

Nutritional Analysis Manual

October 2008

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 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.

1. Standards for **school lunches**:

- **Nutrient standards**, which set out the proportion of nutrients that pupils 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).
- **Food standards and drink standards**, which define the types of food and drinks that pupils 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).

2. Food standards and drink standards for school 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).

Nutritional analysis of school lunch menus is required to demonstrate compliance with the nutrient standards. This guidance is intended to outline the method that should be adopted to analyse school lunch menus.

Monitoring of the implementation of *Hungry for Success*¹ by HM Inspectorate of Education (HMIE) highlighted a wide variation in the methods used to analyse menus across Scotland. In its recommendations, *Hungry for Success – Further Food for Thought*² states that schools should review their overall food provision to ensure that it complies with the requirements of the Act. To ensure consistency in nutritional analysis, the standardised method outlined in this document should now be followed.

¹ *Hungry for Success – A Whole School Approach to School Meals in Scotland*, Scottish Executive, 2003

² *Hungry for Success – Further Food for Thought*, HMIE, 2008

HMIE will monitor compliance with the Act through their programme of school inspections. The nutritional analysis forms an important part of the monitoring process, and will be evaluated along with other significant factors which contribute to the promotion of health and wellbeing in schools.

This guidance will be reviewed in March 2010.

Information on minimum specification for nutritional analysis software

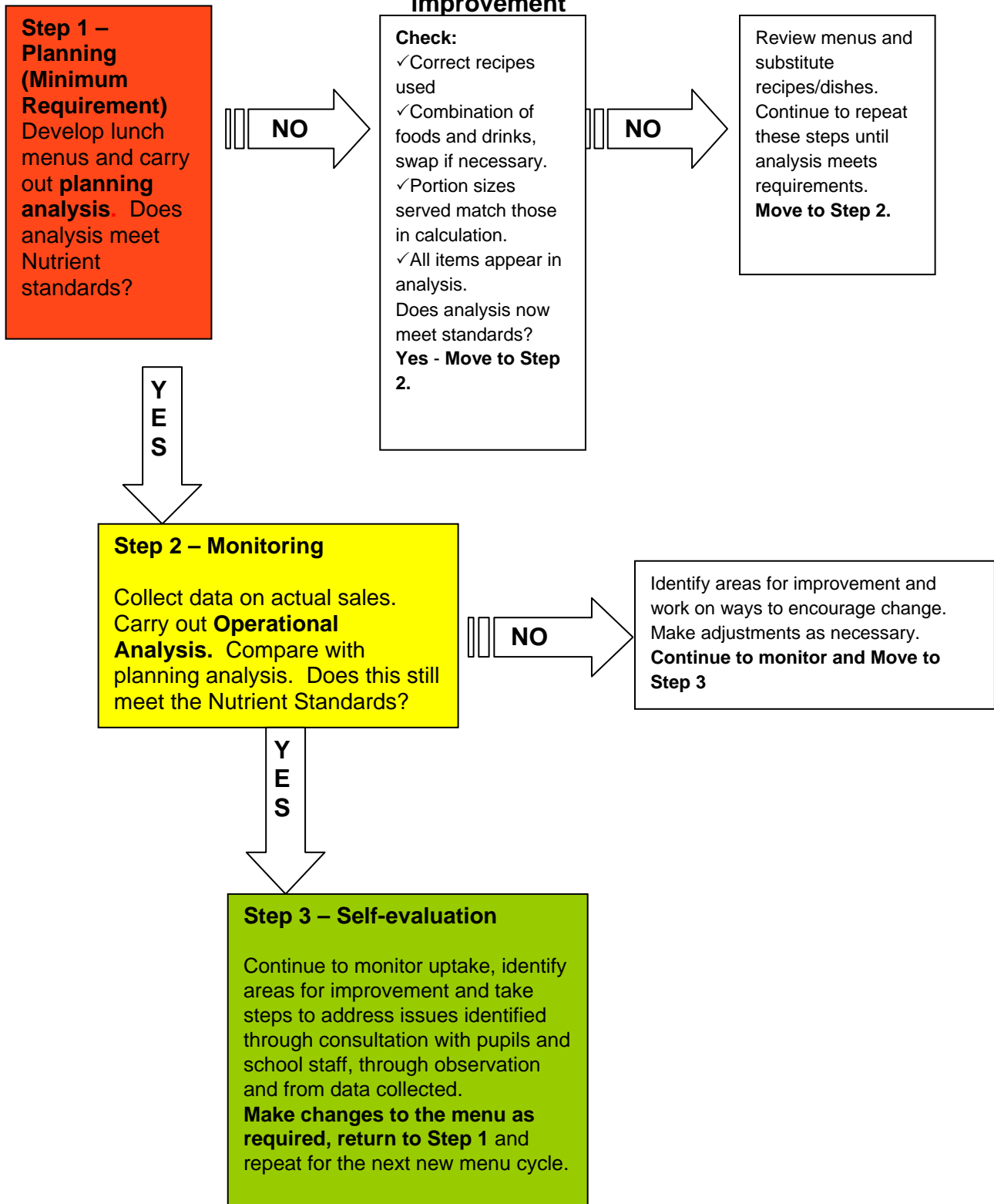
A range of nutritional analysis software packages is available to demonstrate whether school lunch menus meet the nutrient standards. Local authorities may want to use different packages that meet their specific requirements. A minimum technical specification has been developed jointly by the Food Standards Agency Scotland (FSAS) and HMIE. This is shown in Appendix H. It was designed to ensure consistency of calculations of specific nutrients such as fibre and non-milk extrinsic sugars (NMES), and to specify the minimum range of functions which should be performed by the software. Many currently available packages will perform functions which exceed those outlined in the technical specification. 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 dietician is advised.

