



# Welcome to bioresources form of control workshop

(These slides were used to promote discussion and do not represent confirmed policy or company positions)

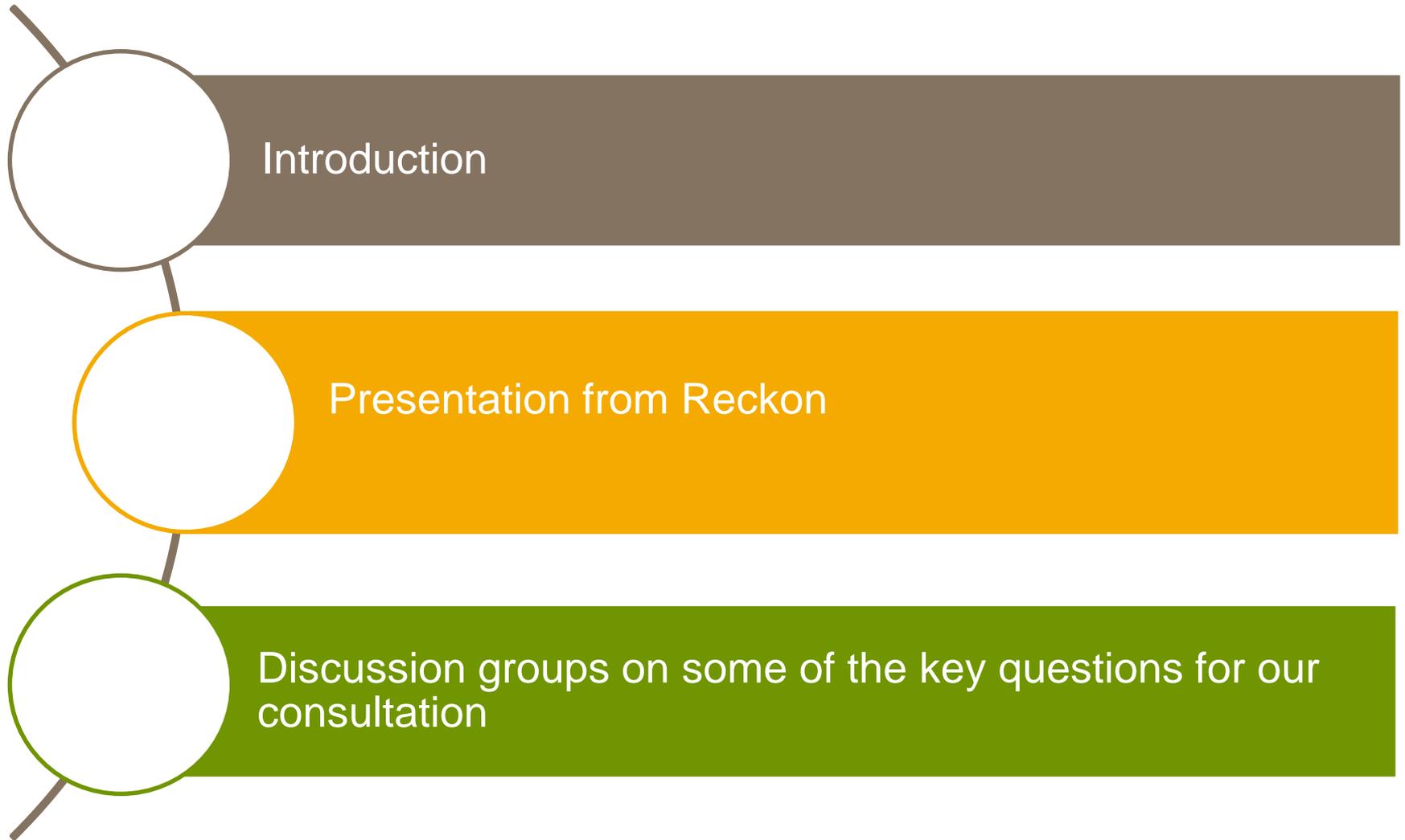
17 January 2017

	Agenda Item	Time
1	Introductions	10:30 to 10.40
2	Bioresources RCV allocation – progress and next steps Iain McGuffog, David Young, Reckon	10:40 to 12:00
3	Coffee break	12:00 to 12:10
4	Bioresources form of control: Volume measure Alison Fergusson, Khaled Diaw	12:10 to 13:10
5	Lunch	13:10 to 13:50
6	Bioresources form of control: discussion points Facilitated by Khaled Diaw, Thames Water and Welsh Water.	13:50 to 15:00

# Update on RCV allocation for bioresources

Iain McGuffog

17 February 2017



In May we set out the four main reasons for considering a focused allocation of the RCV to be beneficial:

Ensuring a level playing field for sludge transport, treatment, recycling and disposal so that third-party service providers have clarity and confidence that they are participating in markets on equal terms with incumbent companies.

