C2 COST BASE, BENCHMARKING AND EFFICIENCY STUDIES

Company guidance

CONTENTS

Section 1 Objectives

The principal objective of the cost base is to inform the assessment of the relative efficiency of companies' capital unit costs. The assessment enables us to set capital efficiency targets appropriate for each company. These targets are included in the assumptions we make when we set price limits.

The cost base comprises a set of capital cost estimates referred to as 'standard costs', which reflect typical activity that has been undertaken and is likely to be undertaken as part of the planned capital investment programmes in PC15. By using the same data and method for deriving standard costs and business plan estimates the standard costs can be used to represent the companies' typical levels of capital unit cost efficiency. As well as efficiency in procuring and delivering capital programmes, this may reflect the benefits of alternative innovative solutions that are included in business plans.

The cost base is not intended to measure the precise efficiency of delivering each of the standard costs (for example to determine which company is most efficient at laying 100mm diameter pipe in grassland areas). Through the spread of activity (e.g. varying diameters and ground surfaces) and by collating the differences in costs across groups of similar activities, we aim to set efficiency targets that are based on the typical level of efficiency being achieved across the main components of the programme (i.e. infrastructure and non-infrastructure in both water and sewerage service).

Section 2 Methodology

The company should compile its standard costs independently of other water and sewerage companies and should not submit final standard cost estimates derived by other companies.

The standard costs are intended to represent typical activity and are stylised to remove atypical costs so that a comparison can be made across the industry. There are two key aspects of the methodology that the company should comply with:

1. The estimates of all standard costs must be derived using cost data sources, unit cost data, estimating systems and procedures that are consistent with those used to produce the capital expenditure estimates in its business plan.

2. All adjustments and assumptions needed to comply with the standard cost definitions must be clearly set out and adjustments must be based on typical costs attributable to the specified exclusion.

In order to ensure their effort is appropriate and proportionate, the company should focus on compiling the standardised costs which can be used to inform expenditure going forward and to be detailed in their Business Plan. The company should complete tables C2.1, 2.3, 2.5 and 2.7 to identify the forecast expenditure in each activity area. In categories where forecast investment is greater than 2% of the total expenditure in that activity area, the company must complete in tables C2.2, 2.4, 2.6 and 2.8 as many standard costs in that category as possible (with a minimum of one, even if the definitions do not align with the planned activity). For example, if the forecast expenditure on water pumping stations (table C2.3, line 5) is greater than 2% of total water service investment then the company must complete at least one of the pumping station lines (12 – 14) in table 2.4. Otherwise (where forecast expenditure in the category is not greater than 2% of total expenditure in that activity area) the company should not complete the associated standard costs. For some categories (for example water resources and management and general) there are no standard costs.

In the final submission on 24 March 2014, the company should explain all changes to its standard costs between the first (8 November 2013) and final submission versions.

We will base the efficiency challenge on the average catch-up in the sub-service, using either the median, lower quartile or frontier standard cost as our marker. Our choice will be determined by whichever benchmark is more applicable and the average catch-up will be weighted by forecast expenditure. We will exclude from this calculation categories where there are no standard costs or no standard costs have been completed.

For example, suppose NI Water's PC15 expenditure breakdown for the water service in table C2.3 included the information shown in the table below. The company should complete as many standard costs as possible in the water treatment works and pumping stations categories in table 2.4 and for household meters in table 2.2, but it should not complete either of the standard costs for treated water storage in table 2.4 because expenditure in this category is less than or equal to 2%.

For each standard cost we will identify a benchmark. Where the company has completed a standard cost, we will calculate the percentage by which the company's cost exceeds the benchmark and the average percentage for each category. Suppose these average percentages are as follows:

A. Category	B. Proportion of PC15 expenditure	C. % above benchmark	D = B * C
Water treatment works	20%	9%	1.8%
Storage	1%	Not completed	
Pumping stations	10%	11%	1.1%
Household meters	5%	12%	0.6%
Total	**35%**		**3.5%**

Dividing 3.5% by 35% we conclude that the company's costs for water non-infrastructure are 10% above the benchmark. We have yet to determine the degree of catch up to the benchmark during PC15. As an example, were catch-up assumed at 50% we will assume companies catch up a proportion e.g. 50% of the distance to the benchmark during PC15.

The company should provide a general commentary setting out:

- the reasons why standard costs have not been completed;
- the link between forecast expenditure in the cost base submission and the business plan expenditure forecasts;
- a summary of the sources of cost data used and the method adopted for achieving consistency between costs used in the business plan submission and the cost base. This should be an overview of the approach and is not required separately for each standard cost;
- a summary of the process for identifying the treatment process solution (non-infrastructure standard costs only) and the method for achieving consistency with scoping the solutions in the business plan;
- the approach taken to calculate indirect costs and whether / how this varies from the values used in the business plan (if applicable, including differences between values used in each sub-activity area, for example if values for mains laying in grassland and in highways are different);
- the basis of any pain/ gain adjustment at both project and programme level; and,
- the approach taken to calculating corporate overheads and whether / how this varies from the values used in the business plan. If there are differences between values used in different activity areas (for example water treatment and water storage), this should be explained.

In addition to the general commentary set out above the company should complete the cost breakdown structure (CBS) Excel spreadsheet for each standard cost (or group of similar costs). Within the CBS the company should provide specific commentary about the methodology, source data and assumptions relating to the breakdown (or build up) of each standard cost. If the company wishes to include further clarification of any points raised in the CBS then this should be provided within the general commentary. Further guidance about the information requirements associated with the cost breakdown structures is included in section 3.

Figure 1 illustrates our expectation of how the standard costs should be linked to business plan estimates and what adjustments should be made to unit costs to produce compliant standard costs.

Figure 1 Derivation of standard costs (Illustration only and not to scale)