Nutritional analysis of the school lunch menu

The menu planning and nutritional analysis process has been broken down into three steps. These have been colour coded and are shown below in the overview.

Overview of menu planning and nutritional analysis for continuous improvement



STEP 1 – PLANNING

A planning analysis is the *minimum* requirement to demonstrate that school lunch menus meet the nutrient standards set out in the Act.

Menu Planning

The document *Food in Scottish Schools – A guide to implementing the Nutritional Requirements* provides useful information for planning school lunch menus.

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 A.

Planning analysis

- The planning analysis is based on the food and drink choices offered to pupils. 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.
- Estimates of pupils' expected food and drink selections should be used. These figures will be determined using caterers' knowledge and experience from previous menu cycles. This analysis should be carried out before menus are issued to schools, to allow any necessary adjustments to be made to the menu plan.

Where schools have access to accurate information on pupils' food and drink selections, they may wish to start the analysis process at Step 2 – operational analysis.

HMIE will require the following information at the time of an inspection, or on request.

- Cover sheet for the nutritional analysis to explain rationale (e.g. sample of schools, standardised menus, and particular issues) – see Appendix D for example.
- Menu planning information including portion sizes, number of items sold, customer number*, number of days, and number of weeks in menu cycle.
- Nutritional analysis either in graph form or as a table of results.
- Other information may be required, such as recipes or information on specific products.

This nutritional analysis information should be provided, in school, for the Health and Nutrition Inspector (HNI) at the beginning of an inspection. Where this is not possible, the analysis must be received within two weeks of the inspection.

* see information on 'customer number' below.

STEP 2 – MONITORING – OPERATIONAL ANALYSIS

- The operational analysis is based on what pupils actually select from the items available at lunch over the period of a week. It is used to demonstrate if the average school lunch selected over a week meets the nutrient standards.
- Systems to record numbers of meals served and uptake of all menu items will need to be in place.
- By comparing the results of analyses at both the planning and operational stages, differences relating to pupils' food selection are highlighted, areas for improvement can be identified and adjustments made.

Schools providing an operational analysis should provide the information for HMIE as detailed at Step 1.

Where an HMIE inspection is due and a new menu cycle is in place, actual sales split information may not be available. In this, case a planning analysis (Step 1) based on realistic estimates of pupils' food and drink selections would be required.

STEP 3 – SELF-EVALUATION

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

- Steps 1 and 2 of the analysis process can be used to inform the development of future menus. Planning of future menus should take account of existing analysis data.
- Self-evaluation should include consultation with pupils, parents and school staff.

You will require the following information to carry out analysis.

- Daily customer number*.
- Number of days of the week in the cycle (remember early finishing days should be included).
- Total number of each food and drink item sold. All food and drink items available need to be included.
- Portion sizes.
- 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 producer will advise you how to do this.
- Weekly menu.

* see page 8 on how the customer number is determined

Guiding Principles – these apply to all schools.

- All food and drinks provided at lunchtime need to be included in the nutritional analysis. This includes products sold in other outlets such as vending machines.
- Additional free bread provided on an unrestricted basis to pupils does not need to be included.
- The analysis does not take account of plate waste or consumption, nor does it apply to individual meals or selections. This is because the nutrient standards relate to the provision of the average school lunch, and not the consumption of the lunch.
- 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.
- 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.

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

In schools where pupils receive a set meal (main course, starter/dessert and drink), the customer number is equal to the number of meals served. For services which are based on a cafeteria system, vending machines and/or satellite sales outlets, determining the customer number can be difficult as meal items are selected individually rather than as a set meal. It is essential that customer numbers collected from these services are not biased towards pupils who make individual purchases as 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 uptake figures for a planning analysis, or with actual uptake figures for an operational analysis.

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

- traditional meals, e.g. roast chicken with gravy
- sandwiches/baguettes/panini/salad boxes, e.g. ham salad baguette
- snack type options, e.g. filled baked potato, pizza, or a burger in a bun.

All other items sold are grouped together under the following categories:

Soups, desserts, fruit portions, yoghurts, savoury snacks (e.g. cheese and crackers) home baking	Vegetables Salad	Drinks	Side dishes e.g. potato wedges coleslaw	Extras jam margarine tomato sauce salad cream
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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. The following calculation explains this more clearly.

Customer number = number of main items (whether estimated or actual).

Where total number of items in a category is greater than the customer number, the amount of each item is divided by total sales in the category. Multiply answer by 100 to give percentage of total sales for each item. Then calculate what number that percentage equals of the customer number.

The formula is in two steps as follows:

$$\text{Step 1} \quad \frac{X \text{ (Amount of item sold)}}{Y \text{ (Total sales of items in category)}} \times 100 = Z \text{ (\% of total sales in category)}$$

$$\text{Step 2} \quad \frac{Z}{100} \times \text{customer number} = \text{quantity of item to go into analysis}$$

A worked example is shown below:

Y = 700 drinks sold, but only 600 main items (customer number),

Split (represents X in each calculation) is 400 fruit juices, 200 bottle of water and 100 cartons of milk.

Therefore $400/700 \times 100 = 57\%$ (Z) and 57% of 600 = 342 fruit juices

$200/700 \times 100 = 29\%$ and 29% of 600 = 174 bottles of water

$100/700 \times 100 = 14\%$ and 14% of 600 = 84 cartons of milk

Total number of drinks to include in the analysis = 600

REMEMBER: this calculation need only be carried out where the category total is greater than the number of main items sold. This is most likely to be for drinks and for soups/desserts/fruit/home baking/savoury snacks.

A spreadsheet is available on the Scottish Government website at <http://www.scotland.gov.uk/Topics/Education/Schools/HLivi/foodnutrition/ssheet/> to assist in the calculations.

