

# Nutritional Analysis Manual

**A guide to demonstrating compliance with the nutritional requirements for food and drink in schools (Scotland) regulations 2008**

**Revised December 2016**

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## 1. Introduction

The Schools (Health Promotion and Nutrition) (Scotland) Act 2007 places a duty on education authorities and managers of grant-aided schools to ensure that all food and drink provided in schools complies with nutritional regulations (the Regulations).

The Regulations form part of the wider health promoting schools approach set out in the Act and work, as a whole, across the school day. There are two parts.

### A Standards for **school lunches**:

- **Nutrient standards**, which set out the proportion of nutrients that children<sup>1</sup> should receive from an average day's school lunch (see section 2 of the [\*Healthy Eating in Schools – A guide to implementing the nutritional requirements for food and drink in schools \(Scotland\) regulations 2008\*](#) and Schedule 3 of the Regulations), and;
- **Food standards and drink standards**, which define the types of food and drinks that children should be offered in a school lunch and their frequency, as well as setting nutritional requirements for specific types of food and drink which may be provided (see section 3 and 4 of [\*Healthy Eating in Schools – A guide to implementing the nutritional requirements for food and drink in schools \(Scotland\) regulations\*](#) and Schedules 1 and 2 of the Regulations).

**B Standards for food and drinks served outwith the school lunch**, for example breakfast, tuckshops, vending machines, mid-morning services and after school clubs (see Section 4 and 6 of [\*Healthy Eating in Schools – A guide to implementing the nutritional requirements for food and drink in schools \(Scotland\) regulations 2008\*](#) and Schedule 4 of the Regulations).

This manual provides guidance for schools and local authorities on how to adopt a consistent approach to nutritionally analyse school lunch menus. An accurate nutritional analysis of school lunch menus is required to demonstrate compliance with the statutory nutrient standards as set out within the Regulations. The process of nutritional analysis provides valuable information to inform menu planning, allowing planners to observe the impact of changes to recipes, portion sizes and food frequency. The manual also gives guidance on establishing a self-evaluation approach to the planning, analysis and review of school lunch menus. This approach ensures that continuous improvement can be a key priority.

The nutritional analysis is an important step in planning menus for school lunches. However, the impact and influence of school staff on the choices that children make cannot be under-estimated. Staff are uniquely placed to create and encourage a culture of healthier eating practices that will enable children to put their learning from the classroom about nutrition and health into action. This will positively benefit children by contributing to the establishment of life-long habits. Working practices of all staff must be based on the duty of the Act to ensure all schools are “health promoting”.

Education Scotland's Health and Nutrition Inspectors monitor compliance of the Act

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<sup>1</sup> Where 'children' is used throughout the document, this refers to all children and young people of school age.

through their programme of school inspections. The nutritional analysis forms an important part of the monitoring process, and will be evaluated along with other evidence which demonstrates how well a school is meeting the duties of the Act. However, nutritional analysis is not just for inspection purposes. All local authorities should, at any time, be able to demonstrate that their menus meet the statutory nutrient standards.

A glossary of terms used throughout the manual is provided in Appendix A. This guidance will be reviewed in August 2018.

## 2. Information on minimum specification for nutritional analysis software

A range of nutritional analysis software packages is available to demonstrate whether school lunch menus meet the nutrient standards. Local authorities may want to use different packages that meet their specific requirements. A minimum technical specification has been developed and is shown in Appendix H. Whichever nutritional analysis software package is used, it should conform to the essential criteria set out in the technical specification.

Guidance on the use of individual nutritional analysis software is **not** included in this document and should be sought from your software provider. Support from a registered nutritionist or dietitian in undertaking nutritional analysis is advised.

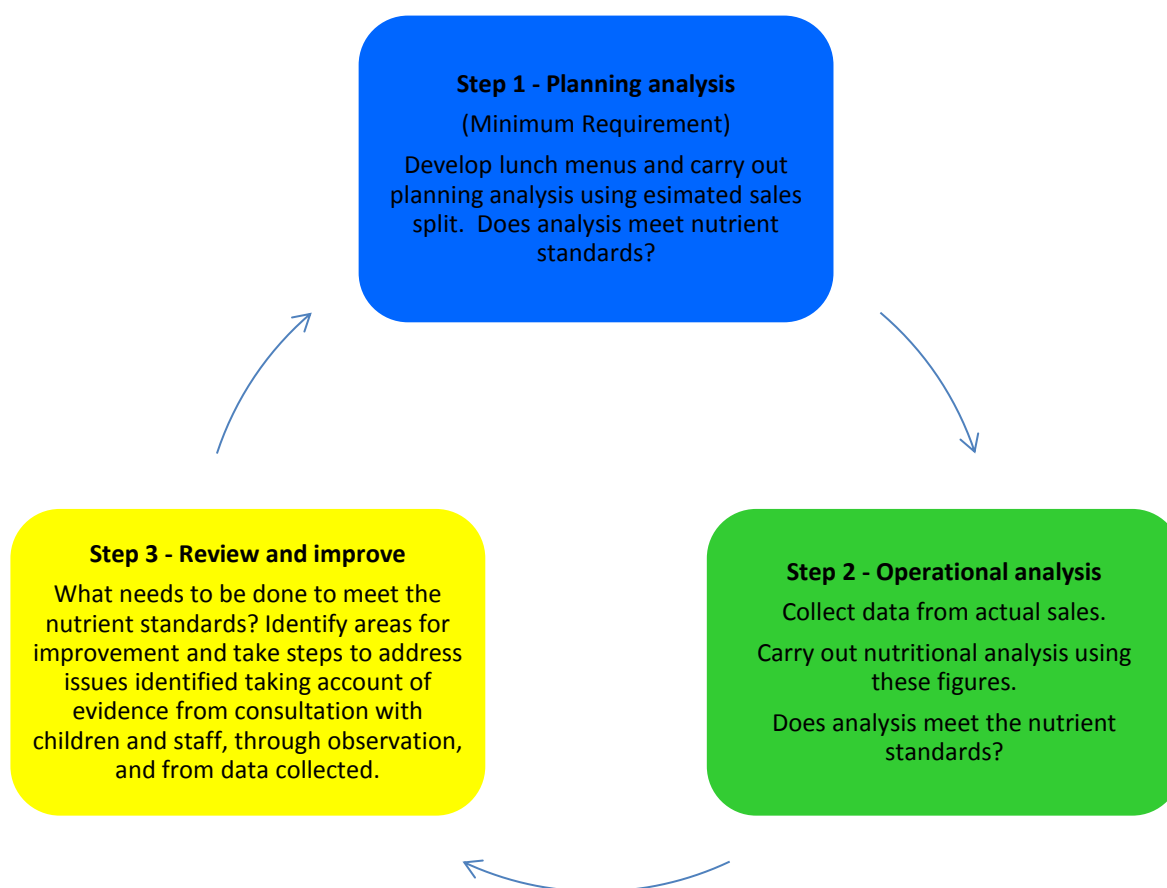
## 3. **Guiding Principles** – these apply to all schools.