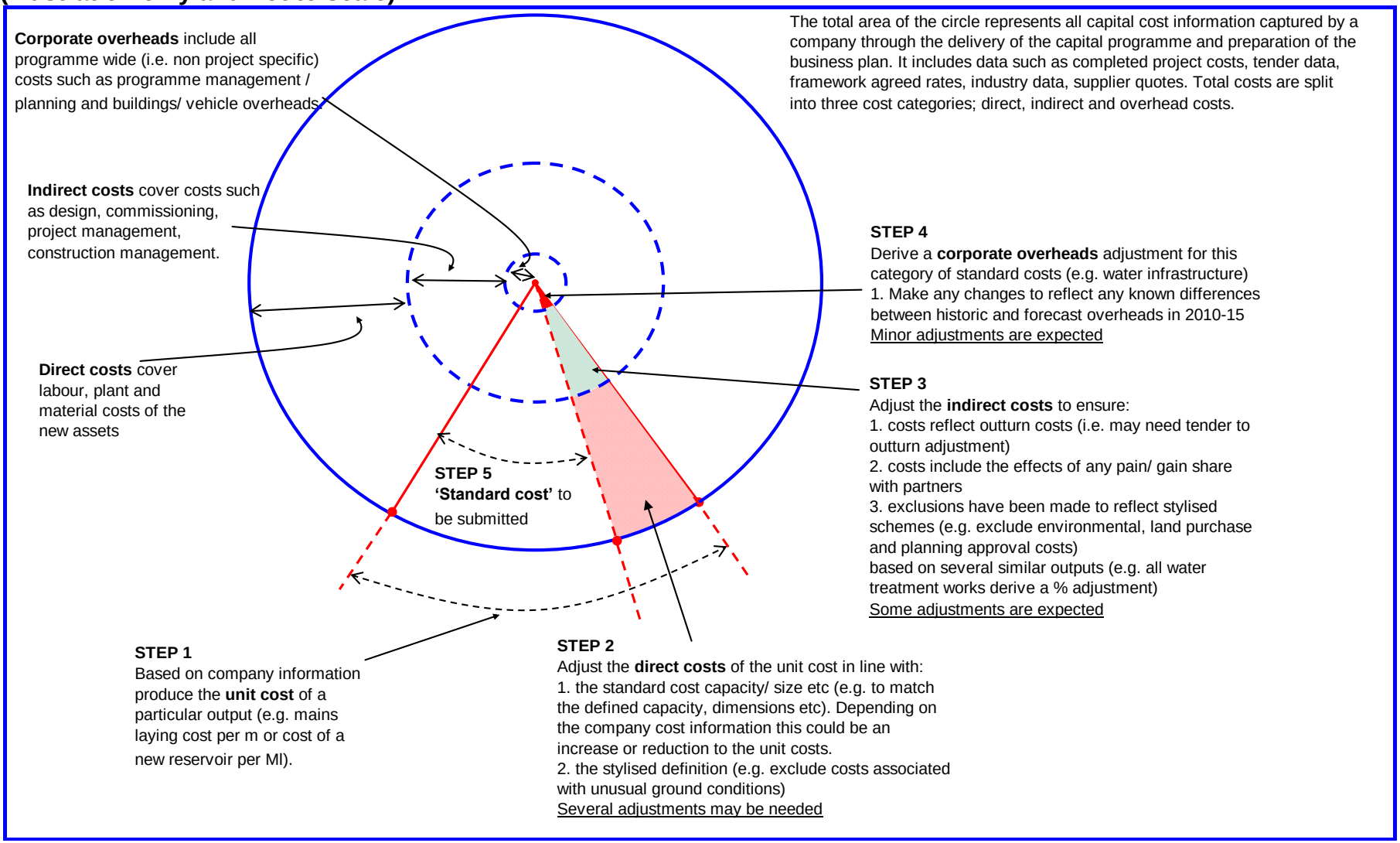

Figure 1 illustrates that we expect the company to use data that they have collected and analysed through the delivery of the capital programme. This may include the use of non-company data, which may be needed to supplement and inform business planning and project delivery. The company may need to adjust the source data (both cost and scope) to comply with the standard cost definitions (and likewise to reflect the proposed outputs in the business plan). The company must make all adjustments in a way that represents typical costs experienced or forecast. The following guidance sets out our expectations in terms of demonstrating the link between company data and the cost base (step 1) and for making adjustments to the company data in each of the three cost categories (steps 2 - 4).

Aligning previous projects to standard cost definitions

Step 1

Cost data

Where possible the company should base its standard costs on company specific projects. The projects used as a basis for standard costs must represent typical unit costs that the company **can confidently** expect to be achievable for that category of work in its future capital investment programme (companies are asked to assess confidence in their unit costs – see Table 1, page 9). Where possible the cost base estimate should be based on several completed projects. The company should specify the source of the data within the CBS (e.g. data taken from company unit cost model or framework agreed rates).

Where historical company data is not available then the company should follow its normal procedures for ensuring the estimate is robust. For example if the company capital delivery procedures require three quotes to be obtained before procuring an asset then this must also be carried out in deriving the standard cost.

The company should also utilise company cost data to value the exclusions required to comply with the cost base definitions as outlined in step 2.

Scope / process choices

For non-infrastructure standard costs the company should specify the solution being costed. There must be a clear link between the scope of the standard cost and proposed business plan solutions. Within the CBS the company should:

- reference any best or standard practice documents to demonstrate the solution is their normal practice. It is also acceptable to reference similar completed or proposed projects;
- demonstrate that the solutions represent the lowest 'whole life cost solution' (lowest NPV), evaluated over an appropriate period and incorporating **standards of service and levels of risk in line with company policy and the business plan submission**; and
- if a company's standard practice differs from the solution stated in the standard cost definition but achieves the same output then the company can submit the cost of their alternative innovative solution, providing that it will be included within the PC15 business plan submission.

Adjusting for compliance with the standard cost definitions

All companies have different procurement and contractual arrangements which can significantly impact the way cost data is collected and analysed. However, we expect the company to have (or be able to access) sufficient information to produce standard costs that comply with the standard cost definitions, whilst being representative of typical costs.

Terminology is not standardised across the industry (e.g. on-costs, management costs and indirect costs are similar but include different elements across the industry). Therefore we have split the costs into three categories which are defined below. The company may not use this terminology or group its costs in this way and it is not necessary to disaggregate company costs to align with this grouping.

The important factor is that all costs have been either included or excluded in line with the standard cost definition. The company should clearly set out within the CBS where the costs have been included, as set out in section 3.

Figure 1 also illustrates the variation in the number (and scale) of adjustments that we anticipate in each cost category. In broad terms we anticipate there will be more adjustments necessary to derive the direct costs than the indirect costs and we anticipate only minor adjustments being necessary to derive the corporate overhead costs. Steps 2, 3 and 4 provide further clarification regarding the adjustments that a company should make to comply with the standard cost definitions.

Step 2: Direct costs

Direct costs cover all construction costs (traditionally split between labour, plant and materials) needed for both the construction phase and the actual output (e.g. including site prelims, cranes etc as well as plant, labour and materials of the new assets/ output).

To produce the direct costs the company should make two forms of adjustment:

1. The cost of construction or installation should be adjusted to meet the standard cost definitions e.g. capacity, equipment list, and pipe depth.

2. The unit costs of actual projects should be adjusted to exclude atypical site factors and to comply with the stylised definitions.

Specific guidance relating to the direct cost build up of each standard cost is included in sections 4-7 below.

The company should state the size/capacity, data source and cost of each item (and exclusion) as well as providing brief commentary about how the data has been collated within the CBS, as set out in section 3.

The costs given should be representative of work done in the past (and likely to be done in future) and historical project data should not be excluded as atypical without good reason.

The company should exclude:

- The effects of severe weather and limited working hours. Adjustments for limited working hours should only be made where outturn costs have been used and the restrictions are due to third parties or local authority planning consents.
- Additional costs arising from environmental and planning constraints (eg requirement for stone-clad buildings in National Park areas).

Step 3: Indirect costs

Indirect costs cover all other costs in addition to direct costs that are needed to complete the project and include:

- design (from initial inception through to detailed design);
- commissioning;
- project management (including planning and quality audits); and
- construction management (including site supervision, traffic management, Health and safety management).

The following adjustments may also be required, depending on how the company captures project costs:

- If the direct costs are derived from tender costs then a tender to outturn ratio adjustment must be made. This adjustment must be based on several projects completed within the last 8 years. The company should explain in commentary how it has calculated the adjustment.

- If the company will also include additional contingency allowance (project or program level) in the business plan submission then a risk allowance should also be included in the standard cost to reflect the company's normal level of risk. It should cover those items included in the standard cost definition.

- If the company operates a pain/ gain agreement with their partners then an adjustment must be made to reflect this at both project and programme level. The adjustment must be the same for each category. For example, all mains laying costs must have the same adjustment even if different contractors are employed and have delivered the schemes with a different pain/gain split. The average (weighted by activity levels) pain/ gain adjustment must be applied. The project and programme level adjustments should be based on the current assessment of NIAMP performance. The basis of this adjustment should be explained in the general commentary.