Ensuring a level playing field for wider markets and protecting the interests of wastewater customers where WaSCs are involved.

Avoiding over-recovery of gains from legacy asset sales/purchases by incumbent companies.

Maintaining consistency between charges and cost recovery.

At the working group on October 20 we discussed:

- some of the different valuation approaches (roll forward of PR09, company valuing assets or processes, standard cost exercise)
- the trade offs between precision and simplicity, in terms of cost accuracy and consistency between companies
- some of the key valuation challenges, such as what assets/processes are valued and costing topics such as land

Today:

- Update on RCV allocation
- Presentation from Reckon on their work
- Early discussion on key topics for our consultation on the bioresources valuation guidance



- We propose to collect information from companies on the valuation of their sludge transport, treatment and disposal assets and how this relates to its economic value in advance of the submission of PR19 business plans
- Use upstream services definition in RAG 4.06
- Valuation for 31 March 2020

When	What
Early March 2017	Consultation on guidance
Early April 2017	Consultation closes on draft guidance
Late April 2017	Ofwat publishes decision on guidance
By 29 September 2017	Companies to submit bioresource asset valuation and RCV allocation plus assurance information to Ofwat
January 2018	Ofwat provides feedback to companies on their asset valuation and proposed RCV allocation to inform their PR19 business plans
December 2019	Ofwat decision on RCV allocations as part of PR19 final determinations

# **Bioresources RCV allocation**

Presentation to Ofwat *Form of control workshop*, 17 January 2017  
Nicholas Francis – Partner, Reckon LLP

# Background to the RCV allocation

Allocation of wastewater RCV between sludge and network plus

Part of package of initiatives to help unlock potential for markets to play greater role in activities relating to sludge treatment and disposal

- Separate price control for sludge (hence RCV allocation)
- Average revenue control for PR19
- No RCV guarantee on post-2020 investment
- Measure to increase extent of market information available

Ofwat decided to make sludge RCV allocation on **focused basis**

- Means that sludge RCV not driven by value of historical RCV and not distorted by any privatisation discount

# Objectives for the focused allocation

Ofwat wants to ensure that sludge RCV reflects the **economic value** of sludge assets and that sludge charges reflect capital costs

Several benefits envisaged

- Ensure that **competition in wider waste markets** not distorted by unduly low pricing by water companies who can provide services using assets financed through the RCV
- Send the right **price signals** to service providers who may be able to participate in markets for provision of sludge services to a wastewater company
- Protect against the risk of unfairly **transferring value** from customers to investors

# Reckon/Jacobs project for Ofwat

Ofwat commissioned consultancy support in late November 2016

- Project team led by **Reckon**, supported by **Jacobs**
- Mix of regulatory economics, accounting and engineering expertise

Main elements

- Conceptual work – what should asset valuation represent?
- Review of high-level approaches
- Work through practical questions for valuation methodology
- Contribute to guidance for consultation

Final report - end January 2017

# Economic value concept

Economic value of a set of assets depends on the value that can be generated by using (or selling) those assets