APPENDICES

- A Food and Drink Standards**
- B Cover Sheet Template and Completed Examples**
- C Sample Primary Menu. Planning analysis displaying portion sizes and sales split, and analysis graph**
- D Sample Secondary Menu. Planning analysis displaying portion sizes and sales split, and analysis graph**
- E Example of customer number calculation**
- F Frequently asked questions**
- G Glossary**
- H Nutritional Software Specification for the analysis of School Menus**

APPENDIX A

SCHOOLS (HEALTH PROMOTION AND NUTRITION) (SCOTLAND) ACT 2007 – NUTRITIONAL REGULATIONS FOR SCHOOLS

	FOOD STANDARDS FOR SCHOOL LUNCHES
Fruit and vegetables	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.
Oily fish	Oily fish must be provided at least once every three weeks.
Fats, spreads and oils	<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"> • Oils must contain a total saturated fat content which does not exceed 16g per 100g and - <ul style="list-style-type: none"> ○ A total monounsaturated fat content of at least 55g per 100g OR ○ A total polyunsaturated fat content of at least 30g per 100g • Fat spreads must contain – <ul style="list-style-type: none"> ○ A total saturated fat content which does not exceed 20g per 100g AND ○ A combined total of monounsaturated and polyunsaturated fat of at least 30g per 100g
Sodium/salt and condiments	<p>Additional salt cannot be provided.</p> <p>Condiments (if provided), must be dispensed in no more than 10ml portions.</p>
Savoury snacks	No savoury snacks can be provided except savoury crackers, oatcakes or breadsticks.
Confectionery	<p>No confectionery can be provided.</p> <p>Confectionery is defined as: 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>
Deep fried foods	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.
Bread	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.

DRINK STANDARDS FOR SCHOOLS

The only drinks permitted in schools are	Specific Criteria
Plain water (still or carbonated)	
Skimmed or semi-skimmed milk	
Milk drinks and drinking yogurts	<ul style="list-style-type: none"> • No more than 1.8g of total fat per 100ml • No more than 10g of total sugars per 100ml and <ul style="list-style-type: none"> • No more than 20g of total sugars per portion size
Soya, rice or oat drinks enriched with calcium	<ul style="list-style-type: none"> • No more than 1.8g of total fat per 100ml • No more than 5g of total sugars per 100ml and <ul style="list-style-type: none"> • No more than 10g of total sugars per portion size
Fruit juices and vegetable juices	Maximum portion size of 200ml
A blend containing any of the following ingredients, either singly or in combination: <ul style="list-style-type: none"> • Fruit • Vegetable • Fruit juice • Vegetable juice 	Maximum portion size of 200ml
Water and fruit and/or vegetable juice combination drinks	<ul style="list-style-type: none"> • No added sugar • No more than 20g of sugar per portion size • 50% or more fruit or vegetable juice • No more than 200ml fruit or vegetable juice
Tea and coffee	

APPENDIX B

Cover Sheet

Local Authority	
Menu Cycle	
Date prepared	
Type of Analysis	
Prepared by	
Software used	
Rationale	

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

Food and Drink Standards	
Starters	
Main courses	
Starchy dish	
Vegetables	
Desserts	
Drinks	
Nutritional Standards	
Portion sizes	
Other relevant information	

Sample 1 – Cover sheet for Planning Analysis

Local Authority	Riverside Council
Menu Cycle	April – October 2008 – Primary
Date prepared	25 February 2008
Type of Analysis	Planning
Prepared by	Nora Flemming
Software used	Nutmeg
Rationale	The planning analysis is based on 100 pupils having lunch each day

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

Food and Drink Standards	All food and drink standards have been met.
Starters	When soup is on the menu, we have assumed that it will be available for all children to choose.
Main courses	The splits used for main courses have been based on previous uptake figures collected from primary schools in Riverside.
Starchy dish	<p>We have assumed 100% of children will take an item from this group. Where one of the main courses contains either pasta or potatoes or a bread base, children will still be offered the potato or rice option and we have used a figure of 100 in the planning analysis. The operational analysis gives a more realistic breakdown of what tends to happen.</p> <p>Potato wedges appear on the menu, but are recorded in the analysis as chips as they are mainly fried and the potato wedge analysis on Nutmeg is for a baked item.</p>
Vegetables	There are sufficient vegetables and salads available for all children to choose a portion. A 30/70 split between the salad bar and vegetables was used.
Desserts	We have some uptake information for desserts which we have used as the figures for the actual dessert on the menu. We know not all children take a dessert, but for the planning analysis we have assumed that those who do not take a dessert will be able to choose either yoghurt or fresh fruit.
Drinks	In previous analysis, we estimated splits as 50% milk and 50% fruit juice. After discussion it was felt that a split of 30% milk, 20% orange juice and 50% apple juice was more realistic.
Nutritional Standards	The menus have been compared with the new standards for the Act.
Portion sizes	The portion sizes and splits are provided on the weekly menu.
Other relevant information	The oaty biscuit recipe used in the analysis contains a margarine which is a source of saturated fat. We have changed the recipe and are now using a mix with a lower saturated fat content.

Sample 2 – Cover Sheet for Operational Analysis

Local Authority	Riverside Council
Menu Cycle	April – October 2008 – Primary
Date prepared	25 May 2008
Type of Analysis	Operational
Prepared by	Nora Flemming
Software used	Nutmeg
Rationale	The operational analysis is based on 100 pupils having lunch each day and has been produced based on information collected in April and early May 2008 from a sample of schools. A 10% sample of schools was used, with varying sizes, location and levels of deprivation.