- All food and drinks available for purchase at lunchtime must be included in the nutritional analysis. This includes products sold at all service counters and from other outlets such as vending machines.
- Additional bread provided on an unrestricted basis to children does not need to be included. Authorities can choose whether to include this or not, but if it is included, should represent the amount typically served. Bread provided as part of a meal such as garlic bread or as an accompaniment to soup must be included.
- Nutrient standards are based on the energy and nutrient needs of children, calculated to provide one third of daily requirements from a school lunch. Nutritional analysis is based on food and drink provision. It does not take account of actual consumption nor plate waste. Local systems should be in place to monitor levels of plate waste.
- Nutritional analysis should be carried out for each week of the menu cycle. For schools which do not follow a cycle of menus, nutritional analysis should be carried out on a sample of menus on a regular basis throughout the year.
- There are different nutrient standards for primary and secondary pupils. For schools with both primary and secondary pupils, a nutritional analysis should be provided for each set of nutrient standards.
- For the purposes of nutritional analysis, a school week represents a normal school week of five consecutive days, Monday to Friday.

- Adult customer numbers should not be included in the analysis.

#### 4. Self-evaluation cycle of nutritional analysis

The menu planning and nutritional analysis process has been broken down into three steps which form the basis of a self-evaluation approach. These steps have been colour coded and are shown below in the overview.



Further detail for each step is detailed below

##### **Step 1 Planning Analysis**

A planning analysis is the *minimum* level of nutritional analysis required to demonstrate that school lunch menus meet the nutrient standards set out in the Regulations.

##### **Menu Planning**

The document [Healthy Eating in Schools – A guide to implementing the nutritional requirements for food and drinks in schools \(Scotland\) regulations 2008](#) provides useful information for planning school lunch menus.

## What is a planning analysis?

A planning analysis is based on the food and drink choices offered to children each week. It is used to demonstrate that the food and drink **provided** makes it possible for the average lunch selected, over the course of a week, to meet the nutrient standards.

Best estimates of children's expected food and drink selections should be used for a planning analysis. These estimates will be determined using caterers' knowledge and experience from previous menu cycles and should be a realistic reflection of the choices made. Careful consideration should be given to inclusion of items that are available for all children to select, but is known that many children choose not to take as part of their lunch. A planning analysis should be carried out **before** menus are issued to schools. This is to allow any necessary adjustments to be made to the menu plan before it begins to be served in school.

Before carrying out a planning analysis of the menu, it must be checked to ensure that it meets the food standards and drink standards. A checklist for this task is in Appendix B.

## You will require the following information to carry out your planning analysis:

- Weekly menu including menu choices for each day.
- Number of days of the week in the cycle (early finishing days should be included if meals or packed lunches are provided).
- Total number of each food and drink item served, or estimated to be served. **All** food and drink items available need to be included.
- Portion sizes for every item. Suggested portion sizes are provided in Appendix C. Please also refer to page 15 of [Healthy Eating in Schools – A guide to implementing the nutritional requirements for food and drinks in schools \(Scotland\) regulations 2008](#) for advice on this.
- Recipes and/or manufactured product specifications – where these are not already on the software database, they will need to be added manually. Guidance from your software provider will advise you how to do this.
- Daily customer number (this is the total number of lunches served each day - see page 9 for guidance on how the customer number is determined in secondary schools or schools where a set menu is not provided)

The [Nutrient Specifications for Manufactured Products](#) guide is also available to assist in achieving the nutrient standards.

You should now go ahead and input the information above into your nutritional analysis software. If the analysis does not show that all nutrient standards have been met, check the following:

- Have the correct recipes been used?
- Do recipes require alteration to improve their nutrient profile?
- Has the correct combination and quantities of food and drinks been used? Adjust if necessary

- Do portion sizes used match those served? Check default settings on software as these may be different to the portion sizes you serve in your schools
- Are all items served in school including all drinks, condiments and meal accompaniments included?
- Have you checked for data entry errors? For example, has 1g instead of 10g or 100g been input.

If the nutritional analysis is still not showing that all standards are being met, review the menu and substitute recipes and dishes used. Repeat this step until the analysis meets the standards. You are then ready to put your menu into schools and move to stage 2 – operational analysis.

## Step 2 Operational Analysis

### What is an operational analysis?

An operational analysis is based on what children actually select from the menu available at lunch time over the period of a week. It is used to demonstrate if the average school lunch **selected** over a week meets the nutrient standards. It exceeds the minimum nutritional analysis required to demonstrate compliance with the Regulations.

An operational analysis can be carried out for an individual school or sample of schools across the authority. It is good practice to carry this out regularly throughout the year to test out the accuracy of the planning analysis, and see where adjustments may need to be made. This step is only required when there is a difference between what children select from the menu and what is estimated that they will select.

Before undertaking an operational analysis, systems to record numbers of meals served and uptake of all menu items will need to be in place (a record of actual sales).

Once you have your accurate sales figures, go ahead and put these into your software package. You are now ready to move to step 3.

### Planning analysis and operational analysis – what's the difference?

**Planning analysis** – an analysis based on what the menu planner plans to offer and provide

**Operational analysis** – an analysis based on what is selected by children from the menu

## Step 3 Review and Improve

### How well are we doing and what difference has it made?

Steps 1 and 2 of the analysis process can be used to evaluate existing menus and inform the development of future menus. By comparing the results of analyses at both

the planning and operational stages, differences relating to children's food selection are highlighted, areas for improvement can be identified and adjustments made. For example, if the uptake of a set sandwich lunch containing the choice of a home baked item and fruit juice is higher than estimated, this may result in higher than expected levels of non-milk extrinsic sugars. A review of the content of the sandwich lunch or its frequency over a week might be required to improve the non-milk extrinsic sugar level.

This important step of the process should use a range of evidence including observations in the dining hall, consultation with children, parents and staff, as well as the sales split and analysis data.