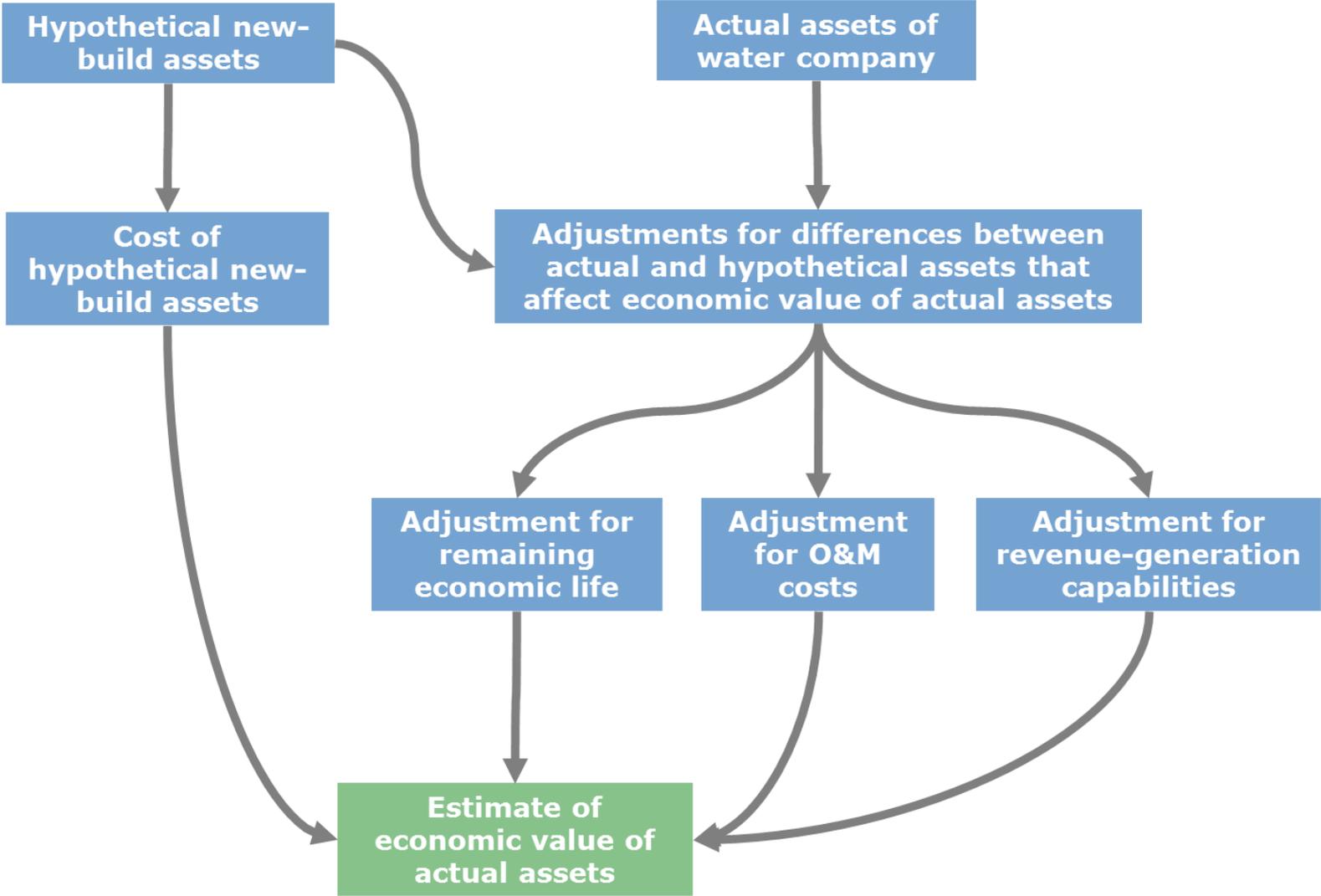
For sludge assets, several sources of revenue

- Treatment and disposal of wastewater sludge (**price controlled**)
- Energy generation (market prices)
- Sale of sludge by-products / biosolids (market prices)

Circularity arising from price controls for sludge PR19 / beyond

- Make assumption about regulated prices to resolve circularity
- Prices under hypothetical assumption of effective competition from new market entrants (using newly built assets)

# Calculation of economic value



# What we envisage

- Clear methodology for calculation of economic value
  - Builds on net MEAV concept from PR09 / RAG 1.05
  - Tailored to purposes and risks for sludge asset valuation
- Valuation led by companies, subject to Ofwat review
- Common industry-wide template
  - Exposes key calculation steps
  - Enables more like-for-like comparisons between companies
- Rules/guidance on a series of practical questions and issues

# Practical issues we're working through

## Costing new-build assets

- Site configuration
- Processes to be costed
- Choice of technology/process
- Treatment of non-appointed assets
- Assumed level of capacity
- Land values

## Adjusting for differences between actual and hypothetical assets

- Adjustments for revenues
- Adjustments for O&M costs
- Treatment of energy generation
- Time horizon for adjustments
- Discount rate

## Adjustments for remaining economic life of actual asset

- Purpose of adjustment
- Potential approaches
- Level of granularity
- Asset age vs condition
- Link to company/reg. accounts

## Other issues

- Timing of valuation / updates
- Shared services / M&G
- Tankers and transportation
- Liquor treatment
- Grants and contributions

Discussion groups on approach

Peter Jordan

ofwat

Objective is to get a consistent approach to bioresource valuation

Emphasising company ownership of proposed valuation and RCV allocation – other options would have less flexibility

Enables Ofwat risk based review and proportionate intervention – customer protection and enabling efficient trading