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

Food and Drinks Standards	All food and drink standards have been met.
Starters	When soup was on the menu, feedback from staff noted that not all children took the soup and it was felt that a 50% uptake was more representative.
Main courses	The splits used for main courses have been based on previous uptake figures collected from primary schools in Riverside.
Starchy dish	We have assumed 100% of children will take an item from this group. Where the main course choice contained either pasta, potatoes or a bread base, feedback from staff was that most children who chose these items would take a portion of bread rather than the other starchy dish on the menu. We have, therefore, specified the number of portions of bread as it was felt that this was more representative. Potato wedges appear on the menu, but are recorded in the analysis as chips as they are mainly fried and the potato wedge analysis on Nutmeg is for a baked item.
Vegetables	We collected some information from two schools which were felt to be representative of uptake in relation to vegetables and salad. They showed our uptake of salad bar as 30% and uptake of vegetables 40% so have used these splits.
Desserts	The splits used for desserts, fruit and yoghurts are from previous uptake figures collected from primary schools in Riverside. Not all children take a dessert and also uptake of fruit or yoghurts is generally poor.
Drinks	A split of 30% milk, 20% orange juice and 50% apple juice was used as this was felt to be realistic. The increase in fruit juice uptake and reduction in milk uptake obviously has an effect on intake of NMES.
Nutritional Standards	The menus have been compared with the new standards for the Act.
Portion sizes	The portion sizes and splits are provided on the weekly menu.
Other relevant information	The oaty biscuit recipe used in the analysis contains a margarine which is a source of saturated fat. We have changed the recipe and are now using a mix with a lower saturated fat content.

APPENDIX C

Sample Menu 1 – Primary Planning Analysis

Happydale Council Primary Menu – April-Oct 2008

Monday	Tuesday	Wednesday	Thursday	Friday
Leek and potato soup	Tomato soup	Lentil soup	Vegetable soup	Carrot and coriander soup
Chicken curry with rice Salmon fishcakes with new potatoes broccoli Mixed salad	Spaghetti Bolognese Cheese, potato and broccoli bake carrots Mixed Salad	Roast beef in gravy with roast potatoes Caribbean chicken pasta Sliced green beans Mixed salad	Macaroni cheese Beef burger in a bun with tomato ketchup Home made potato wedges Tomato wedges Mixed salad	Chicken chow mein (with noodles) Breaded haddock Chips or baby boiled potatoes Peas Mixed salad
Carrot cake	Fruit jelly and ice cream	Apple crumble and custard	Rice pudding and mandarins	Fruit mousse

Each child has a choice of two main courses, plus soup or pudding, and a drink of milk, flavoured milk, orange juice or water.

A mixed salad bowl is available daily for all.

Fresh fruit or fruit yoghurt is available every day as an alternative to the dessert option.

A vegetarian choice is available on request

Sample Menu 1

Happydale Council Primary Menu – Planning Analysis – April-Oct 2008

S = number of servings

P = portion size

	Monday	Tuesday	Wednesday	Thursday	Friday
Soup	Leek and potato soup [S:20] [P:200]	Tomato soup [S:20] [P:200]	Lentil soup [S:20] [P:200]	Vegetable soup [S:20] [P:200]	Carrot and coriander soup [S:20] [P:200]
Main meals	Chicken curry [S:85] [P:210] Rice [S:85] [P:120] Salmon fish cakes [S:15] [P:115] Boiled new potatoes [S:15] [P:130]	Bolognese sauce [S:85] [P:180] Spaghetti [S:85] [P:120] Cheese and broccoli bake [S:15] [P:215]	Roast potatoes [S:80] [P:100] Roast beef in gravy [S:80] [P:124] Caribbean chicken pasta [S:20] [P:180]	Macaroni cheese [S:50] [P:250] Beef burgers [S:50] [P:55] Tomato sauce sachet [S:50] [P:10] Burger buns [S:50] [P:50] Potato wedges [S:100] [P:50]	Chicken chow mein [S:30] [P:195] Breaded haddock [S:70] [P:85] Potato chips, thick cut delights [S:70] [P:100]
Vegetables	Broccoli florets [S:100] [P:80] Mixed salad [S:100] [P:45]	Carrots [S:100] [P:80] Mixed salad [S:100] [P:45]	Sliced green beans [S:100] [P:80] Mixed salad [S:100] [P:45]	Mixed salad [S:100] [P:45] Tomato [S:100] [P:80]	Peas [S:100] [P:80] Mixed salad [S:100] [P:45]
Dessert	Carrot cake [S:50] [P:75] Selection of fresh fruit [S:15] [P:80] Fruit yoghurt [S:15] [P:125]	Fruit jelly [S:65] [P:114] Ice cream [S:65] [P:50] Fruit yoghurt [S:8] [P:125] Selection of fresh fruit [S:7] [P:80]	Apple crumble [S:50] [P:95] Custard [S:50] [P:100] Fruit yoghurt [S:15] [P:125] Selection of fresh fruit [S:15] [P:80]	Fruit yoghurt [S:15] [P:125] Selection of fresh fruit [S:15] [P:80] Rice pudding with mandarins [S:40] [P:150]	Selection of fresh fruit [S:7] [P:80] Fruit yoghurt [S:8] [P:125] Fruit mousse [S:65] [P:80]
Drinks	Milk [S:40] [P:200] Strawberry milk [S:30] [P:200] Orange juice [S:20] [P:150] Water [S:10] [P:200]	Milk [S:40] [P:200] Orange juice [S:20] [P:150] Strawberry milk [S:30] [P:200] Water [S:10] [P:200]	Milk [S:40] [P:200] Orange juice [S:20] [P:150] Strawberry milk [S:30] [P:200] Water [S:10] [P:200]	Milk [S:40] [P:200] Orange juice [S:20] [P:150] Strawberry milk [S:30] [P:200] Water [S:10] [P:200]	Milk [S:40] [P:200] Orange juice [S:20] [P:150] Strawberry milk [S:30] [P:200] Water [S:10] [P:200]

