Centre for Environment Fisheries & Aquaculture Science

Cefas

Radiological Habits Survey: Hartlepool, 2024

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1. Key Points

- The last habits survey completed around the Hartlepool nuclear site was in 2014. At the time of publishing, the 2014 Hartlepool report could be accessed via www.cefas.co.uk/expertise/surveys/habits.
- In 2021, a significant crustacean mortality event occurred, resulting in dead and dying crabs and lobsters being washed ashore in unusually high numbers along parts of the north-east coast of England (CMEP, 2023), including the entire Hartlepool aquatic survey area. It was reported that this mortality event initially caused a noticable decrease in the catch rate of crab and lobster in 2021 and 2022, although this increased slightly in 2024.
- There was restricted access to the shore at Redcar for commercial and hobby fishing vessels that were usually launched in this area. Three of the 5 slipways located in Redcar were closed due to storm damage to the slipway and shore. The largest of these 3 slipways had been closed since 2023 and access was restricted with concrete barriers.
- In the aquatic survey area, the consumption of fish and crustaceans decreased slightly in 2024. However, the consumption of molluscs increased.
- No consumption of wildfowl was identified in 2024 because wildfowling was no longer permitted in the Teesmouth National Nature Reserve (NNR) to allow the local bird populations to increase.
- The most notable changes in occupancy rates over intertidal substrates were a decrease in occupancy over mud and sand, over rock, and over sand and coal. There was an increase in occupancy over mud and stones. Occupancy on a boat over mud was identified in 2024.
- The land in the terrestrial area was predominately residential and industrial with only 6 farms in the terrestrial survey area.
- There was a significant increase in consumption rates of green vegetables, other vegetables and domestic fruit. Conversely, there was a decrease in the consumption rates of poultry, eggs and rabbits/hares.
- No residential properties were located in the direct radiation survey area.
- In 2024, there were significant increases in the maximum direct radiation indoor occupancy rate at commercial properties in the 0 – 0.25 km zone, and in the maximum direct radiation outdoor occupancy rates in the >0.25 – 0.5 km and the >0.5 – 1.0 km zones.

2. Summary

This report presents the results of a survey conducted in 2024 to determine the habits and consumption patterns of people living, working, and pursuing recreational activities in the vicinity of the Hartlepool nuclear licensed site on the north-east coast of England. The site discharges liquid radioactive waste via a pipeline into Tees Bay in the North Sea, gaseous radioactive wastes via stacks to the atmosphere, and contains sources of direct radiation. Areas likely to be most affected by the discharges and sources of radiation were defined as the aquatic survey area for liquid discharges, the terrestrial survey area for the deposition from gaseous discharges, and the direct radiation survey area for ionising radiation emanating directly from the site. The occupancy data collected from the direct radiation survey area are also applicable to inhalation and external exposure arising from gaseous discharges from the site.

The following potential exposure pathways were investigated:

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

Information was collected from members of the public by means of interviews and the data obtained for 517 individuals are presented and discussed. High rates of consumption, occupancy over intertidal substrates and handling of sediment and fishing gear are identified using established methods comprising (a) a ‘cut-off’ to define the high-rate group and (b) 97.5th percentiles. The rates identified can be used in dose assessments. Additionally, profiles of integrated habits data are presented specifically for use in ‘total dose’ assessments.

The aquatic survey area

The aquatic survey area (Figure 5) covered the intertidal areas along the north-east coast of England from Parton Rocks (Hartlepool) in the north, to Saltburn Scar (Saltburn-by-the-Sea) in the south, and the adjacent sea area up to 3 km offshore. The River Tees, from its mouth to the Tees Barrage (approximately 16 km), was also included.

The main commercial fishery in the area was potting for crab and lobster. Gill and trammel netting also took place. In 2021, a significant crustacean mortality event occurred, resulting in dead and dying crabs and lobsters being washed ashore in unusually high numbers along parts of the north-east coast of England (CMEP, 2023), including the entire Hartlepool aquatic survey area. A range of potential causes were investigated, including licensed dredging activity, chemical contamination, activities related to offshore windfarms, presence of algal blooms, and aquatic animal disease. However, no single, consistent causative factor was identified. During the habits survey it was reported by fishermen that this mortality event initially caused a noticable decrease in the catch rate of crab and lobster in 2021 and 2022, though this had slightly increased in 2024. In addition, in 2024 many larger fishing boats could no longer be launched from the shore at Redcar due to a damaged slipway and removal of sediment from the shore following several storms. It was reported that because of the restricted access, many large boats had relocated from Redcar to Hartlepool Marina and elsewhere in the aquatic survey area.

Winkles, cockles and mussels were collected from the shore for consumption. Gut weed and Porphyra were collected from Redcar Rocks for consumption. Seaweed was not identified as being collected from the shore for use as fertiliser or animal feed.

Wildfowling was no longer permitted in the Teesmouth NNR in the aquatic survey area to encourage local bird populations to increase. Therefore, no wildfowl consumption was identified.

Activities taking place on intertidal areas included angling, bait digging, collecting peeler crabs for bait, dog walking, walking, rock pooling, rescue duties, working on the shore, nature warden duties, lifeguard duties, teaching watersports, preparing to swim, playing, beachcombing, preparing to sub-aqua dive and socialising on the beach.

Activities taking place in and on water included teaching watersports, surfing, sub-aqua diving, swimming, lifeguard duties, rescue duties, bodyboarding, boat maintenance, boat angling, sailing, paddling, working on a fishing boat in a harbour, teaching powerboating, wading to collect peeler crabs, rowing and pleasure cruising.

The terrestrial survey area

The terrestrial survey area (Figure 7) covered the land within 5 km from the centre of the Hartlepool site. The land in the terrestrial survey area is a mix of residential, industrial, agricultural land and freshwater marshland. Interviews were conducted at 6 working farms, where beef and suckler cows were produced commercially. Beef was sold directly to the public in ‘beef boxes’. Grass (for haylage and silage), beans, barley and wheat were grown for animal feed. Oil seed rape was produced for human consumption. Wheat was also produced for biofuel. No smallholdings were identified in the survey area.

Seven allotment sites were identified within the terrestrial survey area where a wide variety of fruit and vegetables were grown. Beekeeping was identified in the survey area, but the consumption of honey was not recorded. Game shooting was identified taking place on farmland with pheasant and rabbit being consumed. Wild foods including blackberries and mushrooms were collected and consumed.

Foods from the terrestrial survey area were consumed from the following 11 food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; cattle meat; poultry; eggs; wild/free foods; rabbits/hares; wild fungi. The mean consumption rates for the adult high-rate groups were above the national adult mean consumption rates that are used for comparison in habits surveys for the following 5 food groups: green vegetables; other vegetables; root vegetables; domestic fruit; eggs.

The human consumption of groundwater was not identified. Livestock were supplied with mains water for drinking, but many also had access to pond, stream or ditch water.

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

The direct radiation survey area

The direct radiation survey area (Figure 8) covered the land and sea within 1 km of the Hartlepool nuclear licensed site boundary. The occupancy data collected from the direct radiation survey area are also applicable to inhalation and external exposure pathways arising from gaseous releases from the site.

The occupancy rates were analysed in zones according to the distance from the nuclear licensed site boundary. The zones were 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.0 km. There were no residential properties located within the direct radiation survey area. In the 0 – 0.25 km zone, the highest indoor and total occupancy rates was for a nature warden, and the highest outdoor occupancy rate were for employees (from a business other than EDF). In the >0.25 – 0.5 km zone, the highest indoor and total occupancy rates were for

individuals working and the highest outdoor occupancy rate was for a different employee at the same business (from a business other than EDF). In the >0.5 – 1.0 km zone, the highest indoor and total occupancy rates were for employees and the highest outdoor occupancy rate was for an individual working on the shore (from a business other than EDF).

Gamma dose rates were measured indoors and outdoors at most of the businesses where interviews were conducted in the direct radiation survey area. Background readings were taken over grass at distances beyond 5 km from the Hartlepool nuclear site centre. Of the 3 measurements taken indoors at locations within the direct radiation survey area, one reading was higher than the maximum background reading. The measurements taken inside buildings are expected to be higher than those taken outdoors because building materials and ground type can increase the gamma dose rates. Of the 4 measurements taken outdoors at locations within the direct radiation survey area, one reading was higher than the maximum background reading.

Comparisons with the previous survey

Comparisons for adults were made with the results from the previous Hartlepool habits survey in 2014. Reasons for changes in the consumption and occupancy rates were identified for certain pathways and these are presented in Section 10 of the report.

For the consumption of foods from the aquatic survey area (Figure 1), there was a decrease in the consumption of sea fish and crustaceans, and an increase in the consumption of molluscs. The consumption of wildfowl was no longer identified in 2024. The consumption of marine plants/algae was identified in 2024 but not in 2014.

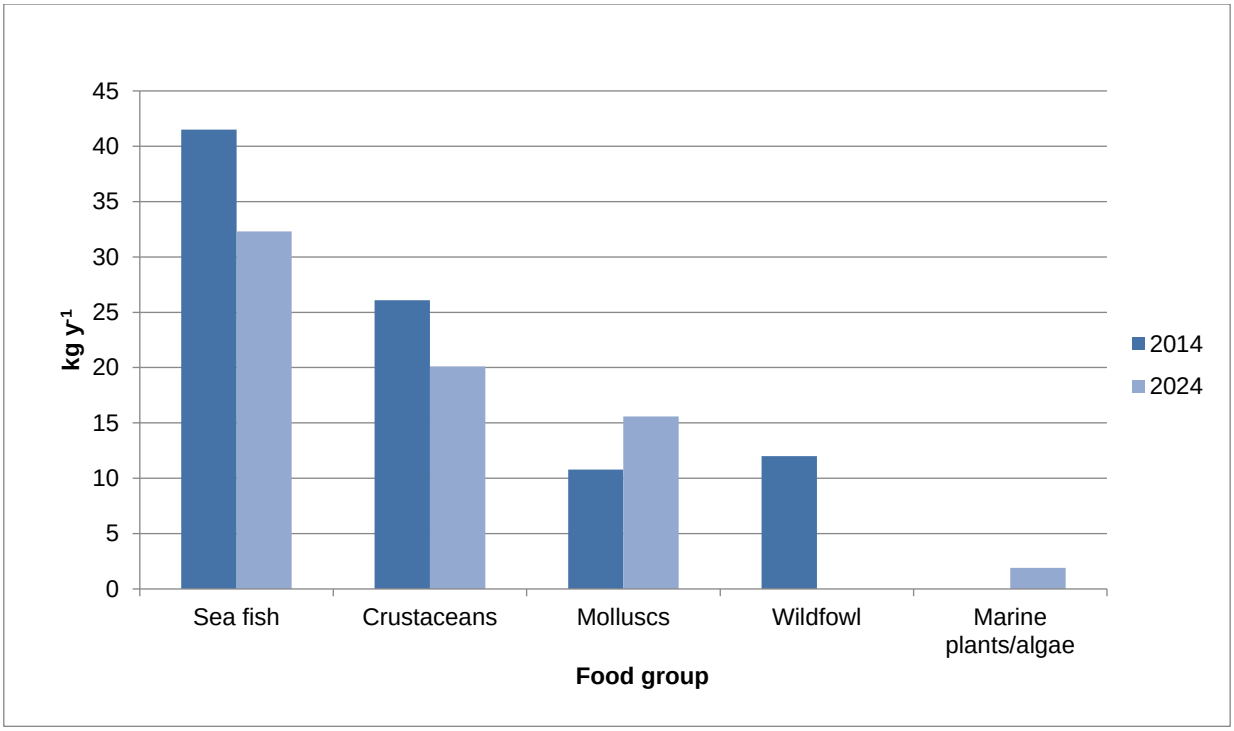

Figure 1. Comparison between 2014 and 2024 mean rates of consumption for the high-rate groups for aquatic foods

There were some significant changes in occupancy over intertidal substrates in 2024 (Figure 2). The most noteworthy changes in 2024 were decreases in occupancy over mud and sand, over rock, over sand and coal, and for handling sediment, and an increase in occupancy over mud and stones. Occupancy on a boat on mud was identified in 2024 but not in 2014.

The most notable changes in the consumption of terrestrial foods in 2024 were the increase in consumption rates of green vegetables, other vegetables and domestic fruit, and the decrease in the consumption rates of poultry, eggs and rabbits/hares, compared with 2014 (Figure 3). The consumption of sheep meat, honey, venison and freshwater fish was identified in 2014, but not in 2024. The consumption of cattle meat was identified in 2024, but not in 2014.

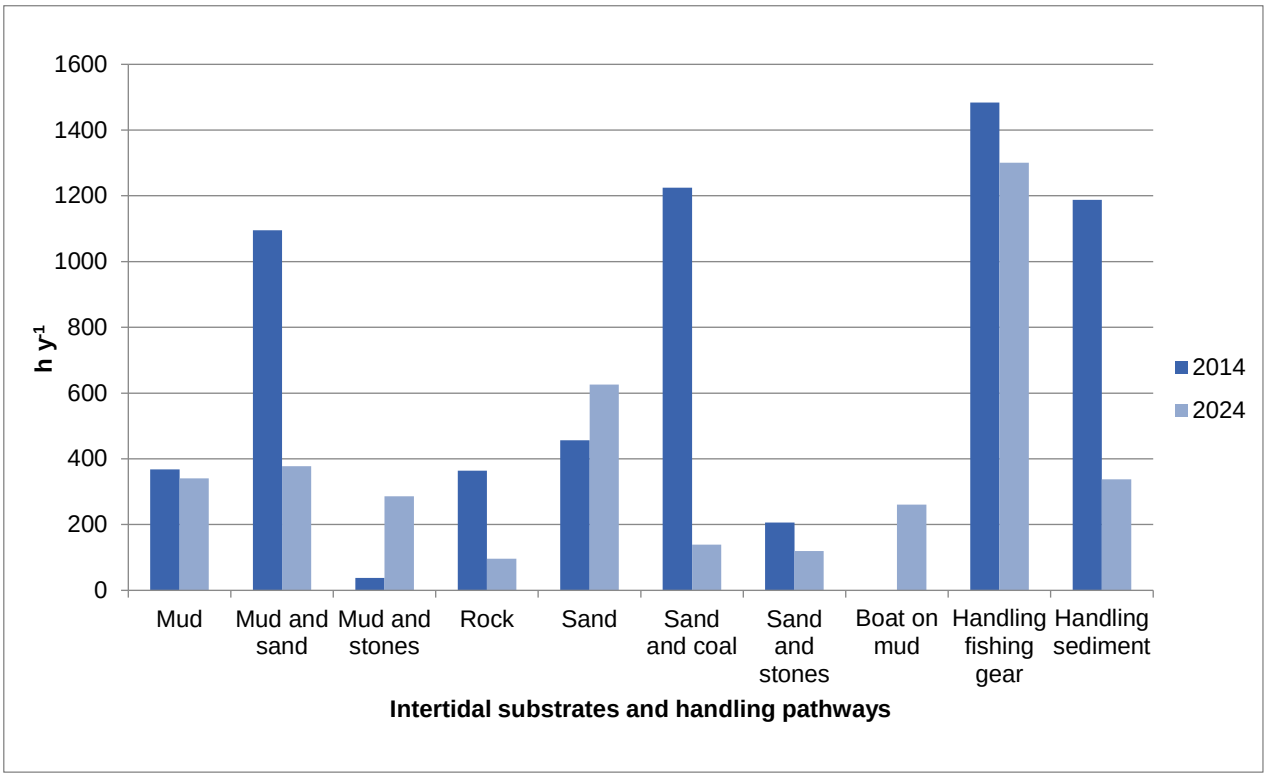

Figure 2. Comparison between 2014 and 2024 mean rates for the high-rate groups for occupancy over intertidal substrates, and handling pathways

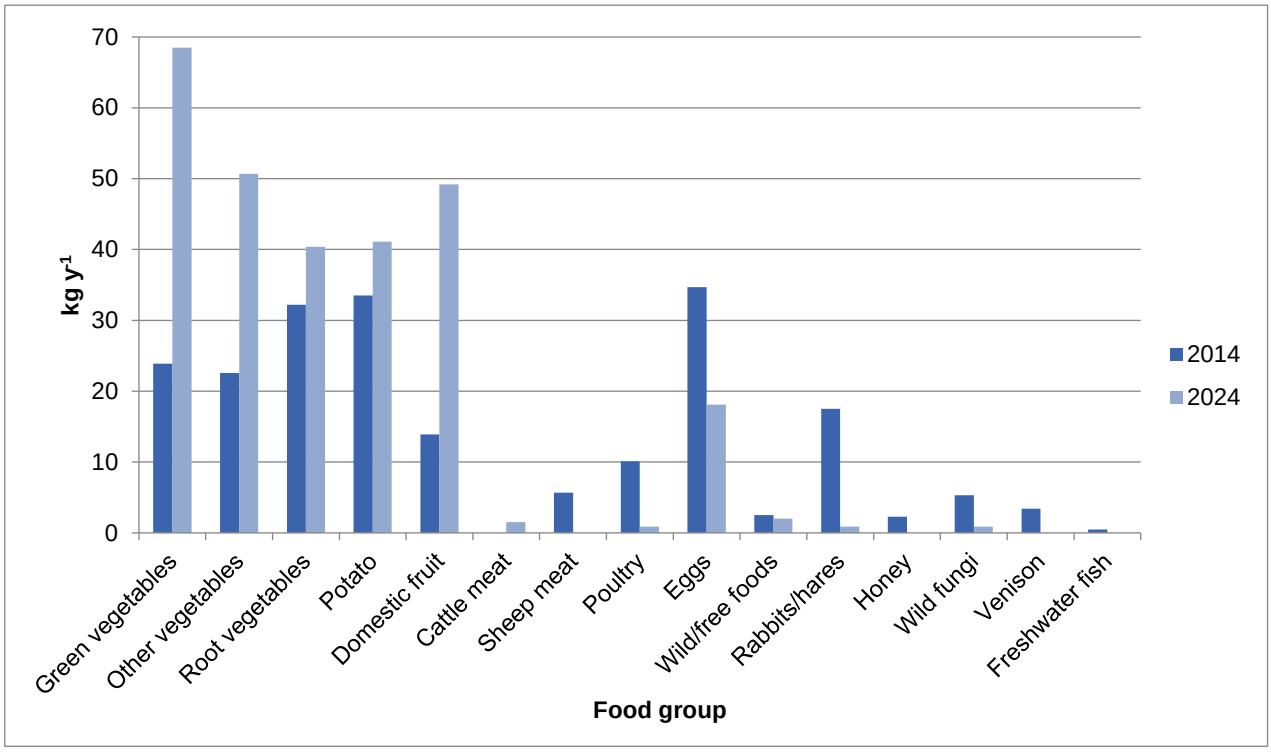

Figure 3. Comparison between 2014 and 2024 mean consumption rates for the high-rate groups for terrestrial foods

The significant changes in the maximum occupancy rates in the direct radiation area were: an increase in the indoor rate and a decrease in the outdoor rate in the 0 – 0.25 km zone; an increase in the outdoor rate in the >0.25 – 0.5 km zone; and an increase in the outdoor rate in the >0.5 – 1.0 km zone (Figure 4).

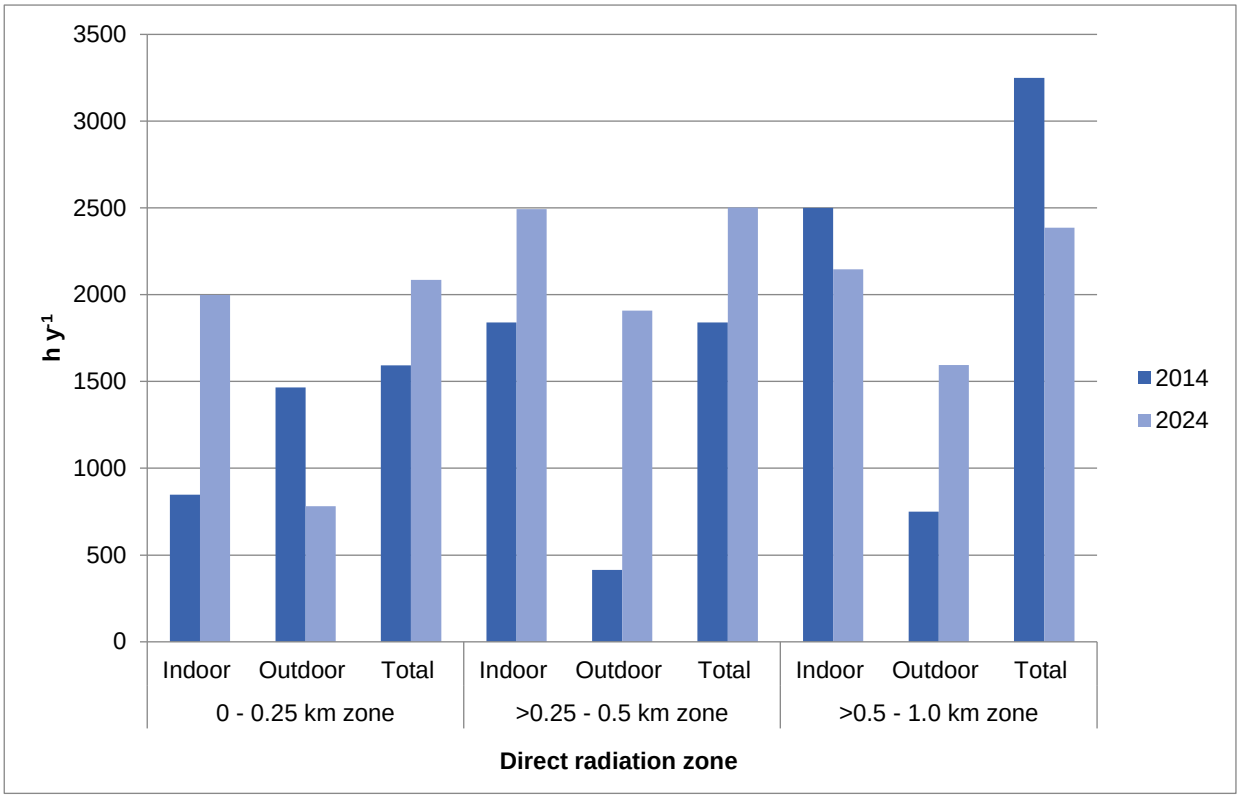

Figure 4. Comparison between 2014 and 2024 maximum direct radiation area occupancy rates

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

The foods and intertidal locations identified in the 2024 Hartlepool habits survey could be used to assist in the selection of samples and measurements for future monitoring programmes. The foods that were either consumed in the largest quantities in their food groups, or were the only food in their food group, are presented in Section 12.2. These foods could be considered for sample selection for the Food Standards Agency monitoring programme. The current environmental monitoring programme conducted for the Environment Agency adequately covers the Hartlepool area and no changes are suggested.

3. Introduction

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

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

3.1. Regulatory framework

In England, the EA regulates the discharges of radioactive waste under Environmental Permitting (England and Wales) Regulations 2016 (UK Parliament, 2016). These regulations transpose parts of the revised EU Basic Safety Standards (BSS) Directive 2013/59/Euratom (EC, 2014) which embody the recommendations of the ICRP, particularly ICRP 103 (ICRP, 2007). The revised BSS Directive was adopted in 2013 to consolidate and update existing Euratom provisions for protection against the harmful effects of ionising radiation, by replacing 5 existing Directives and a Commission Recommendation into one Directive covering occupational, medical and public exposure (EC, 2014). Installation and operation of certain prescribed activities can only occur on sites if they are licensed under the Nuclear Installations Act 1965 (as amended) (NIA 65) (UK Parliament, 1965). The ONR has implemented this legislation and is also responsible for regulating, under the Ionising Radiations Regulations 2017 (IRR 17) (UK Parliament, 2017), the exposure of the public to direct radiation from the operations occurring on these sites.

Appropriate discharge limits are set by the EA, after wide-ranging consultations that include the FSA. The FSA is responsible for ensuring that any radioactivity present in food does not compromise food safety and that permitted discharges of radioactivity do not

result in unacceptable doses to consumers via the food chain. The FSA also ensures that public radiation exposure via the food chain is within acceptable limits (1 mSv).

3.2. Radiological protection framework

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

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

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

The UK environment agencies are also required to ensure that the dose estimates are as realistic as possible for the population as a whole and for reference groups of the population. They are required to take all necessary steps to identify the reference groups of the population, considering the effective pathways of transmission of radioactive substances. Guidance on the principles underlying prospective radiological assessments (for assessments of potential future doses) were provided by the National Dose Assessment Working Group (NDAWG), which consisted of representatives of UK Government Bodies and other organisations with responsibilities for dose assessments (EA, SEPA, DoENI, NRPB and FSA, 2002). NDAWG also published principles underlying retrospective radiological assessment (for assessments of doses already received from past discharges) (Allott, 2005) and possible methods of carrying out these assessments using the data from combined habits surveys (Camplin and others, 2005). NDAWG agreed that the optimal method for performing retrospective dose assessments would be to use habits profiles (profiling method) as described in Camplin and others (2005). This approach was adopted in Radioactivity in Food and the Environment (RIFE) publications, (for example: EA, FSA, FSS, NRW, NIEA and SEPA, 2024). NDAWG published reports on

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

4. The survey

4.1. Site activity

The Hartlepool nuclear site is located near the mouth of the Tees Estuary, approximately 5 km south of the town of Hartlepool. The Hartlepool nuclear power station has 2 advanced gas-cooled reactors, and it is owned and operated by EDF Energy Nuclear Generation Ltd. It was originally expected to shut down in 2009 but has had several extensions to its operational life and it is currently expected to continue generating electricity until March 2027, depending on results from routine inspections of the reactor.

Under the radioactive substances provisions of Environmental Permitting (England and Wales) Regulations 2016 (UK Parliament, 2016), EDF Energy Nuclear Generation Ltd is permitted to undertake radioactive substances activities at the nuclear site. This includes permission to discharge gaseous radioactive wastes via approved outlets to the atmosphere and liquid radioactive wastes via an outfall into Tees Bay in the North Sea. The site is licensed for the purposes of operating certain activities prescribed under the Nuclear Installations Act, 1965 (as amended). The site contains sources of direct radiation. Details of the amounts of gaseous and liquid radioactive waste discharged are published in the RIFE reports (for example: EA, FSA, FSS, NRW, NIEA and SEPA, 2024) Radioactivity in food and the environment (RIFE) report - GOV.UK.

4.2. Survey objectives

The Centre for Environment, Fisheries & Aquaculture Science (Cefas) completed the Hartlepool habits survey in 2024 under contract to the EA, the FSA, and the ONR. The aim of the survey was to obtain comprehensive information on the habits of the public that might lead to their exposure to radiation via gaseous discharges, liquid discharges or direct radiation from the Hartlepool nuclear licensed site.

Specifically, investigations were conducted into the following:

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

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

In addition, the following site specific requests were provided by the EA:

- A Field Centre to be considered for their use of intertidal areas around the site, including taking groups of children from nursery age to university students around the local area and onto the mudflats (this is also within the direct radiation survey area).
- Bait digging activities to the south and east of the nuclear site.
- Boating and leisure activities at Paddy’s Hole.
- Local swimming clubs.
- Activities at Seal Sands.
- Include the site's environmental safety team & site sampling team in discussions about local activities.

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

4.3. Survey areas

The geographic extent of potential effects of radioactivity will differ in relation to its pathway, whether liquid discharges, deposition from gaseous releases, or direct radiation. Therefore, different survey areas were defined to cover each of these 3 main possible sources of exposure. These were an aquatic survey area relating to liquid discharges, a terrestrial survey area relating to deposition from gaseous discharges, and a direct radiation survey area relating to ionising radiation emanating directly from the Hartlepool nuclear licensed site.

The aquatic survey area (Figure 5) covered the intertidal areas along the north-east coast of England from Parton Rocks (Hartlepool) in the north, to Saltburn Scar (Saltburn-by-the-

Sea) in the south, and the adjacent sea area up to 3 km offshore. The River Tees, from its mouth to the Tees Barrage (approximately 16 km), was also included.

The terrestrial survey area (Figure 7) covered all land and freshwater bodies within 5 km of the site centre (National Grid Reference: NZ 529 269), to encompass the main areas of potential deposition from gaseous discharges.

The direct radiation survey area is shown in Figure 8. The area was defined as all land and sea within 1 km of the nuclear licensed site boundary, split into 3 zones, which were 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.0 km. The occupancy data collected from the direct radiation survey area is also applicable to inhalation and external exposure pathways arising from gaseous releases from the site.