Introduction – why allocate

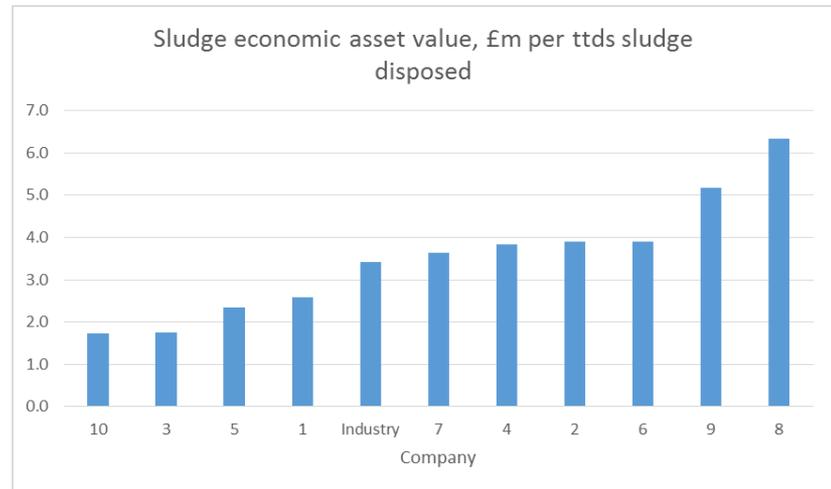
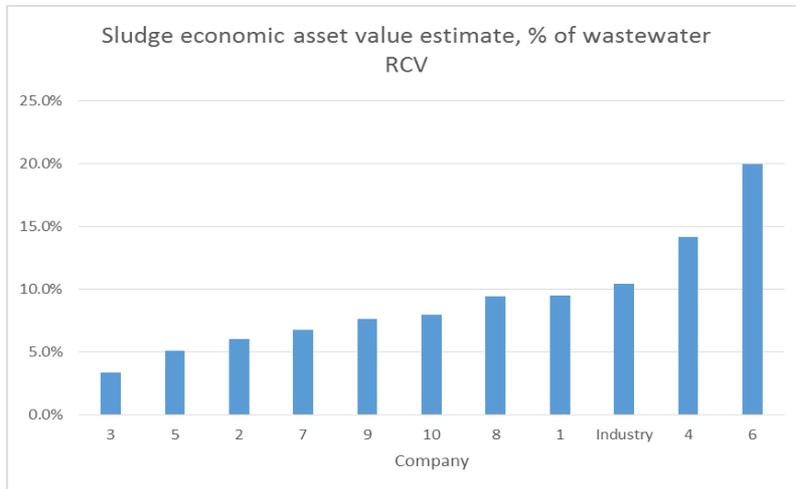
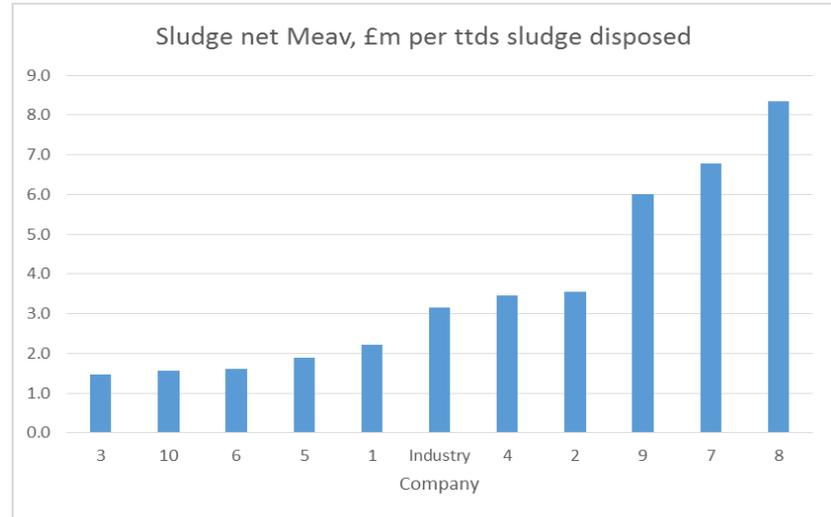
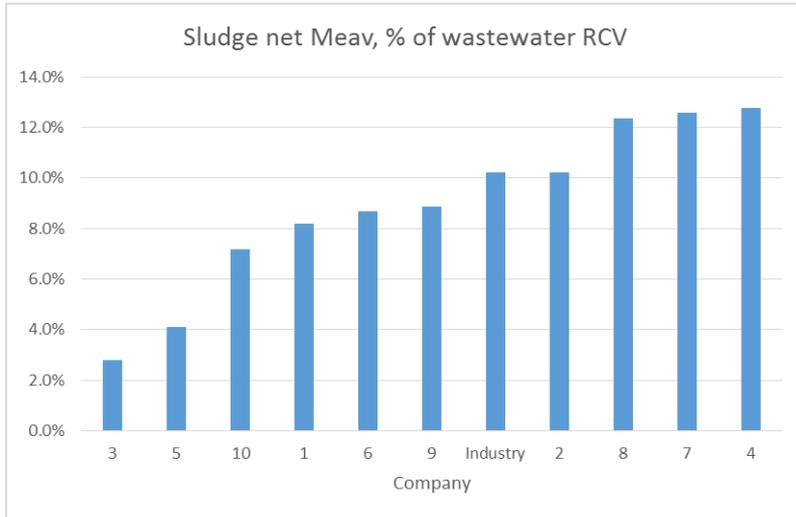
Approach – set out the principle of economic value