Sample Menu 1 Cover Sheet

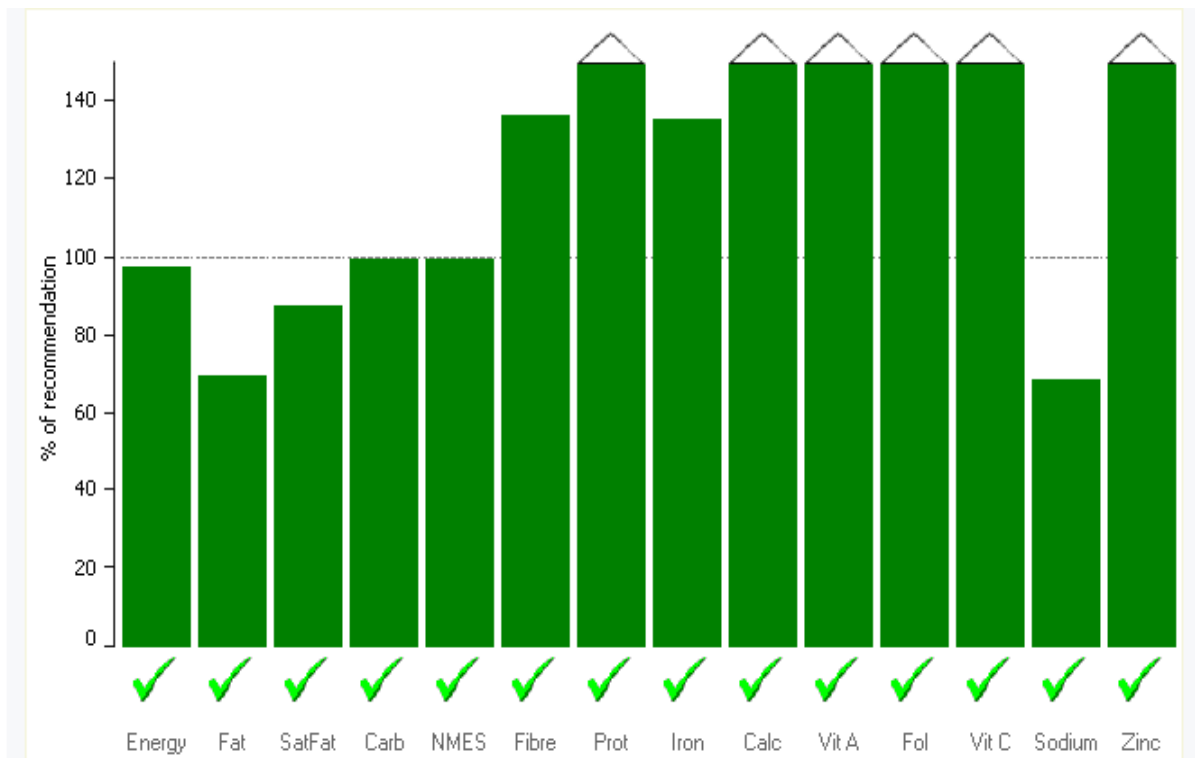
Local Authority	Happydale Council
Menu Cycle	April – October 2008
Date prepared	25 February 2008
Type of Analysis	Planning – primary school
Prepared by	Mary Jackson
Software used	Nutmeg
Rationale	The planning analysis is based on 100 pupils having lunch each day

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

Food and Drink Standards	All food and drink standards have been met.
Starters	We have assumed that there will be a 20% uptake of soup in preference to the dessert option.
Main courses	This splits used for main courses have been based on previous uptake figures collected from primary schools in Happydale.
Starchy dish	We have assumed 100% of children will take the starchy meal accompaniment, e.g. rice with the chicken curry, potatoes with the roast beef. Potato wedges are home made and therefore do not count as a deep fried item. A half portion is served, so the portion size is 50g.
Vegetables	There are sufficient vegetables and salads available for all children to choose a portion of each, as included in the cost of the meal.
Dessert/ fruit /yoghurt	We have some uptake information for desserts, which we have used as the figures for the actual dessert uptake on the menu. 80% of pupils will have a dessert instead of soup.
Drinks	Split based on previous uptake figures. Water has been included as a drink option as not all children will choose milk or fruit juice.
Nutritional Standards	All standards have been met for this menu.
Portion sizes	The portion sizes are displayed on the weekly menu.
Other relevant information	Boiled potatoes are available as an alternative to chips on a Friday, but we know that if chips are on the menu, all pupils will have these. A vegetarian meal will be provided on request on days where there is no vegetarian choice on the menu. A separate menu has been developed for this, and it ensures that cheese is not used as the main source of protein more than twice per week. Additional free bread is available, but this has not been included in the analysis.

Happydale Council - Primary Menu – April-Oct 2008

Planning Analysis



APPENDIX D

Sample Menu 2 – Secondary Planning Analysis

Happydale Council – Secondary Menu – March-Oct 08

	Monday	Tuesday	Wednesday	Thursday	Friday
Soup	Pea and ham soup Crusty brown roll	Vegetable soup Crusty brown roll	Tomato and lentil soup Crusty brown roll	Scotch broth Crusty brown roll	Carrot and coriander soup Crusty brown roll
Main meals	Mince with baby new potatoes Salmon kebabs with cous cous	Sweet and sour pork with noodles Cheese and broccoli quiche with baby new potatoes	Chicken Korma with rice Roast Beef with gravy and roast potatoes	Breaded haddock with oven chips Macaroni cheese	Beef lasagne with garlic bread Chicken fajitas
Vegetable choice	Cabbage Mixed salad	Sweetcorn Mixed salad	Green beans Mixed salad	Peas Mixed salad	Carrots Mixed salad
Snack Meals	Cheese and tomato pizza Tuna pasta salad Panini with cheese	Beef burger Mexican chicken salad Panini with chicken tikka	Cheese and tomato pizza Tuna pasta salad Panini with Cheese and onion	Beef burger Mexican chicken salad Panini with Tuna and sweetcorn	Cheese and tomato pizza Tuna pasta salad Panini with cheesy beano
Additional items	Fresh fruit salad pots Fruit yoghurt Selection of home baking	Fresh fruit salad pots Fruit yoghurt Selection of home baking	Fresh fruit salad pots Fruit yoghurt Selection of home baking	Fresh fruit salad pots Fruit yoghurt Selection of home baking	Fresh fruit salad pots Fruit yoghurt Selection of home baking

Available daily:

Selection of sandwiches – tuna and sweetcorn, chicken mayonnaise, cheese and onion, ham and tomato, egg mayonnaise.