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

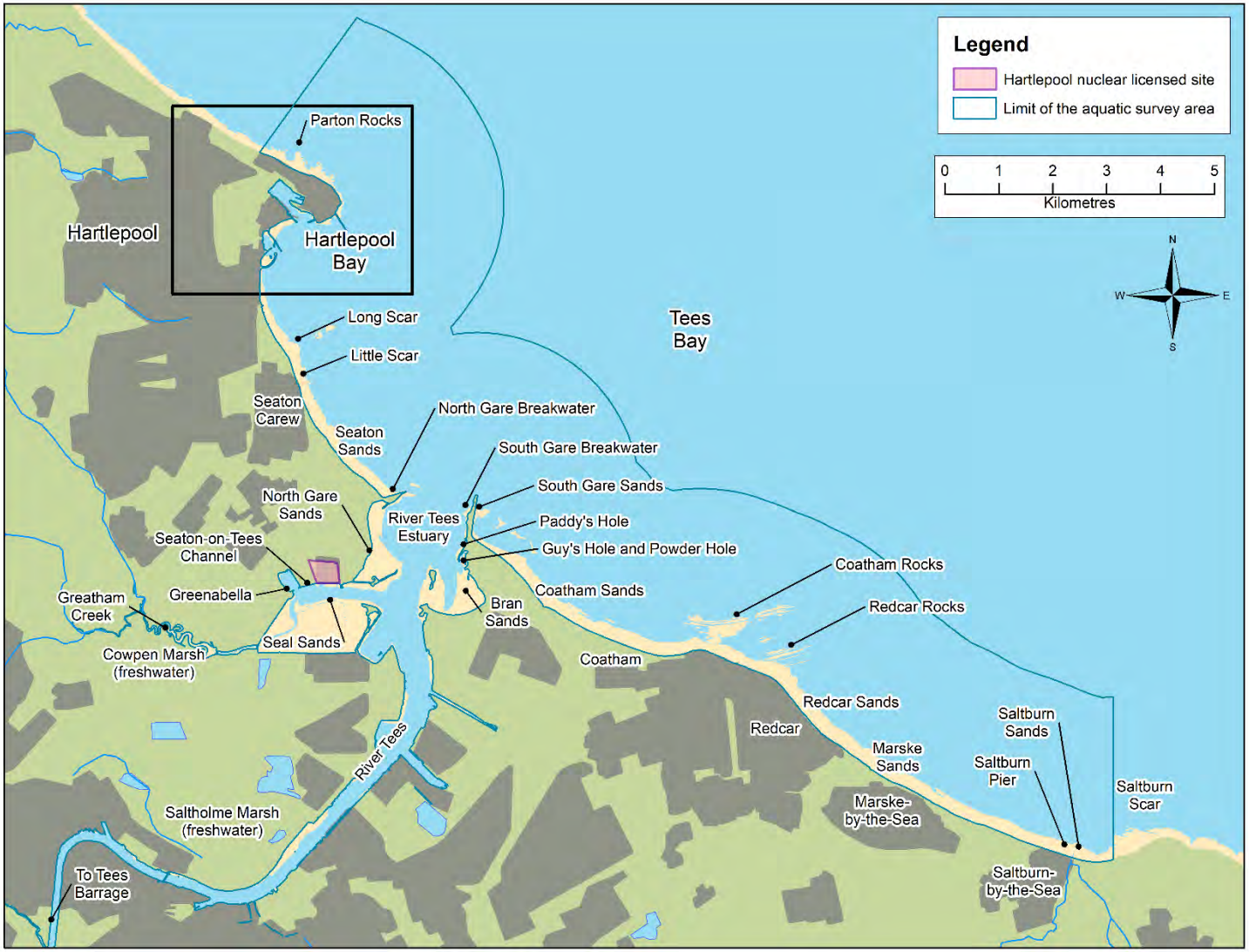

Figure 5. The Hartlepool aquatic survey area

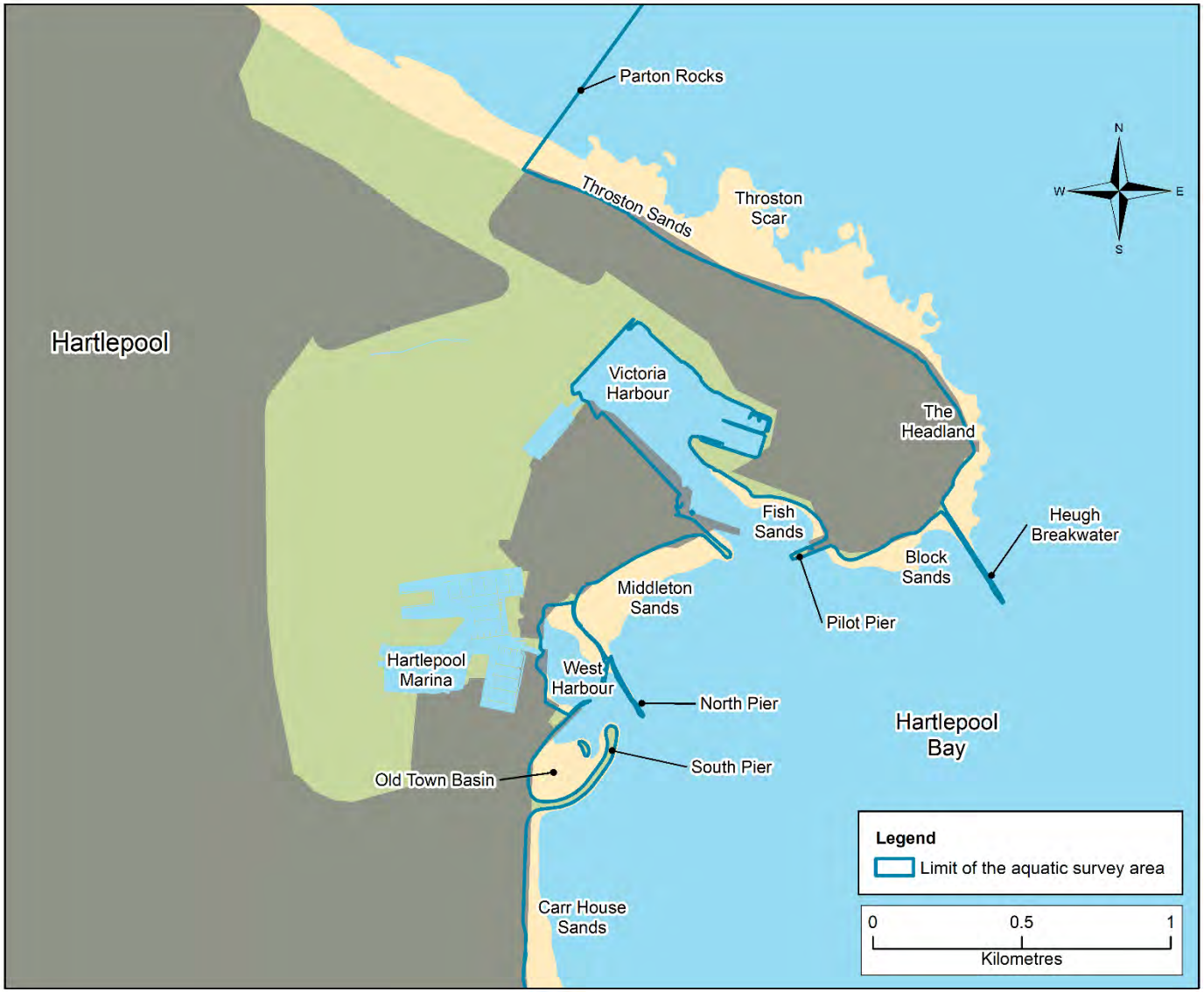

Figure 6. Hartlepool aquatic area: section from Parton Rocks to Carr House Sands

Figure 7. The Hartlepool terrestrial survey area

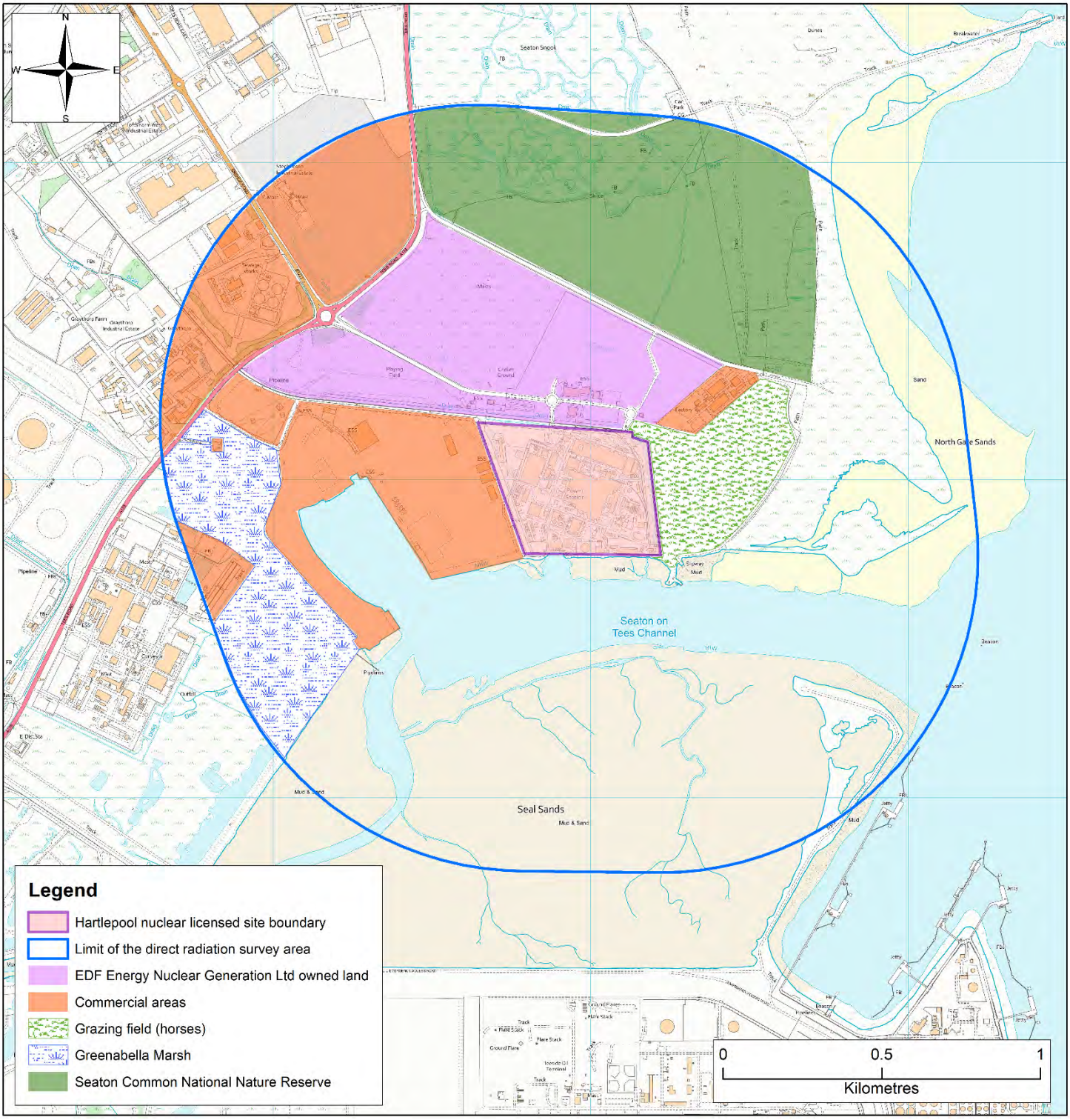

Figure 8. The Hartlepool direct radiation survey area

4.4. Conduct of the survey

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

The fieldwork was carried out from the 4th to the 12th July 2024 using survey techniques consistent with the previous Hartlepool habits survey report (Garrod and others, 2014). During the fieldwork, a meeting was held between members of the survey team and representatives from EDF Energy Nuclear Generation Ltd, including the environmental safety team and sampling team. The discussion provided details about current site activities, local information, potential exposure pathways and activities in the area, and the potential for transfer of contamination off-site by wildlife.

The following information was obtained during the meeting:

- Routine site operations were being undertaken at the time of the survey.
- No changes had been made to the nuclear licensed site boundary or locations of sources of direct radiation since 2014.
- The site is expected to continue generating electricity until 2026 +/- 1 year.

  Note: in December 2024 (after the survey meeting took place), EDF Energy Nuclear Generation Ltd announced an extension to the lifetime of the reactors at Hartlepool to produce power until March 2027 (https://www.edfenergy.com/media-centre/edf-confirms-boost-uks-clean-power-targets-nuclear-life-extensions).
- It is highly unlikely that wildlife could enter controlled areas and this was not considered by EDF Energy Nuclear Generation Ltd to be a risk.
- Potential exposure pathways and activities in the survey areas including angling locations and activities in the direct radiation area. No activities had been observed at Seal Sands.
- The site has an Environmental Radiological Monitoring Programme in place that routinely samples and monitors specific areas offsite to ensure no contamination is occurring.

Interviews were conducted with individuals who were identified in the pre-survey preparation and others that were identified during the fieldwork. These included, for example, people spending time on intertidal substrates, farmers, allotment holders, beekeepers and people spending time within the direct radiation survey area. Interviews

were used to establish individuals' consumption, occupancy and handling rates relevant to the aquatic, terrestrial and direct radiation survey areas. Any other information of possible use to the survey was also obtained. Gamma dose rate measurements were taken over intertidal substrates in the aquatic survey area, and indoors and outdoors at most businesses in the direct radiation survey area where interviews were conducted. Background gamma dose rates were taken at a distance beyond 5 km from the site centre. All gamma dose rate measurements were taken using multiple Thermo RadEye GX Survey Meters, each connected to a compensated Geiger-Müller tube.

For practical and resource reasons, the survey did not involve the whole population in the vicinity of the Hartlepool nuclear licensed site, but targeted subsets or groups, chosen in order to identify those individuals potentially most exposed to radiation pathways. However, it is possible that even within a subset or group there may have been people not interviewed during the survey. Therefore, to aid interpretation, the number of people for whom data were obtained in each group has been calculated as a percentage of the estimated complete coverage for that group (where it was possible to make such an estimate). The results are summarised in Table 24. These 'groups' are described and quantified, and the numbers of people for whom data were obtained are given as percentages of the totals. For certain groups, such as anglers, it can be virtually impossible to calculate the total number of people who undertake the activity in the survey area because it is difficult to quantify visitors from outside the area or occasional visitors during the year. Based on the most recent UK Office of National Statistics residential data for electoral wards (www.ons.gov.uk) there were approximately 33,040 people living in the terrestrial survey area, although information was obtained from a significantly smaller number of residents. The survey did not include employees or contractors at the nuclear licensed sites while they were at work. This is because dose criteria applicable to these people whilst at work and the dose assessment methods (IRR 17) are different from those for members of the public. However, data were collected for employees and contractors while outside work if these people were encountered during the survey.

People were initially questioned about their habits relating to the survey area that their first identified activity occurred in and, where possible, they were also asked about their habits relating to the other 2 survey areas. For example, people in the terrestrial survey were initially questioned because it was known that they produced significant quantities of terrestrial foodstuffs. However, they were also asked about habits that might lead to exposure to liquid discharges or direct radiation. During interviews with representatives from organisations such as local businesses it was not possible to collect data for all pathways (for example consumption of local foods) for each person. In these cases, enquiries were limited to data relating to the primary reason for the interview. For example, in the case of a business within the direct radiation survey area, the occupancy rates for the employees.

5. Methods for data analysis

5.1. Data recording and presentation

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

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

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

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

5.2. Data conversion

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

5.3. Rounding and grouping of data

The consumption and occupancy data in the text of this report are rounded to 2 significant figures, except for values less than 1.0, which are rounded to 1 decimal place. This method of presentation reflects the authors' expert judgement on the accuracy of the methods used. In the tables and annexes, the consumption rate data are presented to 1 decimal place. Occasionally, this rounding process causes the computed values (row totals, mean rates and 97.5th percentiles), which are based on un-rounded data, to appear slightly erroneous. Consumption rates less than 0.05 kg y^{-1} are presented to 2 decimal places in order to avoid the value of 0.0 kg y^{-1}. External exposure data are quoted as integer numbers of hours per year.

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

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

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

Name of age group	Age range in group
Infant	0 to 5 years old
Child	6 years old to 15 years old
Adult	16 years old and over

For direct radiation pathways, the data were grouped into distance zones from the nuclear site boundary as a coarse indication of the potential dose rate distribution due to this source of exposure. The bands used in this report were: 0 – 0.25 km; >0.25 – 0.5 km; >0.5 – 1.0 km. These distance bands are also useful when assessing exposure to gaseous discharges.

5.4. Approaches for the identification of high rates

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

Firstly, the ‘cut-off’ method described by Hunt and others (1982) was used. With the ‘cut-off’ method, the appropriate high rate was calculated by taking the arithmetic mean of the values between the maximum observed rate and one third of the maximum observed rate. In this report, the term ‘high-rate group’ is used to represent the individuals derived by the ‘cut-off’ method. The mean of the high-rate group was calculated for each food group, intertidal substrate and handling pathway identified in the survey.

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

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

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

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

For the direct radiation pathway, the maximum occupancy rates are used instead of calculating the mean occupancy rates and 97.5th percentile rates. This is due to the complex nature of the direct radiation dose rates, which are dependent on both the

distance and direction from the primary sources of direct radiation on site (the spatial extent). Additional factors include the local geography and geology, as well as other structures, which can provide additional shielding between these sources on site and the local receptor points for direct radiation. For simple (cautious) dose assessment of direct radiation, it is appropriate to use the maximum dose and occupancy rates.

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

The survey data have been analysed to produce profiles of consumption and occupancy rates according to the method described by Camplin and others (2005). The profiles for adults are used to assess ‘total dose’ integrated across all pathways of exposure in the RIFE reports (for example: EA, FSA, FSS, NRW, NIEA, and SEPA, 2024) Radioactivity in food and the environment (RIFE) report - GOV.UK.

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

5.6. Data quality

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

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

- Draft reports were reviewed by the EA, FSA and ONR.
- Final reports were only issued when the EA, FSA and ONR were entirely satisfied with the format and content of the draft reports.

6. Aquatic radiation pathways

6.1. Aquatic survey area

The aquatic survey area (Figure 5) covered the intertidal areas along the north-east coast of England from Parton Rocks (Hartlepool) in the north, to Saltburn Scar (Saltburn-by-the-Sea) in the south, and the adjacent sea area up to 3 km offshore. This area encompassed approximately 25 km of shoreline. The River Tees, from its mouth to the Tees Barrage (approximately 16 km), was also included.

The seaward facing part of the shoreline is predominantly a series of long sandy beaches interspersed with rocky scars. In the Tees Estuary and the sheltered bays around the entrance to Hartlepool Marina (Figure 6), the substrates are mainly a mix of mud, sand and stones. Coal dust, which has particles of a similar size to grains of coarse sand, washed up on the shore throughout the survey area but the most significant deposits occur on the beaches in the north of the survey area around Hartlepool Town. Larger pieces of coal are found on the shore. The aquatic survey area is described in detail below from north to south.

Parton Rocks to Fish Sands

Parton Rocks was used as a landmark to define the northern limit of the survey area, but the rocks themselves were just offshore, and no activities were recorded. To the south of Parton Rocks, the sandy beach at Throston was popular with walkers, dog walkers, people playing and rock pooling. The rocky area of Throston Scar extends southwards from the beach and joins the rocks of the promontory to the north of Hartlepool known as ‘The Headland’. Anglers fished from the rocks at The Headland.

The Heugh Breakwater is a pier that extends out into the sea from the south side of The Headland. The outer part of the breakwater was fenced off for safety reasons, but during the survey it was observed that anglers climbed over the fence to fish from the seaward end.

Further east along the south side of The Headland there are 2 small beaches called Block Sands and Fish Sands (Figure 9), separated by a rocky area and Pilot Pier. The pier was used by anglers. At Block Sands there was a concrete paddling pool on the promenade. Since the last habits survey in 2014, coal dust has accumulated on the shore and the

beach was a mix of sand, stones and coal dust with rocks on the lower shore. The beach at Fish Sands was sand and coal, with mud and rocks on the lower shore. Block Sands and Fish Sands were close to residential areas and easy parking, but these were infrequently used during the survey, with only one individual identified walking on the beach at Fish Sands. One individual was identified at Block Sands who collected winkles for consumption.

Figure 9. Fish Sands

Victoria Harbour and Middleton Sands

Victoria Harbour (Figure 10) is the main commercial fishing port within the survey area, which also has a cargo terminal at the western end. The fish quay has landing facilities and fish wholesale businesses are located nearby. The quay and floating pontoons provide moorings for commercial fishing vessels, non-commercial fishing boats, angling boats, charter angling boats, yachts and other small pleasure craft. A Royal National Lifeboat Institution (RNLI) inshore lifeboat station is situated in the south-west corner of the harbour, and volunteers undertook rescue duties across the survey area.

Middleton Sands, to the south-west of Victoria Harbour, is backed by an industrial area. The beach was mainly sand but there were significant deposits of coal dust around the western end of the beach. People used the beach for walking and small quantities of sea coal was collected. Tyre tracks were observed on the shore, and it was reported that commercial collection was taking place.

Figure 10. Victoria Harbour

Hartlepool Marina and surrounding area

To the south-west of Middleton Sands, the sea approach to Hartlepool Marina is protected by 2 large outer piers, called the North Pier and the South Pier. The gate to the North Pier was not locked and angling from the pier was observed despite the ‘angling prohibited’ and ‘unsafe structure’ notices. Access to the South Pier was not restricted but there were reinforcing concrete block sea defences piled up next to the pier making it difficult to fish from, and no anglers were observed there at the time of the survey. Inside the outer piers, the bays of West Harbour and Old Town Basin (Figure 11) were separated by smaller piers, which were not used by anglers. Much of West Harbour and Old Town Basin dried out at low tide revealing a substrate of sand and coal dust on the upper shore, and mud and sand on the lower shore with large stones around the perimeters. A thin layer of coal dust had deposited on the narrow beach at the head of the Old Town Basin. It was reported that coal dust was collected commercially here in recent years. Bait digging took place at Old Town Basin and many old car tyres had been laid out to attract peeler crabs. A yacht club located on the south side of West Harbour has its own slipway for launching small craft. The club catered for powerboats, dinghy and cruiser sailors.

Hartlepool Marina is protected by lock gates that maintain the water level at low tide and there are berths for up to 500 boats on floating pontoons. A wide variety of craft were moored in the marina including commercial and non-commercial fishing boats, charter angling boats, private angling boats, sailing yachts, motor cruisers, speedboats, jet-skis and an RNLI lifeboat. A youth club and sub-aqua diving club also had premises at the marina.

Figure 11. Old Town Basin

Carr House Sands to North Gare Breakwater

Carr House Sands extends south from the Old Town Basin, combining with Seaton Sands (Figure 12) to form a 5 km long sandy beach. The shore at Carr House Sands was easily accessible at multiple points from Hartlepool Town. Carr House Sands had a sand and coal dust shore and was very popular with dog walkers. One individual was identified bait digging at Carr House Sands. Seaton Sands was easily accessible from Seaton Carew which had several large car parks along the sea front. Two rocky areas called Long Scar and Little Scar are located at Seaton Sands, Little Scar is exposed at low tide and Long Scar is not accessible from the shore. Seaton Sands was used by many walkers, dog walkers, anglers, joggers, beachcombers, people metal detecting and families playing on the beach. A popular sea swimmers club had approximately 100 regular swimmers

attending the club and many met daily at Seaton Carew. People were identified working on the shore at Seaton Carew.

The liquid wastes from Hartlepool nuclear power station are discharged into Tees Bay from the site outfall, located just off the beach at the south end of Seaton Sands, approximately half a kilometre north of the North Gare Breakwater.

The North Gare Breakwater forms the southern limit to Seaton Sands and marks the western side of the mouth of the River Tees Estuary. The breakwater was fenced off, but during the survey, it was observed that anglers went round the fence in order to fish along the breakwater.

Figure 12. Seaton Sands

West side of the Tees Estuary

Inside the mouth of the estuary, a wide sandy beach called North Gare Sands, backed by sand dunes, stretches 2 kilometres south from the North Gare Breakwater. It is a Site of Special Scientific Interest (SSSI) and forms part of the Teesmouth NNR. A field centre provided environmental education for school parties and other interested visitors to learn about the reserve, and visits usually included spending some time on the beach conducting sediment surveys and rock pooling. Several nature wardens spent time at

North Gare Sands managing the NNR. The area was also used by people angling, beachcombing, working on the shore, jogging, playing, walking and dog walking.

A long spit of mud, sand, stones and boulders separates the southern end of North Gare Sands from the Seaton-on-Tees Channel, which adjoins the western side of the main Tees Estuary. An extensive patch of samphire grew in a sheltered area near the landward end of the northern side of the spit, but no collection of samphire was identified.

The Hartlepool nuclear power station is located on the northern bank of the Seaton-on-Tees Channel. There is a small jetty and dilapidated slipway near the south-east corner of the station. There is a boulder embankment around the jetty and westwards in front of the power station, and the shore below was a mix of stones, sand and mud, becoming increasingly muddy further down the shore. There were many pipes and old car tyres for attracting peeler crabs on the lower shore to the west and to the east of the jetty (Figure 13). Several individuals were identified that collected peeler crabs and/or were bait digging in this area. Small numbers of anglers fished from the jetty and rocky shore in front of the power station (Figure 14).

Figure 13. East of the power station jetty

To the west of the power station there is a wharf and dry dock. These were used by a 2 companies, and the Seaton-on-Tees Channel was dredged to maintain access for vessels

to these facilities. Further west lies Greenabella Marsh, an extensive area of saltmarsh owned by a factory. There is parking at the factory and paths through the marsh provide acess to the shore. This area is popular with seal and bird watchers and there is a hut located on the bank next to the shore for bird and seal watching. The shore was mud and sand backed by large sea defence boulders. Peeler crabs for bait at the shore next to Greenabella Marsh.

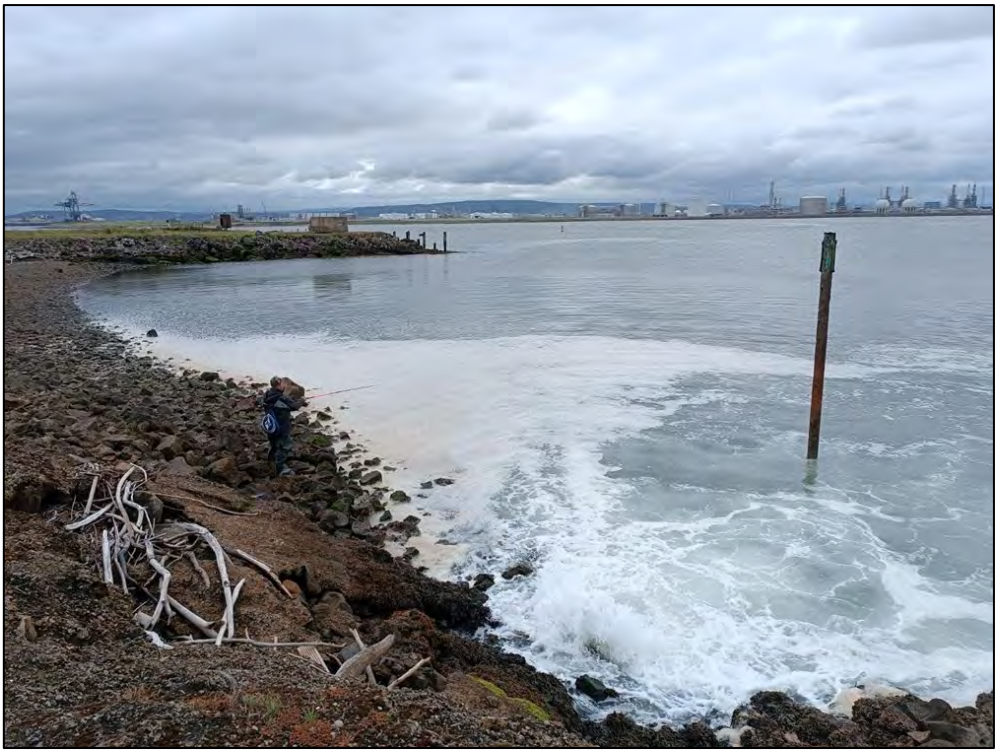

Figure 14. Hartlepool nuclear power station shore with boulder embankment and jetty in the background

The boulder embankment extended westwards to the mouth of Greatham Creek. The shore below the embankment was a mix of mud and sand. There was a car park by the main road which allowed access to footpaths which led to the creek. The intertidal substrate at Greatham Creek was mud, and although the area attracted people to watch birds and seals, they usually stayed on the banks and did not venture down to the intertidal areas.

On the south side of the Seaton-on-Tees Channel, opposite the power station, a large expanse of mud and sand called Seal Sands is exposed at low tide. The Port Authority own the track to the shore and public access is prohibited. It was reported that no intertidal activities were identified taking place in this area.

The River Tees from Seal Sands to the Tees Barrage

The River Tees is tidal for approximately 16 km, from the river mouth to the Tees Barrage, above the barrage the river is freshwater. To the south of Seal Sands and Bran Sands, large stretches of both banks of the river are heavily industrialised and there are several wharfs and docks used by tankers and large cargo vessels. Further up the river towards the barrage, the riverbanks are less industrialised (Figure 15). Public access to the riverbank was possible at the Tees Barrage and via the Teesdale Way path that ran along the river for approximately 4 km downstream. In places along this stretch of river, patches of mud and boulders were exposed along the riverbank at low tide, although the banks of the river were steep sided and access to the intertidal areas was difficult. No activities were observed in these intertidal areas at the time of the survey. A water sports slalom course used for kayaking and rafting was situated in a culvert around the barrage, but this was entirely freshwater.

Figure 15. River Tees below the Tees Barrage

East side of the Tees Estuary

The South Gare Breakwater forms the eastern side of the mouth of the Tees Estuary. Access to the breakwater area is via a road from Coatham, which is privately owned but is open to the public. The breakwater was largely made of slag from a steel works which was previously located in the area, but the end section had a pier that was made of concrete.

Most of the concrete section was fenced off and, as at many other piers and structures in the survey area, despite the danger signs, it was observed that anglers fished from the end of the breakwater. The end of the breakwater was also accessible via the shore on the westward side of the breakwater, with steps leading up to a concrete platform which had been damaged during a storm in 2023. A pilot station and diving club were based on the breakwater and there was a concrete slipway for launching small craft into the estuary.

There are 3 sheltered inlets called Paddy's Hole, Guy's Hole and Powder Hole, which are situated close together on the western side of the breakwater. Paddy's Hole (Figure 16) is the largest and over 40 small boats were moored there including commercial fishing boats, hobby fishing boats, angling boats and other pleasure craft. Approximately 15 small boats were moored at Guy's Hole and 2 at Powder Hole and there was a large shore compound situated close by where other yachts and motorboats were kept. There were many huts and small chalets in this area which were used by boat owners and the public. The embankments around the inlets were mainly boulders of slag and the inlets dried out at low water to reveal a lower shore composed of a mix of mud, sand and stones. Individuals were identified undertaking boat maintenance at Paddy's Hole.

Figure 16. Paddy's Hole

To the south of the inlets, a large area of mud and sand called Bran Sands (Figure 17) is exposed at low tide. There were patches of stones in places and mounds of boulders had

been placed out on the sands for sea defence purposes and to guide the main channel of the estuary. Strings of car tyres had been laid to attract peeler crabs at several locations. Dog walking, playing, water sports preparation, bait digging and peeler crab collecting took place out on the sands. Cockles were collected from the sand and winkles were collected from the boulders.

Figure 17. Bran Sands

South Gare Breakwater to Saltburn Scar

The coastline from South Gare Breakwater south-eastwards to Saltburn-by-the-Sea is an unbroken 12 km stretch of sandy beach with scattered patches of stones (Figure 19). Outcrops of rocks are exposed at low water at Coatham and Redcar (Figure 18). There is easy access to the shore from the villages of Coatham, Redcar, Marske-by-the-Sea, Saltburn-by-the-Sea, and at many other points along this stretch of coast.

People could access the beach to launch angling boats, hobby fishing boats and small commercial fishing boats using tractors at Redcar, Marske-by-the-Sea and Saltburn-by-the-Sea. There were over 40 boats based at Redcar, approximately 10 boats based at Marske-by-the–Sea and about 10 boats based at Saltburn-by-the-Sea. Most of the boats at Redcar were kept in a compound away from the beach with the remaining boats on the side of the esplanade.

This area of the coastline had been subjected to several named storms in recent years, which combined with westerly winds and deteriorated groynes, had significantly depleted

sand levels and exposed a rocky scar. At the time of the survey, boats and craft were unable to launch from 3 of the 5 slipways located in Redcar due to a gap between the end of the concrete slipways and the beach level. In addition, the larger slipway opposite Dundas Street was closed at the time of the survey as it had deteriorated and become unstable. This slipway was previously closed in 2023 and subsequently repaired in November 2023, but further storms caused more damage, and it was closed again in December 2023. Two small slipways were unaffected by the sand removal and provided access to Redcar Sands from the esplanade for small vessels. It was reported that many larger vessels had relocated to Hartlepool and Paddy's Hole.

Figure 18. Redcar Sands

Coatham Sands, Redcar Sands, Marske Sands and Saltburn Sands were all popular beaches used for activities such as walking, dog walking, playing, angling and swimming. Surfing and windsurfing took place all along this part of the coast but particularly at Saltburn Sands where there were watersports schools and a lifeguard station. The pier at Saltburn-by-the-Sea was a popular angling venue.

Redcar Rocks were used by people who were collecting mussels and edible seaweed (gut weed and Porphyra).

Saltburn Scar marked the southern limit of the survey area. The scar was backed by high cliffs and could only be accessed along the shore from Saltburn-by-the-Sea. One individual was identified angling on the scar.

Figure 19. Saltburn Sands

6.2. Commercial fisheries

The only commercial fishing port in the survey area was at Victoria Harbour in Hartlepool, but fishing boats also operated from Hartlepool Marina, Paddy's Hole, Redcar, Marske-by-the-Sea and Saltburn-by-the-Sea. The larger boats based at Victoria Harbour fished outside the survey area. Approximately 70 other registered fishing vessels were based within the survey area but most of these were small, less than 10 m in length, and many of them only operated part time or were not used for commercial fishing. It was reported that the 2021 crab and lobster mortality event (CMEP, 2023) intially caused a noticable decrease in the catch rate of crab and lobster in 2021, though it had slightly increased in 2024.

The main fishing activity within the survey area was potting for common lobsters and brown crabs. A small quantity of velvet swimming crabs were also caught in the pots but these were not landed commercially, since there was no local market for them and they were not profitable to export. Potting was carried out all year by most of the commercial vessels but a few vessels only potted during the summer. Netting also took place during the winter for mixed whitefish,. Although most commercial fishing took place in the open sea, occasionally potting was carried out within the lower reaches of the Tees Estuary.

6.3. Destination of seafood originating from the aquatic survey area

The catch from some of the commercial fishermen were sold to a fish merchant which supplied hotels and restaurants in the north of England and also had a fishmonger in the survey area. Other commercial fishermen sold their catch to a wholesaler outside of the survey area and one sold using Facebook and delivered directly to customers.

6.4. Hobby fishing and angling

In this report, the term ‘hobby fishing’ is used to describe recreational fishing on a small scale with gear such as nets or pots. It is usually carried out by fishermen who do not have commercial fishing licences and therefore it is illegal to offer the catch for sale. Many hobby fishermen operated boats from Victoria Harbour, Hartlepool Marina, Paddy’s Hole, Redcar, Marske-by-the-Sea and Saltburn-by-the-Sea. They mainly used pots to fish for brown crabs and common lobsters. The catches were consumed by the fishermen and their families and friends.

