
Development and pilot testing of revised food-based standards for school lunches in England

Final Report compiled for the
School Food Plan's
Standards Panel

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Table of Contents

1	FOREWORD	4
2	Executive Summary	5
2.1	Purpose.....	5
2.2	Recommendations	7
2.3	Recommended changes to the proposed food-based standards (in a nutrient framework). 8	
3	BACKGROUND TO REVISION OF SCHOOL FOOD STANDARDS.....	10
3.1	The school food standards	10
3.2	School food as a safety net.....	10
4	THE PILOT STUDY	11
4.1	Aim of pilot	11
4.2	Objectives of pilot	11
4.3	Methodology	12
5	RESULTS.....	14
5.1	Response rate and sample characteristics	14
5.2	Participants' feedback on the proposed food-based standards.....	15
5.3	Compliance of the 1-week menus with the nutrient framework	20
5.4	Modelling menus	24
5.5	Portion sizes.....	25
5.6	Assessing if the proposed food-based standards (in a nutrient framework) are 'fit for purpose'	26
5.7	Participant feedback on the practical guide and tools.....	32
6	LIMITATIONS OF THE PILOT STUDY	34
7	APPENDICES	35
8	ACKNOWLEDGEMENTS	56
9	REFERENCES	57

List of appendices

APPENDIX 1: CURRENT DIETARY INTAKES OF PRIMARY AND SECONDARY AGED CHILDREN IN THE UK	35
APPENDIX 2. DEFINING THE NUTRIENT FRAMEWORK.....	36
APPENDIX 3. COMPARISON BETWEEN CURRENT FOOD-BASED STANDARDS FOR SCHOOL LUNCHES AND THE PROPOSED FOOD-BASED STANDARDS.....	37
APPENDIX 4. SAMPLING CRITERIA FOR PILOT STUDY.....	41
APPENDIX 5. CHARACTERISTICS OF GROUP 1 AND GROUP 2 PILOT SCHOOLS AND CATERER	42
APPENDIX 6. PILOT METHODOLOGY	44
APPENDIX 7. PILOT SCHOOLS FEEDBACK ON PROPOSED FOOD-BASED STANDARDS FOR SCHOOL LUNCHES	45
APPENDIX 8. NUTRITIONAL ANALYSIS OF GROUP 1 PILOT MENUS	53
APPENDIX 9. NUTRITIONAL ANALYSIS OF MODELLED MENUS.....	55

List of tables

TABLE 1: IMPACT OF THE REVISED STANDARDS ON MENU PLANNING	18
TABLE 2. MEAN DIETARY INTAKES OF MACRONUTRIENTS IN 4-10 AND 11-18 YEAR OLDS IN THE UK COMPARED WITH DIETARY RECOMMENDATIONS	35
TABLE 3. MICRONUTRIENTS FOR WHICH DIETARY INTAKES IN 4-10 YEAR OLDS IN THE UK ARE LIKELY TO BE INADEQUATE.....	35
TABLE 4. NUTRIENT-BASED STANDARDS FOR PRIMARY AND SECONDARY SCHOOLS.....	36
TABLE 5. THE PILOT SAMPLING CRITERIA	41
TABLE 6. RECRUITMENT PROCESS OF CATERERS AND SCHOOLS	41
TABLE 7. CHARACTERISTICS OF GROUP 1 PILOT SCHOOLS AND CATERERS	42
TABLE 8. CHARACTERISTICS OF GROUP 2 PILOT SCHOOLS AND CATERERS	43
TABLE 9. METHODOLOGY FOR PILOT TESTING THE REVISED STANDARDS	44
TABLE 10. ENERGY AND NUTRIENT CONTENT OF AN AVERAGE SCHOOL LUNCH COMPARED WITH NUTRIENT-BASED STANDARDS SPECIFIED IN THE NUTRIENT FRAMEWORK, BASED ON PLANNED PROVISION OF FOOD AND DRINK, IN 14 PILOT STUDY PRIMARY SCHOOLS	53
TABLE 11. ENERGY AND NUTRIENT CONTENT OF AN AVERAGE SCHOOL LUNCH COMPARED WITH NUTRIENT-BASED STANDARDS SPECIFIED IN THE NUTRIENT FRAMEWORK, BASED ON PLANNED PROVISION OF FOOD AND DRINK, IN 13 PILOT STUDY SECONDARY SCHOOLS	54
TABLE 12. IMPACT OF MODELLING TO MEET ALL FOOD-BASED STANDARDS ON THREE PILOT SCHOOL MENUS	55

List of figures

FIGURE 1: PROPORTION OF GROUP 1 (N=30) AND GROUP 2 (N=26) RESPONDENTS REPORTING FEELING CONFIDENT ABOUT USING THE PROPOSED NEW STANDARDS.	15
FIGURE 2. PROPORTION OF GROUP 1 (N=30) AND GROUP 2 (N=26) RESPONDENTS REPORTING IF THE NEW FOOD-BASED STANDARDS WERE 'EASIER TO UNDERSTAND' AND 'MORE FLEXIBLE TO USE' COMPARED TO THE EXISTING FOOD-BASED AND NUTRIENT-BASED STANDARDS.....	16

1 FOREWORD

For children, eating in school should be a pleasurable experience; a time spent sharing good food with peers and teachers. It is the one time in the day when a school comes together in an informal, relaxed environment. It helps set the tone of a school and it helps provide a model for the relationship with food that children will carry outside school. Schools with a great food culture do not come about by government decree. They are created by great school leaders, and by imaginative cooks who are given the right circumstances in which to flourish. Unless schools make the cultural changes necessary for a thriving food culture, the legal changes to food standards will have a minimal impact. However, compulsory, rather than voluntary, standards are proven to increase take up of fruit and vegetables and foods containing other essential nutrients, such as iron and calcium, while restricting the consumption of fat, saturated fat, sugar and salt. They help schools to ensure that children get the nutrition they need across the whole school day.

The objectives for the Standards Panel were “to create a clearer set of food-based standards, accompanied by practical guidance, that:

1. Provides caterers with a framework on which to build interesting, creative and nutritionally-balanced menus.
2. Is less burdensome and operationally cheaper to implement than the current nutrient-based standards.”

The Standards Panel commissioned the Children’s Food Trust to test the standards with a minimum of 15 schools and 20 caterers. In the end 35 schools and 24 caterers were recruited from across England. The results of the testing were positive and clear. Ninety per cent of school cooks and eighty percent of caterers thought the new standards were easier to understand than the current ones. Eighty per cent of school cooks and caterers thought they would provide more flexibility.

Nutritionally the standards are sound. In both primary and secondary schools, the menus tested met or improved upon the nutritional levels delivered by the current nutrient-based standards. In some areas, improvements were dramatic, such as in the provision of vegetables, which led to better fibre, folate, vitamin A and vitamin C levels in secondary schools. However, the results also showed the need to continue to work to increase iron, zinc and calcium levels in secondary schools which has been a persistent issue with the nutrient-based standards too.

As a result of feedback from the testing, the Standards Panel have made some changes to the draft standards proposed in the School Food Plan. The Panel also agreed several recommendations, which are listed in the Executive Summary.

I would like to take this opportunity to thank the Standards Panel for their hard work and diligence over the last few months and especially to Professor Susan Jebb, from the Nuffield Department of Primary Care Health Sciences for her technical advice and knowledge as the project manager. Thanks must go to the Children’s Food Trust who ensured the testing was completed within a very tight timetable and with excellent engagement from all participants. And, of course, a big thank all to the schools, the cooks, the caterers and especially the thousands of children who prepared and ate their way through our testing. I am confident we have ended up with a final set of revised food-based standards that are simple, short and easy to understand. These will now go out to public consultation. The Standards Panel will continue its work, based on the feedback from schools and caterers, to produce easy to understand, practical guidance to accompany the Standards.

Henry Dimbleby

Co-Author, School Food Plan and Chair of the Standards Panel

2 Executive Summary

2.1 Purpose

This report summarises the findings from a pilot study to test the proposed food-based standards. The study sought to establish whether they will provide caterers with a framework on which to build interesting, creative and nutritionally-balanced menus; and are considered to be less burdensome and operationally cheaper to implement than the current nutrient-based standards.

The study specifically sought to compare the nutrient content of the new menus with the current nutrient-based standards.

There were two test groups. Group 1 were predominantly catering managers and school cooks, and Group 2 were predominantly caterers providing services to schools. The Panel recognised that since the schools and caterers were purposively sampled they do not reflect a random sample but perceived that they provided a valuable test case ahead of wider rollout and subsequent monitoring.

2.1.1 Outcome 1: Provide caterers with a framework on which to build interesting, creative and nutritionally-balanced menus

The majority (90%) of the pilot participants reported that they felt the proposed standards were 'easier to understand', and 85% thought they 'made it easier to plan flexible, interesting and creative menus that appeal to pupils compared with the existing food-based and nutrient-based standards'. The 'meanings of the new standards were clear', 80% of participants reported feeling 'quite' or 'very' confident to use the new standards, and participants had, or foresaw, limited issues with planning and/or meeting the standards. School cooks (Group 1) reported higher satisfaction than caterers (Group 2).

Analysis of the pilot one-week menus, portion sizes and questionnaire feedback has provided important information to either confirm or suggest revisions to the 25 proposed food-based standards. There was some concern that a few of the standards would lead to a more restrictive menu, or that popular dishes would have to be removed from the menu.

There was also some variation between participant feedback and practice. This can be partially explained by the current lack of access to products (for example recommended portion sizes of fruit juice and combination drinks), and the need for more clarity in the guidance. In other cases it would mean a change to current practice in terms of the types, frequency and amounts of food and drink that can be provided. **Section 2.3** details the suggested revisions to the food-based standards.

Nutritional Analysis

Overall, the mean nutrient content of the average primary school lunch met 12 of the 14 nutrient-based standards, and the average secondary school lunch met 11. In primary schools, iron and energy were the standards least likely to be met. In secondary schools, calcium and iron were the least likely to be met. It's important that portion sizes are investigated further, and ways to increase the iron, zinc and calcium content of recipes and meals, are considered. In **section 2.2** recommendation 3 and 5 provide further details how these could be achieved in practice.

Importantly, the mean nutrient content of the pilot primary and secondary menus was similar to or better than that reported for lunchtime food provision in the most recent national school food surveys. The findings suggest that the proposed food-based standards may have improved the energy balance in primary schools and the nutrient density of the average school lunch in secondary schools.

2.1.2 Outcome 2: Are considered to be less burdensome and operationally cheaper to implement than the current nutrient-based standards.

Overall, the pilot participants considered that the proposed food-based standards would be less burdensome (the menu planning process would be simpler, quicker and easier to update). Operationally, the introduction of the new standards, like any change, would require an initial investment in time (for example reviewing and updating procurement lists, and recipe development). Once established, it would be operationally less resource intensive and easier to implement (no longer needing to nutritionally analyse recipes and menus) but not necessarily cheaper than the current nutrient-based standards. Schools may incur increased food costs due to the requirements to provide wholegrain starchy foods and low fat milk to drink, larger portions of meat and fish, and non-dairy meat alternatives for vegetarians, all of which can increase costs. Participants noted that over time any increase in food costs may be offset by other anticipated positive impacts including, better portion control and increased customer satisfaction (due to the ability to offer dishes that are popular with pupils), subsequently leading to higher take up of school lunches.

2.1.3 Changes approved by the Standards Panel to the revised food-based standards.

Some of the standards that went for testing have proved perhaps too restrictive, while in other areas it was felt the standards may lead to an increase in waste. Given the very encouraging results of the pilot, the Panel has felt able to make some revisions to address these concerns. **Section 2.3** details the suggested revisions to the food-based standards, and the rationale and evidence for these changes is explained in **Appendix 3**. The principal revisions are:

1. Reducing the number of wholegrain varieties of starchy food that should be provided at lunch each week from two to one;
2. Splitting the deep-fried, batter-coated, breadcrumb-coated foods and foods that include pastry category into two groups and slightly increasing the overall number of portions permitted across the school day. The wording of this standard has changed from '*no more than three portions of food which has been deep-fried, batter-coated, breadcrumb-coated, or includes pastry, must be provided in a single week across the school day*' to i) '*no more than two portions of food which has been deep-fried, batter-coated, or breadcrumb-coated must be provided in a single week across the school day,*' and ii) '*no more than two portions of food which includes pastry must be provided in a single week across the school day*';
3. Removal of the requirement to provide a starchy food alternative not cooked in fat or oil on each day that a starchy food cooked in fat or oil is provided;
4. Removal of the restriction that cheese must not be served as the only vegetarian option more than twice each week. This standard was considered superfluous as the wording of the standard related to the provision of non-dairy sources of protein for vegetarians was changed from three times to three days per week, emphasising cheese should not be the main option.
5. Including a requirement to provide a fruit-based dessert with a content of at least 50% fruit measured by volume of raw ingredients at least twice per week to address the low provision of fruit.
6. Capping portion sizes of fruit juice to 150ml per serving in line with current Public Health England guidance.
7. Capping the portion size of all fruit juice and milk combination drinks to 330mls to encourage preferences for less sweet drinks and reducing the contribution drinks to intake of non-milk extrinsic sugar.

After further modelling the pilot menus to reflect these revisions we are confident that these changes should still maintain the required nutritional standards. However ongoing monitoring is recommended to ensure the nutritional standards are upheld during the wider rollout.

2.2 Recommendations

The following recommendations have all been approved by the Standards Panel:

Recommendation 1: Introduce a set of revised food-based standards

Maintain the School Food Plan proposal to replace the current food-based and nutrient-based standards for school lunches with a set of revised food-based standards (developed within a nutrient framework). Recommended wording for the new standards can be found in **section 2.3**, and the rationale and evidence for these changes in **Appendix 3**.

Recommendation 2: Develop and disseminate practical guidance and support tools

The Standards Panel to develop and disseminate practical guidance and support tools (e.g. menu checklist, menus and recipes) using the feedback gathered during the pilot study to clearly explain how to interpret and implement the new standards. This will help support schools and caterers to comply with the revised food-based standards and ensure that food and drink provision in schools meets the nutritional requirements of children.

Recommendation 3: Develop portion size guidance for children

The Standards Panel, with input from the Department for Education (DfE), Department of Health (DH), and Public Health England to develop typical portion sizes for food and drink provision in primary and secondary schools, and explore how to strengthen guidance around portion sizes so these are effectively implemented in practice.

Recommendation 4: Procurement

The School Food Plan to engage with food and drink manufacturers and nutritionists in industry to ensure they can enable schools and caterers to procure manufactured foods and drinks in line with suggested portion sizes and composition. The School Food Plan to work with the Department of Environment, Food and Rural Affairs (Defra) and others to ensure good procurement advice for sustainable, local and British produce.

Recommendation 5: Recipe development

Schools and caterers to be encouraged (through the provision of practical guidance) to undertake recipe development to improve the energy balance and nutrient density of school lunch menus, particularly in relation to the iron and zinc content of vegetarian dishes and meal deals (especially sandwich and jacket potato options, and composite dishes such as pasta with sauce). Schools and caterers to actively promote the take up of fruit and fruit-based desserts, for example by using price incentives and secondary schools to increase the availability and take up of milk-based desserts.

Recommendation 6: Monitoring

Schools and caterers to use a menu checklist when planning and evaluating their menus to ensure they are compliant with the revised food-based standards. The Department for Education (DfE) to regularly monitor that the revised food-based standards are being interpreted and implemented appropriately. This is especially important since schools in the testing phase were mostly familiar with developing menus to meet nutritional standards and monitoring will reveal if schools require additional support.

2.3 Recommended changes to the proposed food-based standards (in a nutrient framework)

Food group	Food-based standards for school lunches (<i>wording used in pilot</i>)	Food-based standards for school food <i>other than lunch</i>	Food-based standards for school lunches (<i>recommended changes to standards</i>)
Starchy food	A portion of food from this group must be provided every day	No standard	Maintain standard – no change to wording required
	At least three different starchy foods must be provided each week	No standard	Maintain standard – no change to wording required
	At least two wholegrain varieties of starchy food each week	No standard	At least one wholegrain variety of starchy food each week
	Starchy food cooked in fat or oil must not be provided on more than two days each week across the school day		Maintain standard – no change to wording required
	On each day a starchy food cooked in fat or oil is provided, a starchy food (<i>other than bread</i>) not cooked in fat or oil must also be provided	No standard	Remove standard
	Bread with no added fat or oil must be provided on a daily basis.	No standard	Maintain standard – no change to wording required
Fruit and vegetables	Not less than two portions per day per pupil must be provided; at least one must be vegetables or salad accompaniment; and at least one must be fruit.	Fruit and/or vegetables must be available in all school food outlets	Not less than one portion of vegetables or salad accompaniment per day per pupil must be provided Not less than one portion of fruit per day per pupil must be provided. A fruit-based dessert with a content of at least 50% fruit measured by volume of raw ingredients must be provided at least twice each week.
	At least three different fruits and three different vegetables must be provided each week	No standard	Maintain standard – no change to wording required
Meat, fish, eggs, beans and other non-dairy sources of protein	A portion of food from this group must be provided every day	No standard	Maintain standard – no change to wording required
	A portion of meat or poultry must be provided at least three times each week	No standard	Maintain standard – no change to wording required
	Oily fish must be provided at least once every three weeks	No standard	Maintain standard – no change to wording required
	A portion of non-dairy sources of protein must be provided at least three times each week for vegetarians	No standard	A portion of non-dairy sources of protein must be provided on at least three days each week for vegetarians
	A meat or poultry product (manufactured or homemade) may not be provided more than once each week in primary schools and twice each week in secondary schools across the school day. The meat or poultry product must also meet the legal minimum meat or poultry content requirements ⁱ , and must not contain any prohibited offal ⁱⁱ		Maintain standard – no change to wording required
Milk and dairy	A portion of food from this group must be provided every day	No standard	Maintain standard – no change to wording required
	In addition, low fat milk ⁱⁱⁱ for drinking must be provided every day	No standard	In addition, low fat milk ⁱⁱⁱ for drinking must be available every day
	Cheese must not be served as the only vegetarian option more than twice each week.	No standard	Remove standard

ⁱ **Minimum meat content:** as set out in the Meat Products (England) Regulations 2003ⁱ, or other current regulations

ⁱⁱ **Prohibited offal includes:** brains, lungs, rectum, stomach, feet, oesophagus, spinal cord, testicles, large intestine, small intestine, spleen and udder.

ⁱⁱⁱ **Low fat milk:** (less than 1.8% fat) includes semi-skimmed, 1% milk and skimmed milk.

