																												100		
246	M	36	7.0	**29.9**	0.7					15.2	27.2															**520**		**1560**			1800		
247	F	29	7.0	**20.9**						11.4	20.4																						
250	M	U	U																							10							
251	M	67	9.0	5.4																						34							
252	F	63	9.0	5.4																													
253	M	62	4.3	1.1				10.2		3.6	4.5	20.4					**10.9**		9.5	**6.8**														
254	M	30	4.3	1.1							4.5						**10.5**			**6.8**													
255	M	U	9.0											**23.7**																			
256-257	F	U	9.0											**23.7**																			
258	M	U	9.0											**23.7**																			
259	F	32	3.5																													2200	50
260	F	17	U																													182	
261	M	19	U																													182	
262	M	U	32.0																							40							10
263	F	U	32.0																							10							10
264	M	76	3.5	11.3																						78							30
265-364	U	U	U																												176		
365	M	37	3.5																												1344		
366-367	M	32	7.0																												1344		
368	M	45	7.0																												432		
369-370	M	U	7.0																												100		
371	M	44	U	2.3	0.6																			150					**150**		450		
372	M	34	U	2.3	0.6																										450		

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
373	M	55	U	2.3	0.6																										450		
374	M	48	U	**24.3**	**21.7**	**6.6**																		150					**1333**	**150**		800		
375	F	U	U	**18.8**	3.0	**4.5**																												
376	M	U	U																												249		
377-381	M	U	U																												20		
382	M	65	20.0	10.1																						416							
383	F	62	20.0	10.1																													
384	M	U	3.0																												728		
385	M	U	7.5	5.4	3.1	**4.1**																						**1332**			724		
386	M	59	7.0																							52							
387	F	59	7.0																							52							
388	M	U	3.5																							243					40		208
389	M	U	U																							42							1250
390	M	U	U																							8							759
391	M	150	3.5	**35.4**	**7.6**																					183							
392	F	68	5.5											1.1												26							52
393	M	71	5.5											1.1												26							52
394	M	56	U																							156							183
395	M	52	0.2	2.0														**14.3**										**1460**			1825	4675	2000
396	F	56	0.2	2.0														5.7							50							5758	370
397	M	33	U																									**1460**			1825		
398	M	U	0.9																													6322	1000
399	F	U	0.9																													6322	1000
400-401	M	U	0.9																													6322	1000
402-405	F	U	U																													220	50
406	M	U	U																													220	50
407	M	U	U																													1780	100
408	M	U	U												**25.3**																		
409	F	U	U												**25.3**																		
410	M	U	U												**25.3**																		

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
411	F	U	U												**25.3**																		
412	F	45	2.8					9.3	9.7	9.8	**51.2**	0.5																					
413	M	52	2.8					9.9	9.7	9.8	**51.2**	0.5					2.7																
416	F	45	U					9.9	9.7	9.8	**51.2**	0.5																					
417	M	51	U					9.3	9.7	9.8	**51.2**	0.5																					
418	M	18	U					9.9	9.7	9.8	**51.2**	0.5																					
419	F	18	U					9.9	9.7	9.8	**51.2**	0.5																					
420	M	71	2.8					4.6	10.2	25.1	18.2	6.2																					
421	F	66	2.8					4.6	10.2	25.1	18.2	6.2																					
422	M	79	3.5					**29.1**	26.7	28.5	4.5	1.5																					
423	M	U	3.5					10.9	8.9	6.5	1.5	0.5																					
424	F	U	3.5					10.9	8.9	6.5	1.5	0.5																					
425	M	U	3.5					10.9	8.9	6.5	1.5	0.5																					
426	F	U	3.5					10.9	8.9	6.5	1.5	0.5																					
427	M	U	3.5					10.9	8.9	6.5	1.5	0.5																					
428	F	U	3.5					10.9	8.9	6.5	1.5	0.5																					
429	M	64	U	7.9				5.2	2.3	2.3																						1448	400
430	F	63	U	7.9				5.2	2.3	2.3																						1448	400
431	M	61	3.8					**39.9**	20.4	19.8	41.0	5.0																					
432	F	63	U																							80						1538	310
433	M	68	U																							80						1618	230
434	M	91	0.2																							100						7988	500
435	M	80	0.2																													7664	500
436	F	60	0.2																							245						5676	500
437	M	45	0.2																													4424	500
438	F	41	0.2																													5844	500
439	F	18	0.2																							80						4636	500
441	F	67	0.3		3.0												0.5															6040	1200
442	M	93	U																													2979	45
443	F	86	U																													2979	45