Angling was very popular in the survey area and anglers fished from most of the piers and breakwaters despite many of them being fenced off for safety reasons. Shore angling also took place from beaches and rocky areas. Boat angling was also popular, with private angling boats being kept at Victoria Harbour, Hartlepool Marina, Paddy’s Hole, Guy’s Hole, Redcar, Marske-by-the-Sea and Saltburn-by-the-Sea. Several charter angling boats operated from Victoria Harbour or Hartlepool Marina. Anglers mainly targeted cod in the winter and mackerel in the summer but a wide range of other species were also caught.

Two individuals were identified who collected winkles from Block Sands, west of the power station jetty and Bran Sands for consumption. Two individuals collected cockles from Bran Sands for consumption.

6.5. Other pathways

The collection of seaweed for use as a fertiliser or as livestock feed was investigated but it was not identified within the survey area.

6.6. Food consumption data

Consumption data for locally produced foodstuffs potentially affected by liquid discharges are presented from Table 26 to Table 29 for adults and Table 30 to Table 33 for children. No infants were identified consuming foods from the aquatic survey area. The mean consumption rates for the high-rate groups and the observed 97.5th percentile rates, calculated as described in Section 5.4 are given at the foot of each table.

Adults' consumption rates

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

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

	Food group			
	Sea fish	Crustaceans	Molluscs	Marine plants/algae
Number of observations	72	34	16	2
Number of high-rate consumers	20	5	2	1
Observed maximum for the high-rate group (kg y^{-1})	54.6	35.8	22.5	1.9
Observed minimum for the high-rate group (kg y^{-1})	23.4	12.5	8.8	1.9
Observed mean for the high-rate group (kg y^{-1})	32.3	20.1	15.6	1.9
Observed 97.5th percentile (kg y^{-1})	47.7	27.3	17.4	1.9
Generic mean (kg y^{-1})	15	3.5	3.5	Not determined
Generic 97.5th percentile (kg y^{-1})	40	10	10	Not determined

The predominant species of sea fish consumed by adults were cod, mackerel, haddock, ling, and whiting with smaller quantities of bass, Dover sole, flounder, pollack and turbot. The sea fish were caught throughout the aquatic survey area. Of the sea fish consumed by the 20 people in the high-rate group, the percentage breakdown of species (rounded to the nearest 5%) was 50% cod, 30% mackerel, and a 20% mix of haddock, ling, whiting and bass.

The main species of crustaceans consumed by adults was brown crab and common lobster. The common lobsters and brown crabs were caught using pots throughout the survey area. Of the crustaceans consumed by the 5 people in the high rate-group, the percentage breakdown of species (rounded to the nearest 5%) was 80% brown crab and 20% common lobster.

The main species of molluscs consumed by adults was winkles and cockles with very small quantities of mussel and whelk. The winkles were collected from rocks at Block Sands, to the east of the power station jetty and Bran Sands. The cockles were collected from Bran Sands. Of the molluscs consumed by the 2 people in the high rate-group, the percentage breakdown of species (rounded to the nearest 5%) was 65% winkles and 35% cockles.

The main species of marine plants/algae consumed by adults was gut weed and Porphyra. The gut weed and Porphyra were collected from rocks at Redcar Rocks. Of the marine plants/algae that were consumed by the person in the high rate-group, the percentage breakdown of species (rounded to the nearest 5%) was 70% gut weed and 30% Porphyra.

Children's consumption rates

Table 3 presents a summary of children's consumption rates of foods originating from the aquatic survey area. Children were identified consuming sea fish, crustaceans, molluscs and marine plants/algae. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. No generic rates have been determined for the child age group.

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

	Food group			
	Sea fish	Crustaceans	Molluscs	Marine plants/algae
Number of observations	8	2	1	2
Number of high-rate consumers	1	2	1	2
Observed maximum for the high-rate group (kg y^{-1})	28.9	0.2	2.6	0.1
Observed minimum for the high-rate group (kg y^{-1})	28.9	0.2	2.6	0.1
Observed mean for the high-rate group (kg y^{-1})	28.9	0.2	2.6	0.1
Observed 97.5th percentile (kg y^{-1})	25.5	0.2	Not applicable	0.1

6.7. Occupancy over intertidal substrates

Occupancy rates over intertidal areas for adults, children and infants are presented in Table 34, Table 35 and Table 36, respectively. It should be noted that there is often more than one substrate at one named location and that substrates at a given location are prone to change over time. Activities were assigned to the predominant substrate over which they were taking place.

Table 4 presents a summary of the adults' occupancy rates over intertidal substrates in the aquatic survey area. The table includes the mean occupancy rates for the high-rate groups and the observed 97.5th percentile rates.

Table 4. Summary of adults' intertidal occupancy rates

	Intertidal substrate							
	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
Number of observations	11	10	3	22	171	11	12	1
Number of people in the high-rate group	3	3	1	10	45	3	2	1
Maximum of the high-rate group (h y^{-1})	415	547	286	173	1070	209	120	261
Mean of the high-rate group (h y^{-1})	341	378	286	96	626	139	120	261
Observed 97.5th percentile (h y^{-1})	389	499	274	130	1070	182	120	Not applicable

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

- For mud: bait digging and collecting peeler crabs for bait to the east of the power station jetty.
- For mud and sand: bait digging and collecting peeler crabs for bait at Bran Sands; and collecting peeler crabs for bait at Greenabella Marsh.
- For mud and stones: boat maintenance at Paddy's Hole.
- For rock: angling to the west of the power station jetty, Headland Rocks and Saltburn Scar; collecting winkles from Block Sands and east of the power station jetty; and working on the shore at Seaton Sands.
- For sand:
  - dog walking at Throston Sands;
  - working on the shore, angling, preparing to swim, walking and dog walking at Seaton Sands;
  - angling, dog walking, working on the shore and nature warden duties at North Gare Sands;
  - angling and dog walking at Coatham Sands;
  - angling, teaching watersports, water sports preparation playing, dog walking, jogging and walking at Redcar Sands;
  - angling and dog walking at Marske Sands;
  - lifeguard duties, teaching watersports, water sports preparation and playing at Saltburn Sands.

- For sand and coal: bait digging and dog walking at Carr House Sands.
- For sand and stones: working on the shore at Seaton Sands and Saltburn Sands.
- For boat on mud: boat maintenance at Paddy's Hole.

Children's and infants' occupancy rates over intertidal substrates

Table 5 and Table 6 presents a summary of the children's and infants' occupancy rates over intertidal substrates in the aquatic survey area respectively. The tables include the mean occupancy rates for the high-rate groups and the observed 97.5th percentile rates.

Table 5. Summary of children's intertidal occupancy rates

	Intertidal substrate		
	Mud and sand	Rock	Sand
Number of observations	1	6	32
Number of people in the high-rate group	1	6	9
Maximum of the high-rate group (h y^{-1})	48	32	521
Mean of the high-rate group (h y^{-1})	48	32	399
Observed 97.5th percentile (h y^{-1})	Not applicable	32	521

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

- For mud and sand: bait digging at Bran Sands.
- For rock: rock pooling at Seaton Sands.
- For sand:playing and dog walking at Seaton Sands; and playing at Redcar Sands.

Table 6. Summary of infants' intertidal occupancy rates

	Intertidal substrate	
	Rock	Sand
Number of observations	16	22
Number of people in the high-rate group	16	15
Maximum of the high-rate group (h y^{-1})	91	1070
Mean of the high-rate group (h y^{-1})	77	933
Observed 97.5th percentile (h y^{-1})	91	1070

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

- For rock: rock pooling at Seaton Sands; and rock pooling at Throston Sands.
- For sand: playing at Seaton Sands.

6.8. Gamma dose rate measurements

Gamma dose rate measurements were taken over 6 intertidal substrates. All measurements were taken at a height of 1 metre above the substrate. The results are presented in Table 37 and are summarised in Table 7.

Table 7. Summary of gamma dose rate measurements taken over intertidal substrates

	Substrate					
	Mud	Mud and sand	Mud and Stones	Sand	Sand and coal	Sand and stones
Number of measurements taken	1	1	1	10	1	4
Minimum gamma dose rate at 1 metre[a] (µGy h^{-1})	0.064	0.063	0.172	0.054	0.067	0.065
Maximum gamma dose rate at 1 metre[a] (µGy h^{-1})	0.064	0.063	0.172	0.102	0.067	0.123

Notes

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

For comparison, natural background rates across the UK have been estimated at 0.05 µGy h^{-1} over sandy substrates, 0.07 µGy h^{-1} over mud and over salt marsh, and 0.06 µGy h^{-1} over other substrates (EA, FSA, FSS, NRW, NIEA and SEPA, 2024).

6.9. Handling of fishing gear and sediment

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

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

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

Handling rates of fishing gear and sediment for adults and children are presented in Table 38 and Table 39. No infants were identified handling sediment or fishing gear.

Adults' handling rates of fishing gear and sediment

Table 8 presents a summary of the handling rates of fishing gear and sediment for adults. The table includes the mean handling rates for the high-rate groups and the observed 97.5th percentile rates.

Table 8. Summary of adults' handling rates

	Handling activity	
	Handling fishing gear	Handling sediment
Number of observations	16	20
Number of people in the high-rate group	13	7
Maximum of the high-rate group (h y^{-1})	1760	547
Mean of the high-rate group (h y^{-1})	1301	338
Observed 97.5th percentile (h y^{-1})	1717	514

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

- For handling fishing gear: potting in Tees Bay, between Victoria Harbour and Redcar Rocks; and netting in Tees Bay
- For handling sediment: bait digging at Bran Sands, east of the power station jetty and Carr House Sands; and collecting peeler crabs for bait from Bran Sands, east of the power station jetty and Greenabella.

Children's handling rates of fishing gear and sediment

Table 9 presents a summary of the handling rates of sediment for children. The table includes the mean handling rates for the high-rate groups and the observed 97.5th percentile rates. No children were identified handling fishing gear.

Table 9. Summary of children's handling rates

	Handling sediment
Number of observations	1
Number of people in the high-rate group	1
Maximum of the high-rate group (h y^{-1})	48
Mean of the high-rate group (h y^{-1})	48
Observed 97.5th percentile (h y^{-1})	Not applicable

The only activity undertaken by the child in the high-rate group for handling sediment was bait digging at Bran Sands.

6.10. Water based activities

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

For habits surveys, activities involving a high likelihood of an individual ingesting water are classified as activities 'in water'. All other water-based activities are classified as activities 'on water'.

Occupancy rates for on water activities in the aquatic survey area are presented in Table 40 for adults, Table 41 for children and Table 42 for infants. Where generic data for groups of people were collected, for example, members of sailing clubs, only representative examples have been included in the data presented.

Activities in water

The activities identified taking place in water in the aquatic survey area were surfing, windsurfing, lifeguard duties, rescue duties, teaching watersports, bodyboarding, sub-aqua diving and swimming. Ninety-two observations were recorded for adults, one was recorded for the child age group and no observations were recorded for the infant age group. The highest occupancy rate for adults was 1500 h y^{-1} for a watersports instructor who undertook sessions regularly and also spent a time undertaking watersports at Saltburn Sands. The only occupancy rate for the child age group was 10 h y^{-1} for a child who was sub-aqua diving in Tees Bay.

Activities on water

The activities taking place on water in the aquatic survey area were boat angling, commercial fishing (including netting, potting, steaming to fishing grounds and boat maintenance), teaching powerboating, pleasure cruising, rowing, travelling to a sub-aqua diving site, rescue duties, sailing, wading (to collect peeler crabs for bait) and paddling. One-hundred-and-twenty-one observations were recorded for adults, 9 were recorded for the child age group and 15 were recorded for the infant age group. The highest occupancy rate for adults was 2700 h y^{-1} for commercial fishermen who were netting and potting in Tees Bay and undertaking boat maintenance in Victoria Harbour. The highest occupancy rate for the child age group was 240 h y^{-1} for a child who was boat angling with their family in Tees Bay. The highest occupancy rate for the infant age group was 180 h y^{-1} for an infant who was paddling at Seaton Sands.

7. Terrestrial radiation pathways

7.1. Terrestrial survey area

The terrestrial survey area (Figure 7) covered the land and freshwater bodies within 5 km of the Hartlepool site centre (National Grid Reference: NZ 529 269).

The north-western part of the survey area is largely urban, encompassing the southern outskirts of the towns of Hartlepool, Seaton Carew and the village of Greatham. Whereas the southern part of the survey area along the banks of the River Tees is heavily industrialised. The western and south-western parts of the survey area are more rural in nature encompassing farmland and patches of freshwater marshland.

Interviews were conducted at 6 working farms in the Hartlepool terrestrial survey area. These farms produced beef cattle, suckler beef and arable crops.

Sheep were observed within the terrestrial survey area during the survey, but their owners could not be contacted.

Grass (for haylage and silage), beans, barley and wheat were grown for animal feed. Oil seed rape was grown and destined for human consumption and technical uses. Farmers and their families were consuming their own beef produce.

Seven allotment sites were located within the terrestrial survey area. A wide variety of fruit and vegetables were grown on the allotments.

Beekeeping was identified, with one hive in the survey area. This was its first year since being established and therefore it had not yet been harvested.

Wild foods that were collected from within the survey area and consumed included blackberries and mushrooms. Game shooting was identified taking place on farmland in the terrestrial survey area, where pheasants and rabbits were shot and consumed. The human consumption of groundwater was not identified. Livestock were supplied with mains water for drinking but many also had access to pond, stream or ditch water.

7.2. Destination of food originating from the terrestrial survey area

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

- Beef cattle were sold at local farmers markets, to an abattoir and directly to the public in ‘beef boxes’.
- Wheat was sold to a grain merchant for chicken food and also used for biofuel.
- Barley was sold to a company for dog food and also sold as cattle food.
- Oil seed rape was sold to a company in England where it is crushed and used in the food and technical industries.

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

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

7.4. Food consumption data

Consumption data for locally produced foodstuffs potentially affected by deposition of gaseous discharges are presented from Table 43 to Table 53 for adults and Table 54 to Table 67 for children and infants. The mean consumption rates for the high-rate groups and the observed 97.5th percentile rates, calculated as described in Section 5.4 are given at the foot of each table.

In order to provide information relevant to monitoring and assessments studies, the consumption rate data collected during the survey were analysed to indicate the percentage that each food type contributed to each food group. The data are summarised in Table 68.

Adults' consumption rates

Consumption of locally produced foods was identified in the following 11 food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit; cattle meat; poultry; eggs; wild/free foods; rabbits/hares; wild fungi. No consumption of the following food groups was identified: milk; pig meat; sheep meat; honey; venison; freshwater fish.

Table 10 presents a summary of the adults' consumption rates for the foods consumed from the terrestrial survey area. The table includes the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. For comparison, the table also includes mean consumption rates and 97.5th percentile consumption rates based on national data, which are referred to as 'generic' data in this report.

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

	Food group										
	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/ hares	Wild fungi
Number of observations	57	59	59	56	60	6	4	10	2	1	1
Number of high-rate consumers	5	12	12	27	4	6	4	6	2	1	1
Observed maximum for the high-rate group (kg y^{-1})	104.1	80.7	69.0	72.0	69.0	1.5	0.9	31.2	2.0	0.9	0.9
Observed minimum for the high-rate group (kg y^{-1})	55.8	39.6	24.0	28.1	28.1	1.5	0.9	11.9	2.0	0.9	0.9
Observed mean for the high-rate group (kg y^{-1})	68.5	50.7	40.4	41.1	49.2	1.5	0.9	18.1	2.0	0.9	0.9
Observed 97.5th percentile (kg y^{-1})	63.6	73.6	56.7	55.1	50.8	1.5	0.9	28.8	2.0	Not applicable	Not applicable
Generic mean *(kg y^{-1})	15.0	20.0	10.0	50.0	20.0	15.0	10.0	8.5	7.0	6.0	3.0
Generic 97.5th percentile* (kg y^{-1})	45.0	50.0	40.0	120.0	75.0	45.0	30.0	25.0	25.0	15.0	10.0

Notes

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

The observed mean consumption rate for the high-rate group was greater than the generic 97.5th percentile consumption rate for green vegetables, other vegetables and root vegetables. Five of the mean consumption rates for the high-rate groups exceeded the generic mean consumption rates. These were for green vegetables, other vegetables, root vegetables, domestic fruit and eggs. Four of the observed 97.5th percentile consumption rates exceeded the generic 97.5th percentile consumption rates, which were for green vegetables, other vegetables, root vegetables and eggs.

Children's and infants' consumption rates

Thirteen individuals in the child age group and 4 individuals in the infant age group were identified consuming foods from the terrestrial survey area. Table 11 presents a summary of children's consumption rates and Table 12 presents a summary of infants' consumption rates. The tables include the mean consumption rates for the high-rate groups and the observed 97.5th percentile rates. No generic data have been determined for the child and infant groups. In the child age group, no consumption of foods from the following food groups was identified: milk; pig meat; sheep meat; poultry; wild/free foods; honey; wild fungi; rabbits/hares; venison; freshwater fish. In the infant age group, no consumption of foods from the following food groups was identified: milk; pig meat; sheep meat; poultry; wild/free foods; rabbits/hares; honey; venison; wild fungi; freshwater fish.

Table 11. Summary of children's consumption rates of foods from the terrestrial survey area

	Food group						
	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs
Number of observations	5	7	7	7	7	4	2
Number of high-rate consumers	5	5	1	5	7	4	2
Observed maximum for the high-rate group (kg y^{-1})	8.9	7.5	15.5	39.8	1.0	1.5	11.9
Observed minimum for the high-rate group (kg y^{-1})	8.8	5.9	15.5	20.8	0.4	1.1	4.5
Observed mean for the high-rate group (kg y^{-1})	8.9	6.2	15.5	24.6	0.6	1.4	8.2
Observed 97.5th percentile (kg y^{-1})	8.9	7.3	13.7	37.0	1.0	1.5	11.7

Table 12. Summary of infants' consumption rates of foods from the terrestrial survey area

	Food group						
	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs
Number of observations	1	2	2	2	2	1	1
Number of high-rate consumers	1	1	2	1	1	1	1
Observed maximum for the high-rate group (kg y^{-1})	2.2	1.9	3.9	10.0	0.5	0.7	3.0
Observed minimum for the high-rate group (kg y^{-1})	2.2	1.9	1.6	10.0	0.5	0.7	3.0
Observed mean for the high-rate group (kg y^{-1})	2.2	1.9	2.7	10.0	0.5	0.7	3.0
Observed 97.5th percentile (kg y^{-1})	Not applicable	1.8	3.8	9.7	0.5	Not applicable	Not applicable

8. Direct radiation pathways

8.1. Direct radiation survey area

The direct radiation survey area (Figure 8) covered the land and water within 1 km of the Hartlepool nuclear licensed site boundary. The survey area was split into 3 zones, which were 0 – 0.25 km, >0.25 – 0.5 km and >0.5 – 1.0 km from the Hartlepool nuclear licensed site boundary.

The nuclear power station is located on the northern bank of the Seaton-on-Tees Channel. The direct radiation survey area to the south of the station is taken up by the water of the channel and the associated intertidal mud flats and sand flats, including Seal Sands on the southern shore of the channel. Another intertidal area, North Gare Sands, occupies a large part of the direct radiation survey area to the east and north-east of the power station. Most of the land in the direct radiation survey area is situated to the north and the west of the power station and is a mix of industrial areas and countryside which is used for nature conservation, grazing livestock and leisure activities.

The Hartlepool Power Station Visitors Centre, which also incorporates small offices for 2 nature conservation bodies, is located immediately to the north of the licensed site. To the north of the visitors centre there is a small golf course and cricket club owned by EDF, and further north is an open area of grassland and freshwater marsh called Seaton Snook. To the north-east of the site there is a factory, and beyond that an area of sand dunes, a small part of a public golf course and the sand flats of North Gare Sands. A field adjacent to the east of the site is used for grazing horses.

8.2. Residential activities

No residential properties were identified within the direct radiation survey area.

8.3. Leisure activities

The direct radiation survey area was popular for leisure activities including walking, dog walking, nature studies and seal watching. The area was also used by people for angling, bait digging and collecting shellfish.

The Hartlepool Power Station Visitors Centre was open 5 days a week and catered for drop in visitors as well as taking organised groups on tours around the power station. A field centre based within the visitors centre provided educational and recreational field studies courses, including walks on North Gare Sands, although not all of the visitors' time

was spent within the direct radiation survey area. Seaton Common was located to the north of the survey area and formed part of the Teesmouth NNR.

8.4. Commercial activities

The main commercial activities in the direct radiation survey area were a factory located to the north-east of the site, a manufacturing plant, engineering facility, and dry dock adjacent to the western boundary of the site, and an industrial estate in the far west of the survey area. There were 12 working businesses within the survey area on the industrial estate and interviews were obtained at 7 of these. The number of employees at the businesses ranged from 1 to 80.

Data was also obtained for volunteers of a nature conservation body working in the area.

The activities of EDF employees and contractors while at work were not considered in the direct radiation survey.

8.5. Occupancy rates

Table 69 presents indoor, outdoor and total occupancy data for adults, children and infants. An analysis of the data by distance zones and occupancy rates is shown in Table 70. A summary of occupancy rates in the direct radiation survey area is presented in Table 13. Where generic data for groups of people were collected, for example, employees of businesses, only representative examples have been included in the presented data.

Table 13. Summary of direct radiation occupancy rates

	Zone		
	0 - 0.25 km	>0.25 - 0.5 km	>0.5 - 1.0 km
Number of observations	40	24	68
Highest indoor occupancy (h y^{-1})	1999	2494	2147
Highest outdoor occupancy (h y^{-1})	782	1908	1595
Highest total occupancy (h y^{-1})	2086	2503	2386

0 – 0.25 km from the nuclear licensed site boundary

Occupancy data for 40 individuals in the 0 - 0.25 km zone were included in the analysis. The observations were for 11 employees, 18 people visiting the field centre, 4 individuals collecting peeler crabs, 4 anglers, 2 individuals bait digging and one individual collecting peeler crabs and bait digging. The highest indoor and total occupancy rates were for a nature warden. The highest outdoor occupancy rate was for another employee from a different business.

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

Occupancy data for 24 individuals in the >0.25 - 0.5 km zone were included in the analysis. The observations were for 23 employees and one individual collecting winkles. The highest indoor and total occupancy rates were for multiple employees. The highest outdoor occupancy rates were for another employee at the same business.

>0.5 – 1.0 km from the nuclear licensed site boundary

Occupancy data for 68 individuals in the >0.5 - 1.2 km zone were included in the analysis. The observations were for 28 employees, 8 nature wardens, 2 individuals watching seals, one person working on the shore, 3 individuals playing, walking and collecting driftwood, 23 dog walkers, 2 individuals walking and one individual collecting peeler crabs. The highest indoor and total occupancy rates were for employees. The highest outdoor occupancy rate was for an individual working on the shore.

8.6. Gamma dose rate measurements

Gamma dose rates were measured indoors and outdoors at most properties where interviews were conducted in the Hartlepool direct radiation survey area. Where possible, outdoor measurements were taken approximately 5 to 10 metres from the nearest building and over grass. Gamma dose rate measurements over grass were taken at locations further than 5 km from the site centre to obtain background dose rates. All measurements were taken at a height of 1 metre above the substrate using multiple Thermo RadEye GX Survey Meters, each connected to a compensated Geiger-Müller tube. The indoor and outdoor measurements have not been adjusted for background dose rates. The results are presented in Table 71 and are summarised in Table 14.

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

Substrate	Number of measurements taken	Minimum gamma dose rate at 1 metre (µGy h^{-1})	Maximum gamma dose rate at 1 metre (µGy h^{-1})
Indoor measurements[a]			
Concrete	3	0.065	0.113
Outdoor measurements[a]			
Concrete	3	0.067	0.074
Stones	1	0.091	0.091
Background measurements			
Grass	3	0.073	0.085

Note

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

Of the 3 measurements taken indoors at locations within the direct radiation survey area, one reading was higher than the maximum background reading. Of the 4 measurements taken outdoors at locations within the direct radiation survey area, one reading was higher than the maximum background reading. Since gamma dose rate measurements are influenced by the nature of building materials, the substrate over which they are taken, and many other factors, the measurements taken in residential areas are expected to be higher than those taken in rural areas.

The gamma dose rates can be compared with readings taken by the Radiological Response and Emergency Management System (RREMS) programme, which continuously monitors radiation levels at a network of 89 fixed monitors and a number of mobile monitors distributed throughout the UK (www.gov.uk). The nearest RREMS station to Hartlepool was at RAF Fylingdales, which was approximately 98 km away. The ambient (background) gamma dose rates at RAF Fylingdales during the survey period ranged from 0.09 µGy h^{-1} to 0.12 µGy h^{-1}. Most of the readings taken at the time of the survey were below or within the range observed for the RREMS system, with several dose rates at some locations being higher due to environmental variability.

9. Uses of habits data for dose assessments

9.1. Combined pathways

In determining habits data for the purposes of assessing radiological doses to the public, it may be necessary to consider a combination of pathways. Data are provided in Annex 1, Annex 2 and Annex 3 for adults, children and infants, respectively so that the full effect of

combining pathways can be assessed for individual observations, given the concentrations and dose rates for a particular assessment. The rates for individuals in the high-rate groups are emboldened. In some circumstances, it will be possible to make simplifying assumptions and define the consumption and external exposure rates appropriate to a series of potential high-rate groups.

The most extensive combinations of pathways for adult dose assessment are shown in Table 73. Each of the 29 combinations shown in Table 73 represents an actual individual (or individuals) from Annex 1 who has positive data (irrespective of the magnitude), for each pathway marked with a cross. Other individuals from Annex 1 have combinations that are not listed in Table 73 because they have fewer pathways and a dose assessment for them would be adequately covered by 1 of the 29 listed combinations.

9.2. Prenatal dose assessment

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

9.3. ‘Total dose’ assessment

The UK environment agencies and the FSA have considered ways of using habits data to estimate ‘total dose’ retrospectively. The adopted approach is to use the adult consumption and occupancy data collected in each habits survey to create a matrix with a series of habits profiles for each site. The National Dose Assessment Working Group (NDAWG) considered this approach for assessing retrospective total doses (Camplin and others, 2005) and agreed that using habits profiles is an appropriate approach. The method used to estimate total dose integrated across pathways is provided in the RIFE reports (for example: EA, FSA, FSS, NRW, NIEA and SEPA, 2024) Radioactivity in food and the environment (RIFE) report - GOV.UK.

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

10. Comparisons with the previous survey

The results from this 2024 survey are compared below with results from the last combined habits survey undertaken at Hartlepool in 2014. The aquatic, terrestrial and direct radiation survey areas in the 2024 survey were the same as those in the 2014 survey. The comparison of occupancy rates in the direct radiation area is for all age groups combined. All other comparisons are for adults only.

10.1. Aquatic survey area

The activities identified in the aquatic survey area in 2024 were similar to those identified in 2014.

The main species of sea fish consumed by the adult high-rate group in 2014 were cod, ling, whiting and mackerel. In 2024, the main species were cod, mackerel, ling and haddock. The main species of crustaceans consumed by the adult high-rate group were the same in 2014 and 2024, comprising brown crab and common lobster. The main species of molluscs consumed by the high-rate group in 2014 were whelks and winkles, whereas in 2024, the main species consumed by the high-rate group were winkles and cockles. In 2014, the main species of wildfowl consumed by the adult high-rate group were Canada goose, greylag goose and mallard, whereas in 2024 wildfowl consumption was not identified. In 2024, the main species of marine plants/algae consumed by the adult high-rate group were gut weed and Porphyra, whereas in 2014, the consumption of marine plants/algae was not identified.

A comparison between the consumption of aquatic foods in 2014 and 2024 is presented in Table 15.

Table 15. Comparison between 2014 and 2024 consumption rates of aquatic food groups for adults

Food group	2014			2024		
	Number in high-rate group	Maximum consumption rate (kg y^{-1})	Mean consumption rate for the high-rate group (kg y^{-1})	Number in high-rate group	Maximum consumption rate (kg y^{-1})	Mean consumption rate for the high-rate group (kg y^{-1})
Sea fish	24	71.0	41.5	20	54.6	32.3
Crustaceans	20	45.8	26.1	5	35.8	20.1
Molluscs	3	17.8	10.8	2	22.5	15.6
Wildfowl	2	12.0	12.0	Not identified	Not identified	Not identified
Marine plants/algae	Not identified	Not identified	Not identified	1	1.9	1.9

There were significant changes in the consumption of aquatic foods in 2024 compared with 2014. The number of sea fish species being caught, and the consumption rates of sea fish, had reduced in 2024, but no specific reasons were identified for these changes. For the crustacean food group, the number of people in the high-rate group decreased significantly in 2024. Commercial fishermen had reported a decrease in their crustacean catch in recent years, which may be due to the crab and lobster mortality event in 2021 and 2022. However, it was reported that the catch rate in 2024 had started to increase. The consumption of molluscs increased in 2024 due to the identification of a keen cockle collector who consumed a significant quantity of cockles. In 2024, wildfowl were not consumed because wildfowling was no longer permitted in the Teesmouth NNR to allow the local bird populations to increase. Foods in the marine plants/algae food group were not identified in 2014, but in 2024, an individual was identified who collected and consumed gutweed and Porphyra.

For intertidal occupancy in both 2014 and 2024, occupancy over the following intertidal substrates for adults was recorded: mud; mud and sand; mud and stones; rock; sand; sand and coal; sand and stones. Occupancy over boat on mud was identified in 2024, but not in 2014.

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

- In 2014: angling, bait digging, boat maintenance, collecting crabs, collecting mussels, collecting winkles, collecting sea coal, dog walking, hooking for crabs, nature warden duties and setting pots on the shore.

- In 2024: angling, bait digging, boat maintenance, collecting peeler crabs for bait, collecting winkles, dog walking, jogging, lifeguard duties, nature warden duties, playing, rock pooling, teaching watersports, walking, water sports preparation, working on the shore.

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

- In 2014: handling pots and nets.
- In 2024: handling pots and nets.

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

- In 2014: bait digging and collecting crabs, mussels, winkles and sea coal.
- In 2024: bait digging and collecting peeler crabs for bait.

A comparison between the 2014 and 2024 data for adult occupancy over intertidal substrates and handling pathways is shown in Table 16.

Table 16. Comparison between 2014 and 2024 intertidal occupancy rates and handling rates of fishing gear and sediment for adults

Intertidal substrate or handling pathway	2014			2024		
	Number in high-rate group	Maximum occupancy or handling rate ($h\ y^{-1}$)	Mean occupancy or handling rate for the high-rate group ($h\ y^{-1}$)	Number in high-rate group	Maximum occupancy or handling rate ($h\ y^{-1}$)	Mean occupancy or handling rate for the high-rate group ($h\ y^{-1}$)
Mud	2	368	368	3	415	341
Mud and sand	2	1098	1095	3	547	378
Mud and stones	2	52	38	1	286	286
Rock	11	641	364	10	173	96
Sand	24	1022	457	45	1070	626
Sand and coal	4	1400	1225	3	209	139
Sand and stones	3	261	206	2	120	120
Boat on mud	Not identified	Not identified	Not identified	1	261	261
Handling fishing	13	2346	1484	13	1760	1301
Handling	7	1466	1188	7	547	338

In 2024 there were notable changes in intertidal occupancy compared with 2014. There was one significant increase in 2024 in the adult high-rate group over mud and stones. Additionally, in 2024, the mean intertidal rate for the adult high-rate group decreased

significantly over mud and sand, over sand and coal, over rock, and over sand and stones in comparison to 2014. Occupancy over boat on mud was identified in 2024, but not in 2014.