Consider the reflective questions below. Use the results to develop ways to identify changes that require to be made, develop ways to encourage change, and make adjustments as necessary.

- Which estimates were accurate and which were quite different? What do you think the reasons for the differences are?
- If standards are not being met, what can be done to address this and what requires to change in the next menu cycle to ensure they are met? Are timescales for effective change realistic and achievable?
- Does the menu offer sufficient variety of foods?
- Is it colourful and appealing visually?
- Can a smaller serving be offered of popular foods that may be contributing too many calories, or too much fat, sugar or sodium? Review these foods looking at both contribution of nutrients per 100g and per portion size.
- Can the quantity of a high fat, salt or sugar ingredient in a recipe be reduced?
- Can a high fat ingredient in a recipe be changed to a lower fat ingredient?
- Can the portion size of an appropriate menu item be increased to meet minimum calorie levels? For example rice, pasta, potatoes or bread.
- Are there too many foods high in fat, sugar or sodium on the same day or the same week?

## **5. Determining customer numbers in services using cafeteria systems, vending machines and/or satellite sales outlets**

The customer number is required to be input into the software package for each day of the week. In schools where children receive a set meal (for example a main course, starter/dessert and drink for a standard price), the customer number is equal to the number of meals served. For ease, you may decide to base your planning analysis based on a customer number of 100 and use proportionate figures for the estimated sales split. This number is important as it is used to divide to the total amount of nutrients in the foods and drink served, giving an average amount of nutrients per meal for each customer.

For services which are based on a cafeteria system, vending machines and/or satellite sales outlets, determining the customer number can be more difficult as meal items are selected individually rather than as a set meal. It is essential that customer numbers collected for these services are not biased towards children who make individual purchases such as a drink or yogurt individually but do not buy a main meal. This would skew the analysis.



A method to prevent this outcome has been developed and is outlined below. This method provides a consistent approach to determining customer numbers. It can be used either with estimated sales split figures for a planning analysis, or with actual sales split figures for an operational analysis.

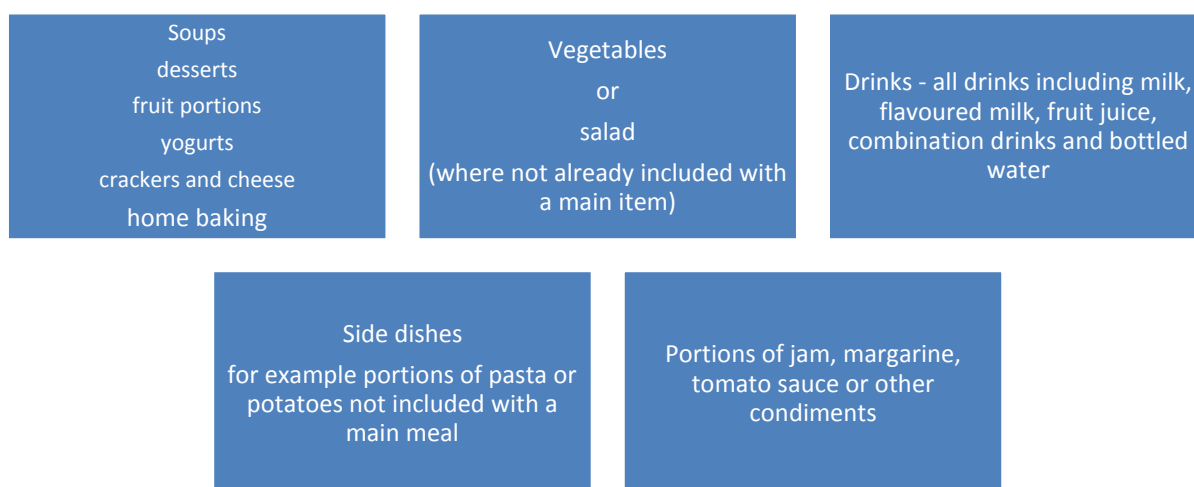
The customer number is the total number of main lunch items sold to children at lunchtime. Main lunch items are defined as:

- traditional meals, for example roast chicken with gravy
- sandwiches/baguettes/panini/salad boxes, for example tuna salad baguette
- snack type options, for example filled baked potato or pizza.

If you are unsure as to which foods would be classed as a main lunch item, please contact one of the Health and Nutrition Inspectors at Education Scotland.

Once the customer number has been calculated, you can determine whether sales of food or drinks in the categories below need to be adjusted so that they are proportionate to your customer number. This approach takes account of the variety and quantities of items which have been bought without attributing multiple sales to individual children.

Group all items other than main lunch items listed above under the following categories and calculate the total number of items in each category:



Where the total number of items in a category is **less** than the customer number, all items in the category will be included in the analysis. Where the total number of items in a category is **greater** than the customer number, these items must be included in proportion to the customer number. A spreadsheet has been developed to do this calculation for you if it is required. You can download it [here](#).

## **6. Information required when a school is being inspected by Education Scotland**

If a school in your local authority is chosen to be part of the sample of inspections to include a Health and Nutrition Inspector (HNI), the headteacher will be informed of this as part of notification of inspection. If this is the case, the Health and Nutrition Inspector will require the following information at the beginning of the inspection week:

- The full menu for each week of the menu cycle including portion sizes, quantity of each item served (sales split), and daily customer number.
- Nutritional analysis either in graph form or as a table of results.
- If using the platter function which is available on some software packages, please indicate what is included in the platter as this cannot be viewed.
- A completed cover sheet outlining whether food and drink standards are being met. A template for the cover sheet is in Appendix D and a completed example in Appendix E.
- Other information may be requested, such as recipes or information on specific products therefore it is helpful if the contact details for the person who can deal with any enquiry is included.

The cover sheet is necessary to demonstrate whether food and drink standards are being met across the school day. It can also provide a helpful narrative and explanation of the decisions or rationale for inclusion of particular dishes or sales split used for the menu and analysis. If the information outlined above is not provided, it is not possible to fully evaluate compliance with the regulations.

The information outlined above should be made available, in school, or electronically for the Health and Nutrition Inspector (HNI) at the beginning of an inspection week. Where this is not possible, the analysis must be received within two weeks of the inspection in order for it to be included as part of the evaluation of provision in the school.

From time to time, a Health and Nutrition Inspector may request a nutritional analysis of your school lunch menus outwith a school inspection. In these circumstances, the same information as above should be provided.