Process – consult on our view on the key assumptions and set out the practical process steps that we expect, e.g.



Information and assurance – tables and information with governance expectations

# Illustration – current MEAV v economic value



# Summary of approach – reflected in tables and information

Processes you would build as if you were a hypothetical new entrant to provide same regulated service

Cost of hypothetical new asset:  
Gross valuation  
Book life

Adjust hypothetical new assets to reflect differences in economic value of actual assets

Arrive at a net economic value of the current assets = focused valuation of RCV at 31 March 2020

Modern equivalent assets for:  
Same service at site  
Location

Company led costing using a consistent approach to other companies

Economic value:  
Discounted difference of cost and income  
Time period over which current assets deliver value

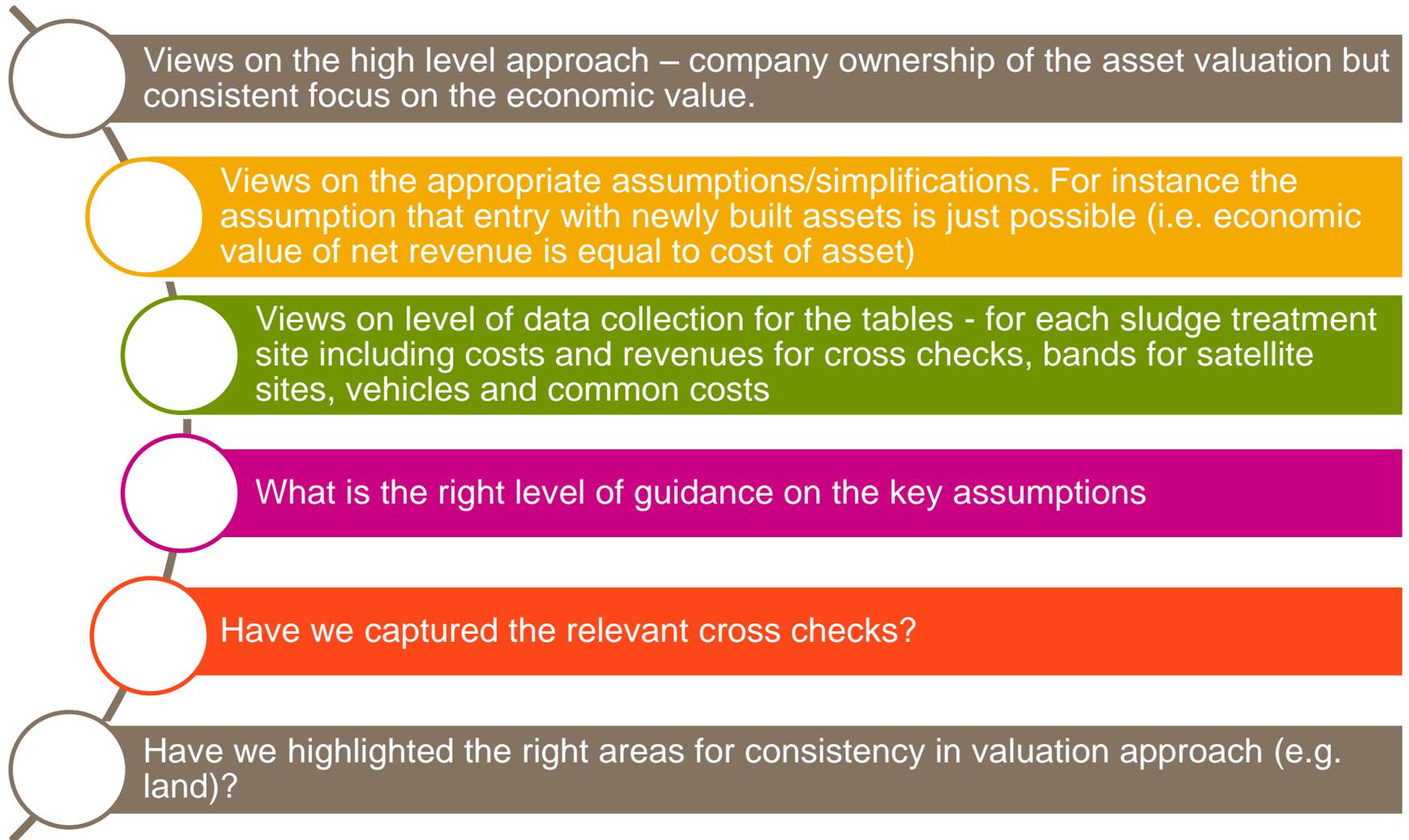
Cross check against:  
PR09 valuation roll forward?  
Cost and condition of current assets?  
Backwards look – historic expenditure / statutory accounts