The changes in occupancy rates were primarily due to activities being undertaken, but also resulting from differences in the intertidal substrates since 2014. For the increase in occupancy over mud and stones, a person was identified undertaking boat maintenance at Paddy's Hole in 2024 for a significant number of hours. For the increase in occupancy over sand in 2024, new commercial activities were found at Seaton Sands and Saltburn Sands. The significant decrease in occupancy over mud and sand in 2024 was due to a reduction in time that one person spent bait digging and collecting peeler crabs to the east of the power station jetty since 2014. In addition, the substrate in this area had changed from mud and sand in 2014 to a higher proportion of mud in 2024. The activities undertaken over rock had changed since 2014, and individuals were no longer identified setting pots on the shore and hooking for crab and lobster from Throston Scar and The Headland in 2024. In 2024, no commercial collection of sea coal was observed. However, there were reports of commercial sea coal collection in recent years. The mean rates for the adult high-rate groups for handling sediment decreased significantly and handling fishing gear remained similar in 2024 compared to 2014. The decrease in handling rates for sediment was attributed to an individual bait digging and peeler crab collecting who had decreased their occupancy times.

For activities taking place in water in the aquatic survey area, the maximum adult occupancy rate was 310 h y^{-1} in 2014 for an individual surfing. In 2024, the maximum adult occupancy rate increased significantly to 1500 h y^{-1} for an individual who was teaching watersports and undertaking recreational watersports.

For activities undertaken on the water in the aquatic survey area, the maximum adult occupancy rate was 2300 h y^{-1} in 2014 for commercial fishermen undertaking potting. In 2024, the maximum adult occupancy rate increased to 2700 h y^{-1} for commercial fishermen undertaking potting, netting, and boat maintenance.

10.2. Terrestrial survey area

Activities in the terrestrial survey area in 2024 were broadly similar to those in 2014. The principal types of farm produce within the area continued to be beef and arable crops. Sheep were observed within the terrestrial survey area during the survey in 2024, but their owners could not be contacted. The growing of fruit and vegetables on the allotment sites and the collection of wild/free foods and game shooting on farmland were identified in both surveys. Bees were being kept but no consumption was identified. One of the farms identified in the 2014 survey was reported to have been sold and the land was designated to become a residential area.

The mean consumption rates for the adult high-rate groups for terrestrial food groups from the 2014 and 2024 surveys are shown in Table 17.

Table 17. Comparison between 2014 and 2024 mean consumption rates (kg y^{-1}) for the adult high-rate groups for terrestrial food groups

Food group	2014	2024
Green vegetables	23.9	68.5
Other vegetables	22.6	50.7
Root vegetables	32.2	40.4
Potato	33.5	41.1
Domestic fruit	13.9	49.2
Cattle meat	Not identified	1.5
Sheep meat	5.7	Not identified
Poultry	10.1	0.9
Eggs	34.7	18.1
Wild/free foods	2.5	2.0
Rabbits/hares	17.5	0.9
Honey	2.3	Not identified
Wild fungi	5.3	0.9
Venison	3.4	Not identified
Freshwater fish	0.5	Not identified

In 2024, compared to 2014, the mean consumption rates for the adult high-rate group increased in the following food groups: green vegetables; other vegetables; root vegetables; potato; domestic fruit. In 2024 the mean consumption rates for the adult high-rate groups decreased in the following food groups: poultry; eggs; wild/free foods; rabbits/hares; wild fungi. The most significant increases in the consumption rates were for green vegetables, other vegetables and domestic fruit, whilst the most significant decreases were for poultry, eggs and rabbits/hares. The consumption of cattle meat was identified in 2024 but not in 2014. The consumption of sheep meat, honey, venison and freshwater fish was identified in 2014 but not in 2024.

The increased consumption rate of green vegetables, other vegetables and domestic fruit in 2024 was due to the identification of several individuals who consumed large quantities of produce from their allotments. Several individuals from the 2014 survey could not be contacted who were previously high-rate consumers of venison, honey and sheep meat. No specific reasons were identified for the other changes in consumption rates.

No consumption of groundwater by humans or livestock was identified in either 2014 or 2024 although livestock had access to surface water in both years.

10.3. Direct radiation survey area

Activities identified in the direct radiation survey area in 2014 and 2024 were similar and included people working, farming, carrying out nature warden duties and undertaking recreational activities. The survey area remained unchanged from the previous survey in 2014. A comparison between the 2014 and 2024 direct radiation occupancy rates for all age groups combined, by zone, is presented in Table 18.

Table 18. Comparison between 2014 and 2024 direct radiation occupancy rates (h y^{-1}) for all age groups combined

	2014	2024
0 - 0.25 km		
Highest indoor occupancy	848	1999
Highest outdoor occupancy	1466	782
Highest total occupancy	1593	2086
>0.25 - 0.5 km		
Highest indoor occupancy	1840 (estimated)	2494
Highest outdoor occupancy	414 (estimated)	1908
Highest total occupancy	1840 (estimated)	2503
>0.5 - 1.0 km		
Highest indoor occupancy	2500	2147
Highest outdoor occupancy	750	1595
Highest total occupancy	3250	2386

Compared with 2014, there were some significant changes to occupancy rates in the direct radiation survey area in 2024.

In the 0 – 0.25 km zone, the highest indoor occupancy rate increased significantly, the highest outdoor occupancy rate decreased moderately, and the highest total occupancy rate increased moderately. In 2014, the highest indoor and total occupancy rates in the 0 – 0.25 km zone were for people carrying out nature warden duties, and the highest outdoor occupancy rate was for an individual who was bait digging and collecting crabs, mussels and winkles. Whereas in 2024, the highest indoor and total occupancy rates were for a nature warden, and the highest outdoor occupancy rate was for an employee.

In the >0.25 – 0.5 km zone, the highest outdoor occupancy rates increased significantly, and the indoor and total occupancy rates increased moderately. In 2014, the highest indoor, outdoor and total occupancy rates in the >0.25 – 0.5 km zone were estimated based on employees working at a factory from the 2008 habits survey. In 2024, positive data was obtained for employees of this manufacturer. The highest indoor and total occupancy rates were for multiple employees. The highest outdoor occupancy rate was for another employee.

In the >0.5 – 1.0 km zone, the highest outdoor occupancy rate significantly increased in 2024. This was due to the identification of an individual working on the shore at North Gare

Sands. In the >0.5 – 1.0 km zone, the highest total occupancy time decreased significantly, and the highest indoor occupancy time decreased slightly. In 2014, the highest indoor, outdoor and total occupancy rates in the >0.5 – 1.0 km zone were for an employee. Whereas in 2024, the highest indoor and total occupancy rates were for an employee at a different business.

Table 19. Comparison between 2014 and 2024 gamma dose rates (μGy h^{-1})

Location	Indoor		Outdoor	
	2014	2024	2014	2024
Business 1	0.053	0.065	0.063	0.067
Business 3	0.074	0.084	0.062	Not recorded

Notes
These measurements have not been adjusted for background dose rates.
The locations correspond to those in Table 71.

When compared with 2014, 3 of the readings taken were slightly higher in 2024. The outdoor reading for Business 3 was not recorded in 2024.

11. Main findings

The survey investigated 3 potential sources of public radiation exposure from the Hartlepool site, which were:

- Discharges of liquid radioactive waste via a pipeline into Tees Bay in the North Sea
- Discharges of gaseous radioactive waste to the atmosphere
- Emissions of direct radiation

Information was obtained by conducting interviews with members of the public including, for example, anglers, people spending time on intertidal substrates, farmers, allotment holders, beekeepers and people spending time within the direct radiation survey area. These people were targeted because their diet and habits may cause them to be exposed to radioactivity from the site. However, it should be noted that the most exposed people can only be defined with the outcome of a dose assessment. Data for 517 individuals are presented in this report. All consumption rates recorded are only for foods produced, collected or caught from within the aquatic and terrestrial survey areas as defined in Section 4.3. The consumption and occupancy rates in this section are presented to 2 significant figures.

11.1. Aquatic survey area

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

- 32 kg y^{-1} for sea fish
- 20 kg y^{-1} for crustaceans
- 16 kg y^{-1} for molluscs
- 1.9 kg y^{-1} for marine plants/algae

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

- For sea fish: cod, mackerel, ling and haddock
- For crustaceans: brown crab and common lobster
- For molluscs: winkles and cockles
- For marine plants/algae: gut weed and Porphyra

There were no individuals identified collecting seaweed from the survey area for use as fertiliser on allotment plots and vegetable gardens for the production of fruit and vegetables. The use of seaweed as animal feed was not identified.

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

- 340 h y^{-1} for mud
- 380 h y^{-1} for mud and sand
- 290 h y^{-1} for mud and stones
- 96 h y^{-1} for rock
- 630 h y^{-1} for sand
- 140 h y^{-1} for sand and coal
- 120 h y^{-1} for sand and stones
- 260 h y^{-1} for boat on mud

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

- 1300 h y^{-1} for handling fishing gear (pots and nets)
- 340 h y^{-1} for handling sediment

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

- 1500 h y^{-1} for ‘in water’
- 2700 h y^{-1} for ‘on water’

Individuals in the child age group were recorded consuming aquatic foods. There were no infants recorded consuming aquatic foods. Individuals in both the child and infant groups were undertaking activities in the aquatic survey area.

11.2. Terrestrial survey area

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

- 69 kg y^{-1} for green vegetables
- 51 kg y^{-1} for other vegetables
- 40 kg y^{-1} for root vegetables
- 41 kg y^{-1} for potato
- 49 kg y^{-1} for domestic fruit
- 1.5 kg y^{-1} for cattle meat
- 0.9 kg y^{-1} for poultry
- 18 kg y^{-1} for eggs
- 2.0 kg y^{-1} for wild/free foods
- 0.9 kg y^{-1} for rabbits/hares
- 0.9 kg y^{-1} for wild fungi

No consumption of milk, sheep meat, pig meat, honey or freshwater fish was identified.

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

No consumption of groundwater by humans or livestock was identified. All livestock were supplied with mains water for drinking, but many also had access to pond, stream or ditch water.

11.3. Direct radiation survey area

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

0 – 0.25 km zone

- 2000 h y^{-1} for the indoor occupancy rate
- 780 h y^{-1} for the outdoor occupancy rate
- 2100 h y^{-1} for the total occupancy rate

>0.25 – 0.5 km zone

- 2500 h y^{-1} for the indoor occupancy rate
- 1900 h y^{-1} for the outdoor occupancy rate
- 2500 h y^{-1} for the total occupancy rate

>0.5 – 1.0 km zone

- 2100 h y^{-1} for the indoor occupancy rate
- 1600 h y^{-1} for the outdoor occupancy rate
- 2400 h y^{-1} for the total occupancy rate

In the 0 – 0.25 km zone, the highest indoor and total occupancy rates were for an employee. The highest outdoor occupancy rate in the 0 – 0.25 km zone was for a nature warden. The highest indoor, outdoor and total occupancy rates in the >0.25 – 0.5 km zone were for employees. The highest indoor and total occupancy rates in the >0.5 – 1.0 km zone were for employees and the highest outdoor occupancy rate was for an individual working on the shore.

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

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

In England and Wales, the monitoring programme for radioactivity in food is undertaken by the FSA, and the monitoring programme for radioactivity in the environment is conducted by the EA. The results of these programmes are published annually in the RIFE reports (for example: EA, FSA, FSS, NRW, NIEA and SEPA, 2024) Radioactivity in food and the environment (RIFE) report - GOV.UK.

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

12.1. Summary of the monitoring programmes for Hartlepool

The 2023 monitoring programmes relevant to the Hartlepool area included the samples and measurements listed in Table 20, Table 21 and Table 22. The location names, foods and substrate classifications are taken directly from RIFE 29 (EA, FSA, FSS, NRW, NIEA and SEPA, 2024) Radioactivity in food and the environment (RIFE) report - GOV.UK. Some of the samples and measurements taken for the monitoring programmes may be from outside the survey areas used for the 2024 Hartlepool habits survey.

Table 20. Aquatic food and environmental samples used in the RIFE 29 monitoring programme

Sample	Location
Plaice	Pipeline
Crabs	Pipeline
Winkles	South Gare
Seaweed	Pilot Station
Sediment	Old Town Basin
Sediment	Seaton Carew
Sediment	Paddy's Hole
Sediment	North Gare
Sediment	Greatham Creek
Sediment	Redcar Sands
Sea coal	Old Town Basin
Sea coal	Carr House Sands
Seawater	North Gare

Table 21. Gamma dose rate measurements over intertidal substrates used in the RIFE 29 monitoring programme

Location	Substrate
Fish Sands	Sand
Fish Sands	Sea coal and sand
Old Town Basin	Sand
Carr House	Sand
Seaton Carew	Sand
North Gare	Sand
Paddy's Hole	Sand and stones
Greatham Creek nature reserve	Mud
Greatham Creek nature reserve	Mud and sand
Redcar Sands	Sand
Redcar Sands	Sand and stones

Table 22. Terrestrial samples used in the RIFE 29 monitoring programme

Sample	Location
Milk	-
Milk	-
Potatoes	-
Barley	-
Grass	0.8km NW of site
Grass	0.6km NE of site
Freshwater	Boreholes, Dalton Piercy

12.2. Information from the 2024 Hartlepool habits survey for use in the selection of samples and measurements for monitoring programmes

Food Standards Agency monitoring

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

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

Food	Food Group
Cod	Sea fish
Brown crab	Crustaceans
Winkle	Molluscs
Gut weed	Marine plants/algae
Cabbage	Green vegetables
Tomato	Other vegetables
Onion	Root vegetables
Potato	Potato
Apple	Domestic fruit
Beef	Cattle meat
Pheasant	Poultry
Chicken egg	Egg
Blackberry	Wild/free foods
Rabbit	Rabbits/hares
Mushroom	Wild fungi

Environment Agency monitoring

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

13. Acknowledgements

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Table 24. Survey coverage

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
Summary of all pathways					
All potential interviewees in the Hartlepool aquatic, terrestrial and direct radiation survey areas.	Number of people residing in the terrestrial survey area (excluding those residents in the direct radiation survey area) (See (B) Terrestrial pathways)	33,040[a]	89[b]	0.3%	The survey targeted individuals who were potentially the most exposed, mostly producers of local foods such as farmers and allotment holders.
	Number of people working, visiting and undertaking recreational activities in the direct radiation survey area (See (C) Direct radiation pathways)	U	111[b]	U	Excluding employees and contractors at the nuclear licensed site. Where generalised data for groups of people were obtained, for example employees at some businesses, only a limited number of representative individuals have been included. Note. There were no residential properties in the direct radiation survey area.
	Number of people affected by liquid discharges (excluding those assigned to other categories above) (See (A) Aquatic pathways)	U	317[b]	U	Where generalised data for groups of people were obtained, for example members of clubs, only a limited number of representative individuals have been included.
	Total for aquatic, terrestrial and direct radiation survey areas	U	517[b]	U	

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
(A) **Aquatic pathways**					
Commercial and hobby fishermen	Number of commercial and hobby fishermen fishing in the aquatic survey area	U	16	U	
People using the intertidal areas (for example: dog walkers, people playing, etc.)	Number of people undertaking activities on the intertidal areas in the aquatic survey area	U	260	U	
People undertaking activities in or on water (for example: swimming, rowing and kayaking etc.)	Number of people undertaking activities in or on water in the aquatic survey area	U	198	U	
Sea fish consumers	Number of people consuming sea fish from the aquatic survey area	U	80	U	
Crustacean consumers	Number of people consuming crustaceans from the aquatic survey area	U	36	U	
Mollusc consumers	Number of people consuming molluscs from the aquatic survey area	U	17	U	
Marine plants/algae consumers	Number of people consuming marine plants/algae from the aquatic survey area	U	4	U	

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
(B) **Terrestrial pathways**					
Farmers	Number of farmers and their family members consuming food from the terrestrial survey area	U	16	U	Interviews were conducted at 6 farms out of an estimated 7 farms in the terrestrial survey area.
Allotment holders and gardeners	Number of allotment holders, gardeners and their family members consuming food from the terrestrial survey area	U	73	U	
(B) **Direct radiation pathways**					
Employees and volunteers	Number of people working or volunteering in the survey area	U	71	U	Excluding employees and contractors at the nuclear licensed site. Where generalised data for groups of people were obtained, for example employees at some businesses, only a limited number of representative individuals have been included.
Visitors (people undertaking recreational activities and visiting educational facilities)	Number of people visiting the survey area	U	61	U	Including people visiting the Teesmouth Field Centre and North Gare Sands.

Group	Criteria	Estimate of complete coverage	Number for whom positive data was obtained	Coverage for positive observations	Notes
Breakdown of age groups for people residing in the 5 km terrestrial survey area					
Adult	16 years old and over	27,520[a]	200	0.7%	
Child	6 years old to 15 years old	3,420[a]	25	0.7%	
Infant	0 to 5 years old	2,100[a]	8	0.4%	

Notes

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

[b] The number of people for whom positive data was obtained for pathways (A) and (B) and (C) will usually not equal the relevant totals in the summary of all pathways. This is because in sections (A), (B) and (C) some individuals may be counted 2 or more times, for example someone who goes angling and consumes foods from the terrestrial area.

U – Unknown

Table 25. Typical food groups used in habits surveys

Food group	Examples of foods within the group
Green vegetables	Asparagus, broccoli, Brussels sprouts, cabbage, calabrese, cauliflower, chard, courgette, cucumber, gherkin, globe artichoke, herbs, kale, leaf beet, lettuce, marrow, spinach
Other vegetables	Aubergine, broad bean, chili pepper, French bean, kohl rabi, mangetout, pea, pepper, pumpkin, runner bean, sweetcorn, tomato
Root vegetables	Beetroot, carrot, celeriac, celery, chicory, fennel, garlic, Jerusalem artichoke, leek, onion, parsnip, radish, shallot, spring onion, swede, turnip
Potato	Potato
Domestic fruit	Apple, apricot, blackberry, blackcurrant, boysenberry, cherry, damson, fig, gooseberry, grape, greengage, huckleberry, loganberry, melon, nectarine, peach, pear, plum, raspberry, redcurrant, rhubarb, rowanberry, strawberry, tayberry, white currant
Milk	Cows' milk, cream, goats' milk, yoghurt
Cattle meat[a]	Beef
Pig meat[a]	Pork
Sheep meat[a]	Lamb, mutton
Poultry[b]	Chicken, duck, goose, grouse, guinea fowl, partridge, pheasant, pigeon, turkey, woodcock
Eggs	Chicken egg, duck egg, goose egg
Wild/free foods	Blackberry, chestnut, crab apple, damson, dandelion root, elderberry, nettle, rowanberry, sloe
Honey	Honey

Food group	Examples of foods within the group
Wild fungi	Mushrooms, other edible fungi
Rabbits/hares	Hare, rabbit
Venison[a]	Venison
Sea fish	Bass, brill, cod, ling, dab, Dover sole, flounder, gurnard, haddock, hake, herring, lemon sole, mackerel, monkfish, mullet, plaice, pollack, rays, saithe, salmon, sea trout, sprat, turbot, whitebait, whiting, witch, cuttlefish[c], squid[c]
Fish (freshwater)	Brown trout, eel (river), perch, pike, rainbow trout, salmon (river)
Crustaceans	Brown crab, common lobster, crawfish, Nephrops, prawn, shrimp, spider crab, squat lobster, velvet swimming crab
Molluscs	Cockles, limpets, mussels, oysters, razor clam, scallops, whelks, winkles
Wildfowl[b]	Canada goose, greylag goose, mallard, pink-footed goose, pintail, shoveler, teal, wigeon

Notes

[a] Including offal.

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

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

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

Person ID number	Bass	Cod	Dover sole	Flounder	Haddock	Ling	Mackerel	Pollack	Turbot	Whiting	Total
4421/3/1	-	24.5	-	-	-	2.7	27.4	-	-	-	54.6
4421/5/1	-	24.5	-	-	-	2.7	27.4	-	-	-	54.6
4726/1/1	-	-	-	-	46.3	-	-	-	-	-	46.3
4422/2/1	4.2	24.8	-	-	-	-	1.8	-	-	-	30.8
4564/1/1	-	25.7	-	-	-	-	4.8	-	-	-	30.6
4444/1/1	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4444/2/1	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4444/3/1	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4444/3/2	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4444/3/3	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4444/3/4	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4444/3/5	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4444/3/6	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4444/3/7	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4444/3/8	-	10.7	-	-	-	5.5	13.7	-	-	-	29.9
4416/1/1	-	4.0	-	-	3.6	-	-	-	-	21.4	28.9
4704/3/1	-	27.2	-	-	-	-	-	-	-	-	27.2
4704/4/1	-	27.2	-	-	-	-	-	-	-	-	27.2
4716/2/1	-	23.4	-	-	-	-	-	-	-	-	23.4
4716/7/1	-	23.4	-	-	-	-	-	-	-	-	23.4
4697/1/1	-	-	-	-	-	-	15.6	-	-	-	15.6

Person ID number	Bass	Cod	Dover sole	Flounder	Haddock	Ling	Mackerel	Pollack	Turbot	Whiting	Total
4697/2/1	-	-	-	-	-	-	15.6	-	-	-	15.6
4456/1/1	-	-	-	-	-	-	14.6	-	-	-	14.6
4456/2/1	-	-	-	-	-	-	14.6	-	-	-	14.6
4454/1/1	-	6.8	-	-	6.8	-	-	-	-	-	13.6
4454/2/1	-	6.8	-	-	6.8	-	-	-	-	-	13.6
4698/1/1	1.0	-	-	1.1	-	-	8.1	-	1.1	-	11.4
4698/2/1	1.0	-	-	1.1	-	-	8.1	-	1.1	-	11.4
4716/1/1	-	9.4	2.0	-	-	-	-	-	-	-	11.3
4717/2/1	-	-	-	-	-	-	-	11.3	-	-	11.3
4717/6/1	-	-	-	-	-	-	-	11.3	-	-	11.3
4418/1/1	-	5.4	-	-	-	5.7	-	-	-	-	11.1
4418/2/1	-	5.4	-	-	-	5.7	-	-	-	-	11.1
4421/1/1	-	3.4	-	-	-	-	7.5	-	-	-	10.9
4421/2/1	-	3.4	-	-	-	-	7.5	-	-	-	10.9
4422/1/1	4.1	4.0	-	-	-	-	1.8	-	-	-	9.9
4406/1/1	-	7.3	-	-	0.6	0.7	-	-	-	0.9	9.5
4716/3/1	-	9.4	-	-	-	-	-	-	-	-	9.4
4696/1/1	-	3.4	-	-	-	-	4.6	-	-	-	8.0
4696/2/1	-	3.4	-	-	-	-	4.6	-	-	-	8.0
4696/2/2	-	3.4	-	-	-	-	4.6	-	-	-	8.0
4696/2/3	-	3.4	-	-	-	-	4.6	-	-	-	8.0
4696/2/4	-	3.4	-	-	-	-	4.6	-	-	-	8.0
4696/2/5	-	3.4	-	-	-	-	4.6	-	-	-	8.0

Person ID number	Bass	Cod	Dover sole	Flounder	Haddock	Ling	Mackerel	Pollack	Turbot	Whiting	Total
4696/2/6	-	3.4	-	-	-	-	4.6	-	-	-	8.0
4406/2/1	-	6.1	-	-	0.5	0.6	-	-	-	0.7	7.9
4717/1/1	-	6.0	-	-	-	-	-	-	-	-	6.0
4717/4/1	-	6.0	-	-	-	-	-	-	-	-	6.0
4599/1/1	-	4.0	-	-	-	-	1.8	-	-	-	5.8
4599/2/1	-	4.0	-	-	-	-	1.8	-	-	-	5.8
4445/1/1	1.6	3.8	-	-	-	-	-	-	-	-	5.4
4445/5/1	1.6	3.8	-	-	-	-	-	-	-	-	5.4
4485/1/1	-	5.2	-	-	-	-	-	-	-	-	5.2
4696/5/1	-	-	-	-	-	-	4.6	-	-	-	4.6
4696/5/2	-	-	-	-	-	-	4.6	-	-	-	4.6
4696/5/3	-	-	-	-	-	-	4.6	-	-	-	4.6
4564/2/1	-	-	-	-	-	-	3.9	-	-	-	3.9
4551/1/1	-	3.0	-	-	-	-	-	-	-	-	3.0
4551/2/1	-	3.0	-	-	-	-	-	-	-	-	3.0
4701/1/1	-	2.7	-	-	-	-	-	-	-	-	2.7
4701/2/1	-	2.7	-	-	-	-	-	-	-	-	2.7
4550/1/1	-	-	-	-	-	-	2.3	-	-	-	2.3
4550/2/1	-	-	-	-	-	-	2.3	-	-	-	2.3
4464/1/1	-	1.9	-	-	-	-	-	-	-	-	1.9
4695/2/1	-	-	-	-	-	-	1.9	-	-	-	1.9
4728/1/1	-	1.8	-	-	-	-	-	-	-	-	1.8
4728/2/1	-	1.8	-	-	-	-	-	-	-	-	1.8

Person ID number	Bass	Cod	Dover sole	Flounder	Haddock	Ling	Mackerel	Pollack	Turbot	Whiting	Total
4409/1/1	-	-	-	-	-	-	1.5	-	-	-	1.5
4409/2/1	-	-	-	-	-	-	1.5	-	-	-	1.5
4609/1/1	-	-	-	-	-	-	0.9	-	-	-	0.9
4552/1/1	-	0.8	-	-	-	-	-	-	-	-	0.8
4552/2/1	-	0.8	-	-	-	-	-	-	-	-	0.8

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of sea fish for adults based on the 20 high-rate consumers is 32.3 kg y^{-1}

The observed 97.5th percentile rate based on 72 observations is 47.7 kg y^{-1}

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

Person ID number	Brown crab	Common lobster	Total
4487/2/1	**35.8**	-	**35.8**
4726/1/1	**14.3**	**11.2**	**25.5**
4716/1/1	**7.2**	**7.0**	**14.2**
4704/3/1	**12.5**	-	**12.5**
4704/4/1	**12.5**	-	**12.5**
4716/2/1	-	7.0	7.0
4713/2/1	-	3.9	3.9
4461/1/1	2.7	-	2.7
4510/1/1	2.7	-	2.7
4417/1/1	-	2.2	2.2
4609/1/1	1.6	-	1.6
4510/2/1	1.4	-	1.4
4713/1/1	-	1.3	1.3
4543/1/1	1.2	-	1.2
4418/1/1	0.8	-	0.8
4418/2/1	0.8	-	0.8
4468/1/1	-	0.6	0.6
4468/2/1	-	0.6	0.6
4468/3/1	-	0.6	0.6
4407/1/1	-	0.5	0.5
4407/2/1	-	0.5	0.5
4407/6/1	-	0.5	0.5
4407/7/1	-	0.5	0.5
4632/1/1	0.4	-	0.4
4632/2/1	0.4	-	0.4
4442/1/1	0.3	-	0.3
4696/1/1	0.2	-	0.2
4696/5/1	0.2	-	0.2
4696/5/2	0.2	-	0.2
4696/5/3	0.2	-	0.2
4406/1/1	0.2	-	0.2
4406/3/1	0.2	-	0.2
4552/1/1	-	0.1	0.1
4552/2/1	-	0.1	0.1

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of crustaceans for adults based on the 5 high-rate consumers is 20.1 kg y^{-1}

The observed 97.5th percentile rate based on 34 observations is 27.3 kg y^{-1}

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

Person ID number	Cockle	Mussel	Whelk	Winkle	Total
4726/1/1	**11.6**	-	-	**10.9**	**22.5**
4692/1/1	-	-	-	**8.8**	**8.8**
4609/1/1	7.1	-	-	-	7.1
4692/3/1	-	-	-	3.5	3.5
4692/4/1	-	-	-	3.5	3.5
4692/5/1	-	-	-	3.5	3.5
4407/6/1	-	-	-	2.4	2.4
4407/7/1	-	-	-	2.4	2.4
4716/1/1	-	-	0.5	-	0.5
4716/2/1	-	-	0.5	-	0.5
4716/3/1	-	-	0.5	-	0.5
4716/7/1	-	-	0.5	-	0.5
4704/3/1	-	-	0.4	-	0.4
4704/4/1	-	-	0.4	-	0.4
4411/1/1	-	0.2	-	-	0.2
4411/2/1	-	0.2	-	-	0.2

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of molluscs for adults based on the 2 high-rate consumers is 15.6 kg y^{-1}

The observed 97.5th percentile rate based on 16 observations is 17.4 kg y^{-1}

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

Person ID number	Gut weed	Porphyra	Total
4405/1/1	**1.3**	**0.6**	**1.9**
4405/2/1	0.1	0.06	0.2

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of marine plants/algae for adults based on the high-rate consumer is 1.9 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 1.9 kg y^{-1}

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

Person ID number	Bass	Cod	Haddock	Mackerel	Whiting	Total
4416/2/1	-	**4.0**	**3.6**	-	**21.4**	**28.9**
4716/4/1	-	9.4	-	-	-	9.4
4716/5/1	-	9.4	-	-	-	9.4
4716/6/1	-	9.4	-	-	-	9.4
4696/3/1	-	3.4	-	4.6	-	8.0
4696/4/1	-	3.4	-	4.6	-	8.0
4445/6/1	1.2	2.9	-	-	-	4.1
4717/5/1	-	2.4	-	-	-	2.4

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of sea fish for the child age group based on the high-rate consumer is 28.9 kg y^{-1}

The observed 97.5th percentile rate based on 8 observations is 25.5 kg y^{-1}

Table 31. Children's consumption rates of crustaceans from the Hartlepool aquatic survey area (kg y^{-1})

Person ID number	Brown crab
4696/3/1	**0.2**
4696/4/1	**0.2**

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of crustaceans for the child age group based on the 2 high-rate consumers is 0.2 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 0.2 kg y^{-1}

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

Person ID number	Winkle
4692/2/1	**2.6**

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of molluscs for the child age group based on the high-rate consumer is 2.6 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 33. Children's consumption rates of marine plants/algae from the Hartlepool aquatic survey area (kg y^{-1})

Person ID number	Gut weed	Porphyra	Total
4405/3/1	**0.1**	**0.05**	**0.1**
4405/4/1	**0.1**	**0.05**	**0.1**

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of marine plants/algae for the child age group based on the 2 high-rate consumers is 0.1 kg y^{-1}