The indirect costs should be calculated for groups of similar standard costs. The company should assume that all tasks that would normally be required when delivering a capital project must be included in the cost. For example typical network modelling and optioneering costs must be included regardless of the fact that the solution has been stated in the standard cost definition.

The company can remove outlier costs from the source data set where an event outside the company's control or unusual circumstances has resulted in extremely high or low costs. Otherwise all costs should be used to calculate an average value of indirect costs for each group of standard costs (e.g. design costs for mains laying regardless of diameter or ground surface). The company should exclude the costs of:

- Public meetings.
- Customer communication.
- Land purchase.
- Legal work.

The company should use company data to value these exclusions and state the associated percentage adjustment within the CBS.

Step 4: Corporate overheads

Corporate overheads for the capital programme include non-project specific costs that are capitalised in the business plan submission and therefore need to be included in the standard cost build up. Depending on each company's capitalisation policy this will include items such as:

- Programme planning
- Management of the delivery of the whole capital programme
- Capitalised buildings (offices, stores)
- Capitalised vehicles used in delivery of the capital programme.

The company should calculate a single overhead value / percentage adjustment for groups of standard costs to mirror the overheads used in the business plan. For example a different overhead percentage may be calculated for water infrastructure and water non-infrastructure to reflect the differences in overheads between the two areas of the business delivering those schemes. Any adjustments must be clearly explained in the general commentary. The company should make it clear what the percentages have been applied to, for example the total of direct and indirect costs, or just direct costs, and adjust formulae in the CBS accordingly.

Price base

All standard costs submitted should be presented in 2012-13 prices. Companies should use COPI during the preparation of standard costs where any historical information has been used. Companies should use the index figures at the time of expenditure (mid-project) and for financial year 2012-13. The table below contains COPI indices from 2002-03 to 2012-13.

COPI financial year average indices (2005=100)

02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13
87.85	91.45	94.63	101.83	106.18	111.30	113.98	110.48	107.38	109.95	112.60

Robustness of standard costs (confidence grades)

The company should judge the robustness of its standard costs based on the key principles relating to estimating best practice, set out in table 1 below. This replaces the reliability and accuracy bands used in previous price reviews.

Table 1 below sets out the definitions relating to each score. The definitions refer to "small", "reasonable" and "significant samples of similar projects. These terms should be interpreted having regard to the number of projects, the degree of similarity and how recently they were carried out. For example five or six projects might constitute a 'reasonable' sample, but only if they were straightforward, similar projects carried out in the previous NIAMP. The company should exercise judgement and should seek to agree its approach with its reporter.

We will use this assessment to understand how robust the source data is as well as being a function of the care the company has taken in adjusting the source data, to ensure compliance with the standard cost definitions.

A score of 3 or better in each category is expected. Where scores are below this level, the company should document the reasons, for example; lack of (recent) experience in such projects, potential use of new technology, as well as their process for improving the robustness of cost estimates if it is being used within the business plan.

Certain score combinations should not be assigned. For example the compliance score cannot be 5 but the basis of the cost data be assessed as 1. The company should avoid assigning these combinations to their standard costs.

Table 1

Criteria	score				
	1	**2**	**3**	**4**	**5**
1. Scope	Company has no previous experience of this type of activity.	Company has had some experience of delivering similar projects, but not within last 8 years.	Company has carried out similar projects but in significantly different size bands.	Company has experience in similar projects, within similar size bands to the definition. Company has standard solution/s for this type of activity which has been assessed as providing the least WLC solution.	Company has considerable experience in similar projects and similar size bands to the definition. Company has standard solutions for this type of activity and a process for updating them. It has been assessed as providing the least WLC solution.
2. Cost	Cost data is from non-company sources. Used industry parametric data (e.g. TR61).	Significant use of non-company sources, costs from dissimilar projects or costs from projects completed more than 8 years in the past.	Company has reasonable company specific data. Some source data may be from a non-company source (e.g. contractors' estimates with limited or no company specific input).	Standard cost represents activity where reliable company specific cost data is available (few data points).	Standard cost represents activity where reliable company specific cost data is available (reasonable number of data points).
3. Risk	A generic contingency is included – no basis of value.	A generic contingency is included – based on generic risk register.	Risk register produced qualitatively (risks identified and scored). **Or** Tender to outturn ratio applied / outturn estimated based on a small sample (or old data set) of projects.	Risk register produced and quantified risk assessment modelled. Or Tender to outturn ratio applied / outturn estimated based on a reasonable sample of similar (and recently completed) projects.	Risk register produced and quantified risk assessment modelled. Or Tender to outturn ratio applied / outturn estimated based on a significant sample of similar (and recently completed) projects.
4. Compliance with standard cost definition	Adjustments have not been made as required in the specification. Company is not able to disaggregate costs to allow adjustments / exclusions to be made.	Company is less confident that all adjustments for direct costs have been made as specified in the guidance. Indirect and overhead costs have been derived but from a small sample of similar projects. Cost data is only available at a site / system level (e.g. cost of 30Ml/d treatment works) making it difficult to derive the adjustments / exclusions.	Company is less confident that all adjustments for direct costs have been made as specified in the guidance. Indirect costs and overheads are based on a small sample of similar projects. Cost data is captured at process unit / system level (e.g. rapid gravity filters) with high level breakdown of indirect costs, risk allowances and overheads. Adjustments and exclusions can be made on a representative basis.	Company is reasonably confident that all adjustments for direct costs have been made as specified in the guidance. Indirect costs and overheads are based on a reasonable sample of similar projects. Cost data is captured at sub-process level (e.g. backwash pumps). Indirect costs are broken down and risk allowances are based on specific risk log. The required adjustments / exclusions can be made on a representative basis.	All adjustments for direct costs have been made as specified in the guidance and are based on a robust historic data. Indirect costs and overheads are based on a significant sample of similar projects. Cost data is fully disaggregated and sufficiently detailed to allow all adjustments and exclusions to be calculated with high confidence.

Company special factors

In the general commentary, the company should set out clearly where it considers that a company specific factor affects the comparability of its standard costs. The company should not make any adjustments for company specific factors in this submission. The company should address the following questions in its commentary:

- What is different about the company's circumstances that cause it to experience materially higher costs than those of other companies?
- Why do these circumstances lead to materially higher costs than those of other companies?
- What is the net monetary impact of these costs? What has the company done to manage the additional costs arising from the special circumstances and to limit their impact?
- Provide details of the adjustment needed to offset the impact of any other special circumstances that reduce the company's costs relative to industry norms, so it only reports net additional costs.
- For capital maintenance claims; make clear the value of the claim for each relevant year of expenditure and the expected adjustment to average expenditure for the period 2010-11 to 2014-15.

Section 3 Format of the submission

Each standard cost (or group of costs) has an associated cost breakdown structure (CBS), which splits up the component parts of the cost build up. We will base the comparative assessment solely on the total standard cost, but the breakdown will be used to check for consistency and compliance with the standard cost definitions (i.e. to help identify where there are differences in efficiency and to identify non-efficiency related variance).

There are five sections within the CBS and the company should complete each section:

1. general information;
2. direct cost (and associated adjustments);
3. indirect costs (and associated adjustments);
4. corporate overheads; and
5. confidence grades.