Forward looking concept:  
Consistent with sludge strategy (e.g approved plans, recent build choices)

Valuation includes:  
Land  
On costs  
Infrastructure  
Non site costs such as vehicles  
Common costs e.g. IT, offices  
M&G

Consistency between charges and cost recovery  
Sufficient revenue implied for maintaining actual assets

If valuing current assets as at 31 March 2017, roll forward to 31 March 2020 with expenditure net of depreciation



- Explore allocations (water resources and bioresources) at Regulatory Accounts Working Group on 28 February
- Consultation 4 weeks – 1 March to 1 April
- Further questions and discussion in advance or during consultation

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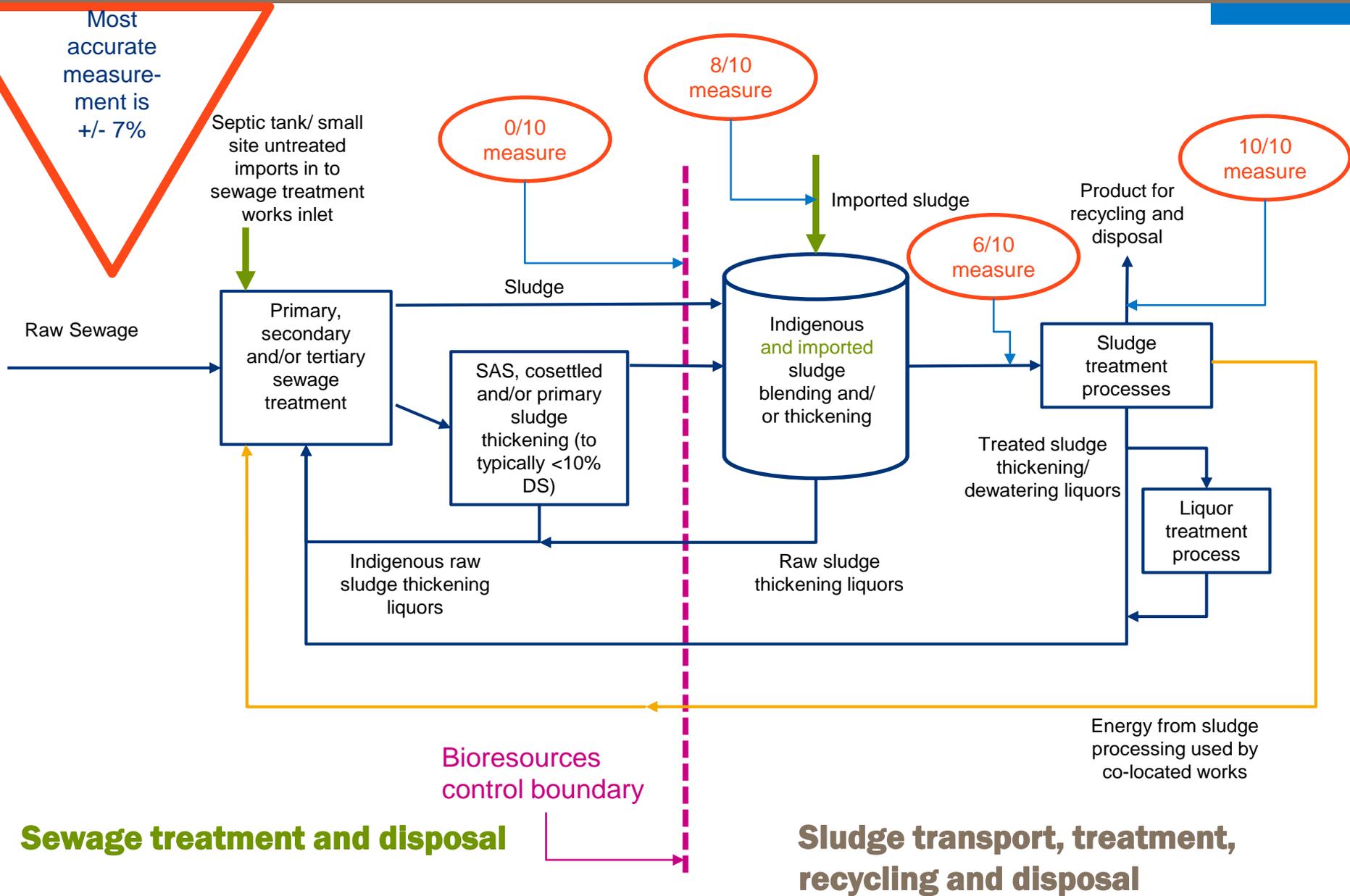
## Bioresources control – volume measure