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

Table 34. Adults' intertidal occupancy rates in the Hartlepool aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4482/1/1	**East of the power station jetty**	**Bait digging and collecting peeler crabs for bait**	**415**	-	-	-	-	-	-	-
	Coatham Sands and Marske Sands	Angling	-	-	-	-	42	-	-	-
4485/1/1	**East of the power station jetty**	**Bait digging**	**313**	-	-	-	-	-	-	-
	Between Headland Rocks and North Gare Sands	Angling	-	-	-	-	235	-	-	-
4693/1/1	**East of the power station jetty**	**Collecting peeler crabs for bait**	**294**	-	-	-	-	-	-	-
	Seaton Sands and Coatham Sands	**Angling**	-	-	-	-	**782**	-	-	-
4710/1/1	East of the power station jetty	Bait digging	102	-	-	-	-	-	-	-
	West of the power station jetty and Headland Rocks	**Angling**	-	-	-	**173**	-	-	-	-
	North Gare Sands	Angling	-	-	-	-	39	-	-	-
4511/1/1	East of the power station jetty	Collecting peeler crabs for bait	39	-	-	-	-	-	-	-
4511/2/1	East of the power station jetty	Collecting peeler crabs for bait	39	-	-	-	-	-	-	-
4511/3/1	East of the power station jetty	Collecting peeler crabs for bait	39	-	-	-	-	-	-	-
4484/1/1	East of the power station jetty	Bait digging	20	-	-	-	-	-	-	-
4508/1/1	North Gare Sands	Undertaking surveys	13	-	-	-	-	-	-	-
	North Gare Sands	Rock pooling	-	-	-	13	-	-	-	-
	North Gare Sands	Working	-	-	-	-	178	-	-	-
	Marske Sands and Saltburn Sands	Walking	-	-	-	-		-	-	-
4508/2/1	North Gare Sands	Undertaking surveys	13	-	-	-	-	-	-	-
	North Gare Sands	Rock pooling	-	-	-	13	-	-	-	-
	North Gare Sands	Working	-	-	-	-	146	-	-	-
	Seaton Sands	Walking	-	-	-	-		-	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4692/1/1	East of the power station jetty	**Collecting winkles**	2	-	-	-	-	-	-	-
	Block Sands and east of the power station jetty		-	-	-	**75**	-	-	-	-
4510/2/1	**Bran Sands**	**Bait digging**	**-**	**547**	-	-	-	-	-	-
4464/1/1	**Greenabella**	**Collecting peeler crabs for bait**	-	**330**	-	-	-	-	-	-
	Throston Scar	Angling	-	-	-	9	-	-	-	-
4564/1/1	**Bran Sands**	**Bait digging and collecting peeler crabs for bait**	**-**	**256**	-	-	-	-	-	-
	Redcar Sands	Angling	-	-	-	-	313	-	-	-
4726/1/1	Bran Sands	Bait digging and collecting cockles	-	117	-	-	-	-	-	-
		Collecting winkles	-	-	-	13	-	-	-	-
4609/1/1	Bran Sands	Collecting cockles	-	104	-	-	-	-	-	-
	Coatham Sands	Dog walking	-	-	-	-	104	-	-	-
4445/1/1	Bran Sands	Bait digging	-	55	-	-	-	-	-	-
	Powder Hole	Staying on a boat	-		-	-	-	-	-	-
	Saltburn Scar	**Angling**	-	-	-	**78**	-	-	-	-
	South Gare Breakwater		-	-	-	-	78	-	-	-
4416/1/1	Bran Sands	Bait digging	-	48	-	-	-	-	-	-
4455/1/1	Bran Sands	Dog walking	-	9	-	-	-	-	-	-
4455/2/1	Bran Sands	Dog walking	-	9	-	-	-	-	-	-
4728/1/1	Old Town Basin	Bait digging	-	3	-	-	-	-	-	-
	Throston Sands	Walking	-	-	-	-	4	-	-	-
4713/1/1	**Paddy's Hole**	**Boat maintenance**	**-**	**-**	**286**	-	-	-	-	-
4714/2/1	Paddy's Hole	Boat maintenance	-	-	48	-	-	-	-	-
4718/1/1	Paddy's Hole	Boat maintenance	-	-	26	-	-	-	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4481/1/1	**Seaton Sands**	**Working on the shore**	-	-	-	**91**	-	-	-	-
			-	-	-	-	**1070**	-	-	-
4481/4/1	**Seaton Sands**	**Working on the shore**	-	-	-	**91**	-	-	-	-
			-	-	-	-	**1070**	-	-	-
4481/5/1	**Seaton Sands**	**Working on the shore**	-	-	-	**91**	-	-	-	-
			-	-	-	-	**1070**	-	-	-
4481/6/1	**Seaton Sands**	**Working on the shore**	-	-	-	**91**	-	-	-	-
			-	-	-	-	**1070**	-	-	-
4481/7/1	**Seaton Sands**	**Working on the shore**	-	-	-	**91**	-	-	-	-
			-	-	-	-	**1070**	-	-	-
4481/8/1	**Seaton Sands**	**Working on the shore**	-	-	-	**91**	-	-	-	-
			-	-	-	-	**1070**	-	-	-
4481/9/1	**Seaton Sands**	**Working on the shore**	-	-	-	**91**	-	-	-	-
			-	-	-	-	**1070**	-	-	-
4515/1/1	Throston Sands	Rock pooling	-	-	-	39	-	-	-	-
		Playing	-	-	-	-	39	-	-	-
4481/2/1	**Seaton Sands**	**Working on the shore**	-	-	-	32	-	-	-	-
			-	-	-	-	**386**	-	-	-
4481/3/1	**Seaton Sands**	**Working on the shore**	-	-	-	32	-	-	-	-
			-	-	-	-	**386**	-	-	-
4515/3/1	Throston Sands	Rock pooling	-	-	-	26	-	-	-	-
		Playing	-	-	-	-	26	-	-	-
4561/1/1	Redcar Rocks	Rock pooling	-	-	-	10	-	-	-	-
	Marske Sands, Redcar Sands and Saltburn Sands	Dog walking	-	-	-	-	175	-	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4561/2/1	Redcar Rocks	Rock pooling	-	-	-	10	-	-	-	-
	Marske Sands, Redcar Sands and Saltburn Sands	Dog walking	-	-	-	-	175	-	-	-
4405/1/1	Redcar Rocks	Collecting seaweed	-	-	-	3	-	-	-	-
	North Gare Sands	Working on the shore	-	-	-	-	175	-	-	-
	Saltburn Sands	Walking	-	-	-	-		-	-	-
4411/1/1	Redcar Rocks	Collecting mussels	-	-	-	1	-	-	-	-
	Marske Sands and Redcar Sands	Dog walking and walking	-	-	-	-	187	-	-	-
4730/1/1	**North Gare Sands**	**Nature warden duties**	**-**	**-**	**-**	**-**	**834**	-	-	-
4459/3/1	**Saltburn Sands**	**Lifeguard duties and teaching watersports**	**-**	**-**	**-**	**-**	**829**	-	-	-
4422/1/1	**Seaton Sands, North Gare Sands, Coatham Sands, Redcar Sands and Marske Sands**	**Angling**	**-**	**-**	**-**	**-**	**717**	-	-	-
4422/2/1	**Seaton Sands, North Gare Sands, Coatham Sands, Redcar Sands and Marske Sands**	**Angling**	**-**	**-**	**-**	**-**	**717**	-	-	-
4459/1/1	**Saltburn Sands and Redcar Sands**	**Teaching watersports, water sports preparation and playing**	-	-	-	-	**610**	-	-	-
4718/3/1	**Coatham Sands, Redcar Sands and Marske Sands**	**Dog walking**	-	-	-	-	**608**	-	-	-
4434/1/1	**North Gare Sands**	**Dog walking**	-	-	-	-	**600**	-	-	-
4434/2/1	**North Gare Sands**	**Dog walking**	-	-	-	-	**600**	-	-	-
4521/1/1	**North Gare Sands**	**Dog walking**	-	-	-	-	**548**	-	-	-
4424/1/1	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/2	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/3	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/4	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4424/1/5	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/6	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/7	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/8	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/9	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/10	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/11	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/12	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/13	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/14	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/15	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/16	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/17	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/18	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/19	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4424/1/20	**Saltburn Sands**	**Lifeguard duties**	-	-	-	-	**539**	-	-	-
4415/1/1	**Redcar Sands**	**Walking and jogging**	-	-	-	-	**413**	-	-	-
4489/1/1	**Seaton Sands**	**Walking, dog walking and preparing to swim**	-	-	-	-	**401**	-	-	-
4466/1/1	**North Gare Sands**	**Working on the shore**	-	-	-	-	**399**	-	-	-
4730/3/1	**North Gare Sands**	**Nature warden duties**	-	-	-	-	**365**	-	-	-
4730/3/2	**North Gare Sands**	**Nature warden duties**	-	-	-	-	**365**	-	-	-
4513/1/1	**Throston Sands**	**Dog walking**	-	-	-	-	**365**	-	-	-
4426/1/1	Seaton Sands	Walking, dog walking and preparing to swim	-	-	-	-	351	-	-	-
4472/1/1	Marske Sands and Saltburn Sands	Dog walking	-	-	-	-	344	-	-	-
4472/2/1	Marske Sands and Saltburn Sands	Dog walking	-	-	-	-	344	-	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4437/1/1	North Gare Sands	Dog walking	-	-	-	-	296	-	-	-
4437/2/1	North Gare Sands	Dog walking	-	-	-	-	296	-	-	-
4442/1/1	Coatham Sands and Redcar Sands	Angling	-	-	-	-	291	-	-	-
4443/1/1	Coatham Sands and Redcar Sands	Angling	-	-	-	-	291	-	-	-
4461/1/1	Seaton Sands	Dog walking	-	-	-	-	274	-	-	-
4465/3/1	Seaton Sands and North Gare Sands	Jogging and walking	-	-	-	-	261	-	-	-
4478/1/1	Seaton Sands	Playing and dog walking	-	-	-	-	236	-	-	-
4478/2/1	Seaton Sands	Playing and dog walking	-	-	-	-	236	-	-	-
4514/1/1	Throston Sands	Dog walking	-	-	-	-	235	-	-	-
4486/1/1	Seaton Sands and North Gare Sands	Dog walking	-	-	-	-	235	-	-	-
4486/2/1	Seaton Sands and North Gare Sands	Dog walking	-	-	-	-	235	-	-	-
4413/1/1	Redcar Sands	Walking and beachcombing	-	-	-	-	200	-	-	-
4477/1/1	Seaton Sands	Metal detecting and playing	-	-	-	-	158	-	-	-
4477/2/1	Seaton Sands	Metal detecting and playing	-	-	-	-	158	-	-	-
4522/1/1	Throston Sands and North Gare Sands	Dog walking	-	-	-	-	156	-	-	-
4522/2/1	Throston Sands and North Gare Sands	Dog walking	-	-	-	-	156	-	-	-
4427/1/1	Seaton Sands	Walking, dog walking and preparing to swim	-	-	-	-	145	-	-	-
4514/2/1	Throston Sands	Dog walking	-	-	-	-	130	-	-	-
4562/1/1	Seaton Sands and Saltburn Sands	Playing and walking	-	-	-	-	126	-	-	-
4423/1/1	Saltburn Sands	Working on the shore	-	-	-	-	123	-	-	-
4560/1/1	South Gare Breakwater, Redcar Sands and Marske Sands	Walking and dog walking	-	-	-	-	122	-	-	-
4701/1/1	South Gare Breakwater	Angling	-	-	-	-	117	-	-	-
4701/2/1	South Gare Breakwater	Angling	-	-	-	-	117	-	-	-
4701/3/1	South Gare Breakwater	Angling	-	-	-	-	117	-	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4419/1/1	Coatham Sands and Marske Sands	Walking	-	-	-	-	104	-	-	-
4499/1/1	Throston Sands	Dog walking	-	-	-	-	104	-	-	-
4499/2/1	Throston Sands	Dog walking	-	-	-	-	104	-	-	-
4505/2/1	Seaton Sands	Dog walking	-	-	-	-	104	-	-	-
4505/3/1	Seaton Sands	Dog walking	-	-	-	-	104	-	-	-
4520/1/1	North Gare Sands	Dog walking, beachcombing and playing	-	-	-	-	104	-	-	-
4520/3/1	North Gare Sands	Dog walking, beachcombing and playing	-	-	-	-	104	-	-	-
4702/1/1	North Gare Sands	Dog walking	-	-	-	-	104	-	-	-
4702/2/1	North Gare Sands	Dog walking	-	-	-	-	104	-	-	-
4695/1/1	Bran Sands	Dog walking	-	-	-	-	104	-	-	-
4697/1/1	Marske Sands	Angling	-	-	-	-	93	-	-	-
	Redcar Sands, Marske Sands and Saltburn Sands	Walking	-	-	-	-		-	-	-
4438/1/1	North Gare Sands	Dog walking	-	-	-	-	90	-	-	-
4438/2/1	North Gare Sands	Dog walking	-	-	-	-	90	-	-	-
4433/1/1	Seaton Sands	Walking, dog walking and preparing to swim	-	-	-	-	79	-	-	-
4563/1/1	Bran Sands	Dog walking	-	-	-	-	78	-	-	-
4563/2/1	Bran Sands	Dog walking	-	-	-	-	78	-	-	-
4599/1/1	Seaton Sands and North Gare Sands	Dog walking	-	-	-	-	78	-	-	-
4599/2/1	Seaton Sands and North Gare Sands	Dog walking	-	-	-	-	78	-	-	-
4430/1/1	Seaton Sands	Walking, dog walking, preparing to swim and beachcombing	-	-	-	-	72	-	-	-
4431/1/1	Seaton Sands	Walking and preparing to swim	-	-	-	-	71	-	-	-
4428/1/1	Seaton Sands	Walking, dog walking and preparing to swim	-	-	-	-	70	-	-	-
4457/1/1	Bran Sands and Saltburn Sands	Dog walking	-	-	-	-	64	-	-	-
4405/2/1	Saltburn Sands	Walking	-	-	-	-	60	-	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4722/1/1	Seaton Sands	Dog walking	-	-	-	-	59	-	-	-
	Carr House Sands		-	-	-	-	-	59	-	-
4722/2/1	Seaton Sands	Dog walking	-	-	-	-	59	-	-	-
	Carr House Sands		-	-	-	-	-	59	-	-
4722/3/1	Seaton Sands	Dog walking	-	-	-	-	59	-	-	-
	Carr House Sands		-	-	-	-	-	59	-	-
4722/4/1	Seaton Sands	Dog walking	-	-	-	-	59	-	-	-
	Carr House Sands		-	-	-	-	-	59	-	-
4719/1/1	Redcar Sands	**Dog walking**	-	-	-	-	52	-	-	-
	Carr House Sands		-	-	-	-	-	**104**	-	-
4719/2/1	Redcar Sands	**Dog walking**	-	-	-	-	52	-	-	-
	Carr House Sands		-	-	-	-	-	**104**	-	-
4436/1/1	North Gare Sands	Dog walking	-	-	-	-	52	-	-	-
4709/1/1	North Gare Sands	Dog walking	-	-	-	-	52	-	-	-
4709/2/1	North Gare Sands	Dog walking	-	-	-	-	52	-	-	-
4429/1/1	Seaton Sands	Walking, playing and preparing to swim	-	-	-	-	50	-	-	-
4697/2/1	Redcar Sands, Marske Sands and Saltburn Sands	Walking	-	-	-	-	48	-	-	-
4566/1/1	Throston Sands and Seaton Sands	Dog walking	-	-	-	-	42	-	-	-
4407/1/1	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive, socialising on beach	-	-	-	-	40	-	-	-
4407/2/1	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive, socialising on beach	-	-	-	-	40	-	-	-
4508/3/1	North Gare Sands	Working	-	-	-	-	40	-	-	-
4407/3/1	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/3/2	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/3/3	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4407/3/4	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/3/5	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/3/6	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/3/7	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/3/8	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/3/9	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/4/1	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/4/2	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/4/3	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/4/4	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/4/5	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/4/6	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/4/7	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/4/8	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4407/4/9	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	-	-	39	-	-	-
4523/1/1	North Gare Sands	Dog walking	-	-	-	-	39	-	-	-
4523/2/1	North Gare Sands	Dog walking	-	-	-	-	39	-	-	-
4508/14/1	Marske Sands and Saltburn Sands	Walking	-	-	-	-	38	-	-	-
4465/1/1	North Gare Sands	Dog walking	-	-	-	-	30	-	-	-
4698/1/1	Marske Sands	Angling	-	-	-	-	27	-	-	-
4412/1/1	Redcar Sands	Walking	-	-	-	-	25	-	-	-
4441/1/1	Bran Sands, Coatham Sands, Redcar Sands and Marske Sands	Playing	-	-	-	-	24	-	-	-
4441/2/1	Bran Sands, Coatham Sands, Redcar Sands and Marske Sands	Playing	-	-	-	-	24	-	-	-
4423/4/1	Saltburn Sands	Water sports preparation	-	-	-	-	18	-	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4423/5/1	Saltburn Sands	Water sports preparation	-	-	-	-	18	-	-	-
4562/2/1	Saltburn Sands	Walking	-	-	-	-	18	-	-	-
4469/1/1	Bran Sands, Coatham Sands, Marske Sands, Redcar Sands and Saltburn Sands	Water sports preparation	-	-	-	-	17	-	-	-
4508/12/1	North Gare Sands	Attending a school trip	-	-	-	-	15	-	-	-
4508/12/2	North Gare Sands	Attending a school trip	-	-	-	-	15	-	-	-
4508/13/1	North Gare Sands	Attending a school trip	-	-	-	-	15	-	-	-
4508/13/2	North Gare Sands	Attending a school trip	-	-	-	-	15	-	-	-
4457/2/1	Saltburn Sands	Dog walking	-	-	-	-	12	-	-	-
4423/2/1	Saltburn Sands	Water sports preparation	-	-	-	-	9	-	-	-
4423/3/1	Saltburn Sands	Water sports preparation	-	-	-	-	9	-	-	-
4459/2/1	Saltburn Sands	Water sports preparation	-	-	-	-	9	-	-	-
4508/17/1	Seaton Sands	Walking	-	-	-	-	6	-	-	-
4432/1/1	Seaton Sands	Walking and preparing to swim	-	-	-	-	4	-	-	-
4460/1/1	Seaton Sands and Redcar Sands	Walking	-	-	-	-	4	-	-	-
4460/2/1	Seaton Sands and Redcar Sands	Walking	-	-	-	-	4	-	-	-
4728/2/1	Throston Sands	Walking	-	-	-	-	4	-	-	-
4423/6/1	Saltburn Sands	Water sports preparation	-	-	-	-	2	-	-	-
4407/6/1	South Gare Breakwater and Coatham Sands	Resting	-	-	-	-	1	-	-	-
4407/7/1	South Gare Breakwater and Coatham Sands	Resting	-	-	-	-	1	-	-	-
4715/1/1	**Carr House Sands**	**Bait digging**	-	-	-	-	-	**209**	-	-
4708/1/1	Middleton Sands	Collecting sea coal	-	-	-	-	-	6	-	-
4723/1/1	Middleton Sands	Walking	-	-	-	-	-	1	-	-
4723/2/1	Middleton Sands	Walking	-	-	-	-	-	1	-	-
4724/1/1	Fish Sands	Walking	-	-	-	-	-	1	-	-

Person ID number	Location	Activity	Mud	Mud and sand	Mud and stones	Rock	Sand	Sand and coal	Sand and stones	Boat on mud
4425/1/1	**Seaton Sands and Saltburn Sands**	**Working on the shore**	-	-	-	-	-	-	**120**	-
4425/2/1	**Seaton Sands and Saltburn Sands**	**Working on the shore**	-	-	-	-	-	-	**120**	-
4475/1/1	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4475/1/2	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4475/2/1	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4475/2/2	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4475/3/1	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4475/3/2	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4475/4/1	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4475/4/2	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4475/5/1	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4475/6/1	Across the survey area	Rescue duties	-	-	-	-	-	-	14	-
4417/1/1	**Paddy's Hole**	**Boat maintenance**	-	-	-	-	-	-	-	**261**

Notes for Table 34

The emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over mud for adults based on 3 high-rate observations is 341 h y^{-1}

The observed 97.5th percentile rate based on 11 observations is 389 h y^{-1}

The mean intertidal occupancy rate over mud and sand for adults based on 3 high-rate observations is 378 h y^{-1}

The observed 97.5th percentile rate based on 10 observations is 499 h y^{-1}

The mean intertidal occupancy rate over mud and stones for adults based on the high-rate observation is 286 h y^{-1}

The observed 97.5th percentile rate based on 3 observations is 274 h y^{-1}

The mean intertidal occupancy rate over rock for adults based on 10 high-rate observations is 96 h y^{-1}

The observed 97.5th percentile rate based on 22 observations is 130 h y^{-1}

The mean intertidal occupancy rate over sand for adults based on 45 high-rate observations is 626 h y^{-1}

The observed 97.5th percentile rate based on 171 observations is 1070 h y^{-1}

The mean intertidal occupancy rate over sand and coal for adults based on 3 high-rate observations is 139 h y^{-1}

The observed 97.5th percentile rate based on 11 observations is 182 h y^{-1}

The mean intertidal occupancy rate over sand and stones for adults based on 2 high-rate observations is 120 h y^{-1}

The observed 97.5th percentile rate based on 12 observations is 120 h y^{-1}

The mean intertidal occupancy rate over boat on mud for adults based on the high-rate observation is 261 h y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 35. Children's intertidal occupancy rates in the Hartlepool aquatic survey area (h y^{-1})

Person ID number	Age	Location	Activity	Mud and sand	Rock	Sand
4416/2/1	**14**	**Bran Sands**	**Bait digging**	**48**	-	-
4481/13/1	**6**	**Seaton Sands**	**Rock pooling**	-	**32**	-
			Playing	-	-	**386**
4481/14/1	**7**	**Seaton Sands**	**Rock pooling**	-	**32**	-
			Playing	-	-	**386**
4481/15/1	**8**	**Seaton Sands**	**Rock pooling**	-	**32**	-
			Playing	-	-	**386**
4481/16/1	**9**	**Seaton Sands**	**Rock pooling**	-	**32**	-
			Playing	-	-	**386**
4481/17/1	**10**	**Seaton Sands**	**Rock pooling**	-	**32**	**-**
			Playing	-	-	**386**
4481/18/1	**11**	**Seaton Sands**	**Rock pooling**	-	**32**	-
			Playing	-	-	**386**
4459/4/1	**7**	**Redcar Sands**	**Playing**	-	-	**521**
4459/5/1	**7**	**Redcar Sands**	**Playing**	-	-	**521**
4478/3/1	**6**	**Seaton Sands**	**Playing and dog walking**	-	-	**236**
4405/3/1	9	Saltburn Sands	Walking	-	-	60
4405/4/1	7	Saltburn Sands	Walking	-	-	60
4407/5/1	12	South Gare Breakwater and Coatham Sands	Preparing to sub-aqua dive and socialising on beach	-	-	38
4429/2/1	15	Seaton Sands	Playing	-	-	24
4429/3/1	12	Seaton Sands	Playing	-	-	24
4429/4/1	10	Seaton Sands	Playing	-	-	24
4477/3/1	12	Seaton Sands	Playing	-	-	14
4477/4/1	14	Seaton Sands	Playing	-	-	14
4477/5/1	12	Seaton Sands	Playing	-	-	14
4508/15/1	15	Seaton Sands	Walking	-	-	6
4508/16/1	12	Seaton Sands	Walking	-	-	6
4508/6/1	6	North Gare Sands	Conducting a beach survey	-	-	2
4508/6/2	6	North Gare Sands	Conducting a beach survey	-	-	2
4508/7/1	7	North Gare Sands	Conducting a beach survey	-	-	2
4508/7/2	7	North Gare Sands	Conducting a beach survey	-	-	2
4508/8/1	8	North Gare Sands	Conducting a beach survey	-	-	2
4508/8/2	8	North Gare Sands	Conducting a beach survey	-	-	2
4508/9/1	9	North Gare Sands	Conducting a beach survey	-	-	2
4508/9/2	9	North Gare Sands	Conducting a beach survey	-	-	2
4508/10/1	10	North Gare Sands	Conducting a beach survey	-	-	2

Person ID number	Age	Location	Activity	Mud and sand	Rock	Sand
4508/10/2	10	North Gare Sands	Conducting a beach survey	-	-	2
4508/11/1	11	North Gare Sands	Conducting a beach survey	-	-	2
4508/11/2	11	North Gare Sands	Conducting a beach survey	-	-	2

Notes

The emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over mud and sand for the child age group based on the high-rate observation is 48 h y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

The mean intertidal occupancy rate over rock for the child age group based on 6 high-rate observations is 32 h y^{-1}

The observed 97.5th percentile rate based on 6 observations is 32 h y^{-1}

The mean intertidal occupancy rate over sand for the child age group based on 9 high-rate observations is 399 h y^{-1}

The observed 97.5th percentile rate based on 32 observations is 521 h y^{-1}

Table 36. Infants' intertidal occupancy rates in the Hartlepool aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Rock	Sand
4481/19/1	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/19/2	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/20/1	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/20/2	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/21/1	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/21/2	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/22/1	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/22/2	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/23/1	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/23/2	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/24/1	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4481/25/1	**Seaton Sands**	**Rock pooling**	**91**	-
		Playing	-	**1070**
4515/2/1	**Throston Sands**	**Rock pooling**	**39**	-
		Playing	-	39
4481/10/1	**Seaton Sands**	**Rock pooling**	**32**	-
		Playing	-	**386**
4481/11/1	**Seaton Sands**	**Rock pooling**	**32**	-
		Playing	-	**386**
4481/12/1	**Seaton Sands**	**Rock pooling**	**32**	-
		Playing	-	**386**
4562/9/1	Seaton Sands	Playing	-	108
4520/2/1	North Gare Sands	Dog walking, playing and beachcombing	-	104
4465/2/1	North Gare Sands	Dog walking	-	30
4441/3/1	Bran Sands, Coatham Sands, Redcar Sands and Marske Sands	Playing	-	24

Person ID number	Location	Activity	Rock	Sand
4508/4/1	North Gare Sands	Conducting beach survey	-	4
4508/5/1	North Gare Sands	Conducting beach survey	-	4

Notes

The emboldened observations are the high-rate individuals

The mean intertidal occupancy rate over rock for the infant age group based on 16 high-rate observations is 77 h y^{-1}

The observed 97.5th percentile rate based on 16 observations is 91 h y^{-1}

The mean intertidal occupancy rate over sand for the infant age group based on 15 high-rate observations is 933 h y^{-1}

The observed 97.5th percentile rate based on 22 observations is 1070 h y^{-1}

Table 37. Gamma dose rate measurements over intertidal substrates in the Hartlepool aquatic survey area (µGy h^{-1})

Location	National Grid Reference	Substrate	Gamma dose rate at 1m[a]
Throston Sands	NZ 521 345	Sand	0.057
Block Sands	NZ 531 335	Sand and stones	0.065
Fish Sands	NZ 527 335	Sand	0.060
Middleton Sands	NZ 521 334	Sand	0.065
Old Town Basin	NZ 517 327	Sand and coal	0.067
Carr House Sands	NZ 519 315	Sand	0.058
Seaton Sands	NZ 526 296	Sand	0.100
East of power station jetty	NZ 536 267	Mud	0.064
East of power station jetty	NZ 536 267	Mud and sand	0.063
Bran Sands	NZ 556 267	Sand	0.057
Paddy's Hole	NZ 555 273	Mud and stones	0.172
South Gare Sands	NZ 559 276	Sand	0.054
South Gare Sands	NZ 559 276	Sand and stones	0.123
Redcar Sands	NZ 593 253	Sand	0.102
Marske Sands	NZ 632 233	Sand	0.062
Marske Sands	NZ 632 233	Sand and stones	0.068
Saltburn Sands	NZ 667 218	Sand	0.059
Saltburn Sands	NZ 667 218	Sand and stones	0.073

Notes

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

Table 38. Adults' handling rates of fishing gear and sediment in the Hartlepool aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Fishing gear	Sediment
4406/1/1	**Tees Bay**	**Potting**	**1760**	-
4704/1/1	**Tees Bay**	**Potting**	**1647**	-
4704/2/1	**Tees Bay**	**Potting**	**1647**	-
4704/3/1	**Tees Bay**	**Potting**	**1647**	-
4716/1/1	**Tees Bay**	**Potting and netting**	**1644**	-
4716/2/1	**Tees Bay**	**Potting and netting**	**1644**	-
4487/1/1	**Between Victoria Harbour and Redcar Rocks**	**Potting**	**1564**	-
4468/1/1	**Tees Bay**	**Potting**	**1189**	-
4468/2/1	**Tees Bay**	**Potting**	**1189**	-
4406/3/1	**Tees Bay**	**Potting**	**880**	-
4713/1/1	**Tees Bay**	**Potting**	**766**	-
4417/1/1	**Tees Bay**	**Potting**	**704**	-
4487/2/1	**Between Victoria Harbour and Redcar Rocks**	**Potting**	**627**	-
4510/1/1	Tees Bay	Potting	547	-
4714/1/1	Tees Bay	Potting	469	-
4714/2/1	Tees Bay	Potting	469	-
4510/2/1	**Bran Sands**	**Bait digging**	-	**547**
4482/1/1	**East of the power station jetty**	**Bait digging and collecting peeler crabs for bait**	-	**415**
4464/1/1	**Greenabella**	**Collecting peeler crabs for bait**	-	**330**
4485/1/1	**East of the power station jetty**	**Bait digging**	-	**313**
4693/1/1	**East of the power station jetty**	**Collecting peeler crabs for bait**	-	**294**
4564/1/1	**Bran Sands**	**Bait digging and collecting peeler crabs for bait**	-	**256**
4715/1/1	**Carr House Sands**	**Bait digging**	-	**209**
4703/1/1	Bran Sands	Bait digging and collecting cockles	-	130
4609/1/1	Bran Sands	Collecting cockles	-	104
4710/1/1	East of the power station jetty	Bait digging	-	102
4416/1/1	Bran Sands	Bait digging	-	48
4511/1/1	East of the power station jetty	Collecting peeler crabs for bait	-	39
4511/2/1	East of the power station jetty	Collecting peeler crabs for bait	-	39
4511/3/1	East of the power station jetty	Collecting peeler crabs for bait	-	39

Person ID number	Location	Activity	Fishing gear	Sediment
4484/1/1	East of the power station jetty	Bait digging	-	20
4445/1/1	Bran Sands	Bait digging	-	13
4508/1/1	East of the power station jetty	Bait digging	-	13
4508/2/1	East of the power station jetty	Bait digging	-	13
4708/1/1	Middleton Sands	Collecting sea coal	-	6
4712/1/1	Old Town Basin	Bait digging	-	3

Notes

The emboldened observations are the high-rate individuals

The mean handling rate of fishing gear for adults based on 13 high-rate observations is 1301 h y^{-1}

The observed 97.5th percentile rate based on 16 observations is 1717 h y^{-1}

The mean handling rate of sediments for adults based on 7 high-rate observations is 338 h y^{-1}

The observed 97.5th percentile rate based on 20 observations is 514 h y^{-1}

Table 39. Children's handling rates of sediment in the Hartlepool aquatic survey area (h y^{-1})

Person ID number	Location	Activity	Sediment
4416/2/1	**Bran Sands**	**Bait digging**	**48**

Notes

The emboldened observation is the high-rate individual

The mean handling rate of sediments for the child age group based on the high-rate observation is 48 h y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 40. Adults' occupancy rates in and on water in the Hartlepool aquatic survey area (h y^{-1})

Person ID number	Location	Activity	In water	On water
4423/1/1	Saltburn Sands	Teaching watersports and recreational watersports	1472	-
4459/1/1	Saltburn Sands	Working on the shore and recreational watersports	416	-
4407/1/1	Tees Bay	Sub-aqua diving	350	-
		Travelling to sub-aqua diving site	-	80
4407/2/1	Tees Bay	Sub-aqua diving	350	-
		Travelling to sub-aqua diving site	-	80
4469/1/1	Bran Sands, Coatham Sands, Marske Sands, Redcar Sands and Saltburn Sands	Windsurfing	261	-
4407/3/1	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/3/2	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/3/3	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/3/4	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/3/5	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/3/6	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/3/7	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/3/8	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/3/9	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/4/1	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/4/2	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/4/3	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/4/4	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/4/5	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40

Person ID number	Location	Activity	In water	On water
4407/4/6	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/4/7	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/4/8	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/4/9	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/6/1	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4407/7/1	Tees Bay	Sub-aqua diving	200	-
		Travelling to sub-aqua diving site	-	40
4423/4/1	Saltburn Sands	Teaching watersports	123	-
4423/5/1	Saltburn Sands	Teaching watersports	123	-
4415/1/1	Redcar Sands	Swimming	96	-
4489/1/1	Seaton Sands	Swimming	85	-
4459/3/1	Saltburn Sands	Lifeguard duties and teaching watersports	82	-
4427/1/1	Seaton Sands	Swimming	78	-
4430/1/1	Seaton Sands	Swimming	73	-
4433/1/1	Seaton Sands	Swimming	73	-
4413/1/1	Redcar Sands	Swimming	70	-
4426/1/1	Seaton Sands	Swimming	68	-
4423/2/1	Saltburn Sands	Teaching watersports	61	-
4423/3/1	Saltburn Sands	Teaching watersports	61	-
4412/1/1	Redcar Sands	Swimming	59	-
4476/2/1	Tees Bay	Teaching watersports	52	-
		Teaching powerboating	-	98
4411/1/1	Redcar Sands	Swimming	52	-
4424/1/1	Saltburn Sands	Lifeguard duties	50	-
4424/1/2	Saltburn Sands	Lifeguard duties	50	-
4424/1/3	Saltburn Sands	Lifeguard duties	50	-
4424/1/4	Saltburn Sands	Lifeguard duties	50	-
4424/1/5	Saltburn Sands	Lifeguard duties	50	-
4424/1/6	Saltburn Sands	Lifeguard duties	50	-
4424/1/7	Saltburn Sands	Lifeguard duties	50	-
4424/1/8	Saltburn Sands	Lifeguard duties	50	-
4424/1/9	Saltburn Sands	Lifeguard duties	50	-
4424/1/10	Saltburn Sands	Lifeguard duties	50	-
4424/1/11	Saltburn Sands	Lifeguard duties	50	-
4424/1/12	Saltburn Sands	Lifeguard duties	50	-