The company should state the cost or percentage adjustment (where applicable) and related assumptions and explanations associated with each cost element within the CBS. We do not expect any additional commentary about each standard cost within the general commentary. If there is additional information that the company wants to include that cannot be satisfactorily explained in the CBS then the company should reference it within the appropriate cell in the CBS and submit it within the general commentary.

If the company's system for capturing costs does not align with the structure in the CBS tables this must be explained. For example, if all outline and detailed design is embedded within the direct costs because those activities were carried out by the contractor and cannot be disaggregated, then this must be clearly stated in the "assumptions" column of the design costs to make it clear where the costs have been included (see example 2).

If the company is unable to provide a disaggregation of the costs as set out within the CBS then the company should indicate in the assumptions column whether the costs are included in the total. The company should not leave any line blank; a zero adjustment must be specified.

Companies should complete the CBS such that a positive value represents a cost to be included in the standard costs and negative value represents exclusions. The company should sum the total direct, indirect and overhead costs and transfer the total to the master tables (C2.2, 2.4, 2.6 and 2.8).

The company can add additional lines for direct costs and associated adjustments into the CBS if they are required, as shown in the following examples of an infrastructure and non-infrastructure standard cost. The standard lines for indirect costs, associated adjustments and corporate overheads should be retained.

COST BREAKDOWN STRUCTURE - EXAMPLE

Mains laying - grassland

1. General information	
Reference to standard practice / generic solutions or completed similar projects	See scope of works outlined in mains laying schedule of rates and recently completed projects ref: A & B

2a. Direct costs					
Provide brief description of the source, quantity and age of the cost data and method for ensuring it represents typical costs	Cost data is based on the average of three AMP4 contracts (all using schedule of rates) that represent grassland areas (private land, verge and development sites). The three contracts used has totalled £65m in completed projects since 2000/01.				
Items to be included in cost - provide breakdown:	**Cost (£)**				**Assumptions/ details**
	100mm	**150mm**	**200mm**	**300mm**	
pipe supply	15000	17000	20000	25000	all based on MDPE, 10 bar rated
pipe laying	40000	45000	50000	55000	productivity rate assumed = 20m/day
reinstatement (temporary & permanent)	1000	1000	1000	1000	labour only - re-use excavated material
fittings supply	3000	3200	3400	3600	in line with frequency table, assume all fittings are polyethylene.
fittings installation	700	800	900	1000	in line with frequency table. Same costs have been used for unplanned pits as trials holes - schedule of rates doesn't differentiate between them
traffic management	0	0	0	0	included within pipe laying rates
assumed mains length used in estimate (m)	1000	1000	1000	1000	based on typical length of infrastructure schemes in AMP4
2b. Adjustments and exclusions (provide a breakdown and brief description of the adjustments)					
unusual ground conditions	0	0	0	0	schedule of rates is based on normal ground conditions
disposal to landfill	1000	1000	1000	1000	disposal costs not included in rates. Disposal costs on project A used as representative (i.e. was approx 1km)
adjust for abnormally high storage costs	0	0	0	0	storage costs not included in schedule of rates
NRSWA costs excluding lane rental	0	0	0	0	not applicable in grassland
to align with required 900mm pipe cover	0	0	0	0	fixed rates allows cover depth up to 1.2m
to align with specified fixtures and fittings	1000	1100	1200	1300	assumed all fittings are polyethylene - schedule of rates used to build up cost
Total direct cost	**61700**	**69100**	**77500**	**87900**	

3a. Indirect costs	**% of direct costs**	**Assumptions/ explanation of how typical costs have been derived**
Design (inception to detailed design)	3.0%	Based on average design costs of all completed AMP4 schemes. Detailed design is embedded within "pipe laying" rates
Commissioning	0.0%	Embedded within "pipe laying" rates
Project management (including planning and quality audits)	1.5%	Based on average of all water infrastructure projects
Construction management (including prelims, site supervision, site overheads)	0.0%	Embedded within "pipe laying" rates
3b. Adjustments		
pain/ gain	0.0%	No incentive mechanisms in place for these contracts.
tender / outturn	-5.0%	Based on average ratio over AMP4 completed projects (under these 3 contracts)

Total indirect cost (£)	**-308.5**	**-345.5**	**-387.5**	**-439.5**

4. Corporate overheads	**% (specify what of)**	**Assumptions/ explanation of how typical costs have been derived**
Programme planning	0.8%	Ave percentage for water infrastructure planning team over last 3 years
Management of delivery of the whole capital programme	1.0%	Standard adjustment for all service areas of capital delivery
Capitalised building costs (offices, stores)	0.0%	Embedded within "management of delivery of whole programme"
Other capitalised items (e.g. vehicles)	1.5%	Infrastructure team vehicles are capitalised.

Total overheads (£)	**2025.9**	**2268.9**	**2544.7**	**2886.2**

	100mm	**150mm**	**200mm**	**300mm**
Total Cost (£)	**63,417**	**71,023**	**79,657**	**90,347**
Total Standard cost (£/m)	**£ 63.4**	**£ 71.0**	**£ 79.7**	**£ 90.3**

5. Confidence grades	**Scope**	**Cost**	**Risk**	**Comp-liance**
Company assessment	4	5	5	4

COST BREAKDOWN STRUCTURE - EXAMPLE

C2.4 Line 1 New treatment works, SW4	30	Ml/d

1. General information	
Reference to standard practice / generic solutions or completed similar projects	Solution based on standard practice documents X, Y & Z for water treatment. See similar AMP4 projects A, B and C
Provide a brief commentary to outline whether this is the lowest whole life cost solution (lowest NPV)	The process for deriving a standard practice solution includes a review of whole life costs. Each SPD has a document owner who is responsible for ensuring it is up to date (which includes reviewing WLC as more operating experience is gained). Design procedures include a review of WLC for each project therefore using outturn costs ensures the solution is in line with the WLC choices made as part of delivering the capital programme.

2a. Direct costs

Provide a brief description of the source, quantity and age of the cost data and method for ensuring it represents typical costs: All outturn costs are captured in the unit cost database and unit cost models (process unit level) have been derived and used to generate the direct costs. All data in the models is no more than 6 years old and there are at least 7 data points in each model used (except GAC pressure filters).