## **7. Frequently Asked Questions**

**7.1** Do we still need to do an analysis if all food and drinks meet the food standards and drink standards?

Yes. The nutrient standards are separate from the food standards and drink standards. All food served at lunchtime needs to meet the food and drink standards, but also needs to be nutritionally analysed to ensure that the balance of food provided for children to select meets the nutrient standards.

**7.2** Do we need to analyse food and drinks served outwith lunch?

No, it must meet the drinks standards and food standards outwith lunch. Nutrient standards only apply to food and drinks served at lunchtime.

**7.3 Why do we need to provide two different nutritional analyses if we are serving the same menu to all children in a school with both primary and secondary children?**

There are two sets of nutrient standards. One set for primary aged children and one for secondary aged children. This is because children of different ages have differing nutritional needs. For example, teenage girls have a much higher requirement for iron than primary aged girls. Therefore, if you are serving both primary and secondary children in the same school, you need to ensure that you are serving a menu that meets the differing nutritional needs of the different age ranges. This may in part be achieved through larger portion sizes for secondary aged children.

**7.4 Which portion sizes should we use?**

There are no set portion sizes that must be used. However, the portion sizes included in the nutritional analysis must be reflective of those served in school. Guidance on portion sizes can be found in Appendix C.

**7.5 Why are adult meals served not included in the analysis?**

This is because the nutrient standards are for children and not for adults.

**7.6 Do items from vending machines need to be included if the items sold meet the food and drink standards?**

Yes, all items sold at lunchtime, regardless of where they are sold, need to be included. Therefore, if you have a vending machine selling drinks and snacks to which children have access at lunchtime, these items need to be included.

**7.7 How do we find out what proportion of sales in vending machines is sold at lunchtime?**

You will have to use a reasonable estimate of what is sold in the machine at lunchtime. There is no set way to determine this. The method used to calculate the sales should be determined locally, and to suit individual circumstances.

**7.8 Should we include water in the analysis?**

Bottles of water can be included in the analysis in the proportions sold along with all other drinks. Free drinking water does not need to be included.

**7.9 We provide only cold packed lunches on a Friday. Do these need to be included in the analysis?**

Yes, all food provided at lunchtime for children needs to be included in the nutritional analysis, even when you are providing a reduced service for fewer children. The customer numbers on these days should reflect this situation.

**7.10 When undertaking a planning analysis, can we include a portion of fruit and a portion of vegetables for all children having lunch?**

If a portion of fruit and vegetables is included as part of the set meal price and this is available and offered to all children as part of their lunch, then you can include 100% uptake in the planning analysis, provided that this is available for all children at the service counter. This is the same as for all other items that are included in the cost of a meal. It would be good practice to ensure that menus make it clear that they have been analysed to ensure they meet the standards on the assumption that all children take all meal components. Consideration should be given to the positioning of products on the service counter and pricing information to ensure children are fully aware of what they are entitled to as part of their lunch. Staff have an important role in supporting and encouraging children to make good choices, and ensure that they are well informed about what they can choose.

In a cafeteria style service, you can only include vegetables that are included in the cost of a dish, for examples vegetables served with a main meal or meal deal. If the vegetables are priced separately and children pay extra for them, you can only include an estimate of the number of portions which would actually be purchased. An example would be side salad with a baked potato – if this is included in the cost of a filled potato, you can include 100% uptake of side salad in the planning analysis. If the side salad is priced separately from the baked potato, then an estimate of how many children would purchase this item would be used.

**7.11** Would a portion of soup count as a main lunch item for the customer number?

Soup would not count as a main lunch item for the customer number. This is because it does not contain enough nutrients or energy to count as a main lunch item on its own.

**7.12** Where should individual portions of cheese, tuna and coleslaw portions be included in the analysis?

If served separately, these would count as side dishes. If served with something that forms part of a main meal, for example filling for baked potato, but charged separately, this would be included as a main item and therefore as a customer number. The portion would not be included twice.

**7.13** Why is additional bread provided at no extra cost not included in the analysis, but bread that is paid for is?

Additional bread provided at no cost is not included because it is made available to satisfy pupils with larger appetites. This practice encourages children to fill up on starchy carbohydrate rather than on foods high in fat and sugar. Bread provided at a cost (either separately or as part of a meal), for example garlic bread, naan bread, or a roll with soup, should be analysed as part of the meal.

**7.14** We sell a lot of drinks as single purchases. How should these be included in the analysis?

These should be included in the analysis in the proportions in which you sell

them, with the maximum number included being the customer number. This ensures that single purchases will not skew the analysis, but also takes account of the variety and quantities of different drinks sold.

**7.15 Will serving meal deals help to meet nutrient standards?**

Meal deals can help to meet the nutrient standards because children are purchasing a package planned to include all the elements they need to have a balanced lunch. If meal deals are marketed as being good value for money, they can be effective in encouraging more children to have a balanced lunch, which includes fruit and vegetables.

**7.16 If we only serve meal deals, do we assume in the analysis that all children have all meal deal components?**

Yes. If all components of the meal deal are included in the price, you can assume, for the purposes of the analysis, that all children will have all of the meal deal components. This is because all children purchasing these meal deals will have the opportunity to have these items without any additional cost.

**7.17 What do we do if we have a shortage of energy in our operational analysis, but this meets the standard in our planning analysis?**

The nutrient standards are set to ensure that the food and drinks provided for lunch allow each child access to a balanced lunch. Some children may select only a sandwich or soup instead of a complete meal. Meal deals can help to encourage children to select a balanced lunch, and it is important for staff to encourage them to take their full meal entitlement.

**7.18 Do we have to carry out an operational analysis for each school?**

No. However an operational analysis is useful to give you an indication of how closely the average lunch selected over a week compares to the nutrient standards. An operational analysis can be carried out for an individual school, or by using the average sales split from a sample of schools that use the same menu cycle.

**7.19 How many schools would make up a sample?**

Each local authority should decide how many schools make up a sample. The sample should be reflective of the range of schools within the local authority, for example, larger and smaller schools, urban and rural schools, and schools with varying levels of free meal entitlement (FME). As a minimum, a 10% sample is recommended, but you may want to include more schools.

**7.20 We do not have a standard cycle of menus in our schools. How often should we analyse the menus?**

If you have schools where you do not have a standard menu, you should analyse a sample of the menus on a regular basis throughout the year. This will help to ensure that you know how well you are planning your menus to meet the

standards. A nutritional analysis would still be required by Education Scotland if the school were to be inspected.

**7.21** How do we determine our customer number for the planning analysis if our schools cover a range of sizes?

You may want to base your planning analysis on a customer number of 100, and use proportionate figures for the different items on the menu. Using this approach will mean that you can take account of the sales figures from both small and large schools.