Baked potatoes – fillings as above.

Baguettes – fillings as above.

Drinks: choice of semi-skimmed milk, flavoured milk (strawberry, chocolate and banana), apple juice, orange juice and water.

Meal Deal: main meal, snack meal, sandwich, baked potato or baguette, with salad, and a choice of soup, yoghurt or fresh fruit salad, and a choice of drink.

Where there is no vegetarian main meal on the menu, this can be provided on request.

Sample Menu 2

Happydale Council – Secondary Planning Analysis - March-Oct 08

S = number of servings

P = portion size

	Monday	Tuesday	Wednesday	Thursday	Friday
Soup	Pea and ham soup [S:25] [P:300] Wholemeal bread rolls [S:15] [P:85]	Vegetable soup [S:25] [P:300] Wholemeal bread rolls [S:15] [P:85]	Tomato and lentil soup [S:25] [P:300] Wholemeal bread rolls [S:15] [P:85]	Scotch broth [S:25] [P:300] Wholemeal Bread rolls [S:15] [P:85]	Carrot and coriander soup [S:25] [P:300] wholemeal bread rolls [S:15] [P:85]
Main Meals	Mince pie [S:40] [P:101] Boiled new potatoes [S:40] [P:190] Salmon kebabs [S:10] [P:56] Couscous [S:10] [P:180]	Sweet and sour pork [S:40] [P:190] Noodles [S:40] [P:180] Cheese and broccoli quiche [S:10] [P:150] Boiled new potatoes [S:10] [P:190]	Chicken korma [S:30] [P:175] Long grain rice [S:30] [P:180] Roast potatoes [S:20] [P:150] Roast beef in gravy [S:20] [P:155]	Breaded haddock [S:40] [P:110] Foodservice oven chips [S:40] [P:125] Macaroni cheese [S:25] [P:320] Tomato sauce sachet [S:10] [P:10]	Lasagne [S:40] [P:438] Garlic bread [S:40] [P:64] Chicken fajitas [S:25] [P:170]
Snack Meals	Panini [S:20] [P:100] Cheddar cheese [S:20] [P:50] Jacket potato [S:12] [P:180] Wholemeal bread [S:24] [P:50] Baguette [S:15] [P:100] Tuna and sweetcorn [S:51] [P:95] Cheese and tomato pizza [S:15] [P:90] Tuna pasta salad [S:8] [P:263]	Panini [S:20] [P:100] Chicken tikka [S:20] [P:90] Jacket potato [S:12] [P:180] Wholemeal bread [S:24] [P:50] Baguette [S:15] [P:100] Chicken mayonnaise [S:51] [P:105] Mexican chicken pasta salad [S:8] [P:275] Beef burgers [S:15] [P:55] Burger buns [S:15] [P:50] Tomato sauce sachet [S:10] [P:10]	Panini [S:20] [P:100] Cheese and onion [S:20] [P:45] Jacket potato [S:12] [P:180] Wholemeal bread [S:24] [P:50] Baguette [S:15] [P:100] Egg mayonnaise [S:51] [P:55] Cheese and tomato pizza [S:15] [P:90] Tuna pasta salad [S:8] [P:263]	Panini [S:20] [P:100] Tuna and sweetcorn [S:20] [P:95] Jacket potato [S:12] [P:180] Wholemeal bread [S:24] [P:50] Baguette [S:15] [P:100] Cheddar cheese [S:51] [P:50] Mexican chicken pasta salad [S:8] [P:275] Beef burgers [S:15] [P:55] Burger buns [S:15] [P:50] Tomato sauce sachet [S:10] [P:10]	Panini [S:20] [P:100] Cheesy beans [S:20] [P:80] Jacket potato [S:12] [P:180] Wholemeal bread [S:24] [P:50] Baguette [S:15] [P:100] Ham and tomato [S:51] [P:65] Cheese and tomato pizza [S:15] [P:90] Tuna pasta salad [S:8] [P:263]
Vegetables and salad	Cabbage [S:40] [P:80] Mixed salad [S:73] [P:80]	Sweetcorn [S:10] [P:80] Mixed salad [S:94] [P:80]	Sliced green beans [S:20] [P:80] Mixed salad [S:87] [P:80]	Peas [S:40] [P:80] Mixed salad [S:83] [P:80]	Carrots [S:40] [P:80] Mixed salad [S:83] [P:80]
Desserts	Fresh fruit salad [S:50] [P:150] Fruit yoghurt [S:10] [P:125] Cornflake biscuit [S:59] [P:80]	Fresh fruit salad [S:50] [P:150] Fruit yoghurt [S:10] [P:125] Carrot cake [S:59] [P:125]	Fresh fruit salad [S:50] [P:150] Fruit yoghurt [S:10] [P:125] Empire biscuits [S:59] [P:71]	Fresh fruit salad [S:55] [P:150] Fruit yoghurt [S:12] [P:125] Flapjack [S:67] [P:65]	Fresh fruit salad [S:55] [P:150] Fruit yoghurt [S:12] [P:125] Fruit chunk muffins [S:67] [P:76]
Drinks	Milk [S:32] [P:200]	Milk [S:32] [P:200] Apple juice [S:17]	Milk [S:32] [P:200] Apple juice [S:17]	Milk [S:36] [P:200] Apple juice [S:18]	Milk [S:36] [P:200] Apple juice [S:18]