Food group	Food-based standards for school lunches (wording used in pilot)		Food-based standards for school food other than lunch	Food-based standards for school lunches (recommended changes to standards)
Foods high in fat, sugar and salt	No more than three portions of food which has been deep-fried, batter-coated, breadcrumb-coated, or includes pastry, must be provided in a single week across the school day.			No more than two portions of food which has been deep-fried, batter-coated, or breadcrumb-coated must be provided in a single week across the school day.
	Snacks must not be provided. Nuts, seeds, vegetables and fruit with no added salt, sugar or fat are allowed. Dried fruit is permitted to have 0.5% vegetable oil as a glazing agent			No more than two portions of food which includes pastry must be provided in a single week across the school day
	Savoury crackers or breadsticks which are served with fruit or vegetables or dairy food may be provided as part of lunch		Savoury crackers and breadsticks must not be provided	Maintain standard – no change to wording required
	Confectionery, chocolate and chocolate-coated products may not be provided across the school day			Maintain standard – no change to wording required
	Desserts, cakes and biscuits are allowed at lunchtime but must not contain any confectionery		Desserts (except yoghurt), cakes and biscuits must not be provided	Maintain standard – no change to wording required
	No salt shall be available to add to food after the cooking process is complete			Maintain standard – no change to wording required
	Condiments may be available only in sachets or individual portions of no more than 10 grams or one teaspoonful			Maintain standard – no change to wording required
	Healthier drinks	Free, fresh drinking water should be provided at all times		
The only drinks permitted during the school day are: <ul style="list-style-type: none">• Plain water (still or carbonated); low fat milk^{iv} or lactose reduced milk;• Fruit juice; vegetable juice;• Plain soya, rice or oat drinks enriched with calcium; plain fermented milk (e.g. yoghurt) drinks;• Unsweetened combinations of fruit or vegetable juice with plain water (still or carbonated)• Combinations of fruit juice and low fat milk^{iv} or plain yoghurt, plain soya, rice or oat drinks enriched with calcium; cocoa and low fat milk; flavoured low fat milk.• Tea, coffee, hot chocolate. Combination drinks may contain added vitamins or minerals and may be available in individual portions of no more than 300mls. Combination drinks including milk should not exceed 5% added sugars or honey. The fruit juice content of any drink must be no more than 150mls. Fruit juice combination drinks must be at least 50% fruit juice by volume.			The only drinks permitted during the school day are: <ul style="list-style-type: none">• Plain water (still or carbonated); low fat milk^{iv} or lactose reduced milk;• Fruit juice; vegetable juice;• Plain soya, rice or oat drinks enriched with calcium; plain fermented milk (e.g. yoghurt) drinks;• Unsweetened combinations of fruit or vegetable juice with plain water (still or carbonated)• Combinations of fruit juice and low fat milk^{iv} or plain yoghurt, plain soya, rice or oat drinks enriched with calcium; cocoa and low fat milk; flavoured low fat milk.• Tea, coffee, hot chocolate. Combination drinks may contain added vitamins or minerals and may be available in individual portions of no more than 330mls. Combination drinks including milk should not exceed 5% added sugars or honey. The fruit juice content of any drink must be no more than 150mls. Fruit juice combination drinks must be at least 45% fruit juice by volume.	

3 BACKGROUND TO REVISION OF SCHOOL FOOD STANDARDS

Pupils need the right balance of food and nutrients to develop and grow. For many pupils, a school lunch is the main meal of the day providing a critical nutritional safety net.^{1 2} It is important that school food contains sufficient energy and micronutrients to promote good nutritional health in all pupils and to protect those who are nutritionally vulnerable (this group includes those who are underweight, overweight and nutritionally deficient, see **Table 2** and **Table 3** in **Appendix 1** for current dietary intakes of primary and secondary aged children).

The School Food Plan,³ presented by the Secretary of State for Education, Michael Gove, on 12th July 2013, and compiled by appointed independent reviewers Henry Dimbleby and John Vincent, found that the implementation of current, largely nutrient-based standards, while resulting in significant positive changes, has not been universally successful. After consulting with schools, caterers and public health nutritionists on how to ‘*get regulation right*’, one of the recommended actions to government (DfE) was to ‘introduce food-based standards for all schools’, involving the testing a set of revised food-based standards (built on a nutrient framework). The School Food Plan recognised that it was vital to get the standards right, and set up an expert Standards Panel which commissioned the Children’s Food Trust to pilot test the revised standards.

3.1 The school food standards

Food provided for children and young people in maintained schools in England^{IV} is required to meet national standards for school food.⁴ These standards include food-based standards which apply across the school day, and nutrient-based standards which apply to food and drink provided at lunchtime only. These standards were introduced in 2006 to improve the quality of food provided within schools in England, and encourage pupils to make healthier choices within school, which it was hoped would also influence their choices outside of school. National surveys of school lunch provision, choices and consumption have shown that since these standards were introduced, the food chosen and eaten by pupils is more balanced and more closely meets their nutritional requirements.^{5 6} The proposed food-based standards (within a nutrient framework) are based on the current food-based standards (see **Appendix 3** for the differences and the rationale for the changes). For more information on the nutrient framework see **Table 4** in **Appendix 2**).

3.2 School food as a safety net

Free school meals currently provide a safety net for vulnerable pupils, ensuring that they have a nutritious meal at lunchtime. A survey of food and nutrient intakes in low income populations in the UK which may be expected to compare more closely to the intakes of children from lower socio-economic households was published in 2006.⁷ The results from this survey showed that overall, although dietary intakes in low income groups were broadly in line with the population as a whole, there was some evidence that children in low income groups tend to eat fewer portions of fruit and vegetables, and have higher sugar intakes and lower fibre intakes than the population as a whole.

However, not all entitled pupils register for free school meals, and not all registered pupils take up their free school meal - recent estimates suggest that about 400,000 pupils are missing out each day.⁸ In addition, there are families living in poverty who would benefit from free school meals for their children who are not currently entitled to receive them. The recent government announcement about the introduction of universal free school meals for infant pupils will mean that many more of these pupils will have access to a school lunch, and it is vital that standards are in place to ensure that the food provided at lunchtime meets pupils’ nutritional requirements and continues to act as provide a safety net, and helps to address these inequalities.

^{IV} In England maintained schools (and academies founded before 2010) are legally required to meet the school food standards.⁴ Academies and free schools are exempt from the school food standards but are encouraged to follow them.

4 THE PILOT STUDY

4.1 Aim of pilot

The aim of the pilot was to test the revised food-based standards and supporting practical guidance (and tools) in a diverse range of schools in England to evaluate if they are ‘fit for purpose’, that is, meet the nutritional requirements of pupils, and provide caterers with a framework on which to build interesting and creative menus that are less burdensome and operationally cheaper to implement than the current nutrient-based standards.

This included engaging with a range of catering providers (local authority, private and in-house), and asking them to consider how they would interpret and implement these standards, translate the proposed standards into interesting and creative menus, and report on the operational impact (time and money) the revised standards would have on their service. The findings from the pilot will be used to enhance and finalise the revised food-based standards and inform the development of supporting practical guidance.

4.2 Objectives of pilot

The objectives of the pilot were to:

- Support the Standards Panel to create a clearer set of food-based standards designed to achieve nutritionally balanced menus, accompanied by practical guidance (and tools e.g. menu checklist) that (a) provides caterers with a framework on which to build interesting and creative menus; (b) is less burdensome and operationally cheaper to implement than the current nutrient-based standards. Note: the early draft of the food-based standards published in Appendix B: Approach to revising school food standards in the School Food Plan (p.143-145), and feedback from the Standards Panel was used as a starting point.
- Work with the Children’s Food Trust stakeholder groups and networks (including members of the Standards Panel) to identify and recruit a minimum of 15 schools and 20 caterers, representative of the different types of schools and catering providers operating in England:
 - 15 schools to pilot test the revised food-based standards and practical guidance (and tools) by planning and cooking an interesting and creative one-week lunch menu, and submitting their final one-week menu and the associated standard recipes, product specifications, portion sizes and provision mix to the Trust for nutritional analysis to determine if the revised standards are fit for purpose i.e. sufficiently robust to meet the nutritional requirement of pupils;
 - 20 caterers (*responsible for more than one school*) to review and provide feedback on the revised food-based standards and practical guidance.
- Draft a feedback questionnaire and semi-structured interviews for schools and caterers to complete to ascertain their understanding and perspective of the revised standards, and their opinion on the content, format and tone of the practical guidance and tools.
- Use information and feedback collected from the pilot schools and caterers to refine the standards and practical guidance and tools.
- Share revised standards and feedback on the practical guidance and tools with the Standards Panel to agree final content and format prior to public consultation in January 2014.
- Draft a report documenting the development of the revised food-based standards and the outcomes and recommendations from the pilot.

4.3 Methodology

4.3.1 Sampling criteria

Table 5 in **Appendix 4** outlines the sampling criteria. The pilot included two groups:

- **Group 1 (n=15 schools):** a range of different types of schools (primary, secondary, special, academies and free schools), geographically spread, catering for children with different cultural or religious dietary requirements and special dietary needs. To be able to compare and measure the impact of the revised standards to the current standards it was necessary to include schools/caterers that were compliant with the current food-based standards and nutrient-based standards for school lunches. In acknowledgement of the recent government announcement of universal infant free school meal (UIFSM) provision, it was also considered useful to include a school with 75-80%+ take up.
- **Group 2 (n=20 caterers):** a range of different sized local authority catering providers, private catering companies, and in-house providers i.e. provided by the school itself.

4.3.2 Recruitment of pilot schools and caterers

In acknowledgment of the tight timelines to pilot test the revised standards, the Trust purposively sampled schools and caterers representative of the different types of schools and catering providers operating in England using existing stakeholder groups and networks (including members of the Standards Panel).

A range of caterers (local authority, private [large, medium, small], and school in-house) were selected. Each school and caterer was initially contacted by phone by one of the Trust's nutritionists, and subsequently received a letter (from the Leon Foundation) formally inviting them to participate in the pilot. The Trust requested the local authority and private caterers to approach a diverse range of schools within their catering contracts (see **Table 5** in **Appendix 4** for the sampling criteria) to participate in the pilot study. Each school was offered a small incentive (signed copies of celebrity cook books, and a celebrity cook to come and do a cooking lesson as a raffle prize) to participate in the study, to be awarded on successful completion of the pilot. Each caterer participating in the pilot study was acknowledged for their involvement by being named on the School Food Plan website. The final list of schools and caterers participating in the pilot study can be found in **Table 7** and **Table 8** in **Appendix 5**.

4.3.3 Design and analysis

Table 9 in **Appendix 6** outlines the methodology. The schools and caterers were divided into two groups. Group 1 was asked to plan and cook an interesting, creative and nutritionally-balanced one-week lunch menu, using the revised food-based standards and associated practical guidance and tools (planning menu checklist). Group 2 was asked to use the revised standards and practical guidance and support tools to check the compliance of their current lunch provision. The two tasks were explained to schools and caterers by one of the Trust's nutritionists at the recruitment stage of the pilot, and schools and caterers self-nominated which group they would like to participate in (this was primarily determined by their capacity to undertake the additional work associated with the pilot study). Fieldwork took place between 28th October and 15th November 2013.

4.3.4 Materials

4.3.4.1 Questionnaires:

One week prior to the pilot study electronic copies of the feedback questionnaires were sent to the pilot schools and caterers. Participants were asked to complete the questionnaires after they had completed the pilot tasks. The questionnaires asked the participants to comment on the proposed standards, specifically if they were '*easier to understand*' and '*made it easier to plan flexible, interesting and creative menus that appeal to pupils compared with the existing food-based and nutrient-based standards*'. They were asked to highlight if the '*meanings of the new standards were clear*' and rank how confident they felt about using the new standards. They were also asked to highlight any issues they had/foresaw with planning and/or meeting the standards. Each of the closed questions also had an open-ended component allowing participants to describe reasons for their responses or add comments.

4.3.4.1 Practical guidance and support tools:

A 20-page practical guide including a menu planning checklist was drafted, summarising the proposed food-based standards and explaining how to interpret and implement them, including a rationale for each standard (why each food group is important, outlining the key nutrients each food group provides, and explaining their importance for children's health); definition of the types of foods and drinks that counted under each food category (to help participants to choose a variety of food and drinks from each of the five food groups), and good practice to consider when planning menus, preparing and cooking food (to help limit fat, saturated fat, salt and sugar). The practical guide also included examples of typical portion sizes for different foods and drinks - these were given for both primary and secondary aged children and generally specified for food as served.

An electronic version of the practical guide was sent to each participant to use during the pilot. Group 2 participants were also encouraged to review and send back an annotated version of the practical guide highlighting any points within the guide that required further information or clarification.

4.3.5 Assessing compliance of the 1-week menus with the proposed food-based standards (within a nutrient framework)

Group 1 participants were asked to plan and cook a one-week menu. A Trust nutritionist checked all one-week planned pilot menus against the proposed food-based standards to indicate if each of the standards had been met in practice.

Recipes and/or product specifications for each menu item, with details of portion sizes and provision mix (i.e. number of servings) were collected from each pilot school. Where required, each school also provided additional information about their catering practices and the brands of products used. The one-week menus and recipes were nutritionally analysed (using SaffronTM menu planning and nutrient analysis software), and menus were checked for compliance with the proposed food-based standards and the nutrient framework. For further information on the nutrient framework see **Appendix 2**.

5 RESULTS

5.1 Response rate and sample characteristics

Table 6 in **Appendix 4** shows the recruitment process. A total of 40 schools and 33 caterers were approached to participate in the pilot study^V. The response rate for schools (n=35, 92%) and caterers (n=26; 81%) was significantly higher than anticipated. Three (8%) schools declined to participate, 35 schools opted to participate in Group 1 and two offered to participate in Group 2. Of the 33 caterer's approached, six (19%) declined to participate at the outset, one subsequently withdrew during the pilot, two offered to participate in both the Group 1 and Group 2, four opted to participate in Group 1, and 20 offered to participate in Group 2. The main reason cited for declining to participate in the pilot study was insufficient capacity this reason was given by two schools and three caterers. One caterer approached expressed that they didn't wish to participate as they didn't agree with the changes being made to the standards. The remaining two caterers didn't give a reason.

Group 1: a total of 35 schools and their caterers agreed to plan a new 1-week menu, representing three local authority caterers, three private contractors, and five school in-house caterers. **Table 7** in **Appendix 5** shows the characteristics of the Group 1 schools and caterers. A total of 31 one-week menus^{VI} were planned and submitted to the Trust for analysis representing primary schools (14), co-educational secondary schools (13), single-sex girls secondary schools (2), a single-sex boys secondary school (1), and a special school (1).

Feedback questionnaires and comments on the revised standards were received from 31 participants. Most of the questionnaires (26) were completed by catering managers or cooks working in schools. Three questionnaires were completed by LA staff (2 service managers, 1 nutritionist), one by a school business manager, and one by the owner/director of a private contractor. It should be noted that respondents had different roles in relation to menu planning and analysis - some planned and analysed menus themselves (either for their own school or for all schools in a contract), others planned menus which were then analysed centrally, and some followed centrally-produced menus and had little involvement in menu planning and analysis. It is also important to note that due to the time constraints of the pilot, cooks and caterers were only asked to plan and cook a 1-week menu, whereas typical school menu cycles run for 3-4 weeks.

Group 2: a total of 24 schools and caterers agreed to assess their current menu against the revised food-based standards, representing local authority caterers (12), private contractors (10), and school in-house caterers (2). **Table 8** in **Appendix 5** shows the characteristics of the schools and caterers involved in the menu checking part of the pilot. A total of 25 menu checklists were submitted (one caterer assessed their primary and secondary menu).

A total of 26 feedback questionnaires were received (two caterers responded separately for their primary and secondary school menus). Most of the questionnaires were completed by LA or private contractor staff (13 managers, 5 staff with nutrition expertise). Five questionnaires were completed by catering managers or cooks working in schools, and one by the director of a private contractor. As for Group 1, this means that respondents had different roles in relation to catering provision. It should be noted that the profile of Group 1 and Group 2 respondents is different. This means that respondents are likely to have different experience, knowledge and perspectives of the school food standards. The following analysis is based on 30 questionnaires from Group 1 participants (one questionnaire was excluded due to missing data), and 26 questionnaires from Group 2 participants.

^V Anticipated response rate was 50%.

^{VI} Note: one menu was pilot tested by four schools, and another menu was pilot tested by two schools this explains the variance between the number of pilot schools (n=35) and the number of menus (n=31).

5.2 Participants' feedback on the proposed food-based standards

5.2.1 Confidence in using the new standards to check, plan and cook compliant menus

Figure 1 below illustrates that the majority of Group 1 (83%) and Group 2 (81%) respondents reported feeling 'quite' or 'very' confident to use the new standards.

Four out of five of the Group 1 respondents said that having planned a new 1-week menu to meet the revised standards, they felt 'quite' (50%) or 'very' (33%) confident about using the new standards. Comments indicated that many schools were used to using existing food-based standards, and didn't feel that the new standards were much different, or that they had to make too many changes to their menus to meet them. It was noted that the supporting guidance was helpful, and that they liked being able to select dishes that they knew were popular with pupils. Five respondents expressed a neutral opinion; one was concerned about ensuring that the nutrient content of the menu was sufficient, and another that they had to read the standards and guidance several times to understand it. No respondents felt that they weren't confident in using the standards.

Similarly, the majority of the Group 2 respondents said that having checked their existing menu against the revised standards, they felt 'quite' (50%) or 'very' (31%) confident about using them. As for Group 1, comments indicated that many schools were used to using existing food-based standards, and didn't feel that the new standards were much different, or that they had to make too many changes to their menus to meet them. A number added that this was subject to receiving clarification on some points. Four respondents expressed a neutral opinion - all required some clarifications on certain aspects of the standards. One respondent stated that they were not confident in using the standards as they were happy with existing guidance.