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
445	M	73	3.7	**17.9**				6.2	17.2	6.4		15.0					1.3									200								
446	F	70	3.7	2.4				6.2	17.2	6.4		15.0																						
447	F	45	U					2.5	11.5	4.4		15.4																						
448	M	22	U					2.5	11.5	4.4		15.4																						
449	M	38	U					2.5	11.5	4.4		15.4																						
450	F	36	U					2.5	11.5	4.4		15.4																						
455	M	46	3.5	0.2	0.4			13.2	16.3	24.8	10.9						0.5	**11.9**	1.4	1.0														
456	F	69	3.5	0.2	0.4			13.2	16.3	24.8	10.9						0.5		1.4	1.0														
457	F	73	2.8					11.7	12.0		24.3	7.9																						
458	M	83	2.8					11.7	12.0		24.3	7.9																						
459	M	48	2.8					11.7	12.0		24.3	7.9																						
460	F	36	2.6					4.5	23.3	**33.1**	**72.8**	1.2						4.4								100								
461	M	48	2.6					4.5	23.3	28.6	**72.8**	1.2						4.4								100								
464	M	73	2.6					4.5	23.3	**33.1**	**72.8**	1.2						4.4																
465	M	43	4.8					**22.8**	5.7	14.9	**79.6**															50								
466	F	46	4.8					**22.8**	5.7	14.9	**79.6**															50								
468	F	18	4.8					**22.8**	5.7	14.9	**79.6**															50								
469	M	54	2.8					**31.1**	**51.2**	**45.9**		9.9																						
470	M	80	U					**24.4**	32.7	**29.5**	**72.8**																							
471	F	80	U					**24.4**	32.7	**29.5**	**72.8**																							
472	M	46	3.2					**18.2**	**71.4**	28.4	**113.8**							**17.8**																
473	F	40	U					3.0	10.7	4.7	19.0																							
474	M	54	U					3.0	10.7	4.7	19.0																							
476	M	18	U					3.0	10.7	4.7	19.0																							
477	M	42	U					3.0	10.7	4.7	19.0																							
478	F	40	U					3.0	10.7	4.7	19.0																							
479	M	75	3.5	5.2	0.8			**19.7**	**36.3**	**32.5**	**81.9**																							
480	F	65	3.5	3.9	0.8			**19.7**	**36.3**	**32.5**	**81.9**																							
481	M	50	U	1.3																						100								
482	M	45	U	1.3																						100								

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
483	F	43	U	1.3																													
485-486	M	35	U	4.0																						30							
487	M	44	2.6					**30.6**	22.4	**35.3**	27.3	4.0																					
488	F	28	2.6					**17.9**	22.4	**35.3**	27.3	4.0																					
489	F	54	U					15.3	11.2	17.7	13.7	2.0																					
490	M	55	U					15.3	11.2	17.7	13.7	2.0																					
491	M	76	2.8					**36.9**	31.8	11.3	**68.3**																						
492	F	73	2.8					**36.9**	31.8	11.3	**68.3**																						
493	M	63	3.5					**22.6**	8.1	23.7	**45.5**	1.3																					
494	M	74	2.6					**31.3**	**71.8**	**44.4**	**127.4**																						
495	F	71	2.6					**31.3**	**71.8**	**44.4**	**127.4**																						
496	M	U	U																							70		80			130		
497	M	U	2.5				4.0										4.0																
498	F	U	2.5				4.0										4.0																
499	M	U	U																		**2.7**												
500	F	U	U																		**2.7**												
501	M	57	U	4.5	2.4																							380			1000		
502	M	42	U	6.0																					200						1100		
503	F	40	U	6.0																													
506	M	56	U	4.5	3.4																							350			900		
507	M	37	U	4.5	3.4																							350			900		
508	M	41	U																												1350		
509	M	U	U	8.8																						160					200		
510	M	55	U																					45					45				
511	M	54	U																					100							480		
512	M	57	U																					100							480		
513	M	59	U																					100							480		
514	M	32	U																						80						50		
515	F	34	U																						80						50		
516	M	69	3.5					**16.7**	34.5	**40.4**	**72.8**																						