Person ID number	Location	Activity	In water	On water
4424/1/13	Saltburn Sands	Lifeguard duties	50	-
4424/1/14	Saltburn Sands	Lifeguard duties	50	-
4424/1/15	Saltburn Sands	Lifeguard duties	50	-
4424/1/16	Saltburn Sands	Lifeguard duties	50	-
4424/1/17	Saltburn Sands	Lifeguard duties	50	-
4424/1/18	Saltburn Sands	Lifeguard duties	50	-
4424/1/19	Saltburn Sands	Lifeguard duties	50	-
4424/1/20	Saltburn Sands	Lifeguard duties	50	-
4429/1/1	Seaton Sands	Swimming	49	-
4428/1/1	Seaton Sands	Swimming	43	-
4476/1/1	Tees Bay	Teaching watersports	40	-
		Teaching powerboating	-	98
4476/1/2	Tees Bay	Teaching watersports	40	-
		Teaching powerboating	-	98
4476/1/3	Tees Bay	Teaching watersports	40	-
		Teaching powerboating	-	98
4560/1/1	Redcar Sands, South Gare Breakwater and Marske Sands	Swimming	35	-
4431/1/1	Seaton Sands	Swimming	33	-
4459/2/1	Saltburn Sands	Teaching watersports	27	-
4456/1/1	Tees Bay	Sub-aqua diving	25	-
		Pleasure cruising	-	200
4456/2/1	Tees Bay	Sub-aqua diving	25	-
		Pleasure cruising	-	200
4425/1/1	Saltburn Sands	Surfing	20	-
4419/1/1	Coatham Sands and Marske Sands	Swimming	17	-
4423/6/1	Saltburn Sands	Teaching watersports	14	-
4476/3/1	Tees Bay	Teaching watersports	12	-
4476/3/2	Tees Bay	Teaching watersports	12	-
4476/3/3	Tees Bay	Teaching watersports	12	-
4476/3/4	Tees Bay	Teaching watersports	12	-
4432/1/1	Seaton Sands	Swimming	9	-
4475/5/1	Tees Bay	Rescue duties	5	-
			-	30
4475/6/1	Tees Bay	Rescue duties	5	-
			-	30
4420/1/1	South Gare Breakwater	Sub-aqua diving	4	-
		Boat angling and rowing	-	80
4475/4/1	Tees Bay	Rescue duties	4	-
			-	30

Person ID number	Location	Activity	In water	On water
4475/4/2	Tees Bay	Rescue duties	4	-
			-	30
4475/3/1	Tees Bay	Rescue duties	3	-
			-	30
4475/3/2	Tees Bay	Rescue duties	3	-
			-	30
4475/2/1	Tees Bay	Rescue duties	2	-
			-	30
4475/2/2	Tees Bay	Rescue duties	2	-
			-	30
4457/2/1	Saltburn Sands	Surfing	2	-
4475/1/1	Tees Bay	Rescue duties	1	-
			-	30
4475/1/2	Tees Bay	Rescue duties	1	-
			-	30
4508/1/1	Marske Sands and Saltburn Sands	Bodyboarding	1	-
4508/14/1	Marske Sands and Saltburn Sands	Bodyboarding	1	-
4716/1/1	Tees Bay	Potting and netting	-	2724
	Victoria Harbour	Boat maintenance		
4716/2/1	Tees Bay	Potting and netting	-	2724
	Victoria Harbour	Boat maintenance		
4487/1/1	Between Victoria Harbour and Redcar	Potting and boat maintenance	-	1929
4406/1/1	Tees Bay	Potting	-	1877
4704/1/1	Tees Bay	Potting	-	1725
4704/2/1	Tees Bay	Potting	-	1725
4704/3/1	Tees Bay	Potting	-	1725
4468/1/1	Tees Bay	Potting	-	1330
4468/2/1	Tees Bay	Potting	-	1330
4406/3/1	Tees Bay	Potting	-	939
4462/1/1	Tees Bay	Boat angling	-	861
4713/1/1	Tees Bay	Potting	-	825
4487/2/1	Between Victoria Harbour and Redcar	Potting	-	784
4417/1/1	Tees Bay	Potting	-	782
4703/1/1	Tees Bay	Boat angling	-	743
4422/2/1	Tees Bay	Boat angling	-	626
4510/1/1	Tees Bay	Potting	-	547
4714/1/1	Tees Bay	Potting	-	521
4714/2/1	Tees Bay	Potting	-	521
4421/4/1	Tees Bay	Boat angling	-	367

Person ID number	Location	Activity	In water	On water
4445/1/1	Tees Bay	Boat angling	-	355
4445/2/1	Tees Bay	Boat angling	-	355
4445/3/1	Tees Bay	Boat angling	-	355
4445/4/1	Tees Bay	Boat angling	-	355
4445/4/2	Tees Bay	Boat angling	-	355
4445/4/3	Tees Bay	Boat angling	-	355
4572/1/3	Tees Bay	Sailing	-	226
4572/1/1	Tees Bay	Sailing	-	226
4572/1/2	Tees Bay	Sailing	-	226
4572/1/4	Tees Bay	Sailing	-	226
4572/1/5	Tees Bay	Sailing	-	226
4572/1/6	Tees Bay	Sailing	-	226
4572/1/7	Tees Bay	Sailing	-	226
4572/1/8	Tees Bay	Sailing	-	226
4572/1/9	Tees Bay	Sailing	-	226
4572/2/1	Tees Bay	Sailing	-	226
4421/3/1	Tees Bay	Boat angling	-	183
4481/1/1	Seaton Sands	Paddling	-	183
4481/4/1	Seaton Sands	Paddling	-	183
4481/5/1	Seaton Sands	Paddling	-	183
4481/6/1	Seaton Sands	Paddling	-	183
4481/7/1	Seaton Sands	Paddling	-	183
4481/8/1	Seaton Sands	Paddling	-	183
4481/9/1	Seaton Sands	Paddling	-	183
4458/1/1	Tees Bay and Victoria Harbour	Steaming to fishing grounds and working on fishing boat	-	180
4458/2/1	Tees Bay and Victoria Harbour	Steaming to fishing grounds and working on fishing boat	-	180
4421/1/1	Tees Bay	Boat angling	-	115
4693/1/1	East of the power station jetty	Wading (collecting peeler crabs for bait)	-	98
4444/1/1	Tees Bay	Boat angling	-	90
4502/1/1	Tees Bay	Boat angling	-	80
4502/2/1	Tees Bay	Boat angling	-	80
4502/2/2	Tees Bay	Boat angling	-	80
4502/2/3	Tees Bay	Boat angling	-	80
4502/2/4	Tees Bay	Boat angling	-	80
4571/1/1	Tees Bay	Sailing	-	67
4571/1/2	Tees Bay	Sailing	-	67
4571/2/1	Tees Bay	Sailing	-	67
4571/2/2	Tees Bay	Sailing	-	67
4571/2/3	Tees Bay	Sailing	-	67

Person ID number	Location	Activity	In water	On water
4571/2/4	Tees Bay	Sailing	-	67
4571/2/5	Tees Bay	Sailing	-	67
4571/2/6	Tees Bay	Sailing	-	67
4571/2/7	Tees Bay	Sailing	-	67
4571/2/8	Tees Bay	Sailing	-	67
4444/2/1	Tees Bay	Boat angling	-	66
4564/1/1	Bran Sands	Wading (collecting peeler crabs for bait)	-	65
4481/2/1	Seaton Sands	Paddling	-	64
4481/3/1	Seaton Sands	Paddling	-	64
4482/1/1	East of the power station jetty	Wading (collecting peeler crabs for bait)	-	54
4464/1/1	Greenabella	Wading (collecting peeler crabs for bait)	-	37
4418/1/1	Tees Bay	Boat angling	-	20
4701/1/1	Tees Bay	Boat angling	-	18
4701/2/1	Tees Bay	Boat angling	-	18
4442/1/1	Tees Bay	Boat angling	-	15
4443/1/1	Tees Bay	Boat angling	-	15
4511/1/1	East of the power station jetty	Wading (collecting peeler crabs for bait)	-	13
4511/2/1	East of the power station jetty	Wading (collecting peeler crabs for bait)	-	13
4511/3/1	East of the power station jetty	Wading (collecting peeler crabs for bait)	-	13
4454/1/1	Tees Bay	Boat angling	-	12
4454/2/1	Tees Bay	Boat angling	-	12
4478/1/1	Seaton Sands	Paddling	-	9
4478/2/1	Seaton Sands	Paddling	-	9

Table 41. Children's occupancy rates in and on water in the Hartlepool aquatic survey area (h y^{-1})

Person ID number	Location	Activity	In water	On water
4407/5/1	Tees Bay	Sub-aqua diving	10	-
		Travelling to sub-aqua diving site	-	4
4445/6/1	Tees Bay	Boat angling	-	237
4481/13/1	Seaton Sands	Paddling	-	64
4481/14/1	Seaton Sands	Paddling	-	64
4481/15/1	Seaton Sands	Paddling	-	64
4481/16/1	Seaton Sands	Paddling	-	64
4481/17/1	Seaton Sands	Paddling	-	64
4481/18/1	Seaton Sands	Paddling	-	64
4478/3/1	Seaton Sands	Paddling	-	9

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

Person ID number	Location	Activity	On water
4481/19/1	Seaton Sands	Paddling	183
4481/19/2	Seaton Sands	Paddling	183
4481/20/1	Seaton Sands	Paddling	183
4481/20/2	Seaton Sands	Paddling	183
4481/21/1	Seaton Sands	Paddling	183
4481/21/2	Seaton Sands	Paddling	183
4481/22/1	Seaton Sands	Paddling	183
4481/22/2	Seaton Sands	Paddling	183
4481/23/1	Seaton Sands	Paddling	183
4481/23/2	Seaton Sands	Paddling	183
4481/24/1	Seaton Sands	Paddling	183
4481/25/1	Seaton Sands	Paddling	183
4481/10/1	Seaton Sands	Paddling	64
4481/11/1	Seaton Sands	Paddling	64
4481/12/1	Seaton Sands	Paddling	64

Table 43. Adults' consumption rates of green vegetables from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Asparagus	Broccoli	Brussels sprout	Cabbage	Calabrese	Cauliflower	Courgette	Cucumber	Herbs	Kale	Lettuce	Nasturtium leaves	Total
4707/1/1	**1.4**	**5.1**	**16.4**	**35.1**	-	**20.4**	-	**19.1**	-	**5.5**	**1.2**	-	**104.1**
4553/1/1	-	**7.3**	**12.3**	**9.6**	-	**18.4**	**5.4**	**4.9**	-	-	**5.8**	-	**63.6**
4553/2/1	-	**7.3**	**12.3**	**9.6**	-	**18.4**	**5.4**	**4.9**	-	-	**5.8**	-	**63.6**
4632/1/1	-	-	**8.0**	**17.5**	**6.5**	-	**11.0**	-	-	**11.2**	**1.5**	-	**55.8**
4632/2/1	-	-	**8.0**	**17.5**	**6.5**	-	**11.0**	-	-	**11.2**	**1.5**	-	**55.8**
4547/1/1	-	7.3	10.9	-	-	7.1	1.2	-	-	-	1.6	-	28.2
4547/2/1	-	7.3	10.9	-	-	7.1	1.2	-	-	-	1.6	-	28.2
4565/1/1	-	-	5.5	15.3	-	4.1	-	-	-	1.1	-	-	25.9
4549/1/1	-	7.7	-	6.4	-	7.7	-	-	-	0.3	-	-	22.0
4549/2/1	-	7.7	-	6.4	-	7.7	-	-	-	0.3	-	-	22.0
4534/1/1	-	5.1	1.8	4.3	-	-	-	6.4	-	-	2.0	-	19.5
4534/2/1	-	5.1	1.8	4.3	-	-	-	6.4	-	-	2.0	-	19.5
4548/1/1	-	-	-	10.2	-	8.2	-	-	-	-	-	-	18.4
4708/1/1	-	3.4	3.4	4.3	-	3.7	1.8	-	-	1.1	-	-	17.7
4708/2/1	-	3.4	3.4	4.3	-	3.7	1.8	-	-	1.1	-	-	17.7
4708/3/1	-	3.4	3.4	4.3	-	3.7	1.8	-	-	1.1	-	-	17.7
4708/4/1	-	3.4	3.4	4.3	-	3.7	1.8	-	-	1.1	-	-	17.7
4708/5/1	-	3.4	3.4	4.3	-	3.7	1.8	-	-	1.1	-	-	17.7
4708/6/1	-	3.4	3.4	4.3	-	3.7	1.8	-	-	1.1	-	-	17.7
4552/1/1	-	1.2	1.3	2.9	-	-	0.9	9.7	-	-	-	-	16.0
4552/2/1	-	1.2	1.3	2.9	-	-	0.9	9.7	-	-	-	-	16.0
4552/3/1	-	1.2	1.3	2.9	-	-	0.9	9.7	-	-	-	-	16.0
4552/4/1	-	1.2	1.3	2.9	-	-	0.9	9.7	-	-	-	-	16.0
4552/5/1	-	1.2	1.3	2.9	-	-	0.9	9.7	-	-	-	-	16.0
4552/6/1	-	1.2	1.3	2.9	-	-	0.9	9.7	-	-	-	-	16.0
4552/7/1	-	1.2	1.3	2.9	-	-	0.9	9.7	-	-	-	-	16.0
4534/3/1	-	4.1	1.5	3.4	-	-	-	5.1	-	-	1.6	-	15.6
4534/4/1	-	4.1	1.5	3.4	-	-	-	5.1	-	-	1.6	-	15.6
4551/1/1	-	-	-	1.7	-	1.4	-	11.9	-	-	-	-	15.0
4551/2/1	-	-	-	1.7	-	1.4	-	11.9	-	-	-	-	15.0
4566/1/1	-	-	-	-	-	-	6.4	-	0.3	-	8.0	0.1	14.8
4724/1/1	-	-	2.3	7.4	-	3.4	-	-	0.1	-	0.7	-	13.8
4724/2/1	-	-	2.3	7.4	-	3.4	-	-	0.1	-	0.7	-	13.8
4724/3/1	-	-	2.3	7.4	-	3.4	-	-	0.1	-	0.7	-	13.8
4550/1/1	-	-	4.6	5.3	-	-	1.8	-	-	-	1.0	-	12.7

Person ID number	Asparagus	Broccoli	Brussels sprout	Cabbage	Calabrese	Cauliflower	Courgette	Cucumber	Herbs	Kale	Lettuce	Nasturtium leaves	Total
4550/2/1	-	-	4.6	5.3	-	-	1.8	-	-	-	1.0	-	12.7
4544/1/1	-	2.1	2.5	2.3	-	1.8	-	-	-	-	0.3	-	9.0
4544/2/1	-	2.1	2.5	2.3	-	1.8	-	-	-	-	0.3	-	9.0
4562/1/1	-	-	4.0	4.9	-	-	-	-	-	-	-	-	8.9
4562/2/1	-	-	4.0	4.9	-	-	-	-	-	-	-	-	8.9
4562/3/1	-	-	4.0	4.9	-	-	-	-	-	-	-	-	8.9
4562/4/1	-	-	4.0	4.9	-	-	-	-	-	-	-	-	8.9
4562/5/1	-	-	4.0	4.9	-	-	-	-	-	-	-	-	8.9
4562/6/1	-	-	4.0	4.9	-	-	-	-	-	-	-	-	8.9
4562/7/1	-	-	4.0	4.9	-	-	-	-	-	-	-	-	8.9
4543/1/1	-	-	3.4	-	-	3.0	-	-	-	-	-	-	6.4
4543/2/1	-	-	3.4	-	-	3.0	-	-	-	-	-	-	6.4
4543/3/1	-	-	3.4	-	-	3.0	-	-	-	-	-	-	6.4
4546/1/1	-	-	-	3.4	-	2.0	-	-	-	-	0.6	-	6.0
4543/4/1	-	-	2.5	-	-	2.3	-	-	-	-	-	-	4.8
4566/2/1	-	-	-	-	-	-	2.7	-	-	-	-	-	2.7
4567/1/1	-	0.5	-	0.7	-	0.6	0.5	-	-	-	-	-	2.2
4567/2/1	-	0.5	-	0.7	-	0.6	0.5	-	-	-	-	-	2.2
4567/3/1	-	0.5	-	0.7	-	0.6	0.5	-	-	-	-	-	2.2
4567/4/1	-	0.5	-	0.7	-	0.6	0.5	-	-	-	-	-	2.2
4567/5/1	-	0.5	-	0.7	-	0.6	0.5	-	-	-	-	-	2.2
4567/6/1	-	0.5	-	0.7	-	0.6	0.5	-	-	-	-	-	2.2

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for adults based on the 5 high-rate consumers is 68.5 kg y^{-1}

The observed 97.5th percentile rate based on 57 observations is 63.6 kg^{-1}

Table 44. Adults' consumption rates of other vegetables from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Broad bean	Chilli pepper	French bean	Pea	Pepper	Pumpkin	Runner bean	Squash	Sweetcorn	Tomato	Total
4553/1/1	**4.1**	**0.5**	**3.2**	**2.0**	**13.2**	-	**6.4**	-	**10.4**	**40.8**	**80.7**
4553/2/1	**4.1**	**0.5**	**3.2**	**2.0**	**13.2**	-	**6.4**	-	**10.4**	**40.8**	**80.7**
4707/1/1	-	-	**0.4**	**0.1**	**0.7**	-	**1.5**	-	**5.5**	**56.7**	**65.0**
4632/1/1	**2.3**	-	**2.7**	-	-	-	-	**0.9**	**1.6**	**45.0**	**52.5**
4632/2/1	**2.3**	-	**2.7**	-	-	-	-	**0.9**	**1.6**	**45.0**	**52.5**
4552/1/1	-	**0.1**	**0.3**	-	**2.1**	-	**0.7**	**2.6**	**1.3**	**32.4**	**39.6**
4552/2/1	-	**0.1**	**0.3**	-	**2.1**	-	**0.7**	**2.6**	**1.3**	**32.4**	**39.6**
4552/3/1	-	**0.1**	**0.3**	-	**2.1**	-	**0.7**	**2.6**	**1.3**	**32.4**	**39.6**
4552/4/1	-	**0.1**	**0.3**	-	**2.1**	-	**0.7**	**2.6**	**1.3**	**32.4**	**39.6**
4552/5/1	-	**0.1**	**0.3**	-	**2.1**	-	**0.7**	**2.6**	**1.3**	**32.4**	**39.6**
4552/6/1	-	**0.1**	**0.3**	-	**2.1**	-	**0.7**	**2.6**	**1.3**	**32.4**	**39.6**
4552/7/1	-	**0.1**	**0.3**	-	**2.1**	-	**0.7**	**2.6**	**1.3**	**32.4**	**39.6**
4547/1/1	2.7	0.04	0.2	4.8	0.6	-	-	-	3.5	13.6	25.3
4547/2/1	2.7	0.04	0.2	4.8	0.6	-	-	-	3.5	13.6	25.3
4724/1/1	-	0.03	0.3	0.2	0.5	-	-	-	-	22.7	23.7
4724/2/1	-	0.03	0.3	0.2	0.5	-	-	-	-	22.7	23.7
4724/3/1	-	0.03	0.3	0.2	0.5	-	-	-	-	22.7	23.7
4565/1/1	-	-	-	-	1.2	-	-	-	-	21.8	22.9
4566/1/1	-	-	-	-	-	2.3	-	-	-	18.1	20.4
4551/1/1	-	-	0.7	0.1	1.0	-	-	-	1.4	12.0	15.1
4551/2/1	-	-	0.7	0.1	1.0	-	-	-	1.4	12.0	15.1
4543/1/1	-	-	-	10.2	-	-	-	-	4.3	0.6	15.0
4543/2/1	-	-	-	10.2	-	-	-	-	4.3	0.6	15.0
4543/3/1	-	-	-	10.2	-	-	-	-	4.3	0.6	15.0
4534/1/1	-	-	-	-	-	-	-	-	-	13.5	13.5
4534/2/1	-	-	-	-	-	-	-	-	-	13.5	13.5
4708/1/1	-	0.1	-	-	0.9	-	0.8	-	0.3	9.9	11.9
4708/2/1	-	0.1	-	-	0.9	-	0.8	-	0.3	9.9	11.9
4708/3/1	-	0.1	-	-	0.9	-	0.8	-	0.3	9.9	11.9
4708/4/1	-	0.1	-	-	0.9	-	0.8	-	0.3	9.9	11.9
4708/5/1	-	0.1	-	-	0.9	-	0.8	-	0.3	9.9	11.9
4708/6/1	-	0.1	-	-	0.9	-	0.8	-	0.3	9.9	11.9
4543/4/1	-	-	-	7.6	-	-	-	-	3.2	0.4	11.3
4534/3/1	-	-	-	-	-	-	-	-	-	10.8	10.8
4534/4/1	-	-	-	-	-	-	-	-	-	10.8	10.8
4546/1/1	-	-	-	-	-	-	-	-	-	9.8	9.8
4562/1/1	-	0.2	0.4	0.2	-	-	-	-	-	6.6	7.5

Person ID number	Broad bean	Chilli pepper	French bean	Pea	Pepper	Pumpkin	Runner bean	Squash	Sweetcorn	Tomato	Total
4562/2/1	-	0.2	0.4	0.2	-	-	-	-	-	6.6	7.5
4562/3/1	-	0.2	0.4	0.2	-	-	-	-	-	6.6	7.5
4562/4/1	-	0.2	0.4	0.2	-	-	-	-	-	6.6	7.5
4562/5/1	-	0.2	0.4	0.2	-	-	-	-	-	6.6	7.5
4562/6/1	-	0.2	0.4	0.2	-	-	-	-	-	6.6	7.5
4562/7/1	-	0.2	0.4	0.2	-	-	-	-	-	6.6	7.5
4548/1/1	-	-	-	-	-	-	-	-	-	6.8	6.8
4550/1/1	-	-	-	-	0.2	-	-	-	1.7	3.4	5.4
4550/2/1	-	-	-	-	0.2	-	-	-	1.7	3.4	5.4
4567/1/1	-	-	-	-	-	-	-	-	0.6	1.7	2.3
4567/2/1	-	-	-	-	-	-	-	-	0.6	1.7	2.3
4567/3/1	-	-	-	-	-	-	-	-	0.6	1.7	2.3
4567/4/1	-	-	-	-	-	-	-	-	0.6	1.7	2.3
4567/5/1	-	-	-	-	-	-	-	-	0.6	1.7	2.3
4567/6/1	-	-	-	-	-	-	-	-	0.6	1.7	2.3
4544/1/1	-	-	-	-	-	-	-	-	-	1.4	1.4
4544/2/1	-	-	-	-	-	-	-	-	-	1.4	1.4
4555/1/1	-	-	-	-	-	-	-	-	0.9	-	0.9
4555/2/1	-	-	-	-	-	-	-	-	0.9	-	0.9
4555/3/1	-	-	-	-	-	-	-	-	0.9	-	0.9
4549/1/1	-	-	-	-	-	-	-	-	0.9	-	0.9
4549/2/1	-	-	-	-	-	-	-	-	0.9	-	0.9

Notes

The emboldened observations are the high-rate consumers

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

The observed 97.5th percentile rate based on 59 observations is 73.6 kg y^{-1}

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

Person ID number	Beetroot	Carrot	Celeriac	Celery	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Turnip	Total
4707/1/1	**11.3**	**6.4**	**3.6**	-	-	-	**6.0**	**13.2**	**0.7**	**0.7**	**3.4**	-	**23.9**	-	**69.0**
4632/1/1	**5.1**	**4.7**	-	-	-	-	**12.9**	**18.9**	-	-	**5.6**	-	-	**9.5**	**56.7**
4632/2/1	**5.1**	**4.7**	-	-	-	-	**12.9**	**18.9**	-	-	**5.6**	-	-	**9.5**	**56.7**
4553/1/1	**13.5**	-	-	-	-	-	**18.0**	-	**3.2**	**0.3**	-	-	**16.4**	-	**51.4**
4553/2/1	**13.5**	-	-	-	-	-	**18.0**	-	**3.2**	**0.3**	-	-	**16.4**	-	**51.4**
4549/1/1	**2.8**	-	-	-	-	-	**7.5**	**16.5**	-	-	**4.5**	**0.3**	-	**3.2**	**34.8**
4549/2/1	**2.8**	-	-	-	-	-	**7.5**	**16.5**	-	-	**4.5**	**0.3**	-	**3.2**	**34.8**
4565/1/1	**0.5**	-	-	-	-	-	-	**10.6**	-	-	-	-	**16.4**	-	**27.4**
4547/1/1	**2.3**	**0.5**	-	**0.4**	-	-	**3.0**	**11.9**	**0.8**	**0.2**	-	-	**8.2**	-	**27.2**
4547/2/1	**2.3**	**0.5**	-	**0.4**	-	-	**3.0**	**11.9**	**0.8**	**0.2**	-	-	**8.2**	-	**27.2**
4534/1/1	-	**6.4**	-	-	-	-	-	**8.2**	-	-	-	**0.3**	**9.1**	-	**24.0**
4534/2/1	-	**6.4**	-	-	-	-	-	**8.2**	-	-	-	**0.3**	**9.1**	-	**24.0**
4543/1/1	0.8	0.6	-	-	-	-	-	9.9	-	-	-	-	8.5	-	19.8
4543/2/1	0.8	0.6	-	-	-	-	-	9.9	-	-	-	-	8.5	-	19.8
4543/3/1	0.8	0.6	-	-	-	-	-	9.9	-	-	-	-	8.5	-	19.8
4534/3/1	-	5.1	-	-	-	-	-	6.6	-	-	-	0.3	7.3	-	19.2
4534/4/1	-	5.1	-	-	-	-	-	6.6	-	-	-	0.3	7.3	-	19.2
4550/1/1	1.1	-	-	-	-	-	5.0	11.0	-	0.3	-	-	-	-	17.4
4550/2/1	1.1	-	-	-	-	-	5.0	11.0	-	0.3	-	-	-	-	17.4
4562/1/1	1.1	-	-	-	-	-	0.7	10.7	-	-	-	-	-	3.1	15.5
4562/2/1	1.1	-	-	-	-	-	0.7	10.7	-	-	-	-	-	3.1	15.5

Person ID number	Beetroot	Carrot	Celeriac	Celery	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Turnip	Total
4562/3/1	1.1	-	-	-	-	-	0.7	10.7	-	-	-	-	-	3.1	15.5
4562/4/1	1.1	-	-	-	-	-	0.7	10.7	-	-	-	-	-	3.1	15.5
4562/5/1	1.1	-	-	-	-	-	0.7	10.7	-	-	-	-	-	3.1	15.5
4562/6/1	1.1	-	-	-	-	-	0.7	10.7	-	-	-	-	-	3.1	15.5
4562/7/1	1.1	-	-	-	-	-	0.7	10.7	-	-	-	-	-	3.1	15.5
4543/4/1	0.6	0.5	-	-	-	-	-	7.4	-	-	-	-	6.4	-	14.9
4548/1/1	6.0	-	-	-	-	-	4.0	-	2.2	-	-	-	-	-	12.2
4552/1/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/2/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/3/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/4/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/5/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/6/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/3/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/4/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/5/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/6/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4552/7/1	1.1	-	-	-	-	-	0.7	2.2	0.4	-	1.1	-	6.5	-	11.9
4546/1/1	3.0	-	-	-	-	-	-	8.8	-	-	-	-	-	-	11.8
4566/1/1	-	-	-	-	1.0	-	-	9.1	-	0.4	-	-	-	-	10.5
4544/1/1	1.6	1.6	-	-	-	-	1.6	-	1.0	-	-	0.1	4.1	-	10.1
4544/2/1	1.6	1.6	-	-	-	-	1.6	-	1.0	-	-	0.1	4.1	-	10.1
4567/1/1	0.1	0.2	-	-	-	0.2	0.3	3.7	-	-	0.2	-	-	-	4.7
4567/2/1	0.1	0.2	-	-	-	0.2	0.3	3.7	-	-	0.2	-	-	-	4.7

Person ID number	Beetroot	Carrot	Celeriac	Celery	Fennel	Garlic	Leek	Onion	Parsnip	Radish	Shallot	Spring onion	Swede	Turnip	Total
4567/3/1	0.1	0.2	-	-	-	0.2	0.3	3.7	-	-	0.2	-	-	-	4.7
4567/4/1	0.1	0.2	-	-	-	0.2	0.3	3.7	-	-	0.2	-	-	-	4.7
4567/5/1	0.1	0.2	-	-	-	0.2	0.3	3.7	-	-	0.2	-	-	-	4.7
4567/6/1	0.1	0.2	-	-	-	0.2	0.3	3.7	-	-	0.2	-	-	-	4.7
4708/1/1	0.2	1.3	-	-	-	0.1	-	1.1	-	-	-	-	1.7	-	4.4
4708/2/1	0.2	1.3	-	-	-	0.1	-	1.1	-	-	-	-	1.7	-	4.4
4708/3/1	0.2	1.3	-	-	-	0.1	-	1.1	-	-	-	-	1.7	-	4.4
4708/4/1	0.2	1.3	-	-	-	0.1	-	1.1	-	-	-	-	1.7	-	4.4
4708/5/1	0.2	1.3	-	-	-	0.1	-	1.1	-	-	-	-	1.7	-	4.4
4708/6/1	0.2	1.3	-	-	-	0.1	-	1.1	-	-	-	-	1.7	-	4.4
4555/1/1	-	1.9	-	-	-	-	-	1.3	-	-	-	-	-	-	3.2
4555/2/1	-	1.9	-	-	-	-	-	1.3	-	-	-	-	-	-	3.2
4555/3/1	-	1.9	-	-	-	-	-	1.3	-	-	-	-	-	-	3.2
4551/1/1	0.3	-	-	-	-	-	-	1.8	-	-	-	-	-	0.8	2.9
4551/2/1	0.3	-	-	-	-	-	-	1.8	-	-	-	-	-	0.8	2.9
4724/1/1	0.6	0.4	-	-	-	-	-	1.4	-	-	-	0.04	-	-	2.4
4724/2/1	0.6	0.4	-	-	-	-	-	1.4	-	-	-	0.04	-	-	2.4
4724/3/1	0.6	0.4	-	-	-	-	-	1.4	-	-	-	0.04	-	-	2.4

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables for adults based on the 12 high-rate consumers is 40.4 kg y^{-1}

The observed 97.5th percentile rate based on 59 observations is 56.7 kg y^{-1}

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

Person ID number	Potato
4707/1/1	**72.0**
4565/1/1	**58.2**
4724/1/1	**50.0**
4724/2/1	**50.0**
4724/3/1	**50.0**
4708/1/1	**41.6**
4708/2/1	**41.6**
4708/3/1	**41.6**
4708/4/1	**41.6**
4708/5/1	**41.6**
4708/6/1	**41.6**
4632/1/1	**39.8**
4632/2/1	**39.8**
4562/1/1	**39.8**
4562/2/1	**39.8**
4562/3/1	**39.8**
4562/4/1	**39.8**
4562/5/1	**39.8**
4562/6/1	**39.8**
4562/7/1	**39.8**
4547/1/1	**37.5**
4547/2/1	**37.5**
4548/1/1	**32.0**
4534/1/1	**29.3**
4534/2/1	**29.3**
4549/1/1	**28.1**
4549/2/1	**28.1**
4534/3/1	23.4
4534/4/1	23.4
4552/1/1	21.4
4552/2/1	21.4
4552/3/1	21.4
4552/4/1	21.4
4552/5/1	21.4
4552/6/1	21.4
4552/7/1	21.4
4553/1/1	18.8
4553/2/1	18.8
4543/1/1	18.7

Person ID number	Potato
4543/2/1	18.7
4543/3/1	18.7
4546/1/1	15.0
4543/4/1	14.0
4567/1/1	10.4
4567/2/1	10.4
4567/3/1	10.4
4567/4/1	10.4
4567/5/1	10.4
4567/6/1	10.4
4550/1/1	7.5
4550/2/1	7.5
4551/1/1	7.3
4551/2/1	7.3
4555/1/1	1.5
4555/2/1	1.5
4555/3/1	1.5