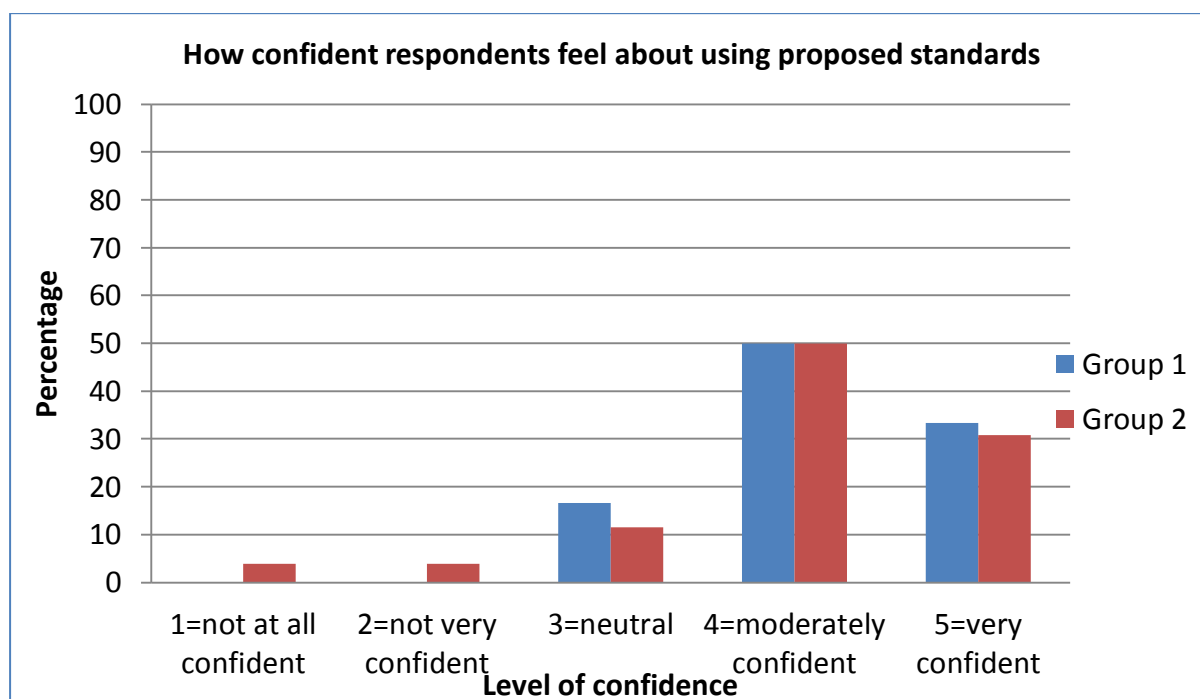


Figure 1: Proportion of Group 1 (n=30) and Group 2 (n=26) respondents reporting feeling confident about using the proposed new standards.

5.2.2 Comparing new and existing school food standards

Figure 2 below illustrates that the majority of both the Group 1 and Group 2 respondents felt that the new standards were '*easier to understand*', and '*made it easier to plan flexible, interesting and creative menus that appeal to pupils*', compared with the existing food-based and nutrient-based standards.

Slightly more of the Group 1 compared with Group 2 participants (90% versus 81%) felt that the standards were '*easier to understand*'. Notably, more of the Group 1 (93%) compared with Group 2 (65%) respondents felt that the revised standards '*made it easier to plan flexible, interesting and creative menus that appeal to pupils*' compared with the existing food-based and nutrient-based standards. The variation in the responses between Group 1 and Group 2 may be partially explained by differences in their roles within the school meal service, and also by the different tasks they were requested to undertake as part of the pilot study. Group 1 participants were primarily school chefs/cooks, asked to plan and cook a menu to meet the new standards whereas Group 2 participants were primarily centrally-based local authority and private contractor staff and were asked to check their current menus against the new standards.

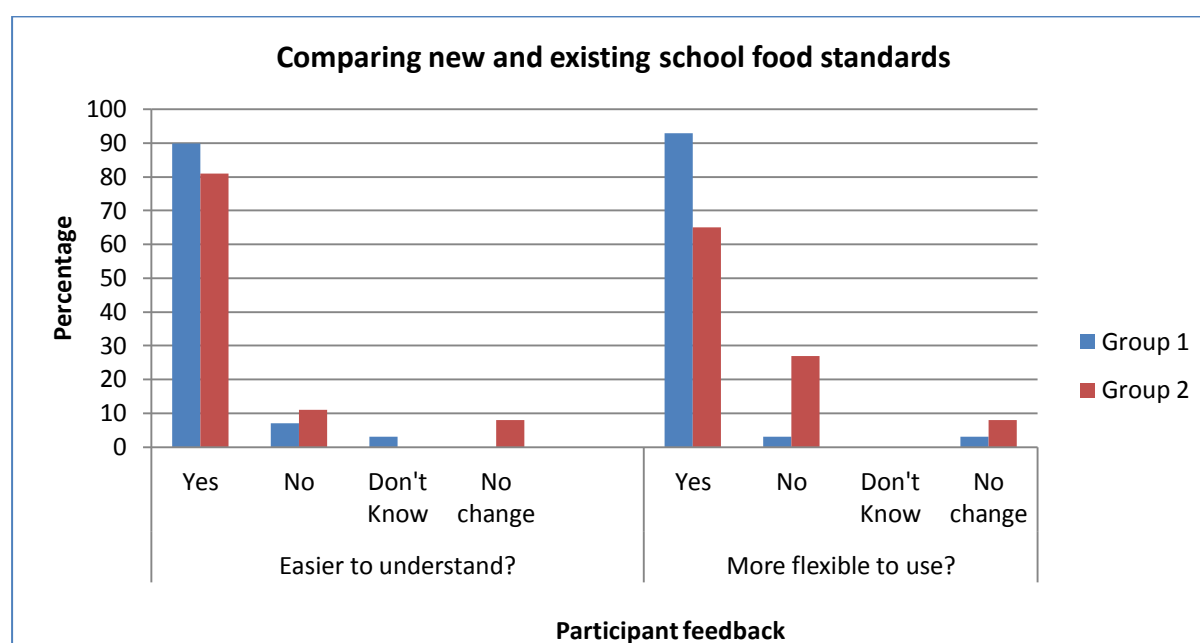


Figure 2. Proportion of Group 1 (n=30) and Group 2 (n=26) respondents reporting if the new food-based standards were '*easier to understand*' and '*more flexible to use*' compared to the existing food-based and nutrient-based standards.

Group 1 respondents commented that as chefs/cooks they could use the standards more easily and be able to judge whether their menus were compliant rather than having to write recipes and have them and their menu nutritionally analysed. Another comment was that if existing standards were being followed then meeting the new standards would be OK, and two respondents mentioned that food-based standards were easier for them to understand than nutrient-based standards or information about nutrients. It was also noted that not having to carry out menu analysis would save time and money, and that schools would not need access to menu planning systems. Of the two respondents who didn't think that the new standards would be easier to use, one didn't currently have any involvement in menu planning or ensuring compliance with standards, and one thought that it wouldn't make much difference as cooks already have a good understanding of standards.

Amongst Group 1 respondents, the most common reason for thinking that it would be easier to plan flexible interesting and creative menus was that menus could be planned to meet the needs and

likes of pupils in each school, and that schools and pupils could be more involved in menu development. There were some provisos however, for example that creative menu planning would require someone with a catering or chef background, that head teachers would need to be on board, that new dishes would need to be developed, and that any change to menus in special schools would need to be implemented over time. The respondent who didn't think that the new standards would make it easier to plan menus considered that the increased number of food-based standards was more restrictive, and one respondent thought that the only difference between revised and existing standards would be management time.

Group 2 respondents also commented that the revised standards were in a simpler format which would make them easier to use for school-based staff, so that menus could be planned locally, and more consideration given to the food on the plate. Being able to assess compliance just by looking at the menu was also mentioned. It was again noted that not having to carry out menu analysis would save time and money, and that schools would not need access to menu planning systems. One respondent commented that experienced staff would find the standards easy to use, but that support would be needed for others. Of the three respondents who didn't think that the new standards would be easier to use, all felt that it wouldn't be much different to meeting the existing standards because they already had all the necessary systems in place.

The most common reasons for thinking that it would be easier to plan flexible, interesting and creative menus were that menus could be planned to meet the needs and likes of pupils in each school, that caterers could provide a more flexible offer to schools, and that cooks, schools and pupils could be more involved in menu development. Of the seven respondents who didn't think that the new standards would make it easier to plan menus, most identified that an increased number of food-based standards was more restrictive than the current standards.

5.2.3 Positive and negative impacts of the new standards

Table 1 below lists the positive and negative impacts of the new standards on menu planning, as identified by schools and caterers. Three respondents in each group stated that there would be no positive impacts on menu planning (generally because they were already providing well-balanced menus). A greater number (Group 1 n=15; Group 2 n=6) stated that there would be no negative impacts on menu planning. The most frequently identified positive impact was that the revised standards allowed cooks more flexibility to offer dishes that pupils liked rather than having to provide what was on a nutritionally-analysed compliant menu. It should be noted that cooks reported finding it easy to plan a 1-week menu using popular dishes, but may have found it more challenging if they had planned a 3-4 week menu.

Table 1: Impact of the revised standards on menu planning

	Group 1 (n=30)	Group 2 (n=26)
Positive impact		
Ability to offer dishes that are popular with pupils	9	-
Simpler and quicker menu planning process	1	6
Easier to change menus	1	4
Increased flexibility	2	2
Reduction in menu analysis costs	-	4
Less waste	2	1
Increased take up	3	-
More wholegrain starchy foods on menu (better for pupils' diets)	2	1
Easier to explain standards to parents and schools	-	2
Better portion control	1	-
Increased customer satisfaction	1	-
School able to input into menu planning	1	-
Negative impacts		
More restrictive food-based standards would mean removal of some popular dishes	1	9
Increased cost	1	7
Potential impact on menu acceptability of using more whole grains, lentils and beans	2	5
Time needed to devise new recipes/check portion sizes	4	1
Challenging to offer plain milk as it wasn't popular/logistical issues	2	1
Potential impact of smaller portion sizes for drinks and cakes	2	-
Concern that without nutrient-based standards micronutrient content would be worse, and levels of fat, salt and sugar higher	-	2
More waste	-	2
Less incentive to try new dishes or use variety of dishes on menus	1	-
More rules to follow	1	-

5.2.4 Likely impact on the types, frequency and amounts of food and drink provided

The majority of the Group 1 respondents indicated on the feedback questionnaire that there would not be much change in the types, frequency and amounts of food and drink provided, and suggested that this was due to their menus already meeting existing school food standards (see **Appendix 7** and **section 5.6** on the number of 1-week menus meeting each of the proposed food-based standards).

In relation to the types of foods, one respondent mentioned that the vegetarian options would change from cheese and pastry-based items to a greater variety being provided, including more wholegrain foods, and one noted that the broader deep-fried category which now includes 'non pre-fried' items such as pastry would reduce the provision of these types of menu items. A few respondents said that they thought there would be more choice, more variety and colourful items on the menu, and some respondents indicated that they would be able to serve popular dishes more often. There were a few specific comments on portion sizes of meat (their existing portion size was lower or higher than recommended in the guidance document), cakes (some portion sizes had to be reduced), jacket potatoes (bigger potatoes had to be sourced), and one respondent thought that the portion size for bread was too high. One respondent suggested that different portion sizes should be provided for infant and junior pupils. Another respondent highlighted that under the revised standards the number of portions (provision mix) of an item provided could be changed as needed in response to [pupil] demand.

Group 2 responses were very similar to those from Group 1. Respondents suggested that the provision of milk and wholegrain starchy foods would increase, whilst provision of starchy foods cooked in oil, pastry items, meat products and cheese-based vegetarian dishes would decrease. One respondent indicated that the change in portion sizes for drinks could mean reduced availability initially whilst suppliers repackaged their products. Most respondents indicated that the amounts of food provided would not change very much, although a small number identified that portion sizes for foods such as meat products, yoghurt and milk would need to increase.

5.2.5 Food procurement and costs

A few Group 1 respondents identified the need to change their procurement, specifically in relation to procuring wholegrain pasta and rice, larger portions of meat and fish products, and smaller sizes of drinks. Most respondents indicated that their food costs would stay about the same, although a few said that their costs would increase due to having to provide milk, and bigger portions of meat and fish. Group 2 responses were very similar to Group 1, with the need to procure milk, different portion sizes for drinks, and wholegrain starchy foods identified as the main changes. One respondent commented that it would be helpful to engage with suppliers at the earliest opportunity to facilitate the availability of these items. Most respondents suggested that food costs would remain about the same, or increase slightly due to having to provide wholegrain starchy foods and non-dairy meat alternatives as these are more costly. A number of respondents said that providing milk would also increase costs.

5.2.6 Time, skills, facilities and equipment

Group 1 responses suggested that the existing context in each school would determine whether more time or additional skills, equipment or facilities were needed, with most respondents suggesting that there would be no change required. One respondent noted that being able to plan her own menu meant that she could ensure that the menu could be delivered using existing facilities and equipment. One caterer delivering transported meals identified a significant equipment cost in relation to providing drinking milk (additional cold storage boxes and increased van capacity), whilst another indicated that their drinking cups in primary schools were not big enough to hold the recommended portion size of milk.

Most of the Group 2 respondents, as for Group 1, stated that no change would be needed because menus would not require much modification to meet the revised standards, and training already in place ensured that catering staff had the skills needed to prepare food from scratch. Some respondents indicated that providing milk would require additional cold storage space, server space and cups.

5.2.7 Food waste

In general, Group 1 respondents indicated that food waste would stay the same or decrease due to being able to offer popular choices more often. One respondent said that having to provide wholegrain foods would increase waste. Another respondent reported that wastage was reduced because concentrated on portion sizes. Equal numbers of Group 2 respondents thought that food waste would stay about the same (10) or increase (9). Providing milk, different vegetarian options, wholegrain starchy foods and a second starchy food (as an alternative to starchy food cooked in oil) were identified as potentially contributing to increased waste. Fewer respondents (5) thought that food waste would decrease.

5.3 Compliance of the 1-week menus with the nutrient framework

5.3.1 Nutritional analysis of pilot menus

Thirty-one 1-week menus (14 primary, 13 co-educational secondary, 2 all girls secondary, 1 all boys secondary and 1 special school), planned and cooked to meet the proposed food-based standards, were nutritionally analysed. For each school, the energy and nutrient content for the 13 nutrients included in the nutrient framework (fat, saturated fat, carbohydrate, protein, non-milk extrinsic sugars (NMES), fibre, iron, zinc, calcium, folate, vitamin A, vitamin C and sodium) were calculated for the average school lunch. For further information on the nutrient framework see **Appendix 2)**

The mean energy and nutrient content of an average school lunch was compared with the nutrient-based standards (see **Table 10** and **Table 11** in **Appendix 8**). The calculation of an average school lunch was based on planned provision over the one-week pilot.^{vii} Analysis is based on a total of 27 menus, 14 primary schools and 13 coeducational secondary schools.^{viii}

Overall, the mean nutrient content of the average primary school lunch met 12 of the 14 nutrient-based standards (carbohydrate, non-milk extrinsic sugars, fat, saturated fat, protein, fibre, zinc, calcium, folate, vitamin A, vitamin C and sodium), but was not compliant with energy (slightly too high - 548 kcal compared with 530 kcal), and iron (slightly too low – 2.9mg compared with 3.0mg). All primary schools met the standards for protein, fibre, folate, vitamin A and vitamin C. The mean nutrient content of the average secondary school lunch met 11 of the 14 nutrient-based standards (energy, carbohydrate, non-milk extrinsic sugars, fat, saturated fat, protein, fibre, folate, vitamin A, vitamin C, and sodium). The average secondary school lunch menu was too low in calcium (302mg compared with 350mg), iron (4.5mg compared with 5.2mg) and zinc (3.0mg compared with 3.3mg). Calcium and iron were the least likely standards to be met, with only one school compliant with the standard for calcium and two schools compliant with the iron standard.

The average pilot primary and secondary school lunch met the standards for percentage energy from carbohydrate, non-milk extrinsic sugars (NMES), fat and saturated fat, suggesting that the food and drink provision was well-balanced in terms of sources of energy.

The mean energy and nutrient content of the pilot primary and secondary lunch was similar to or better than the most recent national school food surveys for all nutrients.^{5 6} This suggests that the proposed food-based standards have maintained or in some cases positively impacted on the balance of energy from different sources and the nutrient density of the average school lunch.^{ix}

5.3.2 Energy, fat and carbohydrate

The nutrient framework initially devised by the School Meals Review Panel¹ and more recently advocated by the School Food Plan Standards Panel recommends that the average school lunch

^{vii} Compliance with the standards should be assessed on the basis of planned provision. The expectation is that planned and actual provision should be closely aligned to pupils' selection of food and drink. The provision mix data submitted by the pilot schools closely reflected actual provision during the one-week trial which means that the analysis is a conservative estimate.

^{viii} Note: three single sex secondary school menus (Girls=2; Boys=1) were also nutritionally analysed but the results have not been included in the overall analysis as the nutrient-based standards for single sex and coeducational schools are different reflecting the slightly different energy and nutritional requirements. Likewise the all through special school menu was also not included. In terms of compliance with the nutrient framework the four menus excluded followed a similar pattern to the other menus.

^{ix} It should be noted that different methodologies were used in the national surveys compared with the pilot study which may impact on the comparability of the results.

should provide $30\% \pm 5\%$ ^x of daily energy requirements.⁹ This equates to 530 ± 26.5 kcals for primary schools and 646 ± 32.2 kcals for secondary schools with at least 50% of food energy from carbohydrate and no more than 35% from fat, 11% from saturated fat, and 11% from non-milk extrinsic sugars (NMES). Recent results from the National Diet and Nutrition Survey (NDNS)¹⁰ have shown that primary and secondary aged children's diets, on average, provide levels of fat and carbohydrate in line with these dietary recommendations, but the levels of saturated fat and non-milk extrinsic sugars are too high (see **Table 2** and **Table 3** in **Appendix 1**).

The energy content of the average primary school lunch was slightly above the standard for energy, and only five of the 14 pilot primary schools were within the 5% tolerance permitted for energy. The average energy content of a secondary school lunch was within the 5% tolerance permitted for energy, ten of the 13 secondary schools met the standard for energy. Further analysis of percentage energy from carbohydrate, fat, saturated fat and NMES suggests that the provision was appropriately balanced in terms of energy in both primary and secondary schools.

5.3.3 Saturated fat

Dietary reference values for saturated fat state that average intakes should not exceed 11% of food energy.⁹ This equates to a maximum of 6.5g and 7.9g for an average primary and secondary school lunch, respectively.⁴ The average pilot primary and secondary school lunch provided 10.1% and 8.6% energy from saturated fat respectively, which is in line with government recommendations. Just over half of the primary (8) and all but one secondary menu met the standard for saturated fat. One in five primary menus exceeded the saturated fat standard by more than 10%, supporting the need for strengthened practical guidance on portion sizes for desserts, cakes and biscuits.