Annex 1. Adults' consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex (U if unknown)	Age in years (U if unknown)	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Molluscs	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Honey	Wild fungi	Venison	Intertidal occupancy over mud	Intertidal occupancy over sand	Intertidal occupancy over sand and stone	Intertidal occupancy over salt marsh	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
517	F	63	3.5					**16.7**	34.5	**40.4**	**72.8**																							
518	M	50	3.5					15.4	24.4	**31.3**	**71.0**	**25.2**																						
519	F	46	3.5					15.4	24.4	**31.3**	**71.0**	**25.2**																						
520	F	65	2.8					**36.1**	**49.0**	19.4								**8.9**	2.0															
521	M	69	2.8					**36.1**	**49.0**	19.4								**8.9**	2.0															
522	M	40	U				**11.2**										**21.2**			**9.0**			**13.6**											
524	F	49	0.5																1.3							340						7832	270
525	M	56	0.5	1.5															1.3													7944	160
526	M	25	0.5	1.5															1.3													6136	330
527	M	56	U																							160							
528	F	53	U																							160							
529	M	51	16.5	5.0		0.1																									640		
530	F	51	16.5	5.0		0.1																											
531	M	21	16.5	5.0		0.1																		**720**						**720**		960		
532	M	U	U																												640		
533	M	53	18.0			1.7																		10		160		15	10		36		
534	M	82	18.0			1.7																											
535	M	46	U	8.9																						270							
536	M	23	U	8.9																						270	70						
537	F	U	U	8.9																													

Notes

Emboldened observations are rates included in the critical groups.

Annex 2. Children's consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex	Age in years	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Wild fungi	Venison	Intertidal occupancy over sand and stone	Occupancy in water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
15 year old age group																								
19	F	16	3.0	2.6	**0.7**		2.7		9.1	**48.0**	1.4					**24.7**	**14.2**		**1.8**	**36.3**				
22	M	16	3.3				**34.9**	**18.0**	**36.8**	**27.3**	2.3		**17.5**						0.5					
81	F	16	U	**10.2**	**0.3**																			
157	F	16	0.1																		52		7050	458
414	F	16	2.8				9.9	**9.7**	9.8	**51.2**	0.5													
415	M	16	2.8				9.9	**9.7**	9.8	**51.2**	0.5													
440	M	16	0.2																		80		4636	500
451	M	16	U				2.5	**11.5**	4.4		**10.4**													
467	M	16	4.8				**22.8**	5.7	**14.9**	**79.6**											50			
475	F	16	U				3.0	**10.7**	4.7	19.0														
4	F	15	0.1					**9.1**	10.2		3.6												6758	728
36	M	15	U		**0.4**																			
444	F	15	U																				616	44
9	M	14	2.4						5.9	**75.0**	0.9					0.3	**8.9**							
17	M	14	3.0	2.6	**0.7**		2.7		9.1	**48.0**	1.4					**28.5**	**14.2**		**1.8**	**36.3**				
23	F	14	3.3				**34.9**	**18.0**	**36.8**	**27.3**	2.3		**17.5**						0.5					
54	F	14	U	**4.2**																				
205	M	14	3.5	2.7	**0.4**		**29.6**	**10.9**	**26.7**	**38.2**	**19.7**						**6.7**	**0.9**			78	13		91
223	F	14	4.5	1.8	0.1							**210.4**	**47.3**	**19.0**	**2.8**		3.0	**0.9**						
452	F	14	U				2.5	**11.5**	4.4		**15.4**													
5	M	13	0.1					**9.1**	10.2		3.6												6758	728
462	F	13	2.6				2.3	**11.6**	**16.5**	**36.4**	0.6						2.2				100			
8	F	12	2.4						5.9	**75.0**	0.9					0.3	**8.9**							
140	M	12	4.5				1.0	5.3	3.3	25.4		**207.4**		**20.2**	**2.3**	2.0	**10.4**	0.3	0.5					
206	M	12	3.5	2.7	**0.4**		**29.6**	**10.9**	**26.7**	**38.2**	**19.7**						**6.7**	**0.9**			78	13		91
484	M	12	U	1.3																				

Annex 2. Children's consumption rates (kg/y or l/y) and occupancy rates (h/y) in the Sizewell area