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of potato for adults based on the 27 high-rate consumers is 41.1 kg y^{-1}

The observed 97.5th percentile rate based on 56 observations is 55.1 kg y^{-1}

Table 47. Adults' consumption rates of domestic fruit from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Apple	Blackberry	Blackcurrant	Blueberry	Cherry	Fig	Gooseberry	Grapes	Melon	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	Tayberry	White currant	Total
4632/1/1	**28.3**	-	**1.5**	-	**2.8**	-	**0.9**	-	-	**22.7**	**7.5**	-	**1.5**	**0.9**	**2.8**	-	-	**69.0**
4632/2/1	**28.3**	-	**1.5**	-	**2.8**	-	**0.9**	-	-	**22.7**	**7.5**	-	**1.5**	**0.9**	**2.8**	-	-	**69.0**
4707/1/1	**7.5**	-	-	**0.4**	-	-	-	**2.3**	-	**4.5**	**3.8**	**0.4**	-	**3.4**	**8.2**	**0.4**	-	**30.7**
4566/1/1	**19.1**	-	**1.8**	-	-	-	-	-	-	-	-	**4.5**	**0.9**	-	**1.4**	-	**0.5**	**28.1**
4553/1/1	4.1	-	1.4	0.4	-	0.3	-	-	-	2.0	-	1.4	0.3	4.6	1.0	-	-	15.5
4553/2/1	4.1	-	1.4	0.4	-	0.3	-	-	-	2.0	-	1.4	0.3	4.6	1.0	-	-	15.5
4566/2/1	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2
4550/1/1	2.3	-	2.3	-	-	-	-	-	-	0.9	-	-	1.1	-	-	-	-	6.6
4550/2/1	2.3	-	2.3	-	-	-	-	-	-	0.9	-	-	1.1	-	-	-	-	6.6
4724/1/1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	0.4	4.5	-	-	5.5
4724/2/1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	0.4	4.5	-	-	5.5
4724/3/1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	0.4	4.5	-	-	5.5
4506/1/1	-	0.5	-	-	-	-	0.3	-	-	-	1.5	-	0.3	1.9	-	-	-	4.5
4506/2/1	-	0.5	-	-	-	-	0.3	-	-	-	1.5	-	0.3	1.9	-	-	-	4.5
4506/3/1	-	0.5	-	-	-	-	0.3	-	-	-	1.5	-	0.3	1.9	-	-	-	4.5
4549/1/1	-	-	-	-	-	-	-	-	-	-	-	2.0	-	-	2.0	-	-	4.1
4549/2/1	-	-	-	-	-	-	-	-	-	-	-	2.0	-	-	2.0	-	-	4.1
4551/1/1	2.0	-	-	-	0.4	-	-	-	-	1.2	0.4	-	-	-	-	-	-	4.0
4551/2/1	2.0	-	-	-	0.4	-	-	-	-	1.2	0.4	-	-	-	-	-	-	4.0
4565/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	1.0	-	-	3.6

Person ID number	Apple	Blackberry	Blackcurrant	Blueberry	Cherry	Fig	Gooseberry	Grapes	Melon	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	Tayberry	White currant	Total
4548/1/1	-	-	-	-	-	-	-	0.7	-	-	-	2.3	-	-	-	-	-	2.9
4544/1/1	-	-	-	-	-	-	-	-	2.3	-	-	-	-	0.3	-	-	-	2.6
4544/2/1	-	-	-	-	-	-	-	-	2.3	-	-	-	-	0.3	-	-	-	2.6
4546/1/1	0.7	-	-	-	-	-	0.9	-	-	-	-	-	-	0.9	-	-	-	2.4
4567/1/1	0.4	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3	0.2	-	-	1.2
4567/2/1	0.4	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3	0.2	-	-	1.2
4567/3/1	0.4	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3	0.2	-	-	1.2
4567/4/1	0.4	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3	0.2	-	-	1.2
4567/5/1	0.4	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3	0.2	-	-	1.2
4567/6/1	0.4	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3	0.2	-	-	1.2
4708/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	0.7	-	-	0.9
4708/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	0.7	-	-	0.9
4708/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	0.7	-	-	0.9
4708/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	0.7	-	-	0.9
4708/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	0.7	-	-	0.9
4708/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	0.7	-	-	0.9
4543/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5
4543/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5
4543/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5
4562/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5
4562/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5
4562/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5

Person ID number	Apple	Blackberry	Blackcurrant	Blueberry	Cherry	Fig	Gooseberry	Grapes	Melon	Pear	Plum	Raspberry	Redcurrant	Rhubarb	Strawberry	Tayberry	White currant	Total
4562/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5
4562/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5
4562/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5
4562/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	0.5
4543/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	0.4
4534/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3
4534/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	-	0.3
4534/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2
4534/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2
4552/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2
4552/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2
4552/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2
4552/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2
4552/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2
4552/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2
4552/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	-	-	0.2
4547/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1
4547/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	0.1

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for adults based on the 4 high-rate consumers is 49.2 kg y^{-1}

The observed 97.5th percentile rate based on 60 observations is 50.8 kg y^{-1}

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

Person ID number	Beef
4633/1/1	1.5
4633/5/1	1.5
4633/6/1	1.5
4633/7/1	1.5
4633/8/1	1.5
4633/9/1	1.5

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of cattle meat for adults based on the 6 high-rate consumers is 1.5 kg y^{-1}

The observed 97.5th percentile rate based on 6 observations is 1.5 kg y^{-1}

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

Person ID number	Pheasant	Pigeon	Total
4506/1/1	0.4	0.5	0.9
4506/2/1	0.4	0.5	0.9
4506/3/1	0.4	0.5	0.9
4633/1/1	0.9	-	0.9

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of poultry for adults based on the 4 high-rate consumers is 0.9 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 0.9 kg y^{-1}

Table 50. Adults' consumption rates of eggs from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Chicken egg
4554/1/1	**31.2**
4505/1/1	**20.8**
4505/2/1	**20.8**
4555/1/1	**11.9**
4555/2/1	**11.9**
4555/3/1	**11.9**
4547/1/1	8.9
4547/2/1	8.9
4534/1/1	7.4
4534/2/1	7.4

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of eggs for adults based on the 6 high-rate consumers is 18.1 kg y^{-1}

The observed 97.5th percentile rate based on 10 observations is 28.8 kg y^{-1}

Table 51. Adults' consumption rates of wild/free foods from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Blackberry
4553/1/1	**2.0**
4553/2/1	**2.0**

Notes

The emboldened observations are the high-rate consumers

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

The observed 97.5th percentile rate based on 2 observations is 2.0 kg y^{-1}

Table 52. Adults' consumption rates of rabbits/hares from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Rabbit
4633/1/1	**0.9**

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of rabbits/hares for adults based on the high-rate consumer is 0.9 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 53. Adults' consumption rates of wild fungi from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Mushrooms
4633/1/1	**0.9**

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of wild fungi for adults based on the high-rate consumer is 0.9 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 54. Children's consumption rates of green vegetables from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Broccoli	Brussels sprout	Cabbage	Cauliflower	Courgette	Kale	Total
4562/8/1	-	**4.0**	**4.9**	-	-	-	**8.9**
4708/7/1	**1.7**	**1.7**	**2.1**	**1.8**	**0.9**	**0.6**	**8.8**
4708/8/1	**1.7**	**1.7**	**2.1**	**1.8**	**0.9**	**0.6**	**8.8**
4708/9/1	**1.7**	**1.7**	**2.1**	**1.8**	**0.9**	**0.6**	**8.8**
4708/10/1	**1.7**	**1.7**	**2.1**	**1.8**	**0.9**	**0.6**	**8.8**

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of green vegetables for the child age group based on the 5 high-rate consumers is 8.9 kg y^{-1}

The observed 97.5th percentile rate based on 5 observations is 8.9 kg y^{-1}

Table 55. Infants' consumption rates of green vegetables from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Brussels sprout	Cabbage	Total
4562/9/1	**1.0**	**1.2**	**2.2**

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of green vegetables for the infant age group based on the high-rate consumer is 2.2 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 56. Children's consumption rates of other vegetables from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Chilli pepper	French bean	Pea	Pepper	Runner bean	Sweetcorn	Tomato	Total
4562/8/1	**0.2**	**0.4**	**0.2**	-	-	-	**6.6**	**7.5**
4708/7/1	**0.03**	-	-	**0.4**	**0.4**	**0.1**	**4.9**	**5.9**
4708/8/1	**0.03**	-	-	**0.4**	**0.4**	**0.1**	**4.9**	**5.9**
4708/9/1	**0.03**	-	-	**0.4**	**0.4**	**0.1**	**4.9**	**5.9**
4708/10/1	**0.03**	-	-	**0.4**	**0.4**	**0.1**	**4.9**	**5.9**
4555/4/1	-	-	-	-	-	0.9	-	0.9
4555/5/1	-	-	-	-	-	0.7	-	0.7

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of other vegetables for the child age group based on the 5 high-rate consumers is 6.2 kg y^{-1}

The observed 97.5th percentile rate based on 7 observations is 7.3 kg y^{-1}

Table 57. Infants' consumption rates of other vegetables from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Chilli pepper	French bean	Pea	Sweetcorn	Tomato	Total
4562/9/1	**0.1**	**0.1**	**0.1**	-	**1.6**	**1.9**
4555/6/1	-	-	-	0.4	-	0.4

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of other vegetables for the infant age group based on the high-rate consumer is 1.9 kg y^{-1}

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

Table 58. Children's consumption rates of root vegetables from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Beetroot	Carrot	Garlic	Leek	Onion	Swede	Turnip	Total
4562/8/1	**1.1**	-	-	**0.7**	**10.7**	-	**3.1**	**15.5**
4555/4/1	-	1.9	-	-	1.3	-	-	3.2
4555/5/1	-	1.5	-	-	0.9	-	-	2.4
4708/7/1	0.1	0.6	0.04	-	0.5	0.9	-	2.2
4708/8/1	0.1	0.6	0.04	-	0.5	0.9	-	2.2
4708/9/1	0.1	0.6	0.04	-	0.5	0.9	-	2.2
4708/10/1	0.1	0.6	0.04	-	0.5	0.9	-	2.2

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of root vegetables for the child age group based on the high-rate consumer is 15.5 kg y^{-1}

The observed 97.5th percentile rate based on 7 observations is 13.7 kg y^{-1}

Table 59. Infants' consumption rates of root vegetables from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Beetroot	Carrot	Leek	Onion	Turnip	Total
4562/9/1	**0.3**	-	**0.2**	**2.7**	**0.8**	**3.9**
4555/6/1	-	**1.0**	-	**0.6**	-	**1.6**

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of root vegetables for the infant age group based on the 2 high-rate consumers is 2.7 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 3.8 kg y^{-1}

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

Person ID number	Potato
4562/8/1	**39.8**
4708/7/1	**20.8**
4708/8/1	**20.8**
4708/9/1	**20.8**
4708/10/1	**20.8**
4555/4/1	1.5
4555/5/1	1.1

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of potato for the child age group based on the 5 high-rate consumers is 24.6 kg y^{-1}

The observed 97.5th percentile rate based on 7 observations is 37.0 kg y^{-1}

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

Person ID number	Potato
4562/9/1	**10.0**
4555/6/1	0.8

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of potato for the infant age group based on the high-rate consumer is 10.0 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 9.7 kg y^{-1}

Table 62. Children's consumption rates of domestic fruit from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Rhubarb	Strawberry	Total
4565/2/1	-	**1.0**	**1.0**
4565/3/1	-	**1.0**	**1.0**
4562/8/1	-	**0.5**	**0.5**
4708/7/1	**0.1**	**0.4**	**0.4**
4708/8/1	**0.1**	**0.4**	**0.4**
4708/9/1	**0.1**	**0.4**	**0.4**
4708/10/1	**0.1**	**0.4**	**0.4**

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of domestic fruit for the child age group based on the 7 high-rate consumers is 0.6 kg y^{-1}

The observed 97.5th percentile rate based on 7 observations is 1.0 kg y^{-1}

Table 63. Infants' consumption rates of domestic fruit from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Rhubarb
4565/4/1	**0.5**
4562/9/1	0.1

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of domestic fruit for the infant age group based on the high-rate consumer is 0.5 kg y^{-1}

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

Table 64. Children's consumption rates of cattle meat from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Beef
4633/2/1	1.5
4633/3/1	1.5
4633/10/1	1.5
4633/4/1	1.1

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of cattle meat for the child age group based on the 4 high-rate consumers is 1.4 kg y^{-1}

The observed 97.5th percentile rate based on 4 observations is 1.5 kg y^{-1}

Table 65. Infants' consumption rates of cattle meat from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Beef
4633/11/1	0.7

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of cattle meat for the infant age group based on the high-rate consumer is 0.7 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 66. Children's consumption rates of eggs from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Chicken egg
4555/4/1	11.9
4555/5/1	4.5

Notes

The emboldened observations are the high-rate consumers

The mean consumption rate of eggs for the child age group based on the 2 high-rate consumers is 8.2 kg y^{-1}

The observed 97.5th percentile rate based on 2 observations is 11.7 kg y^{-1}

Table 67. Infants' consumption rates of eggs from the Hartlepool terrestrial survey area (kg y^{-1})

Person ID number	Chicken egg
4555/6/1	**3.0**

Notes

The emboldened observation is the high-rate consumer

The mean consumption rate of eggs for the infant age group based on the high-rate consumer is 3.0 kg y^{-1}

The observed 97.5th percentile is not applicable for 1 observation

Table 68. Percentage contribution each food type makes to its terrestrial food group for adults

Food group	Food	Percentage
Green vegetables	Cabbage	26.8%
	Brussels sprout	17.9%
	Cauliflower	15.2%
	Cucumber	14.2%
	Broccoli	10.2%
	Courgette	6.7%
	Lettuce	3.9%
	Kale	3.6%
	Calabrese	1.3%
	Asparagus	0.1%
	Herbs	0.1%
	Nasturtium leaves	0.01%
Other vegetables	Tomato	74.7%
	Sweetcorn	7.2%
	Pea	5.0%
	Pepper	4.9%
	Runner bean	2.2%
	French bean	1.9%
	Squash	1.8%
	Broad bean	1.7%
	Chilli pepper	0.4%
	Pumpkin	0.2%
Root vegetables	Onion	37.1%
	Swede	22.8%
	Leek	12.4%
	Beetroot	10.1%
	Carrot	6.4%
	Turnip	5.0%
	Shallot	3.4%

Food group	Food	Percentage
Root vegetables	Parsnip	1.6%
	Celeriac	0.4%
	Radish	0.3%
	Spring onion	0.2%
	Garlic	0.1%
	Fennel	0.1%
	Celery	0.1%
Potato	Potato	100.0%
Domestic fruit	Apple	34.2%
	Pear	18.2%
	Strawberry	14.3%
	Rhubarb	9.1%
	Plum	7.3%
	Raspberry	4.2%
	Blackcurrant	3.7%
	Redcurrant	2.4%
	Cherry	2.0%
	Melon	1.4%
	Gooseberry	1.1%
	Grapes	0.9%
	Blackberry	0.4%
	Blueberry	0.4%
	Fig	0.2%
	Whitecurrant	0.1%
	Tayberry	0.1%
Cattle meat	Beef	100.0%
Poultry	Pheasant	62.0%
	Pigeon	38.0%
Eggs	Chicken egg	100.0%
Wild/free foods	Blackberry	100.0%
Rabbits/hares	Rabbit	100.0%
Wild fungi	Mushroom	100.0%

Notes

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

Table 69. Direct radiation occupancy rates for adults, children and infants in the Hartlepool area (h y^{-1})

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
0 – 0.25 km zone				
4570/1/1	Nature warden duties	1999	87	2086
4730/1/1	Working	1043	782	1825
4508/1/1	Working	587	231	818
4508/2/1	Working	587	231	818
4570/2/1	Working	701	30	731
4693/1/1	Collecting peeler crabs for bait	-	392	392
4570/3/1	Working	350	15	366
4570/3/2	Working	350	15	366
4570/3/3	Working	350	15	366
4570/3/4	Working	350	15	366
4485/1/1	Bait digging	-	313	313
4710/1/1	Angling	-	284	284
4482/1/1	Bait digging and collecting peeler crabs for bait	-	156	156
4508/3/1	Working	80	40	120
4730/2/1	Working	59	52	111
4422/2/1	Angling	-	90	90
4717/1/1	Angling	-	60	60
4717/3/1	Angling	-	60	60
4511/1/1	Collecting peeler crabs for bait	-	52	52
4511/2/1	Collecting peeler crabs for bait	-	52	52
4511/3/1	Collecting peeler crabs for bait	-	52	52

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
0 – 0.25 km zone				
4508/12/1	Visiting the field centre	10	15	25
4508/13/1	Visiting the field centre	10	15	25
4508/12/2	Visiting the field centre	10	15	25
4508/13/2	Visiting the field centre	10	15	25
4484/1/1	Bait digging	0	20	20
4508/4/1	Visiting the field centre	6	4	10
4508/5/1	Visiting the field centre	6	4	10
4508/6/1	Visiting the field centre	3	2	5
4508/7/1	Visiting the field centre	3	2	5
4508/8/1	Visiting the field centre	3	2	5
4508/9/1	Visiting the field centre	3	2	5
4508/10/1	Visiting the field centre	3	2	5
4508/11/1	Visiting the field centre	3	2	5
4508/6/2	Visiting the field centre	3	2	5
4508/7/2	Visiting the field centre	3	2	5
4508/8/2	Visiting the field centre	3	2	5
4508/9/2	Visiting the field centre	3	2	5
4508/10/2	Visiting the field centre	3	2	5
4508/11/2	Visiting the field centre	3	2	5
>0.25 – 0.5 km zone				
4451/2/1	Working	2494	9	2503
4451/3/1	Working	2494	9	2503
4451/2/2	Working	2494	9	2503
4451/3/2	Working	2494	9	2503

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
>0.25 – 0.5 km zone				
4451/2/3	Working	2494	9	2503
4451/3/3	Working	2494	9	2503
4451/3/4	Working	2494	9	2503
4451/3/5	Working	2494	9	2503
4451/3/6	Working	2494	9	2503
4451/3/7	Working	2494	9	2503
4451/1/1	Working	-	1908	1908
4451/4/1	Working	1897	12	1908
4451/5/1	Working	1897	12	1908
4451/4/2	Working	1897	12	1908
4451/5/2	Working	1897	12	1908
4451/4/3	Working	1897	12	1908
4451/5/3	Working	1897	12	1908
4451/5/4	Working	1897	12	1908
4451/5/5	Working	1897	12	1908
4451/5/6	Working	1897	12	1908
4451/5/7	Working	1897	12	1908
4439/1/1	Working	-	730	730
4439/2/1	Working	-	730	730
4692/1/1	Collecting winkles	-	91	91
>0.5 – 1.0 km zone				
4509/1/1	Working	2147	239	2386
4509/2/1	Working	2147	239	2386
4509/1/2	Working	2147	239	2386

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
>0.5 – 1.0 km zone				
4509/2/2	Working	2147	239	2386
4509/1/3	Working	2147	239	2386
4509/2/3	Working	2147	239	2386
4509/1/4	Working	2147	239	2386
4509/1/5	Working	2147	239	2386
4509/1/6	Working	2147	239	2386
4509/1/7	Working	2147	239	2386
4518/1/1	Working	2013	38	2051
4518/2/1	Working	2013	38	2051
4518/3/1	Working	2013	38	2051
4518/4/1	Working	2018	32	2051
4518/5/1	Working	2018	32	2051
4518/6/1	Working	2018	32	2051
4518/7/1	Working	2018	32	2051
4518/8/1	Working	2018	32	2051
4518/9/1	Working	2018	32	2051
4518/10/1	Working	2018	32	2051
4531/1/1	Working	1749	40	1789
4531/2/1	Working	1749	40	1789
4531/3/1	Working	1749	40	1789
4531/4/1	Working	1749	40	1789
4531/5/1	Working	1610	179	1789
4466/1/1	Working on the shore	-	1595	1595
4464/1/1	Dog walking	-	390	390

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
>0.5 – 1.0 km zone				
4730/3/1	Volunteering nature warden duties	-	365	365
4730/3/2	Volunteering nature warden duties	-	365	365
4730/4/1	Volunteering nature warden duties	-	182	182
4730/4/2	Volunteering nature warden duties	-	182	182
4730/4/3	Volunteering nature warden duties	-	182	182
4730/4/4	Volunteering nature warden duties	-	182	182
4521/1/1	Dog walking	-	182	182
4460/1/1	Collecting peeler crabs for bait	-	175	175
4460/2/1	Dog walking	-	175	175
4437/1/1	Seal watching	-	169	169
4437/2/1	Seal watching	-	169	169
4434/1/1	Dog walking	-	150	150
4434/2/1	Dog walking	-	150	150
4461/1/1	Dog walking	-	104	104
4465/3/1	Dog walking	-	104	104
4520/1/1	Dog walking	-	104	104
4520/2/1	Dog walking	-	104	104
4520/3/1	Playing, dog walking and collecting driftwood	-	104	104
4730/5/1	Volunteering nature warden duties	-	65	65
4730/5/2	Volunteering nature warden duties	-	65	65
4503/1/1	Playing, dog walking and collecting driftwood	-	60	60

Person ID number	Main activity	Indoor occupancy	Outdoor occupancy	Total occupancy
>0.5 – 1.0 km zone				
4503/2/1	Playing, dog walking and collecting driftwood	-	60	60
4503/3/1	Working	-	60	60
4522/1/1	Working	-	52	52
4522/2/1	Working	-	52	52
4702/1/1	Dog walking	-	52	52
4702/2/1	Dog walking	-	52	52
4438/1/1	Dog walking	-	45	45
4438/2/1	Dog walking	-	45	45
4486/1/1	Dog walking	-	39	39
4486/2/1	Dog walking	-	39	39
4523/1/1	Dog walking	-	39	39
4523/2/1	Dog walking	-	39	39
4436/1/1	Dog walking	-	26	26
4599/1/1	Dog walking	-	26	26
4599/2/1	Dog walking	-	26	26
4709/1/1	Walking	-	26	26
4709/2/1	Walking	-	26	26
4465/1/1	Dog walking	-	12	12
4465/2/1	Dog walking	-	12	12
4430/1/1	Dog walking	-	5	5

Table 70. Analysis of direct radiation occupancy rates for adults, children and infants in the Hartlepool area (h y^{-1})

0 – 0.25 km zone	
Number of hours	**Number of observations**
>8000 to 8760	0
>7000 to 8000	0
>6000 to 7000	0
>5000 to 6000	0
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	1
>1000 to 2000	1
0 to 1000	38
0 to 8760	40
>0.25 – 0.5 km zone	
Number of hours	**Number of observations**
>8000 to 8760	0
>7000 to 8000	0
>6000 to 7000	0
>5000 to 6000	0
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	10
>1000 to 2000	11
0 to 1000	3
0 to 8760	24
>0.5 – 1.0 km zone	
Number of hours	**Number of observations**
>8000 to 8760	0
>7000 to 8000	0
>6000 to 7000	0
>5000 to 6000	0
>4000 to 5000	0
>3000 to 4000	0
>2000 to 3000	20
>1000 to 2000	6
0 to 1000	42
0 to 8760	68

Table 71. Gamma dose rate measurements (µGy h^{-1}) for the Hartlepool direct radiation survey area

Location	Indoor substrate	Indoor gamma dose rate at 1 metre[a]	Outdoor substrate	Outdoor gamma dose rate at 1 metre[a]
Businesses				
Business 1	Concrete	0.065	Concrete	0.067
Business 2	Concrete	0.113	Concrete	0.074
Business 3	Concrete	0.084	Not recorded	Not recorded
Business 4	Not recorded	Not recorded	Concrete	0.073
Business 5	Not recorded	Not recorded	Stones	0.091

Notes

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

Table 72. Background gamma dose rate measurements for the Hartlepool survey area (µGy h^{-1})

	Location	National Grid Reference	Substrate	Gamma dose rate at 1 metre
Background 1	South	NZ 625 204	Grass	0.075
Background 2	West	NZ 475 274	Grass	0.085
Background 3	North	NZ 460 354	Grass	0.073

Table 73. Combinations of adult pathways for consideration in dose assessments in the Hartlepool area

Combination number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
1		X																					X	X			X		
2	X																								X	X		
3	X	X	X																					X			X		
4		X																X						X			X		
5									X		X																		
6					X	X	X	X	X			X																	
7	X	X			X	X	X	X	X																				
8												X								X									
9		X	X																	X						X	X		
10		X																		X								X	X
11	X																			X							X	X	X
12					X	X	X	X	X											X									
13																					X						X		
14																				X	X								
15																						X				X	X		
16	X	X	X														X		X						X		X		

Combination number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
17			X													X			X						X			X	X
18	X																X		X						X		X	X	X
19	X	X	X														X			X					X				
20	X															X				X					X			X	X
21				X															X	X					X				
22			X																X	X					X	X			
23	X																X		X	X					X		X		
24																X			X	X					X	X		X	X
25																X			X	X					X		X	X	X
26					X	X	X	X	X												X				X				
27																						X			X	X			
28										X	X			X	X														
29					X	X	X	X	X				X																

Notes

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

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

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4405/1/1	-	-	-	**1.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	175	-	-	-	-	-	-	-	-	-
4405/2/1	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-
4406/1/1	9.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1760**	-	-	1877	-	-
4406/2/1	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4406/3/1	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**880**	-	-	939	-	-
4407/1/1	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	350	80	-	-
4407/2/1	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	350	80	-	-
4407/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/3/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/3/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/3/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/3/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/3/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/3/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/3/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/4/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/4/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/4/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/4/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/4/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/4/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/4/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	200	40	-	-
4407/6/1	-	0.5	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	200	40	-	-
4407/7/1	-	0.5	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	200	40	-	-
4409/1/1	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4409/2/1	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4411/1/1	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	187	-	-	-	-	-	52	-	-	-
4411/2/1	-	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4412/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-	-	59	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4413/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	70	-	-	-
4415/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**413**	-	-	-	-	-	96	-	-	-
4416/1/1	**28.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-	-	48	-	-	-	-
4417/1/1	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**261**	**704**	-	-	782	-	-
4418/1/1	11.1	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-
4418/2/1	11.1	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4419/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	17	-	-	-
4420/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	80	-	-
4421/1/1	10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115	-	-
4421/2/1	10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4421/3/1	**54.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-
4421/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	367	-	-
4421/5/1	**54.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4422/1/1	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**717**	-	-	-	-	-	-	-	-	-
4422/2/1	**30.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**717**	-	-	-	-	-	-	626	0	90
4423/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	123	-	-	-	-	-	1472	-	-	-
4423/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	61	-	-	-
4423/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	61	-	-	-
4423/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	123	-	-	-
4423/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	123	-	-	-
4423/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	14	-	-	-
4424/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4424/1/15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4424/1/20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**539**	-	-	-	-	-	50	-	-	-
4425/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**120**	-	-	-	20	-	-	-
4425/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**120**	-	-	-	-	-	-	-
4426/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	351	-	-	-	-	-	68	-	-	-
4427/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	145	-	-	-	-	-	78	-	-	-
4428/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	43	-	-	-
4429/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	49	-	-	-
4430/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-	-	73	-	0	5
4431/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71	-	-	-	-	-	33	-	-	-
4432/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	9	-	-	-
4433/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79	-	-	-	-	-	73	-	-	-
4434/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**600**	-	-	-	-	-	-	-	0	150
4434/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**600**	-	-	-	-	-	-	-	0	150
4436/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	0	26
4437/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	296	-	-	-	-	-	-	-	0	169
4437/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	296	-	-	-	-	-	-	-	0	169
4438/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-	0	45
4438/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-	0	45
4439/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	730
4439/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	730
4441/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-	-	-	-	-
4441/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-	-	-	-	-
4442/1/1	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	291	-	-	-	-	-	-	15	-	-
4443/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	291	-	-	-	-	-	-	15	-	-
4444/1/1	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-
4444/2/1	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66	-	-
4444/3/1	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4444/3/2	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4444/3/3	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4444/3/4	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4444/3/5	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4444/3/6	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4444/3/7	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4444/3/8	**29.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4445/1/1	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	-	**78**	78	-	-	-	-	-	-	355	-	-
4445/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	355	-	-
4445/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	355	-	-
4445/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	355	-	-
4445/4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	355	-	-
4445/4/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	355	-	-
4445/5/1	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4451/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1908
4451/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/3/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/3/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/3/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/3/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/3/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/4/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/5/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/5/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/5/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/5/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/5/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/5/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4454/1/1	13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-
4454/2/1	13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-
4455/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4455/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-
4456/1/1	14.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	200	-	-
4456/2/1	14.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	200	-	-
4457/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64	-	-	-	-	-	-	-	-	-
4457/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	2	-	-	-
4458/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180	-	-
4458/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180	-	-
4459/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**610**	-	-	-	-	-	416	-	-	-
4459/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	27	-	-	-
4459/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**829**	-	-	-	-	-	82	-	-	-
4460/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	0	175
4460/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	0	175
4461/1/1	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	274	-	-	-	-	-	-	-	0	104
4462/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	861	-	-
4464/1/1	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**330**	-	9	-	-	-	-	-	**330**	-	37	0	390
4465/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	0	12
4465/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	261	-	-	-	-	-	-	-	0	104
4466/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**399**	-	-	-	-	-	-	-	0	1595
4469/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	-	-	-	-	-	261	-	-	-
4472/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	344	-	-	-	-	-	-	-	-	-
4472/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	344	-	-	-	-	-	-	-	-	-
4475/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	1	30	-	-
4475/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	1	30	-	-
4475/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	2	30	-	-
4475/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	2	30	-	-
4475/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	3	30	-	-
4475/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	3	30	-	-
4475/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	4	30	-	-
4475/4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	4	30	-	-
4475/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	5	30	-	-
4475/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	5	30	-	-
4476/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	98	-	-
4476/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	98	-	-
4476/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	98	-	-
4476/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	98	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4476/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-
4476/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-
4476/3/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-
4476/3/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-
4477/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	158	-	-	-	-	-	-	-	-	-
4477/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	158	-	-	-	-	-	-	-	-	-
4478/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	236	-	-	-	-	-	-	9	-	-
4478/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	236	-	-	-	-	-	-	9	-	-
4481/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	-	-	183	-	-
4481/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	**386**	-	-	-	-	-	-	64	-	-
4481/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	**386**	-	-	-	-	-	-	64	-	-
4481/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	-	-	183	-	-
4481/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	-	-	183	-	-
4481/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	-	-	183	-	-
4481/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	-	-	183	-	-
4481/8/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	-	-	183	-	-
4481/9/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	-	-	183	-	-
4482/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**415**	-	-	-	42	-	-	-	-	**415**	-	54	0	156
4484/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-	-	-	-	-	20	-	-	0	20
4485/1/1	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**313**	-	-	-	235	-	-	-	-	**313**	-	-	0	313
4486/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	235	-	-	-	-	-	-	-	0	39
4486/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	235	-	-	-	-	-	-	-	0	39
4487/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1564**	-	-	1929	-	-
4487/2/1	-	**35.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**627**	-	-	784	-	-
4489/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**401**	-	-	-	-	-	85	-	-	-
4499/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	-	-
4499/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	-	-
4502/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-
4502/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-
4502/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-
4502/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-
4502/2/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-
4503/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	60
4503/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	60
4503/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	60