**7.22** What happens if we do not receive a delivery of an item and we need to serve a different dish?

This sometimes happens and it is beyond your control. Try to replace the item with something that is similar in nutritional composition as far as possible. If you have to replace a dish for a long period, the replacement dish should be of similar nutritional composition. For example, replace chicken casserole with chicken curry. The replacement dish would not need to be nutritionally analysed, but should be indicated to Education Scotland on the analysis cover sheet.

**7.23** Do menus provided for 'one-off' events or theme days need to be analysed?

You would not be expected to re-analyse your menu for infrequent changes made for special events. However, any changes to the menu for that day should take account of the nutritional regulations.

**7.24** Do meals served to children with special dietary requirements need to be included?

No, these are not included as they have been adapted specifically for the needs of the child.

**7.25** Do evening meals served in an Education Authority hostel for school aged children need to be nutritionally analysed?

Yes, evening meals served in an Education Authority maintained hostel require to be nutritionally analysed in the same way as school lunches. This is because the regulations cover evening meals provided in these establishments. See page 8 of [Health Eating in Schools](#) guidance for further clarification.

## **APPENDICES**

- A     Glossary**
- B     Food and Drink Standards Checklist**
- C     Portion size guidance**
- D     Cover Sheet Template**
- E     Completed cover sheet example**
- F     Nutritional software specification for the analysis of school meals menus**

## **Appendix A – Glossary**

**Food and Drink Standards** – these define the provision of food and drinks in a particular setting. Food and Drink Standards can include:

- types of food associated with direct health benefit that should be offered (e.g. fruits and vegetables, oily fish and water);
- the frequency with which certain foods should be offered to ensure that healthier foods are served more frequently than less healthy ones;
- the restriction or elimination of certain foods; and
- nutrient specifications for individual foods.

**Nutrient Standards** – nutrient standards are defined as the amount of energy, macronutrients (protein, fat, saturated fat, total carbohydrate, non-milk extrinsic sugars and fibre) and micronutrients (vitamins and minerals) that a specified group of individuals require averaged over a given period and within a given setting.

**Nutritional Analysis** – term used to describe menu planning analysis, operational analysis or both.

**Nutritional Regulations** – term to describe nutrient standards, food and drink standards or a combination of both.

**Operational Analysis** – describes the level of analysis that will allow caterers to see the impact of actual uptake on achieving the nutrient standards.

**Planning Analysis** – describes the level of analysis that will allow caterers to verify that their school lunch provision meets the Nutritional Regulations. This is the minimum required from local authorities to demonstrate that all food and drink provided in school lunches complies with nutritional regulations as set out in the Schools (Health Promotion and Nutrition) (Scotland) Act 2007.

**Sample of schools** – where a sample approach is used, the sample should be representative, taking account of school size, geographical location, and level of deprivation.



## Appendix B - Checklist for food and drink standards

	<b>FOOD STANDARDS FOR SCHOOL LUNCHES</b>	<b>Met/Not met</b>
<b>Fruit and vegetables</b>	The menu as a whole must provide a choice of at least two types of vegetables and two types of fruit (not including fruit juice) as part of the school lunch.	
<b>Oily fish</b>	Oily fish must be provided at least once every three weeks.	
<b>Fats, spreads and oils</b>	<p>Only oils and spreads high in polyunsaturated and/or monounsaturated fats can be used in food preparation.</p> <ul style="list-style-type: none"> <li>• Oils must contain a total saturated fat content which does not exceed 16g per 100g and - <ul style="list-style-type: none"> <li>○ A total monounsaturated fat content of at least 55g per 100g OR</li> <li>○ A total polyunsaturated fat content of at least 30g per 100g</li> </ul> </li> <li>• Fat spreads must contain – <ul style="list-style-type: none"> <li>○ A total saturated fat content which does not exceed 20g per 100g AND</li> <li>○ A combined total of monounsaturated and polyunsaturated fat of at least 30g per 100g</li> </ul> </li> </ul>	
<b>Sodium/salt and condiments</b>	<p>Additional salt cannot be provided.</p> <p>Condiments (if provided), must be dispensed in no more than 10ml portions.</p>	
<b>Savoury snacks</b>	No savoury snacks can be provided except savoury crackers, oatcakes or breadsticks.	
<b>Confectionery</b>	<p>No confectionery can be provided.</p> <p>Confectionery is defined as:</p> <p>chewing gum, cereal bars, processed fruit bars, non-chocolate confectionery (whether or not containing sugar), chocolate in any form, any product containing or wholly or partially coated with chocolate and any chocolate-flavoured substance, but excludes cocoa powder used in cakes, biscuits and puddings.</p>	
<b>Deep fried foods</b>	Menus must not contain more than three deep fried items in a single week (including chips). This includes products which are deep fried in the manufacturing process. Chips, if served, must be served as part of a meal.	
<b>Bread</b>	Additional bread must be provided everyday as a meal accompaniment, with a variety of bread, which must include brown or wholemeal, being provided over the week.	

	<b>FOOD STANDARDS OUTWITH THE SCHOOL LUNCH</b>	<b>Met/Not met</b>
<b>Fruit and vegetables</b>	A variety of fruit and/or vegetables must be available in all school food outlets.	
<b>Fats, spreads and oils</b>	Only oils and spreads high in polyunsaturated and/or monounsaturated fats should be used in food preparation.	
<b>Sodium/salt and condiments</b>	<p>Additional salt must not be provided in schools.</p> <p>Condiments (if available), must be dispensed in no more than 10ml portions.</p>	
<b>Savoury snacks</b>	<p>Only Pre-packaged savoury snacks with</p> <ul style="list-style-type: none"> <li>• Pack size of no more than 25g</li> <li>• no more than 22g of fat per 100g</li> <li>• no more than 2g of saturates per 100g</li> <li>• no more than 0.6g of sodium per 100g</li> <li>• no more than 3g of total sugar per 100g</li> </ul> <p>are permitted.</p>	
<b>Confectionery</b>	No confectionery can be provided.	
<b>Fried foods</b>	Fried foods cannot be provided.	