	<p>Apple juice [S:17] [P:200] Orange juice [S:16] [P:200] Banana milk [S:15] [P:200] Chocolate milk [S:15] [P:200] Strawberry milk [S:15] [P:200] Water [S:34] [P:150]</p>	<p>[P:200] Orange juice [S:16] [P:200] Banana milk [S:15] [P:200] Chocolate milk [S:15] [P:200] Strawberry milk [S:15] [P:200] Water [S:34] [P:150]</p>	<p>[P:200] Orange juice [S:16] [P:200] Banana milk [S:15] [P:200] Chocolate milk [S:15] [P:200] Strawberry milk [S:15] [P:200] Water [S:32] [P:150]</p>	<p>[P:200] Orange juice [S:17] [P:200] Banana milk [S:16] [P:200] Chocolate milk [S:16] [P:200] Strawberry milk [S:16] [P:200] Water [S:40] [P:150]</p>	<p>[P:200] Orange juice [S:17] [P:200] Banana milk [S:16] [P:200] Chocolate milk [S:16] [P:200] Strawberry milk [S:16] [P:200] Water [S:40] [P:150]</p>
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Sample Menu 2 Cover Sheet

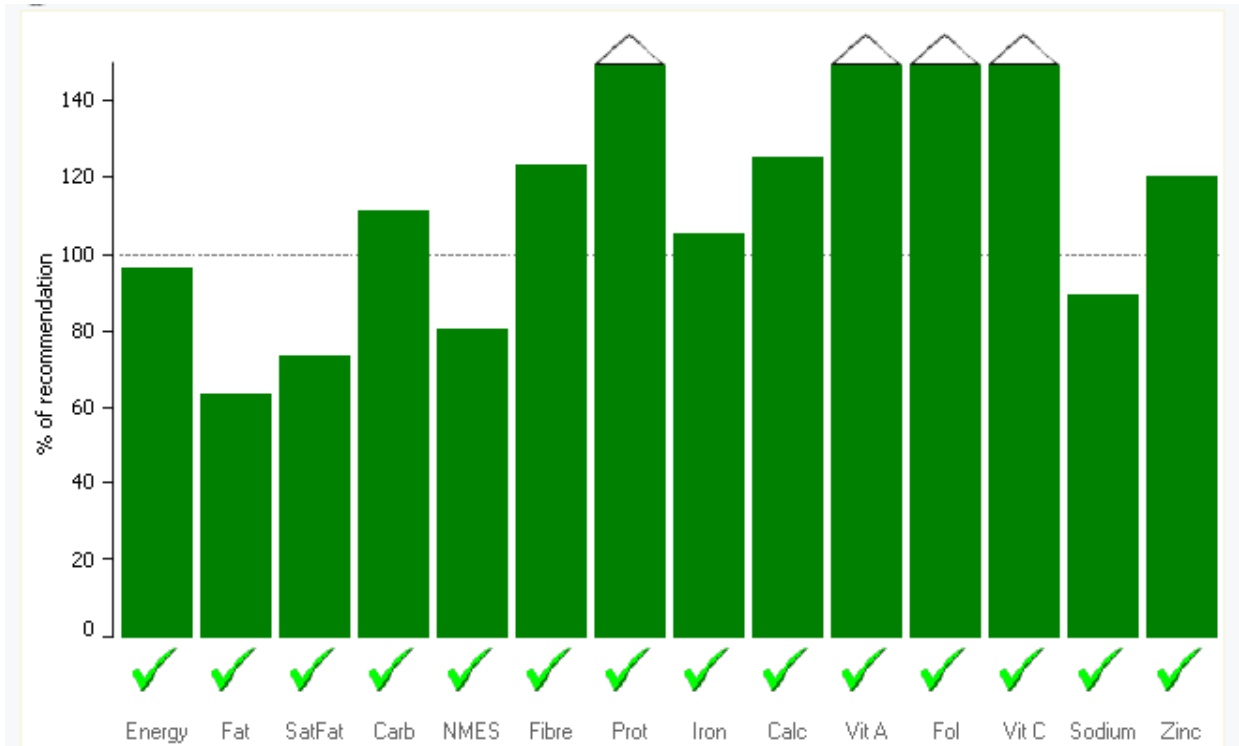
Local Authority	Happydale Council
Menu Cycle	March – October 2008 – Secondary
Date prepared	15 February 2008
Type of Analysis	Planning
Prepared by	Betty Jackson
Software used	Nutmeg
Rationale	The planning analysis is based on 144 pupils having lunch Monday to Wednesday, and 159 pupils having lunch on a Thursday and Friday

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

Food and Drink Standards	All food and drink standards have been met
Starters	Soup can be bought on its own or as part of a meal deal. An estimate of portions sold was included in the customer number calculation with other additional items to determine the proportion that should be included. Soup sold on its own includes a roll, but not with a meal deal.
Main courses	Choice of two main meals daily. Splits used based on previous uptake figures collected from secondary schools in Happydale. Main meals can be bought on their own or as part of a meal deal with soup/dessert and a drink. A starchy component has been included for all main meals served, e.g. mince and potatoes. 70% of main courses and snack items are sold as meal deals.
Snack Items	A choice of five fillings is available each day for sandwiches, baked potatoes, and baguettes. For ease of analysis, one filling each day has been included in the grid, even although all fillings are available all days. The quantities are the same over the week.
Vegetables	There is a choice of a hot vegetable or salad daily. Those having a main meal will have either a hot vegetable or salad, but pupils could have both if they wished. 70% of main courses and snack items are sold as meal deals, therefore salad or vegetable included for this proportion of customers.
Additional Items	Five choices of home baking available daily across the week. These have been entered into the grid in the same way as snack items above. Based on previous sales, more additional items (including soup) were sold than total customer number, so have carried out calculation using spreadsheet to determine the proportions of these items to include. High proportion of fruit salad included as most snack items sold as meal deals and this includes choice of soup or fruit. More pupils choose fruit over soup.
Drinks	Based on previous sales, more drinks sold than total customer number, so carried out calculation using spreadsheet to determine the proportions of drinks to include. Included bottled water in this calculation and in the analysis as this is popular and therefore needs to be taken into account when calculating proportions of drinks sold.
Nutritional Standards	All standards met for this planning analysis.
Portion sizes	Portions sizes used are those served in school.
Other relevant information	Vegetarian choice main meal is not available daily due to limited demand for these dishes, but this is available on request. No previous requests have been made, so these dishes have not been included in this planning analysis.