Company to list main components (e.g. process units, structures, equipment)	size/ capacity	units	Cost (£)	Assumptions/ details
Inlet works - civil structure	220	m3	220000	1 concrete wet well located within a building
DAF tanks	210	m3	270000	Including flow splitter chamber feeding into 3 streams, each with floc tanks preceding the DAFs and civil works for saturated air system. Based on hydraulic de-sludge. Full flow can be treated with one tank off line.
RGF tanks	240	m3	950000	4 prefabricated tanks, based on sand and anthracite media. Full flow can be treated with one tank off line. Includes associated air scour system. Filtration rate 6m/hr.
Interstage pumping station	180	m3	150000	Concrete tank within building
GAC pressure filters	280	m3	1500000	7 pressurised vertical adsorbers based on total vessel volume of 85m3 each (45m3 = media). Only got 2 previous project costs for GAC pressure filters, benchmarked costs using TR61. Filtration rate 6m/hr. Backwash rates based on 20m/h for 10 mins - automatic control based on headloss.
Backwash water holding tanks (clean & dirty) civil works	300	m3	150000	Based on 2 concrete tanks (150m3 each). Complete filter backwashing once/ 24 hours at rate of 170m3/ wash)
Contact tank	625	m3	170000	Based on 30 mins retention time to achieve 1mg/l chlorine residual
Buildings			350000	All process plant, control room and chemical storage is held within buildings, dirty washwater tank is uncovered.
Air saturator plant			120000	Including compressors
Interstage pumps	37	kW	100000	2 pumps - duty/ assist operation
Backwash water pumps	13	kW	140000	4 pumps (2 dirty, 2 clean) duty-assist operation
Chemical dosing	various	various		Includes coagulant (92l/h ferric chloride), polyelectrolyte (520 l/h), chlorination (70kg/h sodium hypochlorite), plumbosolvency control (orthophosphoric acid 1mg/l) and de-chlorination (22l/h sodium bisulphate), and all associated pipework (includes pumping, dosing and mixing plant)
Chemical storage	various	m3		Based on providing 28 days storage for all chemicals
Interconnecting pipework	n/a		400000	Site wide pipework and flow control. Calculated as 1.2% of direct costs
Water quality monitoring	n/a		100000	All sample lines, monitoring equipment and manual taps
Automation and control equipment	n/a		140000	Fully automated plant, based on un-manned works
Control panels and telemetry	n/a		400000	All telemetry is connected to the central (on site) control room

2b. Adjustments and exclusions (provide a breakdown and brief description of the adjustments). The company should amend the list below to reflect the adjustments that they have made (see guidance for table C4)

	Cost (£)	Assumptions/ explanation of how typical costs have been derived
Planning permission and associated costs	0	No adjustment necessary - planning permission costs are captured separately
Effects of seasonal working or limited hours	0	Not possible to disaggregate these costs. Projects are delivered through out the year so costs are balanced - no adjustment deemed necessary.
Dealing with contaminated land	0	Costs are not embedded - no adjustment necessary
Restricted access to site	-25000	All projects used to populate unit cost data base were located in heavily populated urban areas, with very difficult access restrictions. Project A, B & C costs were scrutinised to calculate average adjustment.
Total direct cost	**5135000**	

3a. Indirect costs	Cost (£)	% of direct costs	Assumptions/ explanation of how typical costs have been derived
Design (inception to detailed design)	179725	4%	All based on average of stated projects. Outline and detailed design costs are embedded within each process unit of the 'direct costs'.
Commissioning	77025	2%	Covers company costs only, commissioning costs incurred by contractor are embedded with direct costs
Project management (including planning and quality audits)	77025	2%	Based on average of all water non-infrastructure projects
Construction management (including prelims, site supervision, site overheads)	0	0%	Embedded within direct costs
3b. Adjustments			
pain/ gain	-205400	-4%	based on last 3 years performance of all 3 WNI partners (only run a project p/g system - no programme level incentives in place)
tender / outturn	0	0%	Not applicable, outturn costs used
Total indirect cost	**128375**		

4. Corporate overheads	Cost (£)	% (of direct +indirect costs)	Assumptions/ explanation of how typical costs have been derived
Programme management	15790.125	0.3%	Ave. percentage for water non-infrastructure planning team over last 3 years
Management of delivery of the whole capital programme	52633.75	1.0%	Standard adjustment for all service areas of capital delivery
Capitalised building costs (offices, stores)	42107	0.8%	Includes the engineering offices and a proportion of the operational stores used for capital projects.
Other capitalised items (e.g. vehicles)	0	0.0%	no other items are capitalised
Total overhead costs (£)	**110530.88**		

Total Cost (£)	**5373905.9**
Total Standard cost (£/Ml/d)	**179130**

5. Confidence grades	Scope	Cost	Risk	Compliance
Company assessment	5	4	3	5

Section 4 Water infrastructure

Table C2.1: Composition of investment by project type and location: water mains

In table C2.1 the company should submit an indicative breakdown of total investment on water mains by project type and location. This should cover all planned mains activity in all investment categories. The sum of lines 1 to 7 should be 100%. The forecast investment in water infrastructure should also be stated in pounds. For the submission due on 8 November 2013 the company should input this value. For the final business plan submission it will be copied from the total gross infrastructure expenditure figure as stated in the business plan.

Table C2.2: Water infrastructure Standard costs

The company should provide a breakdown of the estimates for the infrastructure standard costs in the CBS tables C2.2.1- C2.2.11. The company should transfer the total standard costs into master table C2.2.

The company should base the standard cost estimates on previously completed project costs wherever possible. So that broad comparisons can be made between companies it is necessary to reduce the external factors that are beyond companies' control and ensure the standard costs are typical of situations where adverse conditions and complications are generally minimal. The value of the inclusions and/or exclusions must be stated on the CBS to show that they have been accounted for. In addition to the general guidance given in section 3 the following assumptions, specifically relating to the **direct costs** must be made:

Assumptions applicable to all infrastructure standard costs (lines 1 – 14)

- There are no unusual ground conditions. Omit de-watering, soil stabilisation, deep foundations, rafts, piling, special ground support, ground anchors and excavation in rock.
- Excavation costs should be included.
- Excavated materials are not contaminated and can be used to refill trenches and entry and exit points in **grassland** surface type and **new** communication pipes and meters.
- Trenches and entry and exit points should be refilled with granular material in **rural/suburban and urban highways and renewed communication pipes and meters**. Excavated material is disposed of to a landfill tip 1km distant (include landfill tax, assuming all material is not contaminated).
- Include both temporary and permanent reinstatement.
- The pipe and fittings materials should be based on company standard practice and stated in the CBS.
- All necessary working space and areas for storage of materials are readily available at no cost. Include the costs associated with depots and storage within indirect costs. Only exceptional costs associated with working space or storage should be excluded.
- When pipe, fittings and other equipment are 'free supply' by the company, the cost of these items and associated procurement and stores costs must be included within the standard cost.
- Include direct costs associated with commissioning.
- Include traffic management to meet the minimum requirements of The Street Works (N Ireland) Order 1995 (applicable in rural/suburban and urban highways, at entry and exit pits for rehabilitation and communication pipe and meter renewals).
- Allow for the costs associated with the implication of The Street Works (N Ireland) Order 1995, but exclude the lane rental costs as defined by The Street Works (Amendment) (N Ireland) Order 2007 [Article 34A].
- Include costs required to comply with relevant Health, Safety and Environmental regulations. Temporary fencing costs associated with Health and Safety regulations should be included.

Mains laying (including by directional drilling) and rehabilitation (lines 1-10)

- There is an average, non-complex requirement for trench water pumping. Allow for non-complex geotechnical investigations.
- No allowance needs to be made for maintaining flows or over-pumping.
- Disconnection or re-connection to services is not required. Assume there are no uncharted services or other underground obstructions.
- Connection (and re-connection) to trunk and distribution mains is not required.
- Diameters relate to the nominal internal bore of the pipe. For PE pipe specified by outside diameter, select nearest internal bore size and state dimensions in the CBS).
- The depth of cover of the mains is 900mm to the crown of the pipe.
- All pipes are pressure rated at least 10 bar.
- Assume fixtures, fittings and ancillary works as defined in table 2. Assume reception pits are $3m^2$.
- The costs of communication pipes, stop cocks and meter boxes should be excluded.
- For pipe bursting standard costs protective sleeves should be excluded.
- If the company cost information does not result in a cost per metre mains laid or rehabilitated then the company should base the cost on a length that is representative of the typical schemes (the company should specify the length used in the CBS).
- Assume average cost (weighted by activity) if the company has different schedules of rates across different areas in the region.
- Exclude costs for crossings (e.g. railways, rivers).