	<b>Drinks Standards</b>	<b>Met/Not Met</b>
<b>Plain water (still or carbonated)</b>		
<b>Skimmed or semi-skimmed milk</b>		
<b>Milk drinks and drinking yogurts</b>	<ul style="list-style-type: none"> <li>• No more than 1.8g of total fat <b>per 100ml</b></li> <li>• No more than 10g of total sugars <b>per 100ml</b></li> <li>and</li> <li>• No more than 20g of total sugars <b>per portion size</b></li> </ul>	
<b>Soya, rice or oat drinks enriched with calcium</b>	<ul style="list-style-type: none"> <li>• No more than 1.8g of total fat <b>per 100ml</b></li> <li>• No more than 5g of total sugars <b>per 100ml</b></li> <li>and</li> <li>• No more than 10g of total sugars <b>per portion size</b></li> </ul>	
<b>Fruit juices and vegetable juices</b>	Maximum portion size of 200ml	
<b>A blend containing any of the following ingredients, either singly or in combination: Fruit/fruit juice Veg/veg juice</b>	Maximum portion size of 200ml	
<b>Water and fruit and/or vegetable juice combination drinks</b>	<ul style="list-style-type: none"> <li>• No added sugar</li> <li>• No more than 20g of sugar per portion size</li> <li>• 50% or more fruit or vegetable juice</li> <li>• No more than 200ml fruit or vegetable juice</li> </ul>	
<b>Tea and coffee</b>		

## Appendix C – Portion size guidance (adapted from Hungry for Success)

<b>Group 1 (Bread, other Cereals and Potatoes)</b>	<b>Recommended Portion Size (grams/ml) for 5-11 year olds</b>	<b>Recommended Portion Size (grams/ml) for 12- 18 year olds</b>
Rice (cooked weight)	80-120	180
Pasta (cooked weight)	80-120	180
Pasta canned in sauce	90-140	200
Mashed potatoes, boiled potatoes, potato croquettes	90-130	190
Jacket potatoes	120-170	250
Chips, roast potatoes, other potatoes cooked in fat e.g. potato wedges, and other processed potato products cooked in fat such as waffles and smiles	70-100	150
Bread: sliced, rolls, French stick (served instead of rice, pasta or potatoes)	45-65	100

<b>Group 2 (Fruit and Vegetables)</b>	<b>Recommended Portion Size (grams/ml) for 5-11 year olds</b>	<b>Recommended Portion Size (grams/ml) for 12- 18 year olds</b>
Cooked vegetables including peas, green beans, sweetcorn, carrots, mixed vegetables, cauliflower, broccoli, swede, turnip, leek, brussel sprouts, cabbage, spinach, spring greens	40-60	80
Raw vegetables or mixed salad	40-60	80
Baked beans in tomato sauce	79-100	140
Coleslaw (served together or with a mixed salad)	30-40	60
Vegetable-based soup	170-220	300
Medium-sized fruit e.g. apples, pears, bananas, peaches, oranges	Half to one fruit (50-100g)	One fruit (100g)
Small-size fruit, e.g. satsumas, tangerines, plums, apricots, kiwis	One-two fruits (50-100g)	Two fruits (100g)
Very small fruit e.g. grapes, cherries, strawberries, raspberries, blackberries	Half to one cupful (50- 100g)	One cupful (100g)
Dried fruit, e.g. raisins, sultanas, apricots	Half to one tablespoon (10-20g)	One tablespoon (20g)
Fruit salad, fruit tinned in juice and stewed fruit (at least 80% if the weight should come from fruit)	65-130	130
Fruit juice	150	150

<b>Group 3 (milk and milk products)</b>	<b>Recommended Portion Size (grams/ml) for 5-11 year olds</b>	<b>Recommended Portion Size (grams/ml) for 12- 18 year olds</b>
Drinking milk	200ml	300ml
Milk puddings and whips made with milk	150-200	240
Custard (served with fruit for example)	100	140
Yogurts	100-125	125-150
Cheese (served in a salad, baked potato, sandwich or with crackers)	30-40	50
Macaroni cheese	150-215	300
Cheese sauce for use with composite dishes	70-95	120

<b>Group 4 (Meat, Fish and Alternatives)</b>	<b>Recommended Portion Size (grams/ml) for 5-11 year olds</b>	<b>Recommended Portion Size (grams/ml) for 12- 18 year olds</b>
All dishes containing meat which are allowed at any lunch time (e.g. stew, casserole, curry, tikka, sweet and sour) will have a minimum raw meat content of (this weight may be reduced proportionately in composite dishes if adding protein based food such as beans/TVP/cheese/milk)	50-60	80
Sausages, beef, lamb, pork, Lorne (raw weight)	60-80	120
Haggis	60-80	120
Scotch pies, bridies, sausage rolls, Cornish pasty, encased meat pastry pies, quiche, cold pork pies (e.g. Melton Mowbray)	80	110
Lasagne, ravioli, cannelloni	150-215	300
Breaded or battered shaped chicken and turkey products e.g. nuggets, goujons, burgers	60-80	120
Meat-based soup	170-220	300
Pizza	80-120	160
All dishes containing fish and shellfish which are allowed at any lunch time (e.g. pie with potato topping, casserole, curry, sweet and sour) will have a minimum raw fish content of (this weight may be reduced proportionately in composite dishes if adding another protein based food such as bean/cheese/milk)	50-60	80
Breaded or battered fish portions or products e.g. fish cakes, fish fingers, fish goujons, fish shapes	60-80	120
Fish or shellfish such as tuna, salmon or	30-40	50

mackerel and prawns served in a salad, baked potato or sandwich		
Egg served in a salad, baked potato or sandwich	1 egg	1-2 eggs
Vegetarian sausages, burgers, nut cutlets	60-80	120
Vegetarian stew, curry, tikka, sweet and sour	50-60	80

<b>Group 5 (Foods containing Fat and Foods and Drinks containin Sugar)</b>	<b>Recommended Portion Size (grams/ml) for 5-11 year olds</b>	<b>Recommended Portion Size (grams/ml) for 12- 18 year olds</b>
Crisps or corn snacks	25	25
Fruit pies , sponge puddings and crumbles	90-130	145
Cakes, muffins, sponges, fairy cakes, scones, sponge puddings, doughnuts, cookies, tray-bakes	40-50	65
Ice cream	60-80	100

## Appendix D – Coversheet Template

<b>Local Authority</b>	
<b>Menu Cycle</b>	
<b>Date prepared</b>	
<b>Type of Analysis</b>	
<b>Prepared by</b>	
<b>Software used</b>	
<b>Customer number</b>	

The following information has been used to carry out the nutritional analysis.