Happydale council – Secondary School Menu - March-Oct 08

Planning Analysis



APPENDIX E

Spreadsheet example – cafeteria style service/vending machines/satellite sales points

144 is the Customer Number

Dish	Units sold	Proportion %	Customer number equivalent for analysis
Main courses including snack meals and sandwiches			
main meals	50	100	50
snack meals	15	100	15
sandwiches and baguettes	39	100	39
pasta salads	8	100	8
salad boxes	0	0	0
panini	20	100	20
baked potatoes with fillings	12	100	12
Total	144	100	144
Vegetables (if not already included in main course)			
hot vegetable	89	100	89
salad	12	100	12
Total	101	101	101
Side dishes (if not included in main meal)			
pasta	0	0	0
boiled potatoes	0	0	0
naan bread	0	0	0
garlic bread	0	0	0
pitta bread	0	0	0
bread sold with soup	15	100	15
Total	15	100	15
Soup, fruits, desserts and baking			
soup	50	17	25
fruits	100	35	50
desserts	0	0	0
home baking	118	41	59
yoghurts	20	7	10
Total	288	100	144

Drinks			
drinking yoghurt	0	0	0
fruit/vegetable juice	0	0	0
chocolate milk	30	10	15
water	68	24	34
milk	64	22	32
strawberry milk	30	10	15
banana milk	30	10	15
apple juice	34	12	17
orange juice	32	11	16
Total	288	100	144

APPENDIX F

Question and Answers

1. Do we still need to do an analysis if all food and drinks meets 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 pupils to select meets the nutrient standards.

2. Do we need to analyse food and drinks served outwith lunch?

No, it must meet the drinks standards and food standards outwith lunch.

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

There are two sets of nutrient standards. One set for primary aged pupils and one for secondary aged pupils. This is because the pupils 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 pupils 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 be achieved through larger portion sizes for secondary aged pupils.

4. Which portion sizes should we use?

There are no set portion sizes that must be used. The portion sizes included in the nutritional analysis must be reflective of those served in school.

5. Why are adult meals served not included in the analysis?

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

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 pupils have access at lunchtime, these items need to be included.

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.

8. Should we include water in the analysis?

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

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 pupils needs to be included in the nutritional analysis, even when you are providing a reduced service for fewer pupils. The customer numbers on these days should reflect this situation.

10. Can we include in the planning analysis a portion of fruit and a portion of vegetables for all pupils having lunch?

If a portion of fruit and vegetables is included as part of the set meal price and all pupils can have this as part of their lunch, then you can include 100% uptake in the planning analysis. 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 pupils take all meal components.

In a cafeteria style service, you can only include vegetables that are included in the cost of a dish, e.g. vegetables served with a main meal or meal deal. If the vegetables are priced separately and pupils pay extra for them, you can include only an estimate of how many portions 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 pupils would purchase this item would be required.

11. Would a portion of soup count as a main meal item for the customer number?

Soup would not count as a main meal item for the customer number. This is because it does not contain enough nutrients or energy to count as a main meal item on its own. For an item to count as a main meal item, it should contain at least a starchy component, e.g. pasta, and a protein component, e.g. cheese. Therefore, a portion of potato wedges served on their own, or a portion of plain boiled pasta would not count as a main meal item.

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, e.g. 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.

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 pupils 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), e.g. garlic bread, naan bread, or a roll with soup, should be analysed as part of the meal.

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.

15. Will serving meal deals help to meet nutrient standards?

Meal deals can help to meet the nutrient standards because pupils 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 pupils to have a balanced lunch, which includes fruit and vegetables.

16. If we only serve meal deals, do we assume in the analysis that all pupils 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 pupils will have all of the meal deal components. This is because all pupils purchasing these meal deals will have the opportunity to have these items without any additional cost.

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 pupil access to a balanced lunch. Some pupils may select only a sandwich or soup instead of a complete meal. Meal deals can help to encourage pupils to select a balanced lunch, and it is important for staff to encourage pupils to take their full meal entitlement.

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.

19. How many schools would make up a sample?

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

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. 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 HMIE if the school were to be inspected.

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.

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 HMIE on the analysis cover sheet.

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.

APPENDIX G

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 H

<p style="text-align: center;">NUTRITIONAL SOFTWARE SPECIFICATION FOR THE ANALYSIS OF SCHOOL MENUS July 2007</p>

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 software² 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.

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

PART 1	ESSENTIAL CRITERIA
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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 project³ and nutrient analysis project of pasta and pasta sauces⁴.
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

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

⁴ <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 6th 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 6th 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 method⁵) 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 AOAC⁶ 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;

⁵ 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.

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

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 documented⁷, the menus must be calculated using the criteria set by Buss et al⁸ 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.

⁷ 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/>

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

PART 2	FUNCTIONS TO ASSIST IN PROVIDING INFORMATION REQUIRED FOR HMIE MONITORING
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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
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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.