5.3.4 Non-milk extrinsic sugars

Dietary reference values for non-milk extrinsic sugars (NMES) state that average intakes should not exceed 11% of food energy. This equates to a maximum of 15.5g and 18.9g for an average primary and secondary school lunch, respectively.⁴ The average pilot primary and secondary school lunch provided 9.2% and 10.2% energy from NMES respectively, which is in line with government recommendations. Two-thirds of the primary (9) and half of the secondary (7) menus met the standard for NMES. However, over a quarter of the primary menus exceeded the NMES standard by more than 10%, supporting the need for strengthened practical guidance on portion sizes for desserts, cakes and biscuits, and capping the portion size of fruit juice (150 mls)^{xi} and combination drinks (330 mls).

5.3.5 Protein

The nutrient framework sets a minimum standard of 30% of the RNI (7.5g and 13.3g protein for an average primary and secondary school lunch, respectively). All one-week lunch menus provided levels well in excess of this standard, and the proportion of energy from protein was 16.3% in primary schools and 17.0% in secondary schools. This is in line with UK intakes, which are consistently in excess of the RNI for all age groups, and average 15% of total energy intake.⁹

5.3.6 Fibre (non-starch polysaccharide)

There is no government recommendation for fibre intake for children. The nutrient-based standard for dietary fibre for school lunches was derived using a methodology adopted from the Caroline Walker Trust¹¹ which used a pragmatic approach based on a minimum intake of 8g per 1000kcal of

^x An average school lunch should provide 30% of the total daily energy requirement this is based on the assumption that three meals a day are consumed and that lunch provides appropriately one third of the daily intake.

^{xi} **Note:** 200mls of fruit juice (a common serving size in schools) provides 15.6g NMES. Capping the portion size to 150mls will reduce the average NMES content of fruit juice servings to 11.7g.

dietary energy. Applying this methodology for primary and secondary schools equates to 4.2g and 5.2g non-starch polysaccharide (NSP) respectively. The mean fibre content of the average primary and secondary pilot school menus was well in excess of the nutrient-based standard. It is important to note that all the one-week pilot menus met the standard for fibre although only 12 schools appropriately implemented the proposed food-based standard for wholegrain starchy food '*at least two wholegrain varieties of starchy food each week*', suggesting that this standard is not necessarily required to ensure the fibre standard is met. However, it is important to acknowledge that nationally, children's intake of fibre is low,¹⁰ and school food should help to address this by encouraging the development of healthy eating habits, and by introducing children to a variety of foods. It is recommended that this standard is maintained but the frequency be reduced from two to one wholegrain variety of starchy food each week (this is in line with the voluntary food and drink guidelines for early years settings¹²). It is also recommended that school caterers trial wholegrain recipes.^{XII}

5.3.7 Iron, zinc and calcium

Recent National Diet and Nutrition Survey data¹⁰ suggest that both primary and secondary aged children have relatively low dietary intakes of iron and zinc. More than one in four children in the UK may be at risk of iron deficiency, which can impair growth and affect development.¹³ The most recent national primary and secondary school food surveys also suggest that, although the introduction of the food-based and nutrient-based standards had a positive impact on the overall nutritional profile of food provided at lunchtime, the iron and zinc content of the average school lunch as provided, chosen and consumed remained lower than the minimum level set by the nutrient-based standard.^{5,6}

The nutrient framework sets a minimum standard of 35% of the RNI for iron, zinc and calcium to be provided within the 30% of daily energy requirement of an average school lunch. This is to ensure that school food is nutrient dense and helps to address low dietary intake of these nutrients. The mean iron, zinc and calcium content of the pilot primary and secondary menus was similar to or above the most recent national school food surveys^{5 6} suggesting that the proposed food-based standards have not negatively impacted on the nutrient density of the average school lunch.

The nutrient-based standard for iron was the least consistently met, with only four primary and two secondary schools compliant with this standard. However, the mean iron content of the average primary school pilot lunch was within 0.1mg of the standard, and all except one primary school were within 10% of the standard. The iron content of the average secondary school pilot lunch is more of a concern. The mean iron content (4.5mg) was well below the standard (5.2mg), and more than half of the secondary schools were not within 10% of the standard. Further assessment of the menus suggested that the low iron content was not associated with the frequency of red meat provision, but was due to a multitude of factors including small portion sizes of meat within composite dishes, and low iron content of vegetarian dishes and grab-and-go options (such as sandwiches, jacket potatoes, and pasta with sauce). The low iron content of these options can be explained by the lack of iron rich, non-dairy sources of protein in vegetarian dishes, and lower than recommended portion sizes of protein in grab-and-go options. It is recommended that the portion size advice for meat is strengthened, and the practical guidance updated to explain the importance of iron in children's diets and to provide additional advice on how to include good dietary sources of iron in recipes and across the whole menu. It is also recommended that school caterers are given more support and encouragement to develop and trial iron-rich dishes that are popular with pupils, particularly for grab and go options and for vegetarian pupils.^{XIII}

^{XII} Such as the tried and tested wholefood recipes published by the Trust

^{XIII} Such as the tried and tested iron recipes and tips published by the Trust

The mean zinc content of the average primary school pilot lunch was just compliant with the nutrient-based standard, whereas the mean zinc content of the average secondary school pilot lunch was below the standard. Three-quarters of the primary school menus and half of the secondary school menus met the zinc standard, suggesting that there was quite of lot variance amongst the pilot schools. Like iron, the zinc content of the secondary lunch provision is of most concern. The mean zinc content (3.0mg) of the average secondary school pilot lunch was below the standard (3.3mg), but slightly above the mean zinc content (2.6mg) in the most recent national secondary school food survey.⁶ Further assessment of the menus suggested that the low zinc content, like iron, was related to a number of factors including small portion sizes of meat, and low zinc content of vegetarian dishes, grab and go options and composite dishes. It is recommended that the portion size advice is strengthened and the practical guidance updated to give advice on how to include good dietary sources of zinc in recipes and across the menu. It is also recommended that school caterers are given more support and encouragement to develop and trial zinc-rich dishes that are popular with pupils such as the grab and go recipes.^{xiv}

The mean calcium content of the average primary pilot school lunch met the nutrient-based standard, and all schools except one met this standard. The key to meeting this standard was the addition of low fat milk^{xv} for drinking. The estimated provision mix for low fat drinking milk ranged between 28-75% in the primary schools that met the standard. The primary school which did not meet the standard provided only water to drink. When this menu was modelled to include a 10% provision of milk each day, this resulted in the calcium standard being met. The remaining primary school menus were modelled to include 30% provision of drinking milk, and the mean calcium content remained compliant. The calcium content of the average secondary school lunch is more of a concern. The mean calcium content (303mg) was well below the standard (350mg), but higher than the mean content (275mg) observed in the most recent national secondary school survey.⁶ In the pilot study, only one secondary school met the calcium standard, and more than half of the secondary schools were not within 10% of the standard. Further assessment of the menus suggested that the calcium content was associated with low provision of plain milk and milk drinks (less than 10% of all drinks provision in three secondary schools, and an average of 17% in ten secondary schools), and low provision of dairy-based desserts including custard, yoghurt and rice pudding. This suggests that school caterers require more support to promote low fat drinking milk and dairy-based desserts to adolescents and to develop and trial calcium-rich dishes that are popular with pupils.^{xvi}

5.3.8 Folate, Vitamin A and Vitamin C

Nutrient-based standards for folate, vitamin A and vitamin C are set so that the average school lunch provides at least 35% of the RNI.⁴ This equates to at least 53µg folate, 175µg vitamin A, and 10.5mg vitamin C for primary schools, and 70µg folate, 245.0µg vitamin A and 14.0mg vitamin C for secondary schools. All one-week lunch menus provided levels well in excess of these nutrient-based standards, and above the levels observed in the most recent national school food surveys.^{5 6} All 14 primary pilot schools were compliant for these nutrients. All 13 secondary schools were compliant with the vitamin A and vitamin C standards, and all but one secondary school were compliant with folate. This suggests that if the proposed food-based standards are followed, schools should be providing sufficient amounts of all three of these nutrients.

5.3.9 Salt (sodium)

In 2003, the Scientific Advisory Committee on Nutrition (SACN) published daily population targets for salt for adults and children, which were set at 3g/day for children aged 4-6 years, 5g/day for 7-10 year olds and 6g/day for children aged 11 years and over.¹⁷ This does not represent an optimal or

^{xiv} Such as the tried and tested grab and go recipes and tips published by the Trust

^{xv} **Low fat milk:** (less than 1.8% fat) includes semi-skimmed, 1% milk and skimmed milk

^{xvi} Such as the tried and test calcium recipes and tips published by the Trust

ideal consumption level for children but an achievable population goal. The nutrient-based standard for sodium is set at a maximum of 30% SACN recommended daily population salt target. This equates to a maximum of 499mg and 714mg of sodium for the average primary and secondary school lunch.^{xvii} The mean sodium content of the average primary and secondary pilot school lunch met the nutrient-based standard for salt, and more than half of schools were compliant with this standard. However, one primary and three secondary schools were more than 10% above the maximum standard suggesting a lot of variance. The key factors driving the sodium content of school lunches in primary schools were dishes containing cheese, sandwiches, use of soy sauce on one primary school menu, and use of QuornTM regularly. In secondary schools the lack of compliance with sodium can be explained by a higher provision of grab-and-go options (such as sandwiches) coupled with a low take up of hot main meals. It is important to acknowledge that many pilot schools prepared meals from scratch, and some used reduced salt varieties of canned baked beans. It is recommended that each of these best practice points are included in the practical guide, along with additional menu planning guidance how to limit salt and choose products with a lower salt content.

5.4 Modelling menus

Modelling was carried out for three of the 14 primary school pilot menus. The standards checklist was used to identify which of the food-based standards had not been met for the planned menus. Changes were made to the menus so that they were compliant with all of the food-based standards, and the menus were re-analysed against the nutrient-framework to examine the impact of these changes on the overall nutrient content of the menus. Where the menus were not compliant with the nutrient framework after these changes were made, further investigation was carried out. This included looking at portion sizes, provision mix, and recipe and product composition. Making minimal changes to the pilot menus so that each food-based standard was met resulted in an improved balance of energy and increased level of nutrient density but did not necessarily ensure complete compliance with the overall nutrient framework (see **Table 12** in **Appendix 9**).

The key lessons learned from modelling these menus are the need to not only adhere to the types and frequency of the food and drink categories specified by the proposed food-based standards, but also to ensure that the amounts of food and drink, (i.e. typical portion sizes), the provision mix (i.e. proportion each menu item is provided), and recipe and product composition (i.e. nutrient density) are also considered. Each of these factors is important in determining if the menu cycle is compliant with the nutrient framework and meets the nutritional requirements of children.

This observation was also made during the development of the Voluntary Food and Drink Guidelines for Early Years Settings in England. Food-based standards are easy to follow and provide suitable detail about provision of foods in specified food groups, but even with example menu plans, detailed guidance on portion sizes and food composition is required in order to ensure the menu cycle is nutritionally balanced. This highlights the importance of clear practical guidance that gives detailed definitions of what counts within each category of food, includes typical standardised portion sizes, and advice on how to limit the amount of fat, saturated fat, sugar and salt to ensure the appropriate levels of these nutrients, including information on how to read labels and which foods or ingredients to avoid, restrict or promote.

^{xvii} **Note:** To convert salt to sodium, divide by 2.5. The nutrient-based standard for sodium is calculated using a precise method based on the atomic weights for sodium and chloride, the components of salt.

5.5 Portion sizes

The nutrient content of food and drink provided for pupils depends on the portion size that is offered. The practical guide included examples of typical portion sizes for different foods and drinks these were based on published Scottish¹⁴ and Welsh¹⁵ portion sizes guidance, and given for both primary and secondary aged children, and generally specified for food as served.

Most of the menus planned to meet the guidance used the typical portion sizes outlined in the practical guide. Feedback received from the schools and caterer's pilot testing the guidance suggests that overall these typical portion sizes were similar to, or the same as, those currently used in schools. Feedback from one caterer was that the portion sizes of starchy foods and milk and dairy foods they currently provided were lower than, or at the lower end of the range of those in the practical guide. This observation was also verified during the nutritional analysis of the one-week pilot menus. Generally the portion sizes used in primary schools were in line with those in the practical guide. However, in secondary schools, portion sizes of starchy foods, meat, fish, and non-dairy sources of protein, and milk and dairy foods were lower than the typical portion sizes given in the practical guide. The low portion sizes of meat, fish, and non-dairy sources of protein contributed to the low iron and zinc content of the menus. The portion sizes of desserts, cakes and biscuits were higher in primary schools than in the guidance, impacting on energy, fat, saturated fat and non-milk extrinsic sugars. Portion sizes of fruit and vegetables consistently fell in line with that recommended in the practical guide, and in many cases were larger or provided in multiple portions (for example two 80g portions of vegetables per child, per day in a secondary school). This provision contributed to the high vitamin A and C, folate and fibre content of the menus. Where vegetables were included in composite dishes, the energy content of dishes tended to be lower. It is recommended that the portion size advice for composite dishes is strengthened and the practical guidance is updated to explain the importance of using appropriate proportions of ingredients within composite dishes that reflect the portions sizes in the guide.

It is also recommended that further work is undertaken to establish standardised typical portion sizes for food and drink provision in primary and secondary schools in England, and to explore how to strengthen guidance around portion sizes so these implemented in practice.

5.6 Assessing if the proposed food-based standards (in a nutrient framework) are 'fit for purpose'

The next section considers all the evidence gathered during the pilot including participant feedback, the menu checklists and nutrition analysis to establish if each of the new standards is 'fit for purpose'. Key issues in terms of interpreting and implementing each standard are also highlighted.

Appendix 7 summarises the Group 1 and Group 2 participant feedback on each of the 25 proposed food-based standards, and the number of Group 1 one-week pilot menus and Group 2 current menus that were compliant with each standard.

5.6.1 Understanding and identifying any issues in planning menus to meet the new standards

For each standard the participants were asked '*Is the meaning of the standard clear*' and '*Did you, or do you have any issues with planning a lunch menu to meet the standard*'. Respondents were also given the opportunity to comment on each standard. Responses and comments were received from 29 Group 1 respondents and 25 Group 2 respondents.

Overall, Group 1 respondents (primarily cooks and caterers) thought that most of the individual elements of the standards were clear, with only eight standards being identified as not clear. Where standards were identified as not clear, this was by only 1 or 2 respondents for seven of the standards, whilst 4 respondents thought that the meat products standard was not clear. Issues in planning a lunch menu to meet the standards were identified for eleven of the standards, but again by only 1 or 2 respondents in most cases. For three standards (provision of starchy food cooked in oil no more than 2 days each week; providing an alternative to starchy food cooked in oil; providing drinking milk), four respondents identified issues when planning menus. However, despite this positive feedback, only two of the 31 one-week menus that were planned to meet the standards actually met them all in practice (see **Appendix 7**). It should also be noted that some queries were raised during the menu planning process these were answered (where possible) by one of the Trust's nutritionists.

Group 2 respondents (13 managers, 5 staff with nutrition expertise) were generally more likely than Group 1 respondents to state that the meaning of some standards was not clear. Respondents identified that 15 of the standards were not clear, although this was by only 1 or 2 respondents for ten of the standards. The meat products standard was considered to be not clear by the most respondents (5), with 4 respondents considering that the deep-fried, coated and pastry standard, the restriction of cheese as a protein option for vegetarians, and the requirement to provide wholegrain starchy foods were not clear. Issues with planning menus to meet the standards were identified for 15 standards, with 11 respondents stating that meeting the standards for providing wholegrain starchy foods and drinking milk would be an issue. Nine respondents identified an issue with meeting the deep-fried/coated/pastry standard, and seven with meeting the drinks standard.

The difference in response between Group 1 and Group 2 respondents in relation to whether the meanings of the standards were clear may be because Group 1 respondents raised and resolved queries in order to continue with menu planning, whereas Group 2 respondents noted their queries on the questionnaire rather than raising them at the time. Group 2 respondents were also more likely to indicate that there were issues with implementation for some of the standards. This is likely to be partly due to them raising more queries, but also because some respondents were identifying where their existing menu didn't meet standards rather than considering if it would be possible to plan a menu to meet the standards. Other reasons for this discrepancy could be because Group 2 respondents understood the new standards better and so were able to more fully consider the implications (the types of people completing the questionnaire were slightly different in the two groups, with Group 2 respondents more likely to be nutritionists or managers), particularly in relation to cost and logistics.

5.6.2 Starchy food

The revised standards include five requirements relating to the starchy food group, primarily to ensure adequate provision of energy, carbohydrate, fibre whilst limiting the amount of fat. The new standards stipulate that *'a portion of starchy food must be provided everyday'*. This standard was understood by all Group 1 and all except one participant in Group 2. No participants reported any issues in meeting the standard and all but one one-week menu met this standard. The requirement to provide *'at least three different starchy foods each week'* was also understood by all participants, and posed no issues in terms of menu planning.

In comparison, the provision of *'at least two wholegrain varieties of starchy food each week'* was less clearly understood. Four Group 2 respondents queried the meaning, asking for more clarity around what counted as wholegrain (for example wholemeal bread, extra bread, 50:50 varieties, couscous). Overall, a quarter of the participants (Group 1 n=2; Group 2 n=11) reported potential issues with complying with this standard. The main issues reported included cooking, with one respondent stating that using wholegrain rice and pasta was problematic when transporting meals as they stick together more than white versions. Cost was also highlighted as an issue as wholegrain versions of rice and pasta cost more. Pupils' acceptance of wholegrain versions was also a concern, particularly since pasta is a popular option in schools. It was reported that children are not keen on the texture and appearance of brown rice and pasta so it would take time for pupils to become familiar and accept this change, implying that the introduction of this standard could potentially impact on take up. Only 12 of the pilot menus included two wholegrain varieties of starchy food, and only a quarter of Group 2 participants reported that their current menu complied with this standard.

The majority of the participants reported that the meaning of the *'starchy food cooked in fat or oil must not be provided on more than two days each week across the school day'* standard was clear. Three respondents requested further clarity around the definition of what counts as a 'starchy food cooked in oil'.^{xviii} For example if it applied to 'manufactured only', or 'homemade' starchy foods too, and how this standard interacts with the deep-fried/coated/pastry standard. A similar number of participants reported issues with implementing this standard, primarily related to the reduction in the number of days starchy food cooked in oil could be provided. Participants foresaw that changing from three times (current standards) to twice per week would be challenging, particularly in secondary schools. In practice, the restriction to two days a week would mean that chips and roast potatoes (regular items on many menus) will use up the allocation. In terms of compliance, three-quarters of the pilot menus met this standard, and just over half of the Group 2 participants reported that their current menu complied with this standard.