Alison Fergusson  
17 January 2017



1. Current measurement of sludge volumes
2. Revealed issues with measurement, forecasts and variability
3. Definition of measure for bioresources price control
4. Options for adjustments
5. Discussion questions.

# Current practice on measurement. TDS = flow x concentration



# What are the issues with the sludge measures we have used in the past?

Variance between companies in definition of sludge produced

Use sludge disposed to calculate sludge produced

Vs

Population served to calculate sludge produced

Include grit and screenings (4 companies)

Vs

Exclude grit and screenings

Sludge produced by STCs (ie after treatment)

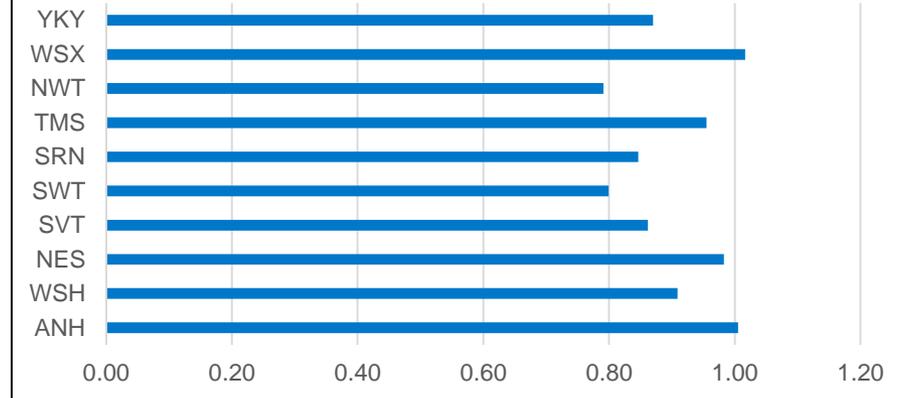
Vs

Sludge produced by wastewater treatment

Difficult to measure due to variability. Measuring production TDS is not needed for management of integrated sewage and sludge treatment services