Observation number	Sex	Age in years	Distance of residence from site (km) (U if unknown)	Fish	Crustaceans	Wildfowl	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Milk	Cattle meat	Pig meat	Sheep meat	Poultry	Eggs	Wild/free foods	Wild fungi	Venison	Intertidal occupancy over sand and stone	Occupancy in water	Indoor occupancy within 1 km of site perimeter fence	Outdoor occupancy within 1 km of site perimeter fence
10 year old age group																								
57	M	11	U	1.1																				
158	F	11	0.1																		52		5737	458
169	M	11	70.0																		9	6		
224	M	11	4.5	1.8	**0.1**							**210.4**	**23.7**	**9.5**	**1.4**		**3.0**	**0.9**						
225	M	11	4.5	1.8	**0.1**							**210.4**	**23.7**	**9.5**	**1.4**		**3.0**	**0.9**						
463	M	11	2.6				**2.3**	**11.6**	**16.5**	**36.4**	**0.6**						**2.2**							
504	F	11	U	3.0																				
38	F	10	U	**8.2**																				
58	M	10	U	1.1																				
162	F	10	0.3																		104		312	104
89	F	9	U	1.7																				
170	M	9	70.0																		9	6		
37	M	8	U	**8.2**																				
148	F	8	6.5	**23.7**																				
453	M	8	U				**1.2**	**5.7**	**2.2**		**7.7**													
159	F	7	0.1																		52		5881	458
163	F	7	U																		104		312	104
5 year old age group																								
149	M	6	6.5	**23.7**																				
523	F	6	U			**0.5**										**1.1**				**0.7**				
131	M	5	U	6.0																				
505	F	5	U	1.5																				
164	F	4	U																		104		312	104
248	M	4	7.0	**12.6**					**7.6**	**13.6**														
454	M	4	U				**1.2**	**5.7**	**2.2**		**7.7**													
165	M	3	U																		104		312	104
171	M	3	70.0																		9	6		
132	F	2	U	1.7																				
1 year old age group																								
249	M	1	7.0	**5.4**					**3.8**	**6.8**														

Notes

Emboldened observations are rates included in the critical groups.

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

	Details of activity	Exposure pathways involved	Estimated rate
1	Members of a wildfowling club were known to shoot regularly between Aldeburgh and Orford	Consumption of wildfowl and occupancy over salt marsh and mud	Insufficient data to estimate rates

Annex 4. Ratios for determining consumption rates for children

Food group	Ratio child/adult[1]	
	1 yr old	10 yr old
Fish[2]	0.050	0.200
Crustaceans[2]	0.050	0.250
Molluscs[2]	0.050	0.250
Green vegetables	0.222	0.444
Other vegetables	0.200	0.500
Root vegetables	0.375	0.500
Potatoes	0.292	0.708
Domestic fruit	0.467	0.667
Milk	1.333	1.000
Cattle meat	0.222	0.667
Pig meat	0.138	0.625
Sheep meat	0.120	0.400
Poultry	0.183	0.500
Eggs	0.600	0.800
Wild/free foods[3]	0.110	0.490
Game[4]	0.140	0.500
Honey	0.789	0.789
Wild fungi	0.150	0.450
Freshwater fish[2]	0.050	0.250
Direct radiation	1.000	1.000
External exposure	0.500	0.030
Plume	1.000	1.000

Notes

1. The age groups suggested for assessment in this table are those relating to dose coefficients representing 1 to 2 yr olds (labelled 1 yr old) and 7 to 12 yr olds (labelled 10 yr old). Excepting notes 2 and 3, ratios were derived from Byrom et al., (1995) for 1yr old (6 - 12 months) and 10 yr old children (10 - 11 yrs).
2. Ratios were derived from Smith and Jones, (2003) which presented data for infants and children.
3. Ratios were derived from FSA data for wild fruit and nuts for infants and 10 yr old children.
4. Game includes rabbits/hares and venison.