Communication pipes (lines 11 and 12)

- Assume lengths of 3m for the short side and 7m for the long side.
- The depth of cover of the pipe is 750mm to the crown of the pipe.
- Assume that new communication pipes refer to a new development site.
- Renewal of communication pipes corresponds to replacement by open cut or moling technique in a suburban location as part of a planned programme. Costs should be for communication pipe renewal separately or with mains rehabilitation / renewal, depending on the company's policy and business plan.
- A new ferrule installation and stop tap for a 25 or 32mm outside diameter service should be included.
- Exclude cost of the meter.
- Water sampling is not required
- Reconnection of services is required.

Household meters (lines 13 and 14)

- Assume that **manually read** household meters are to be installed. For internal meters a digital external meter outreader is not required.
- Include cost of survey for internal meters (include costs associated with abortive house visits).
- Boundary box should be unsealed type.
- Exclude costs for demolition/ removal of existing boundary box.

Where a company's project costs are based on assumptions different from those specified (e.g. different frequency of fittings, depth of cover etc) then the company should make appropriate adjustments such that the standard costs submitted reflect the assumptions specified. The company should only make adjustments if it is able to demonstrate that the differences would result in a change

to the cost (e.g. if the cost is the same whether there is 0.9m or 1.2m cover between ground level and the crown of the pipe then the company should not make an adjustment).

Column definitions

Estimates in each column must be consistent with the definitions as follows:

- **Grassland**
  Urban/ rural verges, new development sites or open field normally used for grazing. Allow for reinstatement of original surface but assume that no imported backfill material other than pipe surround is required. Include the cost of restoring land drainage in open fields. Exclude the costs of traffic management and temporary fencing.
- **Rural \ suburban highway**
  Type 3 or 4 reinstatement and non-traffic sensitive in accordance with The Street Works (N Ireland) Order 1995. For example, secondary or minor roads, housing estates. Alternative forms of reinstatement are permitted under the legislation. For standard costs, assume the cheapest method permitted by the Order will be used.
- **Urban highway**
  Type 2 reinstatement and traffic sensitive in accordance with The Street Works (N Ireland) Order 1995. For example, cities and town centre trunk roads. Alternative forms of reinstatement are permitted under the legislation. For standard costs, assume that the cheapest method permitted by the Order will be used.
- **Mains rehabilitation - Relining**
  Encrustation from an existing main is removed and the pipe lined internally by applying a surface coating. Typically used for relining of cast iron mains.
- **Mains rehabilitation - Pipe insertion**
  Encrustation is removed and a structural pipe is inserted into the existing main. The inserted pipe is of a smaller diameter than the existing one. The company should state the material and the internal and external diameters of the inserted pipe.
- **Internal meter: New**
  Cost of fitting a new, manually read internal meter in an existing property. Assume typical requirements for joinery work and allow for the cost of customer communications. Exclude the cost of abortive house visits.
- **Internal meter: Renew**
  Cost of renewal of a manually read, internal meter. Assume typical requirements for joinery work and allow for the cost of customer communications. Assume that the existing fittings are satisfactory and are suitable without modifications. Exclude the cost of abortive house visits.
- **External meter (into existing boundary box): New**
  Cost of fitting a new, manually read, external meter on a new development site where the developer has provided and installed the boundary box. Assume no internal cleaning of the boundary box is required.
- **External meter (into existing boundary box): Renew**
  Cost of renewal of a manually read meter in an existing boundary box. Assume that the meter chamber is located in the public footpath outside the property and is suitable to accept new meter without any modifications. Allow for internal cleaning of the boundary box prior to replacing the meter but otherwise assume that the existing boundary box is in satisfactory condition.
- **External meter (including boundary box): New**
  Cost of fitting a new, manually read, external meter including a new boundary box for an existing property not a new development site. Assume that the new boundary box is of unsealed type and is located in the public footpath outside the property. Assume the footpath has a tarmac surface.
- **External meter (including boundary box): Renew**
  Cost of renewal of a manually read meter including the renewal of the boundary box. Assume that the existing boundary box is located in the public footpath outside the property and the replacement boundary box is located in its place.

Table 2: Table of frequencies

Nominal bore (mm)	Frequency of occurrence (number / 100m)								
	Access pits	Sluice valves	Hydrants/ flush valves	Tees	Bends	Trial holes	Samples	Unplanned pits	Air valves
100	1.5	1.0	1.0	0.75	0.5	0.75	0.2	0.63	N/A
150	1.5	1.0	1.0	0.75	0.5	0.75	0.2	0.63	N/A
200	0.75	0.2	0.2	0.2	0.07	0.4	0.2	0.33	N/A
300	0.75	0.2	0.2	0.2	0.07	0.4	0.2	0.33	0.07
450	0.75	0.07	0.07	0.07	0.07	0.2	0.2	0.17	0.07
600	0.75	0.07	0.07	0.07	0.07	0.2	0.2	0.17	0.07

Frequencies:

1.5 = 1 per 67m	0.5 = 1 per 200m	0.17 = 1 per 600m
1.0 = 1 per 100m	0.4 = 1 per 250m	0.1 = 1 per 1,000m
0.75 = 1 per 133m	0.33 = 1 per 300m	0.07 = 1 per 1,500m
0.63 = 1 per 160m	0.2 = 1 per 500m	

Where a company's project costs are based on assumptions different from those specified above (i.e. different frequency of fittings, depth of cover etc) then the company should make appropriate adjustments to its project costs such that the standard costs submitted reflect the assumptions specified in this document. The fittings, fixtures and associated structures included in the standard costs should be appropriate to the type of work being undertaken i.e. mains laying, directional drilling or mains rehabilitation. For example access pits would not normally be needed in a mains laying situation.

Section 5 Water non-infrastructure

Table C2.3: Composition of expenditure by asset type: water service

The company should submit an indicative breakdown of total projected water service investment by asset type in table C2.3. This should be consistent with forecasts contained in the business plan, recognising the uncertainty around investment programmes at this stage. The sum of lines 1 to 9 should be 100%. The forecast investment in water service should also be stated in pounds. For the submission due on 8 November 2013 the company should input this value. For the final business plan submission it will be copied from the total gross expenditure figure stated in the final business plan. Unless otherwise stated, definitions of asset types are provided in RAG2.03.

Table C2.4: Water non-infrastructure standard costs

The company should provide a breakdown of the estimates for the non-infrastructure standard costs in the CBS tables C2.4.1- C2.4.14. The company should transfer the total standard costs into master table C2.4.

Table C2.4 contains a series of standard costs that cover installation of new assets as well as replacement or refurbishment of existing assets. The selection of these has been based on an assessment of significant activity carried out in the current AMP, which is likely to be required in the next price limit period to meet existing and new obligations.

Where the line definition states a treatment process the company should not substitute an alternative process even if the alternative is its standard practice. Where the line definition only states input and output conditions the company should select the process in line with its standard practice.