All except three participants reported that the meaning of the standard *'on each day a starchy food cooked in fat or oil is provided, a starchy food (other than bread) not cooked in fat or oil must also be provided'* was clear. These participants requested further guidance around how to implement this standard in practice. For example, if it had to be a direct alternative within the same menu choice (for example chips or mashed potato with fish), or if the provision of pasta and jacket potato as menu options would count. It was highlighted that if a direct alternative had to be provided then this could potentially result in increased waste as pupils will generally choose fish and chips. One respondent wondered if the standard was actually required if starchy food cooked in fat or oil could only be provided twice per week. In terms of compliance, 24 of the 31 pilot menus were compliant with this standard and three-quarters of the Group 2 respondents reported that their current menus complied with this standard.

^{xviii} **Note:** The Trust has received numerous queries around the definition of starchy food cooked in oil since the school food standards were introduced in 2006.

The new standards have maintained the requirement for *'bread with no added fat or oil must be provided on a daily basis'*. All but one respondent reported understanding this requirement, and two reported issues in meeting this standard in practice. Clarity was sought over the type of bread (if ciabatta counted), and the portion size of the bread (if this had to be same as the starchy food portion sizes). One respondent reported concerns that because the extra bread is not sold it creates a lot of waste.

5.6.3 Fruit and vegetables

The proposed standards for fruit and vegetables have changed slightly - the new standard stipulates that *'not less than two portions per day per pupil must be provided; at least one must be vegetables or salad accompaniment; and at least one must be fruit'*. These changes have been proposed to increase the overall provision and variety of vegetables and fruit which will help contribute towards the fibre, folate, vitamin A, vitamin C content of the average school lunch.

The requirement for a portion of vegetables or salad to be an accompaniment means that in practice vegetables included as part of composite dishes (for example vegetable curry) would no longer count towards this standard. All the participants in the pilot study reported that they understood the meaning of this standard, and only two participants reported any issues with planning or meeting this standard in practice. In relation to the requirement to provide a portion of fruit per pupil per day, clarity was sought around the implementation of this standard, for example if in practice it meant that a pudding such as a traditional syrup sponge could only be served if a piece of fruit was served with it, or if it meant that if fruit salad is an option for pudding then effectively every child is offered a piece of fruit even if they don't choose it. This question has been asked repeatedly since the school food standards were introduced in 2006. From the Trust's perspective it means that sufficient portions must be available to be able to offer a portion to every child. However, it is accepted that providing, for example, a piece of fruit every day for each pupil who takes a school lunch could result in wastage. To avoid this, the Trust has advised that if a caterer is providing fresh fruit it would be appropriate to have tinned fruit or juice readily available as an alternative, to ensure that where demand exceeds the caterer's expectations, every child is able to have a portion of fruit.

In terms of compliance during the pilot study, all the Group 2 participants reported that their current menus met both the vegetable and fruit requirement. All the pilot menus provided a portion of vegetable or salad accompaniment, but far fewer included a portion of fruit. The insufficient provision of fruit has also been observed in the recent national school food surveys.^{5 6} It is recommended that the food-based standard for fruit and vegetables is revised to make it clear that sufficient fruit should be available for all children to have at least one portion, that this should be included within their planned provision, and that fruit-based desserts should be provided on at least two days each week.

To increase variety and encourage dietary diversity an additional stipulation has been made in the new standards that *'at least three different fruits and three different vegetables must be provided each week'*. This new requirement was understood by all participants except one, there were no issues reported in planning or meeting this standard, and all menus (pilot and current) complied with this standard.

5.6.4 Meat, fish, eggs, beans and other non-dairy sources of protein

The revised standards include five requirements in relation to the meat, fish, eggs, beans and non-dairy sources of protein food group, primarily to ensure adequate provision of protein, iron and zinc whilst limiting the amount of fat, saturated fat and salt. The new standards stipulate that *'a portion of food from this group must be provided every day,'* and *'a portion of meat or poultry must be provided at least three times each week'*. All the participants in the pilot study reported that they

understood the meaning of both these standards and that they had no issues with planning or meeting them in practice. All Group 1 participants planned their one-week menus to meet these standards, and all Group 2 participants reported their current menus met these standards.

The current standard that *'oily fish must be provided at least once every three weeks'* has been maintained as part of the new standards to encourage children to eat more fish containing omega-3 fatty acids which help maintain a healthy heart. As expected, all participants reported that they understood this standard, with only one participant reporting that they had issues planning menus to meet this standard. Only eight of the pilot menus included oily fish^{xix}, and three Group 2 participants reported that their current menu cycles did not meet this standard.

The new standards also stipulate that *'a portion of non-dairy sources of protein must be provided at least three times each week for vegetarians'*. Four participants sought further guidance around the interpretation of this standard, and six participants reported that they would have issues planning menus and/or complying with this standard. One of the participants wondered if the standard should be rephrased to say *'three days each week'* rather than *'three times each week'* to make it clear that the requirement relates to number of meal occasions rather than number of menu items. Clarity was sought as to whether a vegetarian dish containing a non-dairy source of protein could contain any cheese (for example would cheese in a quiche which already has egg count). Another participant requested further guidance on alternative sources of protein since QuornTM was not used in the contract, and pupils don't like pulses. One respondent highlighted the need for recipe development around vegetarian dishes containing non-dairy sources of protein that pupils will like, if this standard was to be successfully met. Another participant stated that it would be difficult to meet this standard given the restriction on pastry, as non-dairy pastry products are popular with pupils. The issue of cost was also raised by one respondent as protein substitutes can be expensive. In terms of compliance, 22 of the 31 pilot menus met this standard, and two-thirds of Group 2 participants reported that their current menus met this standard.

The current standard for meat products has been revised slightly - the new standard stipulates that *'a meat or poultry product (manufactured or homemade) may not be provided more than once each week in primary schools and twice each week in secondary schools across the school day. The meat or poultry product must also meet the legal minimum meat or poultry content requirements^{xx}, and must not contain any prohibited offal^{xxi}'*. The revisions to this standard resulted in one in seven participants requesting further guidance around what counted as a meat product. The current school food legislation sets out four categories of meat products and provides a definitive list of the types of products within each category and how often they can be provided. Respondents enquired if there were still four categories, and what actually counted as a meat product. As previously encountered during the introduction of current standards, participants queried if this standard included manufactured products only, or if homemade versions were also caught and if so, what the rationale was if they used the same high quality minced meat to prepare meatballs and chilli. One respondent highlighted that the revised wording may lead to a perception that *'twice a week'* is for each of the existing groups, not the category as a whole, and requested more examples on how to interpret this standard. Three participants felt the standard was too restrictive, particularly for secondary schools across multiple serving points. It is worth noting that the frequency that meat products can be provided under the new standards has changed for primary but not secondary

^{xix} **Note:** Oily fish must be provided at least once every three weeks so there was no expectation that the one-week pilot menus had to include oily fish.

^{xx} **Minimum meat content:** as set out in the Meat Products (England) Regulations 2003, or other current regulations

^{xxi} **Prohibited offal includes:** brains, lungs, rectum, stomach, feet, oesophagus, spinal cord, testicles, large intestine, small intestine, spleen and udder.

schools. In terms of compliance, four pilot menus did not meet this standard, and a third of the Group 2 respondents reported that their current menus were not compliant with this new standard.

5.6.5 Milk and dairy

The new standards have three requirements for the milk and dairy food group, that *'a portion of food from this group must be provided every day'*, *'in addition, low fat milk for drinking must be provided every day'* and that *'cheese must not be served as the only vegetarian option more than twice each week'*. These requirements will help to ensure adequate provision of protein, calcium and zinc.

Only one participant queried the meaning, and three respondents reported issues with planning menus to include *'a portion of dairy food every day'*. Six of the pilot menus did not meet this standard, and three Group 2 respondents reported that their current menus didn't meet this standard. Clarity was sought if this meant a portion per child, and the key issues in terms of meeting this standard were the portion sizes of yoghurts (*the guidance stipulated 100g whereas caterers provided 85g or 95g*), and increased costs associated with providing a portion of dairy food every day.

In comparison, the additional requirement for *'low fat milk for drinking must be provided every day'* was less well understood and more contentious. Participants sought further guidance on the interpretation of the standard to clarify if it meant 100% provision, i.e. sufficient for every child to have a portion. Other respondents wanted to know the rationale for the introduction of this standard particularly since a portion of dairy foods had to be provided every day. Over 40% of the Group 2 respondents reported issues with meeting this standard, compared to 13% in Group 1. The key issues related to logistics, including delivery, space, and having sufficient cold storage, particularly for transported meals. One participant stated that they could get around this by using long life milk (though pupils don't like it). Another respondent had provided milk in cups but schools/pupils preferred cartons. Concerns were also raised about the significant costs associated with this standard as milk is often not provided in primary contracts. There was also concern about waste if milk was left out at lunchtime as it was not popular with pupils. It was also highlighted that pupils prefer flavoured milk to plain milk.

Similarly, the participants requested further guidance on what counted as part of the requirement that *'cheese must not be served as the only vegetarian option more than twice each week'*. They queried specifically if a dish could contain any cheese (for example a quiche with egg and cheese), and if there were two vegetarian options each day, would it be correct to assume that one could have cheese every day. Some of the respondents thought that this standard would be too restrictive if the vegetarian option couldn't contain any cheese even if there was non-dairy protein in it. One participant helpfully provided a list of vegetarian dishes containing cheese, and suggested that these should be categorised. Other respondents highlighted that having a small amount of cheese in vegetarian dishes for example on top of pasta and sauce made dishes popular, implying that if the standard excluded cheese completely it may have a detrimental impact on take up of these dishes. In terms of compliance, 27 of the 31 pilot menus met this standard and three-quarters Group 2 respondents reported that their current menus were compliant with this new standard.

5.6.6 Foods high in fat, sugar and salt

The new standards stipulate seven requirements for the foods high in fat, sugar and salt food group - five of these requirements are worded the same as the current standards and two have been updated. As would be expected, the five standards which had not changed namely, that *'snacks must not be provided'*, *'nuts, seeds, vegetables and fruit with no added salt, sugar or fat are allowed'*, *'dried fruit is permitted to have 0.5% vegetable oil as a glazing agent'*, *'savoury crackers or breadsticks which are served with fruit or vegetables or dairy food may be provided as part of lunch'*,

'confectionery, chocolate and chocolate-coated products may not be provided across the school day' *'no salt shall be available to add to food after the cooking process is complete'* and *'condiments may be available only in sachets or individual portions of no more than 10 grams or one teaspoonful'* raised no, or very few issues in terms of interpretation and implementation.

It's important to acknowledge that the food-based standards around the restriction of cakes and biscuits to lunch time only, has been broadened to include desserts. In practice this means that with the exception of yoghurt, schools will not be able to provide dessert menu items at times other than lunch such as mid-morning break and after school clubs. No issues were raised in relation to this restriction by the pilot study participants but this was probably because they were asked to consider the standards specifically in relation to their lunch provision and may not have picked up on the revision to the current food-based standards. It is recommended that this is explored further during the consultation on the revisions to the school food legislation.

The requirement that *'No more than three portions of food which has been deep-fried, batter-coated, breadcrumb-coated, or includes pastry, must be provided in a single week across the school day'* raised few issues in terms of meaning, but more issues around implementation. Primarily, this standard was considered to be too restrictive. The broadening of this category to include pastry means that there is little flexibility for other menu items if fish and chips are on the menu, which is common. This makes it hard to offer a savoury and a sweet pie in a week, and restricts like-for-like choices (for example a meat pie and a vegetarian pie). The pilot participants suggested that either the frequency these types of foods could be provided should be increased, or pastry is put into a separate category. Participants also requested clarity on what counted within this category for example chips, roast potatoes, smartcrumb products; if it applied to main courses or desserts too; and further guidance around how this standard interacted with the standard for starchy food cooked in fat or oil. In terms of compliance, only 17 pilot menus (just over half) met this standard, whilst 13 of the Group 2 participants reported that their current menu met this standard.

5.6.7 Healthier drinks

The new standards maintain the current standards for healthier drinks which were introduced to remove drinks from schools which have no nutritional value and can cause tooth decay, and specifically encourage children to drink water or drinks that provide other nutrients such as milk, or dairy equivalent drinks to address calcium.^{xxii} The requirement to *provide free, fresh drinking water at all times* remains the same as the current standard and as would be expected this stipulation raised no issues in terms of interpretation and implementation. The only change made to the current standards is a cap on portion sizes which has been introduced to address the relatively high contribution of fruit juice and combination drinks to children's dietary intake of sugar. The proposed standards cap fruit juice to maximum 150 mls^{xxiii} and all combination drinks to maximum of 300 mls. The key issue raised during the pilot was related to the limited and/or lack of availability of the capped portion sizes for both types of drinks from manufacturers. Currently fruit juice in schools is most commonly sold in 200ml cartons or bottles, and combination drinks are usually sold in 330mls

^{xxii} The Children's Food Trust has also strongly encouraged schools to provide drinks that are unsweetened, unfortified and additive free wherever possible and which do not contain preservatives, flavourings, colourings and sweeteners. This is in line with the original intention of the School Meals Review Panel, for children to drink pure drinks in schools which offer nutritional benefit. The Trust has developed a voluntary code of practice for drinks provided in schools which encourages the provision of healthier drinks that are unsweetened and additive free wherever possible. http://www.childrensfoodtrust.org.uk/assets/the-standards/sft_vcop_meetingreport_sep2010.pdf

^{xxiii} **Note:** 200mls of fruit juice (a common serving size in schools) provides 15.6g NMES. Capping the portion size to 150mls will reduce the average NMES content of fruit juice servings to 11.7g.

sizes. The pilot respondents highlighted that this change to the drinks standard requires engagement with manufacturers, and raised concern that capping the size of drinks may have a negative impact on income particularly in secondary schools. The Panel however considered that schools have an opportunity to reinforce the 5 A day guidance on fruit juice by limiting to a single 150 ml serving and encouraging dilution to encourage a preference for lower sugar tastes. It is clear from the test menus that this limit on fruit juice contributes to the lowering of intakes of sugar.

5.7 Participant feedback on the practical guide and tools

Each participant was asked for feedback on the practical guide, including ease of use, good practice points, cooking methods and typical portion sizes. For a description of the contents of the practical guide see **section 4.3.4**. Participants were also asked if the self-evaluation menu checklist was useful, and helped them to assess if their menus were compliant with the proposed food-based standards, and if they required any additional support to help them to interpret and implement the standards (such as access to a helpline and example menus).

5.7.1 Ease of use

Nearly three-quarters of Group 1 respondents thought that the guide and tools were 'very easy' (30%) or quite easy (43%) to use, mainly because they were already doing lots of what was in the guide, and they found it easy to plan a menu and then use the guide to check that it met the standards. A few respondents identified that clarification was needed on some of the standards, and a couple felt that too much information was provided. Similarly the majority of Group 2 respondents thought that the guide and tools were 'very easy' (35%) or 'quite easy' (46%) to use. A few respondents highlighted that some standards required clarification.

5.7.2 Portion sizes

Having the portion size information with the standards was seen as helpful. Group 1 respondents suggested that the portion size information could be put with the standards so that all of the important information was in one place to reduce the need to flick through the document. Only a few Group 1 respondents indicated that they would change their current portion sizes, and these would be increased or decreased depending on their current provision. Group 2 respondents also reported that having the portion size information with the standards was helpful, and they identified that they would need to change portion sizes of drinks.

5.7.1 Good practice points

Most of the Group 1 respondents thought that the good practice points were helpful; one respondent queried whether they had to be followed. Similarly, most of the Group 2 respondents thought that the good practice points were helpful, particularly for less experienced staff.

5.7.2 Cooking methods

Few respondents indicated that they would change their cooking methods having used the guidance (one said they would bake rather than fry fish on Fridays). Few Group 2 respondents indicated that they would need to change cooking methods.

5.7.3 Suggestions to improve the guidance

To improve the guidance, respondents suggested that there should be a quick 'at a glance' checklist, sample menus, and more examples of which foods count (and what doesn't count), particularly in relation to starchy foods cooked in fat or oil and the standard limiting deep-fried, coated and pastry products. One respondent commented that it would be important to ensure that all cooks received the guidance, and another queried whether the guidance would be extended to cover food provision at other times of the school day.

Suggestions for improving the guidance included adding an index to the checklist so that supporting information could be found quickly; a couple of respondents suggested that more information was needed for some of the standards for clarification of which foods counted (or didn't count) towards that standard. Another suggestion was to integrate the portion size information with the standards to save having to flick through pages, and clarification of some of the standards. One respondent suggested that the good practice points should be displayed with the standards otherwise they would be ignored and potentially compromise the nutrition quality of the menu without the safety net of nutritional analysis.

5.7.4 Self-evaluation menu checklist

Nearly all respondents thought that the self-evaluation checklist was helpful. About half had used a similar checklist before. A couple of respondents suggested adding columns for each week of the menu cycle. Some respondents thought that the checklist alone would not be sufficient to ensure compliance with standards, or the provision of menus that would meet pupils' nutrient requirements, due to the need for appropriate portion sizes, advice on food composition and cooking methods. Group 2 respondents suggested to include more information in the checklist, for example to add a cautionary note on the checklist reminding people about the importance of portion sizes, choosing healthier products and considering preparation and cooking methods, all of which will ultimately determine the nutritional content of the food provided.

Previous school food audit and inspection studies undertaken by the Trust¹⁶ have illuminated the practical application of using menu checklists as part of quality assurance and inspection processes. These checklists can be easily used by schools to plan and evaluate if their menus meet the food-based standards. The completed checklists can then be used as evidence to demonstrate to parents, children and quality assurance (QA) schemes run by the local authority and/or national organisations and Ofsted that the food and drink provision is compliant with national standards for school food.

5.7.5 Additional support to help understand and use the new standards

Several Group 1 respondents mentioned sample menus as helpful for schools and caterers, also FAQs and a helpline for cooks without access to a company nutritionist. Other suggestions were a conference when the standards are launched, a bank of compliant recipes, and being able to speak to other schools to find out what works well for them. In common with Group 1, Group 2 respondents suggested that example menus and recipes, FAQs and a helpline/email contact would be helpful, particularly for in-house cooks or those new to menu planning.