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4505/1/1	-	-	-	-	-	-	-	-	-	-	-	**20.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4505/2/1	-	-	-	-	-	-	-	-	-	-	-	**20.8**	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	-	-
4505/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	-	-
4506/1/1	-	-	-	-	-	-	-	-	4.5	-	**0.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4506/2/1	-	-	-	-	-	-	-	-	4.5	-	**0.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4506/3/1	-	-	-	-	-	-	-	-	4.5	-	**0.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4508/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	13	178	-	-	-	-	13	1	-	587	231
4508/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	13	146	-	-	-	-	13	-	-	587	231
4508/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-	80	40
4508/12/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	10	15
4508/12/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	10	15
4508/13/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	10	15
4508/13/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	10	15
4508/14/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	-	-	-	-	-	1	-	-	-
4508/17/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-
4509/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4510/1/1	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	547	-	-	547	-	-
4510/2/1	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**547**	-	-	-	-	-	-	-	**547**	-	-	-	-
4511/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	-	-	-	39	-	13	0	52
4511/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	-	-	-	39	-	13	0	52
4511/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	-	-	-	39	-	13	0	52
4513/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-	-	-
4514/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	235	-	-	-	-	-	-	-	-	-
4514/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-
4515/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	39	-	-	-	-	-	-	-	-	-
4515/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4518/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2013	38
4518/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2013	38
4518/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2013	38
4518/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2018	32
4518/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2018	32
4518/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2018	32
4518/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2018	32
4518/8/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2018	32
4518/9/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2018	32
4518/10/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2018	32
4520/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	0	104
4520/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	0	104
4521/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**548**	-	-	-	-	-	-	-	0	182
4522/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	-	-	-	-	-	0	52
4522/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-	-	-	-	-	-	0	52
4523/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	-	-	0	39
4523/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	-	-	-	-	0	39
4531/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1749	40
4531/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1749	40
4531/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1749	40
4531/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1749	40
4531/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1610	179
4534/1/1	-	-	-	-	19.5	13.5	**24.0**	**29.3**	0.3	-	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4534/2/1	-	-	-	-	19.5	13.5	**24.0**	**29.3**	0.3	-	-	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4534/3/1	-	-	-	-	15.6	10.8	19.2	23.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4534/4/1	-	-	-	-	15.6	10.8	19.2	23.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4543/1/1	-	1.2	-	-	6.4	15.0	19.8	18.7	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4543/2/1	-	-	-	-	6.4	15.0	19.8	18.7	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4543/3/1	-	-	-	-	6.4	15.0	19.8	18.7	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4543/4/1	-	-	-	-	4.8	11.3	14.9	14.0	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4544/1/1	-	-	-	-	9.0	1.4	10.1	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4544/2/1	-	-	-	-	9.0	1.4	10.1	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4546/1/1	-	-	-	-	6.0	9.8	11.8	15.0	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4547/1/1	-	-	-	-	28.2	25.3	**27.2**	**37.5**	0.1	-	-	8.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4547/2/1	-	-	-	-	28.2	25.3	**27.2**	**37.5**	0.1	-	-	8.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4548/1/1	-	-	-	-	18.4	6.8	12.2	**32.0**	2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4549/1/1	-	-	-	-	22.0	0.9	**34.8**	**28.1**	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4549/2/1	-	-	-	-	22.0	0.9	**34.8**	**28.1**	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4550/1/1	2.3	-	-	-	12.7	5.4	17.4	7.5	6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4550/2/1	2.3	-	-	-	12.7	5.4	17.4	7.5	6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4551/1/1	3.0	-	-	-	15.0	15.1	2.9	7.3	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4551/2/1	3.0	-	-	-	15.0	15.1	2.9	7.3	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4552/1/1	0.8	0.1	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4552/2/1	0.8	0.1	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4552/3/1	-	-	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4552/4/1	-	-	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4552/5/1	-	-	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4552/6/1	-	-	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4552/7/1	-	-	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4553/1/1	-	-	-	-	**63.6**	**80.7**	**51.4**	18.8	15.5	-	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4553/2/1	-	-	-	-	**63.6**	**80.7**	**51.4**	18.8	15.5	-	-	-	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4554/1/1	-	-	-	-	-	-	-	-	-	-	-	**31.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4555/1/1	-	-	-	-	-	0.9	3.2	1.5	-	-	-	**11.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4555/2/1	-	-	-	-	-	0.9	3.2	1.5	-	-	-	**11.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4555/3/1	-	-	-	-	-	0.9	3.2	1.5	-	-	-	**11.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4560/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-	-	-	35	-	-	-
4561/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	175	-	-	-	-	-	-	-	-	-
4561/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	175	-	-	-	-	-	-	-	-	-
4562/1/1	-	-	-	-	8.9	7.5	15.5	**39.8**	0.5	-	-	-	-	-	-	-	-	-	-	126	-	-	-	-	-	-	-	-	-
4562/2/1	-	-	-	-	8.9	7.5	15.5	**39.8**	0.5	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	-	-	-	-
4562/3/1	-	-	-	-	8.9	7.5	15.5	**39.8**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4562/4/1	-	-	-	-	8.9	7.5	15.5	**39.8**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4562/5/1	-	-	-	-	8.9	7.5	15.5	**39.8**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4562/6/1	-	-	-	-	8.9	7.5	15.5	**39.8**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4562/7/1	-	-	-	-	8.9	7.5	15.5	**39.8**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4563/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-	-	-
4563/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-	-	-
4564/1/1	**30.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**256**	-	-	313	-	-	-	-	**256**	-	65	-	-
4564/2/1	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4565/1/1	-	-	-	-	25.9	22.9	**27.4**	**58.2**	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4566/1/1	-	-	-	-	14.8	20.4	10.5	-	**28.1**	-	-	-	-	-	-	-	-	-	-	42	-	-	-	-	-	-	-	-	-
4566/2/1	-	-	-	-	2.7	-	-	-	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4567/1/1	-	-	-	-	2.2	2.3	4.7	10.4	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4567/2/1	-	-	-	-	2.2	2.3	4.7	10.4	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4567/3/1	-	-	-	-	2.2	2.3	4.7	10.4	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4567/4/1	-	-	-	-	2.2	2.3	4.7	10.4	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4567/5/1	-	-	-	-	2.2	2.3	4.7	10.4	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4567/6/1	-	-	-	-	2.2	2.3	4.7	10.4	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4570/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1999	87
4570/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	701	30
4570/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	15
4570/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	15
4570/3/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	15
4570/3/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	15
4571/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/2/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/2/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/2/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/2/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/2/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4572/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4572/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4572/1/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4572/1/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4572/1/5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4572/1/6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4572/1/7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4572/1/8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4572/1/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4572/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4599/1/1	5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-	0	26

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4599/2/1	5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-	0	26
4609/1/1	0.9	1.6	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	104	-	-	-	-	104	-	-	-	-
4632/1/1	-	0.4	-	-	**55.8**	**52.5**	**56.7**	**39.8**	**69.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4632/2/1	-	0.4	-	-	**55.8**	**52.5**	**56.7**	**39.8**	**69.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4633/1/1	-	-	-	-	-	-	-	-	-	**1.5**	**0.9**	-	-	**0.9**	**0.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4633/5/1	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4633/6/1	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4633/7/1	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4633/8/1	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4633/9/1	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4692/1/1	-	-	**8.8**	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	**75**	-	-	-	-	-	-	-	-	0	91
4692/3/1	-	-	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4692/4/1	-	-	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4692/5/1	-	-	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4693/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**294**	-	-	-	**782**	-	-	-	-	**294**	-	98	0	392
4695/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	-	-
4695/2/1	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/1/1	8.0	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/2/1	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/2/2	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/2/3	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/2/4	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/2/5	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/2/6	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/5/1	4.6	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/5/2	4.6	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/5/3	4.6	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4697/1/1	15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93	-	-	-	-	-	-	-	-	-
4697/2/1	15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-
4698/1/1	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-	-	-	-	-	-	-	-
4698/2/1	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4701/1/1	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117	-	-	-	-	-	-	18	-	-
4701/2/1	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117	-	-	-	-	-	-	18	-	-
4701/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117	-	-	-	-	-	-	-	-	-
4702/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	0	52

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4702/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-	-	-	0	52
4704/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1647**	-	-	1725	-	-
4704/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1647**	-	-	1725	-	-
4704/3/1	**27.2**	**12.5**	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1647**	-	-	1725	-	-
4704/4/1	**27.2**	**12.5**	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4707/1/1	-	-	-	-	**104.1**	**65.0**	**69.0**	**72.0**	**30.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4708/1/1	-	-	-	-	17.7	11.9	4.4	**41.6**	0.9	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	6	-	-	-	-
4708/2/1	-	-	-	-	17.7	11.9	4.4	**41.6**	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4708/3/1	-	-	-	-	17.7	11.9	4.4	**41.6**	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4708/4/1	-	-	-	-	17.7	11.9	4.4	**41.6**	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4708/5/1	-	-	-	-	17.7	11.9	4.4	**41.6**	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4708/6/1	-	-	-	-	17.7	11.9	4.4	**41.6**	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4709/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	0	26
4709/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	-	-	0	26
4710/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	-	-	**174**	39	-	-	-	-	102	-	-	0	284
4713/1/1	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**286**	-	-	-	-	-	**766**	-	-	825	-	-
4713/2/1	-	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4714/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	469	-	-	521	-	-
4714/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	469	-	-	521	-	-
4715/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**209**	-	-	-	**209**	-	-	-	-
4716/1/1	11.3	**14.2**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1644**	-	-	2724	-	-
4716/2/1	**23.4**	7.0	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1644**	-	-	2724	-	-
4716/3/1	9.4	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4716/7/1	**23.4**	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4717/1/1	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	60
4717/2/1	11.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4717/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	60
4717/4/1	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4717/6/1	11.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4718/1/1	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	-	-	-	-	-	**1189**	-	-	1330	-	-
4718/2/1	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1189**	-	-	1330	-	-
4718/3/1	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**608**	-	-	-	-	-	-	-	-	-
4719/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	**104**	-	-	-	-	-	-	-	-
4719/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	**104**	-	-	-	-	-	-	-	-
4722/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59	59	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Poultry	Eggs	Wild/free foods	Rabbits/hares	Wild fungi	Intertidal occupancy over mud	Intertidal occupancy over mud and sand	Intertidal occupancy over mud and stones	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Intertidal occupancy over boat on mud	Handling fishing gear	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4722/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59	59	-	-	-	-	-	-	-	-
4722/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59	59	-	-	-	-	-	-	-	-
4722/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59	59	-	-	-	-	-	-	-	-
4723/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
4723/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
4724/1/1	-	-	-	-	13.8	23.7	2.4	**50.0**	5.5	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
4724/2/1	-	-	-	-	13.8	23.7	2.4	**50.0**	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4724/3/1	-	-	-	-	13.8	23.7	2.4	**50.0**	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4726/1/1	**46.3**	**25.5**	**22.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	117	-	13	-	-	-	-	-	130	-	743	-	-
4728/1/1	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	4	-	-	-	-	3	-	-	-	-
4728/2/1	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
4730/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**834**	-	-	-	-	-	-	-	1043	782
4730/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59	52
4730/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-	0	365
4730/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**365**	-	-	-	-	-	-	-	0	365
4730/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	182
4730/4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	182
4730/4/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	182
4730/4/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	182
4730/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	65
4730/5/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	65

Notes

The emboldened observations are the high-rate individuals

U = Unknown

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

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over mud and sand	Intertidal occupancy over rock	Intertidal occupancy over sand	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4405/3/1	-	-	-	**0.1**	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-
4405/4/1	-	-	-	**0.1**	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-
4407/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	38	-	10	4	-	-
4416/2/1	**28.9**	-	-	-	-	-	-	-	-	-	-	**48**	-	-	**48**	-	-	-	-
4429/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-
4429/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-
4429/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-
4445/6/1	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	237	-	-
4459/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	**521**	-	-	-	-	-
4459/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	**521**	-	-	-	-	-
4477/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-
4477/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-
4477/5/1	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-
4478/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	**236**	-	-	9	-	-
4481/13/1	-	-	-	-	-	-	-	-	-	-	-	-	**32**	**386**	-	-	64	-	-
4481/14/1	-	-	-	-	-	-	-	-	-	-	-	-	**32**	**386**	-	-	64	-	-
4481/15/1	-	-	-	-	-	-	-	-	-	-	-	-	**32**	**386**	-	-	64	-	-
4481/16/1	-	-	-	-	-	-	-	-	-	-	-	-	**32**	**386**	-	-	64	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over mud and sand	Intertidal occupancy over rock	Intertidal occupancy over sand	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4481/17/1	-	-	-	-	-	-	-	-	-	-	-	-	**32**	**386**	-	-	64	-	-
4481/18/1	-	-	-	-	-	-	-	-	-	-	-	-	**32**	**386**	-	-	64	-	-
4508/6/1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/6/2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/7/1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/7/2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/8/1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/8/2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/9/1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/9/2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/10/1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/10/2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/11/1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/11/2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
4508/15/1	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-
4508/16/1	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-
4555/4/1	-	-	-	-	-	0.9	3.2	1.5	-	-	**11.9**	-	-	-	-	-	-	-	-
4555/5/1	-	-	-	-	-	0.7	2.4	1.1	-	-	**4.5**	-	-	-	-	-	-	-	-
4562/8/1	-	-	-	-	**8.9**	**7.5**	**15.5**	**39.8**	**0.5**	-	-	-	-	-	-	-	-	-	-
4565/2/1	-	-	-	-	-	-	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-
4565/3/1	-	-	-	-	-	-	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-

Person ID number	Sea fish	Crustaceans	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over mud and sand	Intertidal occupancy over rock	Intertidal occupancy over sand	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4633/2/1	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-
4633/3/1	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-
4633/4/1	-	-	-	-	-	-	-	-	-	**1.1**	-	-	-	-	-	-	-	-	-
4633/10/1	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-
4692/2/1	-	-	**2.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/3/1	8.0	**0.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4696/4/1	8.0	**0.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4708/7/1	-	-	-	-	**8.8**	**5.9**	2.2	**20.8**	**0.4**	-	-	-	-	-	-	-	-	-	-
4708/8/1	-	-	-	-	**8.8**	**5.9**	2.2	**20.8**	**0.4**	-	-	-	-	-	-	-	-	-	-
4708/9/1	-	-	-	-	**8.8**	**5.9**	2.2	**20.8**	**0.4**	-	-	-	-	-	-	-	-	-	-
4708/10/1	-	-	-	-	**8.8**	**5.9**	2.2	**20.8**	**0.4**	-	-	-	-	-	-	-	-	-	-
4716/4/1	9.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4716/5/1	9.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4716/6/1	9.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4717/5/1	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

The emboldened observations are the high-rate individuals

U = Unknown

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

Person ID number	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over rock	Intertidal occupancy over sand	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4441/3/1	-	-	-	-	-	-	-	-	24	-	-	-
4465/2/1	-	-	-	-	-	-	-	-	30	-	0	12
4481/10/1	-	-	-	-	-	-	-	**32**	**386**	64	-	-
4481/11/1	-	-	-	-	-	-	-	**32**	**386**	64	-	-
4481/12/1	-	-	-	-	-	-	-	**32**	**386**	64	-	-
4481/19/1	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/19/2	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/20/1	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/20/2	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/21/1	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/21/2	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/22/1	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/22/2	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/23/1	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/23/2	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/24/1	-	-	-	-	-	-	-	**91**	**1070**	183	-	-
4481/25/1	-	-	-	-	-	-	-	**91**	**1070**	183	-	-

Person ID number	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over rock	Intertidal occupancy over sand	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4508/4/1	-	-	-	-	-	-	-	-	4	-	6	4
4508/5/1	-	-	-	-	-	-	-	-	4	-	6	4
4515/2/1	-	-	-	-	-	-	-	**39**	39	-	-	-
4520/2/1	-	-	-	-	-	-	-	-	104	-	0	104
4555/6/1	-	0.4	**1.6**	0.8	-	-	**3.0**	-	-	-	-	-
4562/9/1	**2.2**	**1.9**	**3.9**	**10.0**	0.1	-	-	-	108	-	-	-
4565/4/1	-	-	-	-	**0.5**	-	-	-	-	-	-	-
4633/11/1	-	-	-	-	-	**0.7**	-	-	-	-	-	-

Notes

The emboldened observations are the high-rate individuals

U = Unknown

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

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

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

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

Notes

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

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

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

[d] Game includes rabbits/hares and venison.

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

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

Person ID number	Fish	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over mud and sand	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4405/1/1	-	-	**1.9**	-	-	-	-	-	-	-	-	3	175	-	-	-	-	-	-	-
4407/3/1	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	200	40	-	-
4407/3/2	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	200	40	-	-
4407/3/3	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	200	40	-	-
4407/3/4	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	200	40	-	-
4407/3/5	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	200	40	-	-
4407/3/6	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	200	40	-	-
4407/3/7	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	200	40	-	-
4407/3/8	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	200	40	-	-
4407/3/9	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	-	200	40	-	-
4409/2/1	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4423/6/1	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	14	-	-	-
4433/1/1	-	-	-	-	-	-	-	-	-	-	-	-	79	-	-	-	73	-	-	-
4434/2/1	-	-	-	-	-	-	-	-	-	-	-	-	**600**	-	-	-	-	-	0	150
4436/1/1	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	0	26
4437/1/1	-	-	-	-	-	-	-	-	-	-	-	-	296	-	-	-	-	-	0	169

Person ID number	Fish	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over mud and sand	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4441/2/1	-	-	-	-	-	-	-	-	-	-	-	-	24	-	-	-	-	-	-	-
4445/5/1	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4451/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2494	9
4451/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4451/4/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1897	12
4455/2/1	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-
4457/1/1	-	-	-	-	-	-	-	-	-	-	-	-	64	-	-	-	-	-	-	-
4465/3/1	-	-	-	-	-	-	-	-	-	-	-	-	261	-	-	-	-	-	0	104
4475/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	1	30	-	-
4475/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	1	30	-	-
4478/2/1	-	-	-	-	-	-	-	-	-	-	-	-	236	-	-	-	-	9	-	-
4481/4/1	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	183	-	-
4481/6/1	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	183	-	-
4481/7/1	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	183	-	-
4481/8/1	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	183	-	-
4481/9/1	-	-	-	-	-	-	-	-	-	-	-	**91**	**1070**	-	-	-	-	183	-	-

Person ID number	Fish	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over mud and sand	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4508/12/1	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	10	15
4508/12/2	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	10	15
4508/15/1	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-
4509/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/2/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4509/2/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2147	239
4514/1/1	-	-	-	-	-	-	-	-	-	-	-	-	235	-	-	-	-	-	-	-
4515/3/1	-	-	-	-	-	-	-	-	-	-	-	26	26	-	-	-	-	-	-	-
4518/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2013	38
4531/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1749	40
4531/4/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1749	40
4552/3/1	-	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-
4552/4/1	-	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-
4552/7/1	-	-	-	16.0	**39.6**	11.9	21.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-
4555/3/1	-	-	-	-	0.9	3.2	1.5	-	-	**11.9**	-	-	-	-	-	-	-	-	-	-
4560/1/1	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-	35	-	-	-
4562/6/1	-	-	-	8.9	7.5	15.5	**39.8**	0.5	-	-	-	-	-	-	-	-	-	-	-	-
4563/2/1	-	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-
4564/2/1	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Fish	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over mud and sand	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4566/2/1	-	-	-	2.7	-	-	-	8.2	-	-	-	-	-	-	-	-	-	-	-	-
4567/3/1	-	-	-	2.2	2.3	4.7	10.4	1.2	-	-	-	-	-	-	-	-	-	-	-	-
4567/4/1	-	-	-	2.2	2.3	4.7	10.4	1.2	-	-	-	-	-	-	-	-	-	-	-	-
4570/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1999	87
4570/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	701	30
4570/3/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	15
4570/3/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	15
4570/3/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	15
4570/3/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	15
4571/1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4571/1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-
4572/2/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	-	-
4633/6/1	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-
4633/8/1	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-
4633/9/1	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-
4708/4/1	-	-	-	17.7	11.9	4.4	**41.6**	0.9	-	-	-	-	-	-	-	-	-	-	-	-
4708/5/1	-	-	-	17.7	11.9	4.4	**41.6**	0.9	-	-	-	-	-	-	-	-	-	-	-	-
4709/2/1	-	-	-	-	-	-	-	-	-	-	-	-	52	-	-	-	-	-	0	26
4716/3/1	9.4	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Person ID number	Fish	Molluscs	Marine plants/algae	Green vegetables	Other vegetables	Root vegetables	Potato	Domestic fruit	Cattle meat	Eggs	Intertidal occupancy over mud and sand	Intertidal occupancy over rock	Intertidal occupancy over sand	Intertidal occupancy over sand and coal	Intertidal occupancy over sand and stones	Handling sediment	Occupancy in water	Occupancy on water	Indoor occupancy within 1 km of the licensed site boundary	Outdoor occupancy within 1 km of the licensed site boundary
4716/7/1	**23.4**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4717/4/1	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4722/4/1	-	-	-	-	-	-	-	-	-	-	-	-	59	59	-	-	-	-	-	-
4730/1/1	-	-	-	-	-	-	-	-	-	-	-	-	**834**	-	-	-	-	-	1043	782

Notes

The emboldened observations are the high-rate individuals

U = Unknown

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

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

Profile Name	Pathway Name	Number of Individuals		Crustacea	Direct	Eggs	Fish - Sea	Fruit - Domestic	Fruit and nuts - Wild	Gamma external - Sediments	Marine plants/algae	Meat - Cow	Meat - Game	Meat - Poultry	Mollusca	Mushrooms	Occupancy In water	Occupancy On water	Plume (IN; 0-0.25 km)	Plume (MID; 0.25-0.5 km)	Plume (OUT; 0.5-1 km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
			Notes		1					2	3								4	4	4				
			Units	kg	-	kg	kg	kg	kg	h	kg	kg	kg	kg	kg	kg	h	h	h	h	h	kg	kg	kg	kg
Crustacean Consumers		5		**20.1**	-	-	22.4	-	-	23	-	-	-	-	4.8	-	-	1200	-	-	-	-	-	-	-
Occupants for Direct Radiation		116		0.02	**1**	-	0.57	-	-	90	-	-	-	-	0.1	-	1	7	480	13	510	-	-	-	-
Egg Consumers		6		-	-	**18.1**	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-	0.44	0.76	1.6
Sea Fish Consumers		20		2.9	0.1	-	**32.3**	-	-	73	-	-	-	-	1.2	-	-	310	5	-	-	-	-	-	-
Domestic Fruit Consumers		4		0.21	-	-	-	**49.2**	-	11	-	-	-	-	-	-	-	-	-	-	-	57.6	47.6	37.9	48.2
Wild Fruit and Nut Consumers		2		-	-	-	-	15.5	**2.0**	-	-	-	-	-	-	-	-	-	-	-	-	63.6	80.7	18.8	51.4
Occupants over Sediment		49		0.04	0.22	-	1.6	-	-	**620**	-	-	-	-	-	-	34	46	57	-	57	-	-	-	-
Consumers of Marine Plants and Algae		1		-	-	-	-	-	-	180	**1.9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cattle Meat Consumers		6		-	-	-	-	-	-	-	-	**1.5**	0.15	0.15	-	0.15	-	-	-	-	-	-	-	-	-
Game Meat Consumers		1		-	-	-	-	-	-	-	-	1.5	**0.9**	0.9	-	0.91	-	-	-	-	-	-	-	-	-
Poultry Meat Consumers		4		-	-	-	-	3.4	-	-	-	0.37	0.22	**0.9**	-	0.23	-	-	-	-	-	-	-	-	-
Mollusc Consumers		2		12.8	0.5	-	23.1	-	-	60	-	-	-	-	**15.6**	-	-	370	-	46	-	-	-	-	-
Mushroom Consumers		1		-	-	-	-	-	-	-	-	1.5	0.9	0.9	-	**0.9**	-	-	-	-	-	-	-	-	-
Occupants In Water		1		-	-	-	-	-	-	120	-	-	-	-	-	-	**1470**	-	-	-	-	-	-	-	-
Occupants On Water		10		3.5	-	-	7.1	-	-	3	-	-	-	-	0.14	-	-	**1800**	-	-	-	-	-	-	-	-
Local Occupants (0 - 0.25 km)		5		-	1	-	-	-	-	36	-	-	-	-	-	-	-	-	**1260**	-	-	-	-	-	-
Local Occupants (>0.25 - 0.5 km)		21		-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2190**	-	-	-	-	-
Local Occupants (>0.5 – 1.0 km)		26		-	1	-	-	-	-	15	-	-	-	-	-	-	-	-	-	-	**2110**	-	-	-	-
Green Vegetable Consumers		5		0.16	-	-	-	39.9	0.82	-	-	-	-	-	-	-	-	-	-	-	-	**68.5**	66.3	37.8	57
Other Domestic Vegetable Consumers		12		0.1	-	-	0.13	16.7	0.34	-	-	-	-	-	-	-	-	-	-	-	-	37.9	**50.7**	28.3	30.7
Potato Consumers		27		0.03	-	1.2	-	7.8	-	6	-	-	-	-	-	-	-	-	-	-	-	22.6	17.6	**41.1**	19.9
Root Vegetable Consumers		12		0.1	-	2.7	-	17.7	0.34	-	-	-	-	-	-	-	-	-	-	-	-	42.3	36.1	36.4	**40.4**

Notes for Annex 7

1) Direct radiation is expressed as proportion of group who are present within 1 km of site perimeter.
2) Gamma external - Sediments represents occupancy over intertidal substrates including mud; mud and sand; mud and stones; sand; sand and coal; sand and stones. Boat on mud occupancy (maintenance) included with a shielding factor of 0.5.
3) Marine plants/algae represents the consumption of gut weed and Porphyra.
4) Plume times are the sum of individuals' indoor and outdoor times.

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

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

Profile Name	Pathway Name	Number of Individuals		Crustacea	Direct	Eggs	Fish - Sea	Fruit - Domestic	Gamma external - Sediments	Marine plants/algae	Meat - Cow	Mollusca	Occupancy In water	Occupancy On water	Plume (IN; 0-0.25 km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
			Notes		1				2	3					4				
			Units	kg	-	kg	kg	kg	h	kg	kg	kg	h	h	h	kg	kg	kg	kg
Crustacean Consumers		2		**0.2**	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Occupants for Direct Radiation		12		-	**1**	-	-	-	2	-	-	-	-	-	5	-	-	-	-
Egg Consumers		2		-	-	**8.2**	-	-	-	-	-	-	-	-	-	-	0.77	1.3	2.8
Sea Fish Consumers		1		-	-	-	**28.9**	-	48	-	-	-	-	-	-	-	-	-	-
Domestic Fruit Consumers		7		-	-	-	-	**0.6**	-	-	-	-	-	-	-	6.3	4.5	17.6	3.5
Occupants over Sediment		9		-	-	-	-	-	**400**	-	-	-	-	44	-	-	-	-	-
Consumers of Marine Plants and Algae		2		-	-	-	-	-	60	**0.1**	-	-	-	-	-	-	-	-	-
Cattle Meat Consumers		4		-	-	-	-	-	-	-	**1.4**	-	-	-	-	-	-	-	-
Mollusc Consumers		1		-	-	-	-	-	-	-	-	**2.6**	-	-	-	-	-	-	-
Occupants In Water		1		-	-	-	-	-	38	-	-	-	**10**	4	-	-	-	-	-
Occupants On Water		1		-	-	-	4.1	-	-	-	-	-	-	**240**	-	-	-	-	-
Local Occupants (0 - 0.25 km)		12		-	1	-	-	-	2	-	-	-	-	-	**5**	-	-	-	-
Green Vegetable Consumers		5		-	-	-	-	0.4	-	-	-	-	-	-	-	**8.9**	6.2	24.6	4.9
Other Domestic Vegetable Consumers		5		-	-	-	-	0.4	-	-	-	-	-	-	-	8.9	**6.2**	24.6	4.9
Potato Consumers		5		-	-	-	-	0.4	-	-	-	-	-	-	-	8.9	6.2	**24.6**	4.9
Root Vegetable Consumers		1		-	-	-	-	0.4	-	-	-	-	-	-	-	8.9	7.5	39.8	**15.5**

Notes for Annex 8

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

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

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

Profile Name	Pathway Name	Number of Individuals		Direct	Eggs	Fruit - Domestic	Gamma external - Sediments	Meat - Cow	Occupancy On water	Plume (IN; 0-0.25 km)	Plume (OUT; 0.5-1 km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
			Notes	1			2			3	3				
			Units	-	kg	kg	h	kg	h	h	h	kg	kg	kg	kg
Occupants for Direct Radiation		4		**1**	-	-	36	-	-	5	29	-	-	-	-
Egg Consumers		1		-	**3.0**	-	-	-	-	-	-	-	0.4	0.7	1.6
Domestic Fruit Consumers		1		-	-	**0.5**	-	-	-	-	-	-	-	-	-
Occupants over Sediment		15		-	-	-	**930**	-	160	-	-	-	-	-	-
Cattle Meat Consumers		1		-	-	-	-	**0.7**	-	-	-	-	-	-	-
Occupants On Water		15		-	-	-	930	-	**160**	-	-	-	-	-	-
Local Occupants (0 - 0.25 km)		2		1	-	-	4	-	-	**10**	-	-	-	-	-
Local Occupants (>0.5 - 1 km)		1		1	-	-	100	-	-	-	**100**	**-**	-	-	-
Green Vegetable Consumers		1		-	-	0.1	110	-	-	-	**-**	**2.2**	1.9	10	3.9
Other Domestic Vegetable Consumers		1		-	-	0.1	110	-	-	-	-	2.2	**1.9**	10	3.9
Potato Consumers		1		-	-	0.1	110	-	-	-	-	2.2	1.9	**10**	3.9
Root Vegetable Consumers		2		-	1.5	0.1	54	-	-	-	-	1.1	1.2	5.4	**2.7**

Notes for Annex 9

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

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

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

Profile Name	Pathway Name	Number of Individuals		Direct	Eggs	Fish - Sea	Fruit - Domestic	Gamma external - Sediments	Marine plants/algae	Meat - Cow	Mollusca	Occupancy In water	Occupancy On water	Plume (IN; 0-0.25 km)	Plume (MID; 0.25-0.5 km)	Plume (OUT; 0.5-1 km)	Vegetables - Green	Vegetables - Other Domestic	Vegetables - Potatoes	Vegetables - Root
			Notes	1				2	3					4	4	4				
			Units	-	kg	kg	kg	h	kg	kg	kg	h	h	h	h	h	kg	kg	kg	kg
Occupants for Direct Radiation		26		**1.00**	-	-	-	82	-	-	-	-	-	240	510	510	-	-	-	-
Egg Consumers		1		-	**11.9**	-	-	-	-	-	-	-	-	-	-	-	-	0.88	1.5	3.2
Sea Fish Consumers		2		-	-	**16.4**	-	-	-	-	0.50	-	-	-	-	-	-	-	-	-
Domestic Fruit Consumers		1		-	-	-	**8.2**	-	-	-	-	-	-	-	-	-	2.7	-	-	-
Occupants over Sediment		7		0.29	-	-	-	**970**	-	-	-	-	130	260	-	21	-	-	-	-
Consumers of Marine Plants and Algae		1		-	-	-	-	180	**1.9**	-	-	-	-	-	-	-	-	-	-	-
Cattle Meat Consumers		3		-	-	-	-	-	-	**1.5**	-	-	-	-	-	-	-	-	-	-
Mollusc Consumers		2		-	-	16.4	-	-	-	-	**0.50**	-	-	-	-	-	-	-	-	-
Occupants In Water		10		-	-	-	-	43	-	-	-	**190**	36	-	-	-	-	-	-	-
Occupants On Water		6		-	-	-	-	890	-	-	-	-	**190**	-	-	-	-	-	-	-
Local Occupants (0 - 0.25 km)		3		1.00	-	-	-	280	-	-	-	-	-	**1550**	-	-	-	-	-	-
Local Occupants (>0.25 - 0.5 km)		6		1.00	-	-	-	-	-	-	-	-	-	-	**2210**	-	-	-	-	-
Local Occupants (>0.5 – 1.0 km)		6		1.00	-	-	-	-	-	-	-	-	-	-	-	**2130**	-	-	-	-
Green Vegetable Consumers		6		-	-	-	0.46	-	-	-	-	-	-	-	-	-	**15.4**	25.0	31.2	10.0
Other Domestic Vegetable Consumers		3		-	-	-	0.18	-	-	-	-	-	-	-	-	-	16.0	**39.6**	21.4	11.9
Potato Consumers		6		-	-	-	0.46	-	-	-	-	-	-	-	-	-	15.4	25.0	**31.2**	10.0
Root vegetable consumers		4		-	-	-	0.26	-	-	-	-	-	-	-	-	-	14.2	31.6	26.0	**12.8**

Notes for Annex 10

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

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

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

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