The standard cost definitions seek to exclude any components of cost relating to site specific factors in order to allow comparison between companies, for example, specifying green field sites with no complications. The value of the inclusions and/or exclusions must be stated on the CBS to show that they have been accounted for. In addition to the general guidance given in section 3 about the indirect costs and overheads the following assumptions, specifically relating to all of the water non-infrastructure direct and indirect costs must be made:

- There is no planning constraint on the phasing or construction of works; omit costs of planning application and planning studies (excepting normal feasibility studies and design, which should be allocated to indirect costs).
- Accessible land is available and legal/land purchase costs are to be excluded.
- There are no restrictions requiring seasonal working or limiting working hours.
- There are no unusual ground conditions. Omit de-watering, soil stabilisation, deep foundations, rafts, piling, special ground support, ground anchors and excavation in rock. Include for non-complex geotechnical investigations.
- Excavated materials are not contaminated and can be reused for embankments on-site. Assume no need to import fill.
- A public highway suitable for all types of vehicle exists to the boundary of the working area.
- The site is unobstructed and that no trees or ground clearance, drainage, diversion of existing services or preparatory works are needed.
- Exclude site drainage, roads, fencing and landscaping.
- Estimates are for Greenfield sites except where specified. All necessary working space and areas for storage of materials are readily available without cost. Adjustments for limited working space and storage areas should only be made for exceptional costs and in any case not for works such

as pump replacement or similar instances where the working space requirement is minimal.

- When pipe, fittings and other equipment are 'free supply' by the company, the cost of these items and associated procurement and stores costs must be included within the standard cost
- Exclude demolition costs except where reconstruction is indicated or may be selected, and assume that all necessary services (power, water, phone etc) are available on sites.
- There is no limit on the height of structures, no requirements for screen walling or shielding earthworks, no covering of plant which under the company normal practice would operate in the open. All new process plant should be housed within a building unless there is clear company policy and evidence that such equipment is located in the open.
- Provide lighting, power, heating, ventilation, telephones, welfare facilities, intruder and fire alarms and entry control and surveillance within all new buildings.
- Existing services do not need to be diverted and they are of adequate capacity to meet new requirements e.g. new electricity transformers are unnecessary.
- Telemetry and automation included in standard costs should be limited to local and site control, and provision of suitable signals only, for subsequent capture by an assumed existing regional telemetry system.
- Standby generators and associated switchgear are not required.
- Estimates are to be built up as an average cost for the size of works specified in the standard cost and not a nearest equivalent derived from the company's NIAMP database or similar source. When companies have standardised sizes of process units/plant to achieve efficiency, and the standard cost requires an intermediate size, estimate for the size specified but assume that economies will be achieved to the same extent as would be present if the plant had been provided to the nearest company standard size i.e. use the same cost equation.
- Sizes and capacities quoted are to be taken as design requirements, i.e., there is to be no additional provision for growth.
- No pumping is required at the inlet or within the site, except as required for recirculation, reclamation etc.
- Include the costs of all interconnecting pipework.
- Mechanical and electrical costs must include installation and performance tests and commissioning.
- Assume that performance will be satisfactory first time and that process/plant modifications are not required.
- Exclude official opening costs for showpiece sites.
- There is no requirement for a high standard of finish to works for aesthetic or environmental reasons.
- No special measures are required for acoustic or odour control purposes. For exceptions see individual standard cost specifications.
- Companies should not assume spare capacity exists to provide a working solution, unless specifically allowed in the line definition.

Glossary of terms for mechanical and electrical (M&E) equipment

ICA	Instrumentation control and automation
MCC	Motor control centre
PLC	Programmable logic controller
DNO	Distribution Network operator (previously REC)
FAT	Factory acceptance test
SAT	Site acceptance test

Section 6 Sewerage infrastructure

Table C2.5: Composition of investment by project type and location: sewers

In table C2.5, the company should submit an indicative breakdown of total sewerage infrastructure investment by project type and location. This table should cover planned activity in all investment categories. The sum of lines 1 to 4 should be 100%. The forecast investment in sewerage infrastructure should also be stated in pounds. For the submission due on 8 November 2013 the company should input this value. For the final business plan submission it will be copied from the total gross infrastructure expenditure figure stated in the final business plan.

Table C2.6: Standard costs

The company should provide a breakdown of the estimates for the infrastructure standard costs in the CBS tables C2.6.1- C2.6.4. The company should transfer the total standard costs into master table C2.6.

The company should base the standard cost estimates on previously completed project costs wherever possible. So that broad comparisons can be made between companies it is necessary to reduce the external factors that are beyond companies' control and ensure the standard cost definitions are typical of situations where adverse conditions and complications are generally minimal. The value of the inclusions and/or exclusions must be stated on the CBS to show that they have been accounted for. In addition to the general guidance given in section 3 the company should make the following assumptions, specifically relating to sewerage infrastructure direct costs:

- There are no unusual ground conditions. Omit de-watering, soil stabilisation, deep foundations, rafts, piling, special ground support, ground anchors and excavation in rock.
- There is an average non-complex requirement for trench water pumping. Allow for non-complex geotechnical investigations.
- No allowance needs to be made for maintaining flows or over-pumping.
- Excavated costs should be included. Excavated materials are not contaminated and can be used to fill trenches and entry and exit points in grassland areas.
- Trenches and entry and exit points are refilled with granular material in rural/ suburban and urban highways. Excavated material is disposed of to a landfill tip 1km distant (include landfill tax, assuming all material is not contaminated).
- Include both temporary and permanent reinstatement.
- Disconnection or re-connection to laterals and other sewers is not required. Assume there are no uncharted services or other underground obstructions.
- Diameters relate to the nominal internal bore of the pipe.
- The depth of cover to the sewer is 2.0m to the crown of the pipe.
- Include for sewer junction and cap at 10 metre intervals.
- The scope of work is for typical sewer laying or refurbishment for lengths in the range 150m to 1,000 m and should reflect company practices. Short lengths with disproportionately high mobilisation costs should not be used. Conversely, major schemes covering several kilometres with low mobilisation, management and design costs should also be excluded. Where the standard costs are developed from a schedule of rates plus a fixed fee per job, a length of 400m should be assumed unless company specific average job lengths are available.
- Allow for 50m intervals between manholes. This means that the number of manholes required is the sewer length in metres divided by 50, rounded up to the next whole number eg 51m would need two manholes and 100m would still need two manholes.
- There are no requirements for backdrops to manholes, ventpoles or flushing chambers.
- The pipe and fittings materials should be based on company standard practice and state material within CBS.
- When pipe, fittings and other equipment are 'free supply' by the company, the cost of these items and associated procurement and stores costs must be included within the standard cost.
- If the company cost information does not result in a cost per metre sewer laid or rehabilitated then the company should base the cost on a length that is representative of the typical schemes (the company should specify the length used in the CBS).
- Assume average (weighted if applicable) cost if the company has different schedules of rates across different areas in the region.
- Adequate water supply is available on site.
- All necessary working space and areas for storage of materials are readily available at no cost. Include the costs associated with depots and storage within indirect costs. Only exceptional costs associated with working space or storage should be excluded.
- Costs are to be based on open-trench pipe laying with all other assumptions consistent with the relevant design and construction guidelines in Sewers for Adoption (6th edition).
- Include traffic management to meet the minimum requirements of The Street Works (N Ireland) Order 1995 (applicable in rural/suburban and urban highways and at entry and exit pits for rehabilitation).

- Allow for the costs associated with The Street Works (N Ireland) Order 1995 but exclude the lane rental costs as defined by The Street Works (Amendment) (N Ireland) Order 2007 [Article 34A].
- Include costs required to comply with relevant Health, Safety and Environmental regulations. Temporary fencing costs associated with Health and Safety legislation should be included.
- Include direct costs associated with commissioning.
- Exclude costs for crossings (e.g. railways, rivers).