It is recommended that practical guidance is developed and disseminated along with additional support tools including typical portion sizes, advice on food composition, a menu checklist, example menus and recipes that demonstrate how the guidance could be put into practice. It is recommended that the development of these resources is based on the feedback gathered during the pilot study to ensure that they clearly explain how to interpret and implement the new standards. This will help support schools and caterers to comply with the proposed food-based standards and ensure that food and drink provision meets the nutritional requirements of children. It is also important that the practical guidance includes core principles of menu planning advice to ensure that schools develop interesting and varied menus, including the length of the menu cycle, reflecting seasonal ingredients and meeting specific dietary, cultural, and religious needs.

6 LIMITATIONS OF THE PILOT STUDY

The main limitation of the study was the small number of schools and caterers involved, and the purposive sampling necessitated by the timelines. Although a variety of schools and catering providers were involved in the pilot, it is not known how representative these schools and caterers are of school food provision in England. It is likely that the pilot study participants represent the 'more engaged' part of the school food sector as evidenced by their willingness to plan or check menus and provide feedback within a short time period. Most schools and caterers reported that their existing menus met food-based and nutrient-based standards, so their current provision was likely to be well-balanced and nutritious giving them a good basis from which to plan or check new menus – this may not be the case in all schools, and so the scale of the change needed to meet revised standards, and the support required, may have been under-estimated.

Due to the small numbers involved in the pilot, it has not been possible to identify differences between groups (for example between local authority caterers, private contractors and school in-house provision) or between schools whose current menus met existing food-based and nutrient-based standards, and those whose menus did not.

Respondents' roles and responsibilities also varied, meant that they may have had different perspectives in relation to the potential impact of the introduction of revised standards. The pilot was intended to gather these different views, but quantitative analysis of these responses is challenging due to the variation. Another factor is that due to time and resource constraints, participants had only a short time to consider the impact of the new standards, and those that provided feedback having planned a new menu were basing their feedback on a new one-week menu rather than a full menu cycle which is typically 3-4 weeks. This means that it is difficult to fully understand the potential to create varied menus in line with proposed standards over more than one week.

Finally, although the majority of respondents considered that the meaning of the new standards was clear, and that there were few issues in meeting the standards, the one-week planned menus were not necessarily compliant with the new standards. Although some of the issues have been addressed by modelling compliance, it may be that the assessment of the impact of the standards on the nutrient content of menus cannot be fully understood. Despite these limitations, the pilot study has been successful in engaging with a range of schools and caterers, and has provided a good insight into the potential impact of the introduction of revised food-based standards within a nutrient framework.

7 APPENDICES

Appendix 1: Current dietary intakes of primary and secondary aged children in the UK

Dietary surveys in the UK have shown that the diets of young people aged 4-10 years and 11-18 years regularly fail to meet dietary guidelines.¹⁰ **Table 2** below shows that on average children aged 4-10 and 11-18 years do not eat the recommended five portions of fruit and vegetables each day, with one in five primary aged children and only 9% of secondary aged children meeting this recommendation. In terms of energy balance, the amount of energy from fat meets dietary recommendations however children get too much energy from saturated fat and non-milk extrinsic sugars, and insufficient dietary fibre.¹⁰ As seen in other groups in the population, children have too much salt in their diets, typically from meat and meat products, white bread and pasta, and pizza.

Table 3 shows the percentage of 4-10 and 11-18 year olds in the UK who have intakes of micronutrients (vitamins and minerals) that are likely to be inadequate. For primary aged children the mean intakes of most vitamins are above the Reference Nutrient Intake (RNI),^{xxiv} which suggests that overall, the risk of deficiency within the group is considered to be very small. The only exception is zinc, for which 5% of boys and 8% girls in this age group have intakes which are very unlikely to be sufficient. In comparison, secondary aged pupils are more likely to have insufficient intakes of vitamin A, folate, iron, calcium and zinc.

Table 2. Mean dietary intakes of macronutrients in 4-10 and 11-18 year olds in the UK compared with dietary recommendations

Food/nutrient	Dietary recommendation	4-10 years		11-18 years	
		Boys	Girls	Boys	Girls
Fruit and vegetables	At least 5 portions per day	3.2 portions/day	3.3 portions/day	3.0 portions/day	2.8 portions/day
Oily fish	One portion per week (140g)	3g/day	3g/day	3g/day	3g/day
Total fat	≤ 35% food energy	33.3%	34.0%	34.1%	34.4%
Saturated fat	≤ 11% food energy	13.1%	13.5%	12.7%	12.5%
Trans fatty acids	≤ 2% food energy	0.7%	0.7%	0.7%	0.7%
Carbohydrate	Approx. 50% food energy	52.2%	51.7%	50.6%	50.9%
Non-milk extrinsic sugar (NMES)	≤ 11% food energy	14.4%	14.7%	15.6%	15.0%
Dietary fibre (as NSP)	At least 14.9g/day (boys) ^{xxv} At least 13.3g/day (girls) ^{xxv}	11.7g/day	10.8g/day	12.8g/day	10.8g/day

Table 3. Micronutrients for which dietary intakes in 4-10 year olds in the UK are likely to be inadequate.

Micronutrient	Percentage of 4-10 and 11-18 year olds in England with insufficient intakes			
	4-10 years		11-18 years	
	Boys	Girls	Boys	Girls
Vitamins				
Vitamin A	5	4	12	14
Folate	0	0	2	7
Vitamin C	0	0	1	1
Minerals				
Iron	1	1	6	46
Calcium	0	2	7	18
Zinc	5	8	11	19

^{xxiv} RNI: the Reference Nutrient Intake is the amount of a nutrient which is sufficient to meet the requirements of over 97% of a population group. Intakes at or above the RNI will be sufficient for most people.

^{xxv} In line with the national standards for schools in England, this has been calculated as 8g per 100kcal, as published figures apply to adults only.

Appendix 2. Defining the nutrient framework

The proposed food-based standards for school lunches are underpinned by a nutrient framework, which specifies standards for 14 nutrients including energy. The nutrient-based standards included in the nutrient framework were recommended by the School Meals Review Panel¹, put into legislation in 2007,⁴ and adopted by primary schools in 2007 and secondary and special schools in 2008. The nutrient-based standards have been derived from the UK Dietary Reference Values (DRV's).⁹ The minimum amount for each micronutrient is set at 35% of the RNI, and the standard for sodium has been derived from target salt intake to be achieved by populations as recommended by the Scientific Advisory Committee on Nutrition (SACN).¹⁷

The nutrient-based standards for school lunches aims to ensure this meal makes a positive contribution to a healthy diet by increasing the vitamin and mineral content and decreasing the fat, saturated fat, non-milk extrinsic sugars and sodium (salt) content. Minimum levels have been set for nine nutrients, namely carbohydrate, protein, fibre, iron, zinc, calcium, folate, vitamin A and vitamin C because insufficient intake of these can be harmful to health. Maximum levels have been set for four nutrients, namely fat, saturated fat, non-milk extrinsic sugar and sodium/salt because too much of these nutrients can be harmful to health. Complying with the proposed food-based standards and following the best practice guidance on the types of products to select and the amounts of food and drink to provide will help to ensure children receive appropriate amounts of energy and these nutrients. The nutrient framework applies to an average school lunch, and relates to overall provision rather than individual consumption.

Table 4 below summarises the nutrient-based standards for primary and secondary schools.

Nutrient	Max/ Min	Proportion of recommended daily intake of nutrients	Primary Pupils 5-11 years	Secondary Pupils 11-18 years
Energy (kcal)	EAR*	30%±5%	530 ± (26.5)	646 ± (32.3)
Total carbohydrate (g)	Min	50% food energy	70.6	86.1
Non-milk extrinsic sugars (g)	Max	11% food energy	15.5	18.9
Fat (g)	Max	35% food energy	20.6	25.1
Saturated fat (g)	Max	11% food energy	6.5	7.9
Protein (g)	Min	30% RNI	7.5	13.3
Fibre (g) ^{xxvi}	Min	30% calculated reference value ^{xxvii}	4.2	5.2
Iron (mg)	Min	35% RNI	3.0	5.2
Zinc (mg)	Min	35% RNI	2.5	3.3
Calcium (mg)	Min	35% RNI	193	350
Vitamin A (µg)	Min	35% RNI	175	245
Vitamin C (mg)	Min	35% RNI	10.5	14.0
Folate (µg)	Min	35% RNI	53	70
Sodium (mg)	Max	30% SACN recommendation	499	714

EAR: The standard for energy is based on an estimated average requirement (EAR), rather than a minimum or maximum value. An average is used to reflect the range of energy requirements of pupils, who are developing and growing at different rates and have different levels of activity. An average school lunch should provide 30%±5% of the total daily energy requirement this is based on the assumption that three meals a day are consumed and that lunch provides appropriately one third of the daily intake. Note the estimated average requirement (EAR) for energy, and the nutrient-based standards for fat, saturated fat, carbohydrate and non-milk extrinsic sugars based on this EAR, as specified in the nutrient framework are calculated from values reported by COMA⁹ not the 2011 Dietary Recommendations for Energy published by SACN.¹⁸

RNI: Reference Nutrient Intake is the amount of a nutrient which is sufficient to meet the requirements of over 97% of a population group. Intakes at or above the RNI will be sufficient for most people

^{xxvi} Fibre: this has been capped at a maximum of 18g in line with recommendations for adults (SMRP, 2005).¹

^{xxvii} Calculated Reference Value (CRV) has been calculated pragmatically as 8g per 1000 (CWT, 2005).¹¹

Appendix 3. Comparison between current food-based standards for school lunches and the proposed food-based standards

The table below compares the current food-based standards for school lunches⁴ with the proposed food-based standards for school lunches (within a nutrient framework) which were pilot tested with schools and caterers, and provides the rationale for the proposed changes.

Food/ food group	<u>Current</u> food-based standards for school lunches	<u>Proposed</u> food-based standards for school lunches	Rationale for proposed changes to the school food regulations
Starchy food	No standard	A portion of food from this group must be provided every day	To ensure adequate provision of carbohydrate to replace the minimum level currently specified in nutrient-based standards
	No standard	At least three different starchy foods must be provided each week	To ensure variety and increase dietary diversity
	No standard	At least two wholegrain varieties of starchy food each week	To ensure an adequate supply of dietary fibre to replace the minimum level currently specified in nutrient-based standards
	Starchy food cooked in fat or oil should not be provided more than three times a week across the school day	Starchy food cooked in fat or oil must not be provided on more than two days each week across the school day	To help control the provision of fat and saturated fat to replace the maximum level currently specified in nutrient-based standards
	No standard	On each day a starchy food cooked in fat or oil is provided, a starchy food (other than bread) not cooked in fat or oil must also be provided	To offer a healthy choice and control for fat and saturated fat to replace the maximum level currently specified in nutrient-based standards
	Bread with no added fat or oil must be provided on a daily basis	Bread with no added fat or oil must be provided on a daily basis.	No change
Fruit and vegetables	Not less than two portions per day per pupil must be provided; at least one should be vegetables or salad and at least one should be fruit.	Not less than two portions per day per pupil must be provided; at least one must be vegetables or salad accompaniment; and at least one must be fruit.	Vegetables or salad must be provided as an accompaniment, vegetables in composite dishes will no longer count. This is to increase the overall provision of vegetables which will help contribute towards the dietary fibre, vitamin C, vitamin A, and folate content of the average school lunch
	No standard	At least three different fruits and three different vegetables must be provided each week	To ensure variety of fruit and vegetables and increase dietary diversity

Food/ food group	Current food-based standards for school lunches	Proposed food-based standards for school lunches	Rationale for proposed changes to the school food regulations
Meat, fish, eggs, beans and other non-dairy sources of protein	No standard	A portion of food from this group must be provided every day	To ensure adequate provision of protein, iron and zinc to replace the minimum levels currently specified in the nutrient-based standards
	No standard	A portion of meat or poultry must be provided at least three times each week	
	Oily fish must be provided at least once every three weeks	Oily fish must be provided at least once every three weeks	No change
	No standard	A portion of non-dairy sources of protein must be provided at least three times each week for vegetarians	To increase variety and choice for children following a vegetarian diet, and ensure an adequate protein, iron, zinc and dietary fibre supply to replace the minimum levels currently specified in the nutrient-based standards
	A meat product (manufactured or homemade) from each of the four groups below may be provided no more than once per fortnight across the school day, providing the meat product also meets the standards for minimum meat content and does not contain any prohibited offal*: Group 1: Burger, hamburger, chopped meat, corned beef, Group 2: Sausage, sausage meat, link, chipolata, luncheon meat, Group 3: Individual meat pie, meat pudding, Melton Mowbray pie, game pie, Scottish (or Scotch) pie, pasty or pastie, bridie, sausage roll, Group 4: any other shaped or coated meat product	A meat or poultry product (manufactured or homemade) may not be provided more than once each week in primary schools and twice each week in secondary schools across the school day. The meat or poultry product must also meet the legal minimum meat or poultry content requirements ^{xxviii} , and must not contain any prohibited offal ^{xxix}	To simplify the standard and to control for fat, saturated fat, and salt to replace the maximum levels currently specified in the nutrient-based standards

^{xxviii} **Minimum meat content:** as set out in the Meat Products (England) Regulations 2003, or other current regulations

^{xxix} **Prohibited offal includes:** brains, lungs, rectum, stomach, feet, oesophagus, spinal cord, testicles, large intestine, small intestine, spleen and udder.

Food/ food group	Current food-based standards for school lunches	Proposed food-based standards for school lunches	Rationale for proposed changes to the school food regulations
Milk and dairy	No standard	A portion of food from this group must be provided every day	To ensure adequate provision of protein, calcium and zinc to replace the minimum levels currently specified in the nutrient-based standards
	No standard	In addition, low fat milk ^{xxx} for drinking must be provided every day	To ensure adequate provision of protein, calcium and zinc to replace the minimum levels currently specified in the nutrient-based standards, and address low consumption of drinking milk especially amongst secondary-aged pupils
	No standard	Cheese must not be served as the only vegetarian option more than twice each week.	To increase variety and choice for children following a vegetarian diet; to control for the amount of fat and saturated fat to replace the maximum levels specified in the nutrient-based standards.
Foods high in fat, sugar and salt	No more than two deep fried items, such as chips and batter-coated products, in a single week across the school day	No more than three portions of food which has been deep-fried, batter-coated, breadcrumb-coated, or includes pastry, must be provided in a single week across the school day	Increased to three portions from two items in recognition that this category is broader than the current standards, capturing breadcrumb coated and pastry; standard required to control for the amount of fat and saturated fat to replace the maximum levels specified in the nutrient-based standards.
	Snacks, such as crisps, must not be provided. Nuts**, seeds, vegetables and fruit with no added salt, sugar or fat are allowed. Dried fruit may contain up to 0.5% vegetable oil as a glazing agent.	Snacks must not be provided. Nuts, seeds, vegetables and fruit with no added salt, sugar or fat are allowed. Dried fruit is permitted to have 0.5% vegetable oil as a glazing agent	No change
	Savoury crackers and breadsticks can only be served with fruit, vegetables or dairy food as part of school lunch.	Savoury crackers or breadsticks which are served with fruit or vegetables or dairy food may be provided as part of lunch	No change
	Confectionery, such as chocolate bars, chocolate coated or flavoured biscuits, sweets or cereal bars must not be provided across the school day.	Confectionery, chocolate and chocolate-coated products may not be provided across the school day.	No change
	Cakes and biscuits are allowed at lunchtime but must not contain any confectionery. Cakes and biscuits must not be provided at times other than lunch	Desserts, cakes and biscuits are allowed at lunchtime but must not contain any confectionery	Standard required to control for the amount of fat and saturated fat to replace the maximum levels specified in the nutrient-based standards.
	No salt shall be available to add to food after the cooking process is complete. Salt shall not be provided at tables or service counters	No salt shall be available to add to food after the cooking process is complete	No change
	Condiments, such as ketchup and mayonnaise, may only be available in sachets or in individual portions of not more than 10g or 1 teaspoon	Condiments may be available only in sachets or individual portions of no more than 10 grams or one teaspoonful	No change

^{xxx} Low fat milk: (less than 1.8% fat) includes semi-skimmed, 1% milk and skimmed milk.

Food/ food group	Current food-based standards for school lunches	Proposed food-based standards for school lunches	Rationale for proposed changes to the school food regulations
Healthier drinks	Free, fresh drinking water should be provided at all times	Free, fresh drinking water should be provided at all times	No change
	The only drinks permitted during the school day are plain water (still or sparkling); low fat milk, or lactose reduced milk; fruit juice; vegetable juice; plain soya, rice, or oat drinks enriched with calcium; plain fermented milk (e.g. yoghurt) drinks; combination drinks; flavoured low fat milk. Tea, coffee and hot chocolate containing less than 5% added sugars or honey are also permitted.	<p>The only drinks permitted during the school day are:</p> <ul style="list-style-type: none"> • Plain water (still or carbonated); low fat milkⁱⁱⁱ or lactose reduced milk; • Fruit juice; vegetable juice; • Plain soya, rice or oat drinks enriched with calcium; plain fermented milk (e.g. yoghurt) drinks; • Unsweetened combinations of fruit or vegetable juice with plain water (still or carbonated) Combinations of fruit juice and low fat milkⁱⁱⁱ or plain yoghurt, plain soya, rice or oat drinks enriched with calcium; cocoa and low fat milk; flavoured low fat milk. • Tea, coffee, hot chocolate. • Combination drinks may contain added vitamins or minerals and may be available in individual portions of no more than 300mls. Combination drinks including milk should not exceed 5% added sugars or honey. The fruit juice content of any drink must be no more than 150mls. Fruit juice combination drinks must be at least 50% fruit juice by volume. 	<p>Capping the overall size of combination drinks to 300mls will help to control the amount of sugar, fat and saturated fat</p> <p>Capping the size of fruit juice to 150mls is in line with Department of Health recommendations and will help to control the amount of sugar (NMES) in the average school lunch.</p>

Appendix 4. Sampling criteria for pilot study

Table 5 below outlines the sampling criteria. The pilot included two groups:

1. **Group 1 (n=15 schools):** a range of different types of schools (primary, secondary, special, academies and free schools). The pilot schools will be geographically spread and aim to include settings catering for children with different cultural or religious dietary requirements and special dietary needs. To be able to compare and measure the impact of the revised standards to the current standards it will also be necessary to include schools/caterers that are compliant with the current food-based standards and nutrient-based standards for school lunches. In acknowledgement of the recent government announcement of universal free school meal (FSM) provision it would also be useful to include a school with 75-80%+ take up to ensure that they have the physical capacity to provide food in line with the revised standards.
2. **Group 2 (n=20 Caterers):** a range of different sized private catering companies, and in-house providers i.e. provided by the school itself.