<b>Food and Drink Standards</b> Please outline whether food and drink standards are being met across the school day, including information as to which items are deep fried (including during manufacturing), what type of fats and/or spreads are used, and which product or dish contains oily fish.	
<b>Starters</b>	
<b>Main courses</b>	
<b>Starchy dish</b>	
<b>Vegetables</b>	
<b>Desserts</b>	
<b>Drinks</b>	
<b>Nutrient Standards</b>	
<b>Portion sizes</b>	
<b>Other relevant information</b>	

## Appendix E – Completed cover sheet example

<b>Local Authority</b>	The Meadow Valley Council
<b>Menu Cycle</b>	October 2016 to March 2017
<b>Date prepared</b>	10 <sup>th</sup> September 2016
<b>Type of Analysis</b>	Planning
<b>Prepared by</b>	N Chipdale
<b>Software used</b>	Nutmeg
<b>Customer number</b>	100 – analysis has been carried out proportionately using percentages

The following information has been used to carry out the nutritional analysis.

<b>Food and Drink Standards</b> Please outline whether food and drink standards are being met across the school day, including information as to which items are deep fried (including during manufacturing), what type of fats and/or spreads are used, and which product or dish contains oily fish.	Deep fried items: Week 1 – chips, breaded fish, potato wedges Week 2 – fish fingers, chips, breaded fish Week 3 – roast potatoes, chips Week 4 – breaded fish, potato wedges  Oily fish appears on the menu twice – salmon goujons and salmon fishcakes  The only fats and spreads used are Flora margarine  All food and drink standards are being met. No confectionery products are used in home baking or desserts.
<b>Starters</b>	It is assumed that 20% of children will have soup as opposed to fruit, yogurt or dessert choice
<b>Main courses</b>	We have weighted the sales split to the most popular choices for each dish each day, based on experience of previous menu cycles
<b>Starchy dish</b>	All meals include a starchy carbohydrate food
<b>Vegetables</b>	All meals come with either a hot vegetable portion or the choice of salad items. Quantities included are based on uptake on previous menu cycles
<b>Desserts</b>	Children can choose from dessert of the day, fruit or yogurt each day, in addition to soup. Splits used are based on uptake of previous menu cycles
<b>Drinks</b>	Water and milk are available daily – fruit juice is available twice per week.
<b>Nutrient Standards</b>	All standards are being met on each week of the menu cycle
<b>Portion sizes</b>	These are indicated on the menu plan along with sales split information
<b>Other relevant information</b>	We use a local butcher for our sausages and burgers and they use our specification All bread used for sandwiches and additional bread is wholemeal All dessert recipes contain a minimum of 50% fruit

## Appendix F

### NUTRITIONAL SOFTWARE SPECIFICATION FOR THE ANALYSIS OF SCHOOL MENUS July 2007

The Schools (Health Promotion and Nutrition) Act (Scotland) requires schools menus to be analysed and compared with mandatory nutrient standards. This document provides information for Local Authorities who wish to purchase any new suitable nutritional analysis software<sup>2</sup> to allow this requirement to be met.

Part 1	details essential criteria.
Part 2	details functions that will assist in providing information required for HMIE monitoring.
Part 3	lists non essential, but useful, additional functions which may be considered when purchasing nutritional analysis software.

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<sup>2</sup> Other than H4S software which Local Authorities already are licensed to use in all schools in Scotland.



## PART 1      ESSENTIAL CRITERIA

1. The nutritional analysis software must contain a Food Directory consisting of data on:

- ☐ Foods and drinks
- ☐ Food Groups
- ☐ Menu Items

These will be used to build up menus for the week and will be used during nutrition analysis.

2. The software package must use data from the most up-to-date version of '*McCance & Widdowson's Composition of Foods*' plus supplements, which holds the composition of all basic foods. In addition, this should include updates on composition data of a range of foods that have been analysed as part of the Food Standards Agency's nutrient analysis catch-up project<sup>3</sup> and nutrient analysis project of pasta and pasta sauces<sup>4</sup>.
3. The software supplier must ensure that a system is in place to update the database when a new version of '*McCance & Widdowson's Composition of Foods*' is published or when updates on the composition of other foods are published by the Food Standards Agency.
4. For each food, drink and menu item in the Food Directory, the software must hold data on the energy and nutrient content per 100g/ml for each food, drink and menu item. The software must hold data on the following, on which the nutrient standards for school lunches are based:
  - ☐ Energy
  - ☐ Protein
  - ☐ Total fat
  - ☐ Saturated fat
  - Fibre (non starch polysaccharides) – see point 17 and 18 on further requirements
  - ☐ Total carbohydrate
  - Non-milk extrinsic sugars – see point 19 on further requirements
  - ☐ Iron
  - ☐ Calcium
  - ☐ Vitamin A
  - ☐ Vitamin C
  - ☐ Folate
  - ☐ Zinc
  - ☐ Sodium

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<sup>3</sup> <http://www.food.gov.uk/science/surveillance/fsis2004branch/fsis6404>

<sup>4</sup> <http://www.food.gov.uk/science/surveillance/fsis2004branch/fsis6504>

5. The software must provide the facility to build in data on other foods not included in the '*McCance & Widdowson's Composition of Foods*' database (e.g. manufactured foods used by schools). The software must hold data on:
  - ☐ Product name
  - ☐ Manufacturer
  - Nutrient composition of food per 100g (must include energy and the 13 nutrients listed above) and indicate whether this nutrient data is "as purchased" or "as served".
6. Missing values of nutrients need to be obtained directly from the manufacturer or substituted with the nutrient value of a similar food from the '*McCance & Widdowson's Composition of Foods*' database. The source of the value used to fill in the missing nutrient must be highlighted within the software (i.e. the code of the food used to substitute the missing nutrient). The software must also have a function to flag up substituted nutrients values as 'estimated values' as part of the nutrient analysis report.
7. If, for any reason, data on any nutrient (as listed above) is not available / missing for a particular food, the software must have a function to flag up these missing values and to:
  - a) distinguish this from a zero nutrient content in the database and
  - b) highlight the missing values as part of the nutrient analysis report.
8. For each recipe in the Food Directory, the software must hold data on:
  - ☐ The ingredients
    - Food Code
    - Food Name
    - Quantity of each ingredient used
    - Cooking method
    - Total weight of all ingredients (ideally)
    - Total weight of finished dish (ideally)
  - ☐ Portions/ Servings
    - Number of portions
    - Portion size (calculated by dividing finished weight of dish by number of portions)
  - ☐ Nutritional Information
    - Per 100g
    - Per portion
9. The software must allow the addition of recipes to the Food Directory.
10. The software must allow portion sizes to be adjusted.
11. The software must allow the user to enter sales splits, and have the capacity to carry out weighted nutrient analysis e.g. menu items that are served to more

pupils provide a larger proportion of nutrients for that meal and therefore the nutrients in those menu items must be given more “weight”.