Annex 5. Summary of adults' profiled habits data in the Sizewell area

Profile Name	Number of individuals	Pathway Name	Crustacea	Direct[4]	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma ext - Sediment[1]	Honey	Meat - Cattle	Meat - Game[2]	Meat - Pig	Meat - Poultry	Meat - Sheep	Milk	Mollusca	Mushrooms	Occupancy In Water	Occupancy On Water	Plume (IN; 0-0.25km)[3]	Plume (MID; 0.25-0.5km)[3]	Plume (OUT; 0.5-1km)[3]	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
			kg	-	kg	kg	kg	kg	h	kg	kg	kg	kg	kg	kg	l	kg	kg	h	h	h	h	h	kg	kg	kg	kg
Crustacean consumers	4		11.2			26.7			83								1.6			2400							
Occupants for direct radiation	59		0.3	1	0.3	1.0	2.0	1.7	37											31	2353	692	1825	0.9	4.5	5.7	2.1
Egg consumers	19		0.2	0.05	15.5	1.2	0.3	1.0	67			7.2	4.3	5.3	0.5	43.7		0.4		177	351			8.2	13.0	44.8	8.3
Sea fish consumers	24		2.1			23.0	0.6		81			2.5		0.1			0.5			758				0.3	0.7	2.0	1.4
Domestic fruit consumers	7		0.3	0.29		4.7	41.8	0.6	123	0.5													2216	18.8	45.6	58.2	26.6
Wild fruit and nut consumers	3			1			3.6	32.1													7976				10.9	57.7	10.2
Occupants for exposure - Sediment	10		0.5	0.1	2.0	8.8		0.6	731			3.1		1.1						467	751					2.7	1.5
Honey consumers	5		0.1			5.3	38.3	0.9	173	1.8														11.9	11.2	20.0	7.4
Cattle meat consumers	8				0.7	0.4	0.6	0.2			28	0.4	4.7	0.9	0.7	52.6		0.1						8.7	4.5	6.8	9.2
Game meat consumers	7		0.3		6.1	5.9	0.6		127			36.8		14.7				0.8						1.2		20.6	3.9
Pig meat consumers	10				5.6	0.9		0.3			9.5	0.3	22	1.6	1.5	125.0		0.2						0.4	2.1	10.2	1.3
Poultry meat consumers	7		0.4		8.9	2.6	3.5	2.3	181			26.1		19.2				0.8		219				2.6		21.9	4.4
Sheep meat consumers	6				9.4	1.5		0.5			15.8	0.5	19.8	2.6	2.4	208.4		0.3						0.6	3.5	16.9	2.2
Milk consumers	6				9.4	1.5		0.5			15.8	0.5	19.8	2.6	2.4	208.4		0.3						0.6	3.5	16.9	2.2
Mollusc consumers	3		9.3			16.2			50								5.1			508							
Mushroom consumers	3		0.7		14.2	2.6	1.4					44.9		27.2				1.8						2.7		48.0	9.1
Occupants in water	4		0.2		3.3	1.4	9.9	0.5	76										12	51				14.8	5.4	19.1	13.3
Occupants on water	9		2.0	0.11	3.8	13.1		0.7	57			0.1		1.2						2403	742					3.0	1.7
Occupants for plume pathways (inner area)	18		0.5	1	1.1	0.5	0.6	5.3												101	7150				1.8	9.6	1.7
Occupants for plume pathways (middle area)	6		0.5	1		0.5		0.6	34					0.1								5993					
Occupants for plume pathways (outer area)	15		0.1	1		0.4	6.8		11														6863	2.8	14.3	11.0	5.7
Green vegetable consumers	40		0.1	0.05	1.2	1.8	8.4	0.3	7	0.1	0.9												388	28.6	37.0	55.9	37.6
Other domestic vegetable consumers	19		0.2	0.11	1.9	2.1	4.5	0.2	11														816	31.1	55.2	62.9	52.0
Potato consumers	48		0.1	0.08	4.0	0.5	2.9	1.5	130			2.8		1.8				0.1			327		323	17.5	26.5	73.9	27.9
Root vegetable consumers	28		0.1	0.07	0.3	1.4	5.4		198		1.3												554	26.4	42.5	63.2	47.7

Notes

1. Gamma ext - Sediment includes occupancy over mud, salt marsh, sand, and sand and stone
2. Game meat includes rabbits/hares, venison and wildfowl
3. Plume times are the sums of individuals' indoor and outdoor times
4. Expressed as proportion of group who are present within 1km of site

The Centre for Environment, Fisheries & Aquaculture Science
Lowestoft Laboratory, Pakefield Road,
Lowestoft, Suffolk NR33 0HT UK
Tel: +44 (0) 1502 562244
Fax: +44 (0) 1502 513865
www.cefas.co.uk