Table 5. The pilot sampling criteria

Catering provider	Type of school:	Location:	Compliance with current standards
<ul style="list-style-type: none"> • In-house • LA • Private: <ul style="list-style-type: none"> ○ Large ○ Medium ○ Small 	Primary: Middle: Secondary: <ul style="list-style-type: none"> ○ co-educational ○ single sex Special: <ul style="list-style-type: none"> ○ 3-18 years ○ modified textured Size of school: <ul style="list-style-type: none"> ○ small ○ medium ○ large Governance: <ul style="list-style-type: none"> ○ Local authority maintained ○ Academies ○ Free schools 	<ul style="list-style-type: none"> ○ Geographic region (north/south/ west/east) ○ Rural/urban 	<ul style="list-style-type: none"> ○ Food-based standards only; ○ Food-based and nutrient-based standards ○ Catering outside the current school food legislation

Note: school types highlighted in red are lower priority.

Table 6. Recruitment process of caterers and schools

Sampling	No caterers by catering model					
	Local authority	Private	In-house	Total		
Initial sample	15	18	9	42		
Declined to participate	0	6	2	8		
Withdrew after start of survey	0	1	0	1		
Final sample	15	11	7	33		
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
No caterers per group	3	12	3	8	5	2
No pilot school sites	6	n/a	24	n/a	5	n/a

Appendix 5. Characteristics of Group 1 and Group 2 pilot schools and caterer

Table 7. Characteristics of Group 1 pilot schools and caterers									
No.	Region	Local authority	Type of school	Catering model	Existing menu meets		Menu planned		
					FBS	NBS	Type	Age range	
1	North West	Manchester	Primary	Local authority	Y	Y	Primary	5-11	
2	West Midlands	Solihull	Primary	Local authority	Y	Y	Primary	5-11	
3	West Midlands	Telford	Primary (2 pilot sites)/ Secondary (2 pilots)	Local authority	Y	Y	Primary Secondary	4-11; 11-16	
4	South East	Surrey	Secondary	School in-house	Y	Y	Secondary	11-18	
5	Outer London	Richmond upon Thames	Primary	School in-house	Y	Y	Primary	4-11	
6	South East	Buckinghamshire	Special (4-19)	School in-house	N	Y	Special	4-19	
7	Yorkshire and Humber	Calderdale	Special (secondary)	School in-house	Y	N	Secondary special	11-19	
8	Yorkshire and Humber	Wakefield	Secondary	School in-house	Y	Y	Secondary	11-18	
9	South East	Kent	Academy	Private contractor	Y	Y	Secondary	12-18	
10	East Midlands	Derby	Secondary	Private contractor	Y	Y	Secondary	11-16	
11	South East	Kent	Primary	Private contractor	Y	Y	Primary	5-11	
12	South East	Kent	Primary	Private contractor	Y	Y	Primary	5-11	
13	Inner London	Hackney	Academy (girls)	Private contractor	Y	Y	Secondary	12-18	
14	South East	Surrey	Academy	Private contractor	Y	Y	Secondary	11-17	
15	South West	Poole	Secondary	Private contractor	Y	Y	Secondary	13-18	
16	North East	Darlington	Academy (4-16 and SEN)	Private contractor	Y	Y	Primary, middle, secondary	5-19	
17	South East	Kent	Secondary (boys)	Private contractor	Y	Y	Secondary	11-18	
18	Yorkshire and Humber	Lincolnshire	Primary (2 pilot sites)	Private contractor			Primary	4-11	
19	East of England	Thurrock	Academy	Private contractor	Y	Y	Primary	5-11	
20	South East	Surrey	Secondary	Private contractor	Y	Y	Secondary	11-18	
21	South East	Reading	Primary	Private contractor	Y	Y	Primary	4-11	
22	North West	Cheshire East	Academy	Private contractor	Y	Y	Secondary	12-18	
23	Outer London	Brent	Primary	Private contractor	Y	Y	Primary	5-11	
24	South East	Isle of Wight	Primary	Private contractor	Y	Y	Primary	5-11	
25	Outer London	Richmond upon Thames	Primary	Private contractor			Primary	4-11	
26	Yorkshire and Humber	Wakefield	Academy	Private contractor	Y	Y	Secondary	11-18	
27	Yorkshire and Humber	Leeds	Academy	Private contractor	Y	Y	Secondary	11-18	
28	South West	Cornwall	Primary	Private contractor	Y	Y	Primary	4-11	
29	South West	Cornwall	Primary	Private contractor	Y	Y	Primary	5-11	
30	West Midlands	Dudley	Secondary	Private contractor	Y	Y	Secondary	11-18	
31	South East	Surrey	Secondary	Private contractor	Y	Y	Secondary	11-18	

Base: 35 schools (pilot tested 31 menus)

Table 8. Characteristics of Group 2 pilot schools and caterers						
No.	Region	Catering model	Existing menu meets		Menu checked	
			FBS	NBS	Type	Age range
1	Outer London	Local authority	N	Y	Primary	Years 1-6
2	Inner London	Local authority	Y	Y	Primary	4-11
3	South East	Local authority	Y	Y	Primary, Secondary	5-11; 12-18
4	East of England	Local authority	Y	Y	Secondary	12-18
5	Yorkshire and Humber	Local authority	N	Y	Secondary	12-18
			Y	Y	Primary	4-11
6	North West	Local authority	Y	Y	Primary, Secondary	4-11; 12-18
7	Yorkshire and Humber	Local authority	Y	Y	Primary	4-11
8	Inner London	Local authority	Y	Y	Primary	5-11
9	Yorkshire and Humber	Local authority	Y	Y	Primary, Secondary	5-11; 12-18
10	South West	Local authority	N	Y	Primary	5-11
11	North West	Local authority	Y	Y	Primary	5-11
12	North West	Local authority	N	Y	Primary	4-11
13	Yorkshire and Humber	In-house	Y	Y	Primary	4-11
14	South-East	In-house	Y	N	P/M/S	4-16
14	East of England	Private contractor	Y	Y	Primary	5-9
16	National	Private contractor	Y	Y	P/S/M	4 to 18
17	South-East	Private contractor	Y	Y	Primary	4-11
18	Inner London	Private contractor	Y	Y	Secondary	11-16
19	National	Private contractor	Y	Y	Primary	5-10
20	National	Private contractor	Y	Y	Secondary	11-16
21	National	Private contractor	Y	Y	Secondary	11-18
22	National	Private contractor	Y	Y	Primary, Secondary	5-11; 12-18
23	East Midlands	Private contractor	Y	Y	Primary	4-11
24	National	Private contractor	Y	Y	Primary	4-11

Base: 24 caterers

Appendix 6. Pilot methodology

Table 9. Methodology for pilot testing the revised standards		
	Group 1: (Schools n=15)	Group 2: (Caterer n=20)
Task	To <u>plan</u> and <u>cook</u> an interesting, creative and nutritionally-balanced one-week lunch menu, (<i>within reasonable procurement mechanisms</i>), using the revised food-based standards and practical guidance/tools	To use the revised standards and practical guidance/tools to <u>check compliance of current</u> lunch provision.
Objective	<ol style="list-style-type: none"> to measure if the revised food-based standards are fit for purposed i.e. the average lunch provision meets the pupils nutritional requirements (i.e. the nutrient framework) and allow sufficient flexibility to produce creative and interesting menus. to measure the impact of the revised standards versus current standards on <ol style="list-style-type: none"> staff time (planning, preparing and cooking); costs of ingredients. 	<ol style="list-style-type: none"> to measure the impact of the revised standards on current provision i.e. number of changes (types, amounts, frequency of food and drink) they would need to make to ensure their current provision is compliant with revised standards; to measure if the practical guidance/tools are fit for purpose (i.e. clear and easy to understand and use).
Data collection	<ul style="list-style-type: none"> Schools and their caterers submit planned one-week lunch menus and associated recipes, product specifications, portion sizes and provision mix; Completed checklist; Annotated copies of practical guidance; Short questionnaire to ascertain impact of the revised standards on staff time and likely costs; Short semi-structured telephone interview to obtain feedback on 'essential' and 'desirable' standards criteria, and content, tone and format of practical guidance. 	<ul style="list-style-type: none"> Caterers submit current menu and completed checklist Caterers to submit an annotated copy of practical guidance highlighting where info is difficult to understand, requires more detail or there is too much or missing information; Short questionnaire to ascertain impact of the revised standards on staff time and likely costs; Short semi-structured telephone interview to obtain feedback on 'essential' and 'desirable' standards criteria, and content, tone and format of practical guidance.
Data analysis and outcome measures	<ul style="list-style-type: none"> Impact of the revised standards on food provision (types, amounts and frequency of food and drink provided). Impacts of the revised standards on preparation and cooking time, food costs, food waste, daily routines). Extent to which the practical guidance and tools meets the needs of the schools/caterers; Identify any additional (if any) support required. 	<ul style="list-style-type: none"> Extent to which current lunch provision complies with the revised food-based standards; Extent to which the practical guidance and tools meets the needs of the schools/caterers; Identify any additional (if any) support required
Assumptions	<ul style="list-style-type: none"> Schools and their caterers are able and willing to plan and cook a new one-week menu at short notice during the first two weeks November 2013; Local authority and private caterers are able and willing to support the schools within their contract selected to pilot test the standards; 	<ul style="list-style-type: none"> Local authority and private caterers are able and willing to participate in pilot study.

Appendix 7. Pilot schools feedback on proposed food-based standards for school lunches

Food/ food group	Revised food- based standards for school lunches	Rationale for proposed changes	Meaning?				Reported issues planning/meeting				Compliant with standard?				Key issues	Recommendations
			Group 1		Group 2		Group 1		Group 2		Pilot menu		Current menu			
											Group 1		Group 2			
			Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		
Starchy food	A portion of food from this group must be provided every day	to ensure adequate provision of carbohydrate to replace min. level specified in NBS	29	0	24	1	0	29	0	25	31	0	25	0	Nutritional analysis: carbohydrate low (2) primary OK in secondary. Key issues: requires clarification what counts e.g. bread, composite dish - lasagne? Portion sizes	<ul style="list-style-type: none">• Maintain standard• Strengthen guidance around portion sizes to ensure energy and carbohydrate met e.g. meal deals
	At least three different starchy foods must be provided each week	to ensure variety and increase dietary diversity	29	0	25	0	0	29	0	25	30	1	24	1	Key issues: requires clarification what counts e.g. count?	<ul style="list-style-type: none">• Maintain standard• Strengthen guidance around what counts.
	At least two wholegrain varieties of starchy food each week	to ensure adequate supply of dietary fibre to replace min. level currently specified in NBS	29	0	21	4	2	27	11	14	12	19	6	19	Nutritional analysis: 100% pilot menus met NBS for fibre only 20% provided wholegrain varieties. Key issues: Requires clarification what counts e.g. 50:50; perceived to be more prescriptive will require menu changes - 76% Grp 2 not compliant; cost of wholegrain varieties/pupils unfamiliarity - possible impact on take up	<ul style="list-style-type: none">• Modify standard to say at least one wholegrain variety of starchy food each week• Rationale: fibre intake in pilot menus is sufficient but national intake is low amongst children (NDNS), helps to introduce children to wholegrain varieties without incurring additional costs or waste• Strengthen practical guidance to explain what counts and encourage schools/caterers to use wholegrain options
	Starchy food cooked in fat or oil must not be provided on more than two days each week across the school day	to help control the amount of fat, saturated fat to replace max. level currently specified in NBS	27	2	24	1	1	28	5	20	24	7	13	12	Nutritional analysis: total fat slightly too high (3) primary; not an issue in secondary. Key issues: definition what counts; more restrictive; 52% Grp 2 current menus not compliant; potential impact on take up	<ul style="list-style-type: none">• Maintain standard• Strengthen guidance around what counts
	On each day a starchy food cooked in fat or oil is provided, a starchy food (other than bread) not cooked in fat or oil must also be provided	to offer a healthy choice and control for fat, saturated fat to replace max. level currently specified in NBS	27	2	23	1	4	25	6	18	24	7	19	6	Key issues: rationale required/definition in practice – direct alternative; potentially create waste.	<ul style="list-style-type: none">• Remove standard as limiting starchy food cooked in fat and oil 2/wk has had a positive impact on fat and saturated fat & introduction of alternative starchy food option potentially increases waste.• Strengthen guidance around best practice
	Bread with no added fat or oil must be provided on a daily basis.	No change	29	0	24	1	0	29	2	23	30	1	24	1	Key issues: definition of types of bread which count/portion size	<ul style="list-style-type: none">• Maintain standard• Strengthen guidance

Food/ food group	Revised food-based standards for school lunches	Rationale for proposed changes	Meaning?				Reported issues planning/ meeting				Compliant with standard?				Key issue	Recommendations
											Pilot menu		Current menu			
			Group 1		Group 2		Group 1		Group 2		Group 1		Group 2			
			Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		
Fruit and vegetables	Not less than two portions per day per pupil must be provided; at least one must be vegetables or salad accompaniment; and at least one must be fruit.	vegetables or salad must be provided as an accompaniment, vegetables in composite dishes will no longer count this is to increase the overall provision of vegetables which will also help contribute towards dietary fibre, vitamin C, vitamin A, and folate content of the average school lunch	29	0	24	1	1	28	1	24	28	3	25	0	Nutritional analysis: veg accompaniment +ve impact on fibre, folate, vitamins A & C Key issues: Definition - what counts e.g. baked beans Provision versus availability >75% planned menus insufficient fruit	<ul style="list-style-type: none">Separate the vegetable and fruit standard to ensure sufficient fruit provision suggest to re-word as follows1. Not less than one portion of vegetables or salad accompaniment per day per pupil must be provided2. Not less than one portion of fruit per day per pupil must be providedConsider specifying the fruit content of fruit-based desserts reverting back to the interim food-based standard 'a fruit-based dessert with a content of at least 50% fruit measured by volume of raw ingredients must be provided at least twice per week'Strengthen guidance around how to interpret the F& V standard in practice
	At least three different fruits and three different vegetables must be provided each week	to ensure variety of fruit and vegetables, increase dietary diversity	29	0	24	1	0	29	0	25	31	0	25	0	Key issues: none - no comments in questionnaire & no issues in compliance	<ul style="list-style-type: none">Maintain standard

Food/ food group	Revised food-based standards for school lunches	Rationale for proposed changes	Meaning?				Reported issues planning/ meeting				Compliant with standard?				Key issues	Recommendations
			Group 1		Group 2		Group 1		Group 2		Pilot menu		Current menu			
			Group 1		Group 2		Group 1		Group 2		Group 1		Group 2			
			Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		
Meat, fish, eggs, beans nd other non-dairy sources of protein	A portion of food from this group must be provided every day	to ensure adequate provision of protein, iron and zinc to replace the minimum levels currently specified in the nutrient-based standards	29	0	25	0	0	29	0	25	29	2	25	0	Nutritional analysis (n=27): protein OK; iron low pilot menus (10) primary (11) secondary; zinc low (3) primary, (7) secondary Issues: definition-what counts? portion sizes	<ul style="list-style-type: none">• Maintain standard• Strengthen guidance on portion sizes- need to discuss with DfE how portion size guidance is strengthened
	A portion of meat or poultry must be provided at least three times each week		29	0	25	0	0	29	0	25	30	1	25	0	Nutritional analysis (n=27): protein OK; Iron low 18 pilot menus (9) primary) (11) secondary; Zinc low (7) secondary Definition: should red meat be specified? Issues: practice: what about vegetarian sites	<ul style="list-style-type: none">• Maintain standard• Strengthen guidance on portion sizes and the need for variety of red meat and poultry
	Oily fish must be provided at least once every three weeks	No change	29	0	25	0	0	29	1	24	8	23 ^{xxxi}	22	3	Key issues: none reported. Note: 23 pilot sites chose not to include oily fish on 1-week planned menus	<ul style="list-style-type: none">• Maintain standard• Strengthen practice guidance and promote tried and tested oily fish recipes
	A portion of non-dairy sources of protein must be provided at least three times each week for vegetarians	to increase variety and choice for children following a vegetarian; and ensure adequate protein, iron, zinc and dietary fibre supply to replace the minimum levels currently specified in the nutrient-based standards	28	1	21	3	2	27	4	20	22	9	16	9	Nutritional analysis: Low energy, iron and zinc partly due to low energy/nutrient density of vegetarian dishes Key issues: definition: 3 times per week or 3 days per week? What counts – full portion of pulses required in composite dishes? Any cheese in dishes? If Quorn not included on the contract, what are the alternatives? More recipe development required; cost - protein substitutes considered expensive.	<ul style="list-style-type: none">• Maintain standard but clarify wording New wording: A portion of non-dairy sources of protein must be provided at least three days each week for vegetarians• Strengthen guidance – add section on how to increase the energy & nutrient density of vegetarian menus/dishes

^{xxxi} 23 pilot sites chose not to include fish on 1-week planned menus

Food/ food group	Revised food-based standards for school lunches	Rationale for proposed changes	Meaning?				Reported issues planning/ meeting				Compliant with standard?				Key issues	Recommendations
			Group 1		Group 2		Group 1		Group 2		Pilot menu		Current menu			
			Group 1		Group 2		Group 1		Group 2		Group 1		Group 2			
			Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		
Meat, fish, eggs, beans nd other non-dairy sources of protein	A meat or poultry product (manufactured or homemade) may not be provided more than once each week in primary schools and twice each week in secondary schools across the school day. The meat or poultry product must also meet the legal minimum meat or poultry content requirements ^{xxxii} , and must not contain any prohibited offal ^{xxxiii}	to simplify the standard and to control for fat, saturated fat, and salt to replace maximum levels currently specified in the nutrient-based standards	26	3	20	5	4	25	4	20	27	4	17	8	Nutritional analysis: saturated fat high (8 primary schools) Key issues: Definition: what counts; clarification between current and revised standard - if there are still groups? different wording to existing std may lead to perception that twice a week is for each of existing groups not category as a whole; Manufactured versus homemade: perception manufactured products not homemade versions should count if made high quality meat used; Rationale for standard: why does high quality meat used for meatballs count when it's the same as that used for chilli? Guidance: request for examples how to implement in practice Restrictive: considered too restrictive particularly in secondary across multiple serving points	<ul style="list-style-type: none">• Maintain standard• Enhance guidance explain evidence and rationale why standard is in place and relates to manufactured and homemade meat products re –limiting fat/saturated fat/ sodium and encouraging good eating habits/dietary diversity.