Where a company's projects costs are based on assumptions different from those specified above (e.g. different frequency of manholes, depth of cover etc) then the company should make appropriate adjustments to its project costs such that the standard costs submitted reflect the assumptions specified in this document. The company should only make adjustments if it is able to demonstrate that the differences would result in a change to the cost (e.g. if the cost is the same whether there is 1.5m or 2.0m cover between ground level and the crown of the pipe then the company should not make an adjustment).

Column definitions

Estimates in each column should be consistent with the definitions as follows:

- **Grassland**
  Urban/ rural verges, new development sites or open field normally used for grazing. Allow for reinstatement of original surface but assume that no imported backfill material other than pipe surround is required. Include the cost of restoring land drainage in open fields. Exclude the costs of traffic management and temporary fencing.

- **Rural\suburban highway**
  Type 3 or 4 reinstatement and non-traffic sensitive in accordance with The Street Works (N Ireland) Order 1995. For example, secondary or minor roads, housing estates. Alternative forms of reinstatement are permitted under the legislation. For standard costs, assume the cheapest method permitted by the Order will be used.

- **Urban highway**
  Type 2 reinstatement and traffic sensitive in accordance with The Street Works (N Ireland) Order 1995. For example, cities and town centre trunk roads. Alternative forms of reinstatement are permitted under the legislation. For standard costs, assume that the cheapest method permitted by the code will be used.

- **No dig/ reline**
  Insertion of a flexible lining into the sewer using an inversion process. The lining is inserted under pressure of water and cured by circulating hot water. Include cleaning, CCTV and disposal of curing water; exclude pre-liner and over-pumping.

Section 7 Sewerage non-infrastructure

Table C2.7: Composition of expenditure by asset type: sewerage service

The company should submit an indicative breakdown of total projected sewerage service investment by asset type in table C2.7. This should be consistent with forecasts contained in the business plan, recognising the uncertainty around investment programmes at this stage. The sum of lines 1 to 7 should be 100%. The forecast investment in sewerage service should also be stated in pounds. For the submission due on 8 November 2013 the company should input this value. For the final business plan submission it will be copied from the total gross expenditure figure stated in the final business plan. Unless otherwise stated, definitions of asset types are provided in RAG2.03.

Table C2.8: Standard costs

The company should provide a breakdown of the estimates for the non-infrastructure standard costs in the CBS tables C2.8.1- C2.8.15. The company should transfer the total standard costs into master table C2.8.

Table C2.8 contains a series of standard costs that cover installation of new assets as well as refurbishment of existing assets. The selection of these has been based on an assessment of significant activity carried out in the current NIAMP, which is likely to be required in the next price limit period to meet existing and new obligations.

Where the line definition states a treatment process the company should not substitute an alternative process even if the alternative is its standard practice. Where the line definition only states input and output conditions the company should select the process in line with its standard practice.

The standard cost definitions seek to exclude any components of cost relating to site specific factors in order to allow comparison between companies; for example specifying green field sites with no complications. The value of the inclusions and/or exclusions must be stated on the CBS to show that they have been accounted for. In addition to the general guidance given in section 3 about the indirect costs and overheads the following assumptions, specifically relating to sewerage non-infrastructure direct and indirect costs must be made:

- There is no planning constraint on the phasing or construction of works; omit costs of planning application and planning studies (excepting normal feasibility studies and design, which should be allocated to indirect costs).
- Accessible land is available and legal/land purchase costs are to be excluded.
- There are no restrictions requiring seasonal working or limiting working hours.
- There are no unusual ground conditions; omit de-watering, soil stabilisation, deep foundations, rafts, piling, special ground support, ground anchors and excavation in rock. Allow for non-complex geotechnical investigations.
- Excavated materials are not contaminated and can be reused for embankments and there is no need to import fill.
- A public highway suitable for all types of vehicle exists to the boundary of the working area.
- The site is unobstructed and that no trees or ground clearance, drainage, diversion of existing services or preparatory works are needed.
- Telemetry and automation included in standard costs should be limited to local control and provision of suitable signals only, for subsequent capture by an assumed existing regional telemetry system.
- Exclude site drainage, roads, fencing and landscaping.
- Estimates are to be built up as an average cost for the size of works specified in the standard cost, not a nearest equivalent derived from a company's database or similar source; When companies have standardised sizes of process units/plant to achieve efficiency, and the standard cost requires an intermediate size, estimate for the size specified but assume that economies will be achieved to the same extent as would be present if the plant had been provided to the nearest company standard size i.e. use the same cost equation.
- Estimates are for Greenfield sites except where specified; assume that all necessary working space and areas for storage of materials are readily available without cost. Adjustments for limited working space and storage areas should only be made for exceptional costs and in any case not for works such as pump replacement or similar instances where the working space requirement is minimal.
- Exclude demolition costs except where reconstruction is indicated or may be selected, and assume that all necessary services (power, water, phone etc) are available on site.
- Existing services do not need to be diverted and they are of adequate capacity to meet new requirements e.g. new electricity transformers are unnecessary.
- No pumping is required at the inlet or within the site, except where the process choice would require interstage pumping etc.
- Include the costs of all interconnecting pipework.
- Mechanical and electrical costs should include installation and performance tests and commissioning.
- Assume that performance will be satisfactory first time and that process/plant modifications are not required.
- Exclude official opening costs for showpiece sites.
- Sizes and capacities quoted are to be taken as design requirements, i.e., there is to be no additional provision for growth.

- There is no requirement for a high standard of finish to works for aesthetic or environmental reasons.
- There is no limit on the height of structures, no requirements for screen walling or shielding earthworks, no covering of plant which under the company normal practice would operate in the open.
- No special measures are required for acoustic or odour control purposes. For exceptions see individual standard cost specifications.
- When pipe, fittings and other equipment are 'free supply' by the company, the cost of these items and associated procurement and stores costs must be included within the standard cost.
- Provide lighting, power, heating, ventilation, telephones, welfare facilities, intruder and fire alarms and entry control and surveillance within all new buildings.
- Companies should not assume spare capacity exists to provide a working solution, unless specifically allowed in the line definition.

Glossary of terms for mechanical and electrical (M&E) equipment

ICA	Instrumentation control and automation
MCC	Motor control centre
PLC	Programmable logic controller
DNO	Distribution Network Operators (previously REC)
FAT	Factory acceptance test
SAT	Site acceptance test

Section 8 Comparison with PC10 unit costs

Tables C2.9 (water service) and C2.10 (sewerage service) should contain:

- Downloaded unit costs taken from the PC10 cost base and indexed to 2012-13 prices (using COPI), and
- Updated cost estimates for these projects submitted as part of the PC15 cost base exercise copied from tables 2.2, 2.4, 2.6 and 2.8, where the company has provided them. [It should be noted that these are more comprehensive than Ofwat's tables C2.9 and C2.10, as they include all of NI Water's PC10 submitted standard costs lines.]

The company should also provide commentary on the general level of these standard cost estimates and an explanation of the differences between current estimates and those submitted in PC10. This commentary should start from the expectation that movements in standard costs will generally reflect efficiency savings.

Companies should also set out the changes that have been made to their costing methodology, including unit costs, to take account of technological and other efficiencies since the PC10 cost base exercise.