12. The software must allow the user to input the number of customers/ or meals chosen each day.
13. For cooked recipes, the software supplier must provide the facility to estimate weight changes as a result of cooking, if this is not measured directly as above. In which case, values in appendix 4.3 of 6<sup>th</sup> edition of '*McCance and Widdowson's Composition of Foods*', must be applied.
14. For cooked recipes, the supplier of the software must provide the facility to estimate nutrient losses on cooking, using the values in appendix 4.3 of 6<sup>th</sup> edition of '*McCance and Widdowson's Composition of Foods*'
15. The software must display the absolute values for energy and for each of the 13 nutrients of the analysed menu.
16. The software must allow the analysis to be calculated for the number of days specified to allow for shorter weeks.
17. The software must be able to calculate the nutrient content of school lunch menu averaged over five consecutive school days (or a shorter week) e.g. the total sum of the nutrient over the school week, divided by the number of pupils purchasing the school lunch across the week, divided by the number of days in the school week.
18. The software must provide the nutrient composition data for total non-starch-polysaccharides (Englyst method<sup>5</sup>) for all foods. This is to ensure that analysis of the dietary fibre content of menus can be compared directly with the statutory Nutrient Standard for fibre (non-starch-polysaccharides).
19. '*McCance & Widdowson's Composition of Foods*' provides dietary fibre values based on the NSP (Englyst) methodology. However, it is recognised that for nutritional labelling purposes, manufacturers are increasingly measuring and recording the fibre levels in food using the AOAC<sup>6</sup> methodology. Therefore, if NSP (Englyst) data is unavailable for foods that are added to the food directory (e.g. by substituting with the fibre (NSP) value of a similar food from the '*McCance & Widdowson's Composition of Foods*' database), the following approach must be adopted in order to obtain a reasonable NSP value;

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<sup>5</sup> Englyst H N, Quigley M E, Hudson G J, (1994) 'Determination of Dietary Fiber as Non-starch Polysaccharides with Gas-Liquid Chromatographic, High-performance Liquid Chromatographic or Spectrophotometric Measurement of Constituent Sugars', *Analyst*, 119, 1497–1509.

<sup>6</sup> AOAC (2000) Methods 985.29 and 991.45. Official methods of analysis 17th Ed W Horwitz, AOAC International, Gaithersburg, MD, USA

8. Dietary fibre values given using the AOAC methodology must be divided by 1.33.

The software must have a function to flag up these fibre values as 'estimated values' as part of the nutrient analysis report.

20. The 'McCance & Widdowson's Composition of Foods' database does not hold data for 'non-milk extrinsic sugars' (NMES). Although several different methods of calculating NMES have been documented<sup>7</sup>, the menus must be calculated using the criteria set by Buss et al<sup>8</sup> as outlined below to estimate the non-milk extrinsic sugars (NMES) of all foods and drinks within the Food Directory:

- ☐ All the sugars in fruit juices as well as table sugar, honey and the sucrose, glucose and glucose syrups added to foods are taken as extrinsic
- ☐ All sugars in fresh fruit and vegetables are taken as intrinsic
- ☐ Sugars *naturally present* in fruit that are canned, stewed, dried or used in preserves are taken to be half extrinsic and half intrinsic
- ☐ Lactose, whether in a milk product or not, has been considered as milk sugar and added to the intrinsic sugars.
- ☐ The proportions of intrinsic and extrinsic sugars in other mixed and prepared foods are calculated according to the above principles

Note: NMES data on all foods from the National Diet and Nutrition Survey (NDNS) nutrient databank is available from the Food Standard Agency on request.

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<sup>7</sup> Food Standards Agency research project N08016: Critical appraisal of methods to estimate NMES in foods – identification of a recommended approach  
<http://www.food.gov.uk/science/research/researchinfo/nutritionresearch/dietarynutrientsresearch/n08programme/n08projectlist/n08016/>

<sup>8</sup> Buss DH, Lewis, J, Smithers G. Non-milk intrinsic sugars (letter to the editor) Journal of Human Nutrition and Dietetics (1994), 7, 87.

<b>PART 2</b>	<b>FUNCTIONS TO ASSIST IN PROVIDING INFORMATION REQUIRED FOR HMIE MONITORING</b>
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As part of guidance for the Schools (Health Promotion and Nutrition) Act, HMIE will produce a manual on how menus will be required to be nutritionally analysed to demonstrate they meet the Scottish Nutrient Standards for Scottish Schools. For ease of use and accuracy of data used for monitoring, it would be helpful if software could provide the information outlined below. This information will be required by HMIE as part of monitoring.

21. The software should compare nutritional content of a menu against the Nutrient Standards for Scottish Schools as set out in the Regulations.
22. There are two sets of Nutrient Standards based on age groups, primary-aged pupils and secondary-aged pupils. The software should allow the user to enter the required age group, and the nutritional analysis must use the appropriate standard.
23. The software should be able to display the comparison of nutritional content of the menu against the Nutrient Standards, the number of customers and/or meals each day, portion size and sales split data.
24. Where the software displays the energy content of menus, it should be able to demonstrate if this is within 10% of the standard e.g. above 90% or below 110%.

### **PART 3     ADDITIONAL FUNCTIONS**

Although not essential, the software package could contain the following functions to assist in the ease of use and efficiency of the programme for the user.

24. The analysis could be displayed in a format that allows the user to easily identify if a nutrient meets or does not meet the statutory standard. This analysis could be a graphical display, such as a bar chart incorporating colour coding to show whether the standard is being met.

25. The system could be web based to allow the user to access the software from any computer.

26. Offer system/software support e.g. online or by telephone.

27. Allow manual entry of recipes or editing of existing recipes to allow for instant adjustment or additions and increased flexibility.

28. Ability to print recipes, menus and analysis.

29. Ability to export/ import and email analysis and other data.

30. Ability to identify dishes on the menu which are high or low in a particular nutrient and offer appropriate substitute dishes.

31. Highlight or search for recipes or menus containing specific allergens or ingredients.

32. Cost breakdowns – food and staff costs.

33. Can use either metric or imperial weights.

34. Have a platter function to allow the user to add together different components to make up composite dishes of foods already in the database. For example a plate of mixed fruit, sandwiches, or biscuits and cheese.

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