^{xxxii} **Minimum meat content:** as set out in the Meat Products (England) Regulations 2003, or other current regulations

^{xxxiii} **Prohibited offal includes:** brains, lungs, rectum, stomach, feet, oesophagus, spinal cord, testicles, large intestine, small intestine, spleen and udder.

Food/ food group	Revised food-based standards for school lunches	Rationale for proposed changes	Meaning?				Reported issues planning/ meeting				Compliant with standard?				Issues	Recommendations
											Pilot menu		Current menu			
			Group 1		Group 2		Group 1		Group 2		Group 1		Group 2			
			Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		
Milk and dairy	A portion of food from this group must be provided every day	to ensure adequate provision of protein, calcium and zinc to replace the min. levels currently specified in the NBS	28	1	25	0	1	28	2	23	26	5	22	3	Nutritional analysis: calcium OK primary; low in 12 secondary pilot menus. Issues: What counts custard milk powder? Definition of provision: a portion per child? Portion sizes: yoghurts? Cost: providing everyday will increase costs	<ul style="list-style-type: none">• Maintain standard calcium low in secondary schools & intake low amongst adolescent girls;• Enhance guidance how to interpret standard
	In addition, low fat milk ^{xxxiv} for drinking must be provided every day	to ensure adequate provision of protein, calcium and zinc to replace the min. levels currently specified in the NBS, and address low consumption of drinking milk especially amongst secondary-aged pupils	29	0	23	2	4	25	11	13	28	3	11	14	Nutritional analysis: calcium OK primary; low in 12 secondary pilot menus. Definition: is this 100% provision or just available? A portion per child Rationale: if dairy has to be provided every day, why need to provide milk too? Logistics cold storage/ space/delivery in particularly for transported meals; provided in cups - schools/ pupils prefer cartons. Could use long life milk but pupils don't like it. Cost: significant cost as not often provided in primary contracts; Waste: issue with waste if left out at lunchtime as not popular with pupils; Impact on take up: pupils prefer flavoured milk	<ul style="list-style-type: none">• Maintain but modify wording of standard to increase clarity that it's not interpreted to mean 100% provision• New wording: In addition, low fat milk^x for drinking must be available every day• Rationale for maintaining calcium low in secondary schools & calcium intake low amongst adolescent girls;• DfE & Defra to explore options for increased promotion of EU subsidised milk scheme
	Cheese must not be served as the only vegetarian option more than twice each week.	to increase variety and choice for children following a vegetarian; to control for the amount of fat and saturated fat to replace the max. levels specified in NBS.	28	1	21	4	2	27	6	19	27	4	18	7	Definition: can a dish contain any cheese? E.g. quiche; if there are 2 veg. options each day - assume one can have cheese every day? Restrictive: if dish can't contain any cheese even if there is non-dairy protein in it? Impact on take up: having a small amount of cheese in veg dishes makes dishes popular	<ul style="list-style-type: none">• Remove this standard as strengthened standard on a portion of non-dairy sources of protein must be provided at least three days each week for vegetarians• Strengthen guidance – how to increase the energy & nutrient density of vegetarian menus/dishes

^{xxxiv} **Low fat milk:** (less than 1.8% fat) includes semi-skimmed, 1% milk and skimmed milk.

Food/ food group	Revised food- based standards for school lunches	Rationale for proposed changes	Meaning?				Reported issues planning/meeting				Compliant with standard				Issues	Recommendations
			Group 1		Group 2		Group 1		Group 2		Pilot		Current menu			
			Group 1		Group 2		Group 1		Group 2		Group 1		Group 2			
			Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		
Foods high in fat, sugar and salt	No more than three portions of food which has been deep-fried, batter-coated, breadcrumb-coated, or includes pastry, must be provided in a single week across the school day	Increased to three portions from two items in recognition that this category is broader than the current standards, capturing breadcrumb coated and pastry; standard required to control for the amount of fat and saturated fat to replace the maximum levels specified in the nutrient-based standards.	28	1	21	4	1	28	9	15	17	14	13	12	Nutritional analysis: saturated fat high (8 primary schools). Definition: what counts e.g. smart crumb? How does this standard interacts with SFCIO? Does it apply to main courses or desserts too? Restrictive: considered too restrictive. Fish and chips (common) then little flexibility; makes it hard to offer a savoury and a sweet pie; also restricts like-for-like choices (pie for meat and vegetarian option). Could put pastry in a separate category? Guidance requested with more examples.	Create two standards one for deep-fried, battered-coated, breadcrumb-coated and one for pastry and recognition that this standard has had a positive impact on energy, fat and saturated fat across menus see suggested re-wording 1. No more than two portions of food which has been deep-fried, batter-coated, or breadcrumb-coated must be provided in a single week across the school day. 2. No more than two portions of food which includes pastry must be provided in a single week across the school day.

Food/ food group	Revised food-based standards for school lunches	Rationale for proposed changes	Meaning?				Reported issues planning/ meeting				Compliant with standard				Issues	Recommendations
											Pilot		Current menu			
			Group 1		Group 2		Group 1		Group 2		Group 1		Group 2			
			Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		
Foods high in fat, sugar and salt	Snacks must not be provided. Nuts, seeds, vegetables and fruit with no added salt, sugar or fat are allowed. Dried fruit is permitted to have 0.5% vegetable oil as a glazing agent	No change	29	0	25	2	0	29	1	24	30	1	25	0	Definition: is popcorn permitted – currently banned as is pre-packaged, or has oil; Savoury cheese biscuits count here? Are crackers OK?	Maintain standard
	Savoury crackers or breadsticks which are served with fruit or vegetables or dairy food may be provided as part of lunch	No change	29	0	25	0	0	29	1	24	31	0	25	0	No issues	Maintain standard
	Confectionery, chocolate and chocolate-coated products may not be provided across the school day.	No change	28	1	24	1	0	29	0	25	31	0	25	0	Definition: Is cocoa powder still Ok? Cost: impact on income if can't serve cereal bars (confusion over existing std)	Maintain standard
	Desserts, cakes and biscuits are allowed at lunchtime but must not contain any confectionery	standard required to control for the amount of fat and saturated fat to replace the maximum levels specified in the nutrient-based standards.	29	0	25	0	0	29	0	25	31	0	25	0	Nutritional analysis Definition: are these allowed at MMB? Is icing allowed?	Maintain standard Enhance guidance on portion sizes for desserts
	No salt shall be available to add to food after the cooking process is complete	No change	29	0	24	1	0	29	0	25	31	0	25	0	No issues	Maintain standard
	Condiments may be available only in sachets or individual portions of no more than 10 grams or one teaspoonful	No change	29	0	25	0	0	29	0	25	31	0	25	0	No issues	Maintain standard

Food/ food group	Revised food-based standards for school lunches	Rationale for proposed changes	Meaning?				Reported issues planning/ meeting				Compliant with standard				Issues	Recommendations
			Group 1		Group 2		Group 1		Group 2		Pilot menu		Current menu			
			Group 1		Group 2		Group 1		Group 2		Group 1		Group 2			
			Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		
Healthier drinks	Free, fresh drinking water should be provided at all times	No change	29	0	25	0	0	29	0	25	31	0	25	0	No issues.	Maintain standard
	The only drinks permitted during the school day are:	<p>capping the overall size of combination drinks to 300mls will help to control the amount of sugar, fat and saturated fat;</p> <p>capping the size of fruit juice to 150mls is in line with Department of Health recommendations and will help to control the amount of sugar in the average school lunch.</p>	29	0	25	0	1	28	7	18	Not able to source	23	0	<p>Nutritional analysis: Definition what counts? Are artificial sweeteners still permitted? Tea/coffee/hot choc for primary? Is hot choc a combination drink so needs 50% juice and <5%sugar? Add requirement for drinking milk here Procurement: Can't get 150ml juice from suppliers – usually 200ml; currently have portion sizes that don't meet std (lots of 330ml and 200ml for juice); not practical to measure out correct portion size; needs engagement with manufacturers; Cost: many drinks come in 330ml – may have impact on income in secondary schools so may be lots of resistance</p>	<p>Re-word standard to maintain capped size of fruit juice at 150 mls in line with DH recommendations and cap the overall size of combination drinks to 330 mls (in line with current availability as minimal difference between 300mls and 330mls.</p> <p>New wording: combination drinks may contain added vitamins or minerals and may be available in individual portions of no more than 330mls. Combination drinks including milk should not exceed 5% added sugars or honey. The fruit juice content of any drink must be no more than 150mls. Fruit juice combination drinks must be at least 45% fruit juice by volume.</p>	

Nutrient	Min/ Max	Nutrient- based standards	National Primary Study ⁵ Mean (SE)	Nutrient content of average lunch Mean (SD)	Pilot study: Primary (n=14)				% of std (min-max)
					Schools meeting the nutrient-based standard				
					Met	Within 5% of standard	Within 10% of standard	Not within 10% of standard	
Energy (kcal)	EAR	530 ± 26.5	626.3±13.0	548.4±61.4	5	-	3 (1 low; 2 high)	6 (2 low; 4 high)	84-125
Carbohydrate (g)	Min	70.6	90.3±1.8	76.5±9.6	11	1	1	1	87-143
NMES (g)*	Max	15.5	19.0±0.6	13.4±4.0	9	-	1	4	54-133
Fat (g)*	Max	20.6	21.1±0.6	17.2±2.4	13	1	-	-	70-104
Saturated Fat (g)*	Max	6.5	8.0±0.2	6.2±1.3	8	2	1	3	54-125
Protein (g)	Min	7.5	23.7±0.5	22.3±1.9	14	-	-	-	260-355
Fibre (g)	Min	4.2	6.4±0.1	6.1±0.8	14	-	-	-	114-179
Iron (mg)	Min	3.0	3.0±0.1	2.9±0.3	4	4	5	1	80-113
Zinc (mg)	Min	2.5	2.7±0.1	2.7±0.3	11	-	2	1	84-128
Calcium (mg)	Min	193	279.6±9.4	285.7±50.6	13	-	-	-	89-193
Folate (ug)	Min	53	86.1±1.9	77.7±14.7	14	-	-	-	116-214
Vitamin A (µg)	Min	175	505.7±17.7	431.7±123.6	14	-	-	-	147-372
Vitamin C (mg)	Min	10.5	37.1±1.5	27.5±6.5	14	-	-	-	186-356
Sodium (mg)*	Max	499	674.3±18.3	468.5±62.6	8	2	3	1	73-111
Percentage energy from:									
Protein		-		16.3					
Carbohydrate		50		52.3					
NMES*		11		9.2					
Fat*		35		28.2					
SFA*		11		10.1					
Base: 14 Primary schools									
*To meet the standard the mean nutrient content should be below the value shown									
Key		Compliant with nutrient-based standard							
		Not compliant with nutrient-based standard							

Table 11. Energy and nutrient content of an average school lunch compared with nutrient-based standards specified in the nutrient framework, based on planned provision of food and drink, in 13 pilot study secondary schools

Nutrient	Min/ Max	Nutrient- based standards	National Secondary Study ⁶ Mean (SE)	Nutrient content of average lunch Mean (SD)	Pilot study: Secondary (n=13 co-educational) Schools meeting the nutrient-based standard				
					Met	Within 5% of standard	Within 10% of standard	Not within 10% of standard	% of std (min-max)
Energy (kcal)	EAR	646 ± (32.3)	646.0	647.3±31.3	10	-	2 (1 low; 1 high)	1 (1 high)	95-113
Carbohydrate (g)	Min	86.1	88.2±0.8	100.4±6.0	13	-	-	-	108-133
NMES (g)*	Max	18.9	18.7±0.7	18.3±3.1	7	1	4	1	70-130
Fat (g)*	Max	25.1	24.3±0.3	16.7±3.2	13	-	-	-	55-96
Saturated Fat (g)*	Max	7.9	8.4±0.2	6.2±1.2	12	-	1	-	53-113
Protein (g)	Min	13.3	23.8±0.5	27.6±2.8	13	-	-	-	190-271
Fibre (g)	Min	5.2	5.5±0.1	8.1±1.1	13	-	-	-	100-188
Iron (mg)	Min	5.2	3.2±0.1	4.5±0.6	2	1	3	7	65-100
Zinc (mg)	Min	3.3	2.6±0.0	3.0±0.3	7	2	3	1	88-118
Calcium (mg)	Min	350	275.2±6.6	302.2±36.1	1	2	2	8	67-103
Folate (ug)	Min	70	68.3±1.5	94.9±14.8	12	1	-	-	94-173
Vitamin A (µg)	Min	245.0	270.6±8.5	471.8±93.3	13	-	-	-	120-249
Vitamin C (mg)	Min	14.0	27.2±1.0	42.4±12.6	13	-	-	-	109-466
Sodium (mg)*	Max	714	834.1±20.3	701.4±90.4	7	2	1	3	77-115
Percentage energy from:									
Protein		-		17.0					
Carbohydrate		50		58.1					
NMES*		11		10.6					
Fat*		35		23.2					
SFA*		11		8.6					

Base: 13 Secondary schools *To meet the standard the mean nutrient content should be below the value shown**Note:** National secondary school data the estimated energy content of the average school lunch provided was equated with the standard, for information see ref⁶

Key

	Compliant with nutrient-based standard
	Not compliant with nutrient-based standard

Appendix 9. Nutritional analysis of modelled menus

Table 12. Impact of modelling to meet all food-based standards on three pilot school menus														
Nutrient	Min max	Nutrient-based standards	Primary School 1				Primary School 2				Primary School 3			
			Original menu		Modelled menu		Original menu		Modelled menu		Original menu		Modelled menu	
			% of std	Met	% of std	Met	% of std	Met	% of std	Met	% of std	Met	% of std	Met
Energy (kcal)	EAR	530 ± 26.5	124.7	X	122.1	X	100.8	✓	94.7	X	93.3	X	89.7	X
Carbohydrate (g)	Min	70.6	116.4	✓	112.3	✓	99.7	X	94.6	X	104.4	✓	97.2	X
NMES (g)	Max	15.5	132.9	X	116.7	X	53.5	✓	89.8	✓	116.8	X	87.7	✓
Fat (g)	Max	20.6	79.6	✓	77.7	✓	96.1	✓	89.2	✓	72.8	✓	69.9	✓
Saturated Fat (g)	Max	6.5	80.0	✓	80.0	✓	103.1	X	94.6	✓	96.9	✓	89.2	✓
Protein (g)	Min	7.5	281.3	✓	284.0	✓	329.3	✓	302.7	✓	260.0	✓	284.0	✓
Fibre (g)	Min	4.2	142.9	✓	140.5	✓	142.9	✓	147.6	✓	135.7	✓	138.1	✓
Iron (mg)	Min	3.0	86.7	X	86.7	X	93.3	X	96.7	X	96.7	X	100.0	✓
Zinc (mg)	Min	2.5	100.0	✓	100.0	✓	112.0	✓	100.0	✓	84.0	X	84.0	X
Calcium (mg)	Min	193	121.1	✓	118.7	✓	193.2	✓	135.6	✓	88.9	X	118.8	✓
Folate (ug)	Min	53	153.0	✓	151.1	✓	166.0	✓	149.8	✓	120.0	✓	128.0	✓
Vitamin A (µg)	Min	175	187.5	✓	179.1	✓	307.3	✓	296.5	✓	244.3	✓	291.9	✓
Vitamin C (mg)	Min	10.5	299.0	✓	287.6	✓	331.4	✓	317.1	✓	192.4	✓	217.1	✓
Sodium (mg)	Max	499	96.4	✓	94.3	✓	98.4	✓	91.8	✓	86.9	✓	89.0	✓
Which FBS standards not met?			Deep-fried, coated or includes pastry		All FBS met		Meat or poultry products		All FBS met		1. Starchy food in fat or oil alternative 2. Vegetable provision 3. Deep-fried, coated or includes pastry 4. Drinking milk		All FBS met	
Menu/recipe changes			Replaced breaded nuggets with quorn bolognaise ↓ portion sizes of cake				Swapped breaded chicken to plain ↑ portion of meat and baked beans ↓ milk from 75% to 30%				Added veg as accompaniment Removed a deep-fried option			
			↓ portion size of juice to 150ml								Added starchy food alternative: ratio of 80:20 Swapped 2 dessert recipes with lower sugar alternatives Added milk for 20% of pupils			

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Group 1: schools and caterers

Abbey Academy
 Bolsover Secondary
 Briary Primary
 Burnt Oak Primary
 Carshalton Boys
 Clapton Academy (girls)
 Colham Manor, Primary
 Collingswood Academy
 Corfe Hill Secondary
 Darlington Academy (4-16 and SEN)
 Dartford Secondary (boys)
 Ercall Wood Technology College
 Furzedown Special (4-19)
 Gateway Academy
 Heathside Secondary
 Heckington St. Andrews Primary
 Katesgrove Primary
 Knutsford Academy
 Lyon Park Primary
 Manchester local authority
 Oakfield Primary
 Orleans Primary
 Phoenix Academy
 Ravenscliffe Special (secondary)
 Rodillian Academy
 Ruskington Chestnut Street Primary
 Solihull, local authority
 South Leeds Academy
 St Cleers Primary
 St Minver Primary
 St Wilfreds Secondary
 Summerhill Secondary
 Teagues Bridge Primary School
 Telford local authority
 The Farm Kitchen Primary
 Tomlinscote Secondary
 Windmill Primary School

Group 2: Caterers

BAM FM Ltd
 Catering Leeds – Leeds City Council
 Caterlink - Islington
 Chartwells
 Endeavour High School Hull
 Hampshire County Council Catering Services
 Harrison Catering Services Ltd
 Hertfordshire Catering Limited
 Holy Trinity Church of England primary schools
 ISS education
 Kingswood Educational Catering Limited
 Lancashire County Commercial Group
 London Borough of Enfield – Catering Services
 London Borough of Newham
 Newham Catering and Cleaning Services
 Nightingale primary school
 North Yorkshire County Caterers – North Yorkshire
 County Council
 Oxfordshire County Council (Working in partnership
 with Carillion PLC)
 Plymouth City Council
 Priory Primary School
 Solutions SK Stockport
 Taylor Shaw
 Warden Park Academy Trust
 Wirral Council – Metro Catering

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