Variance between a company's forecast and actual measure of sludge

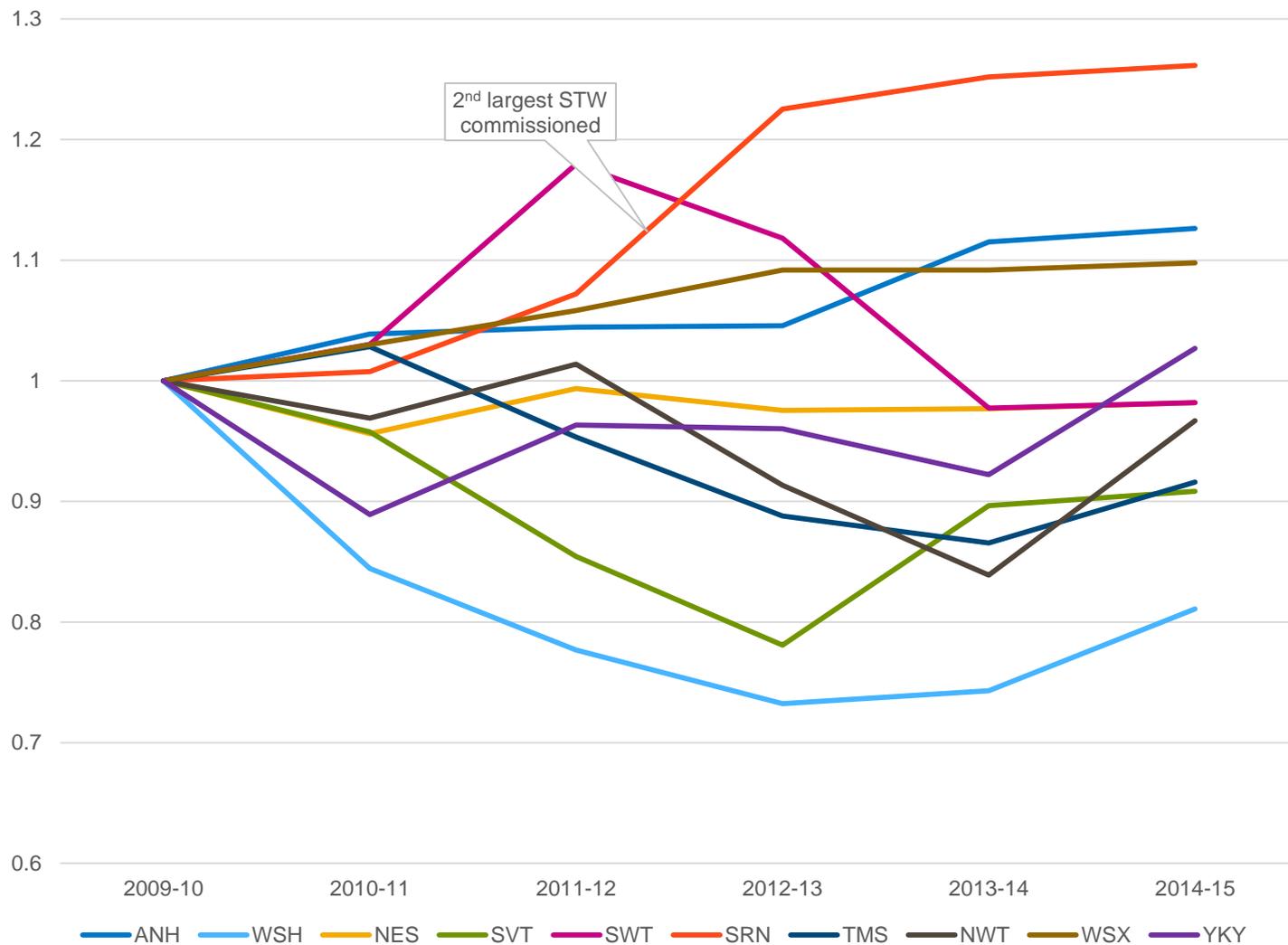
5 year total (2008-09 to 12-13): actual sludge disposed as proportion of PR09 forecast



Variance in a company's measure over time

Eg. "For JR10 the company has revised its method of calculating sludge produced and disposed from that used for JR07-JR09. TDS figures are calculated directly from volumes reported and analytical data and no longer include any adjustment for digestion process losses. As a result ...there is a marked reduction in this year's figures compared to previous."

# Change in relative sludge production reported over time



For the average revenue control to work as intended we need a measure of bioresources volume that:

- is meaningful for the market, i.e. is “commodity” based;
- incentivises appropriate behaviour by both producers and market entrants;
- is consistent over time;
- is consistent between companies;
- is not disproportionately costly to measure and assure; and
- is clear

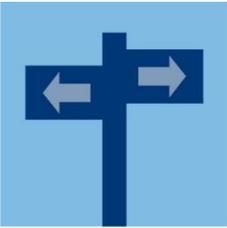
## **Draft Definition**

Sludge production in tonnes dry solids for the average revenue price control:

- is a measure of untreated sludge (primary, secondary and tertiary) produced by wastewater treatment processes;
- does not include the grit and screenings removed through preliminary wastewater treatment processes, but is likely in some cases to include some screenings from smaller wastewater treatment works without inlet screens. Such screenings may be removed as part of the sludge treatment process, for example through pre-digestion or imported sludge screens;
- is as direct as possible and so follows the principles by preference:
  - Measured - compulsory after 2020 for both flow and dry solids (rather than calculated);
  - Continuously measured rather than composite sampling, but composite sampling rather than spot sampling.

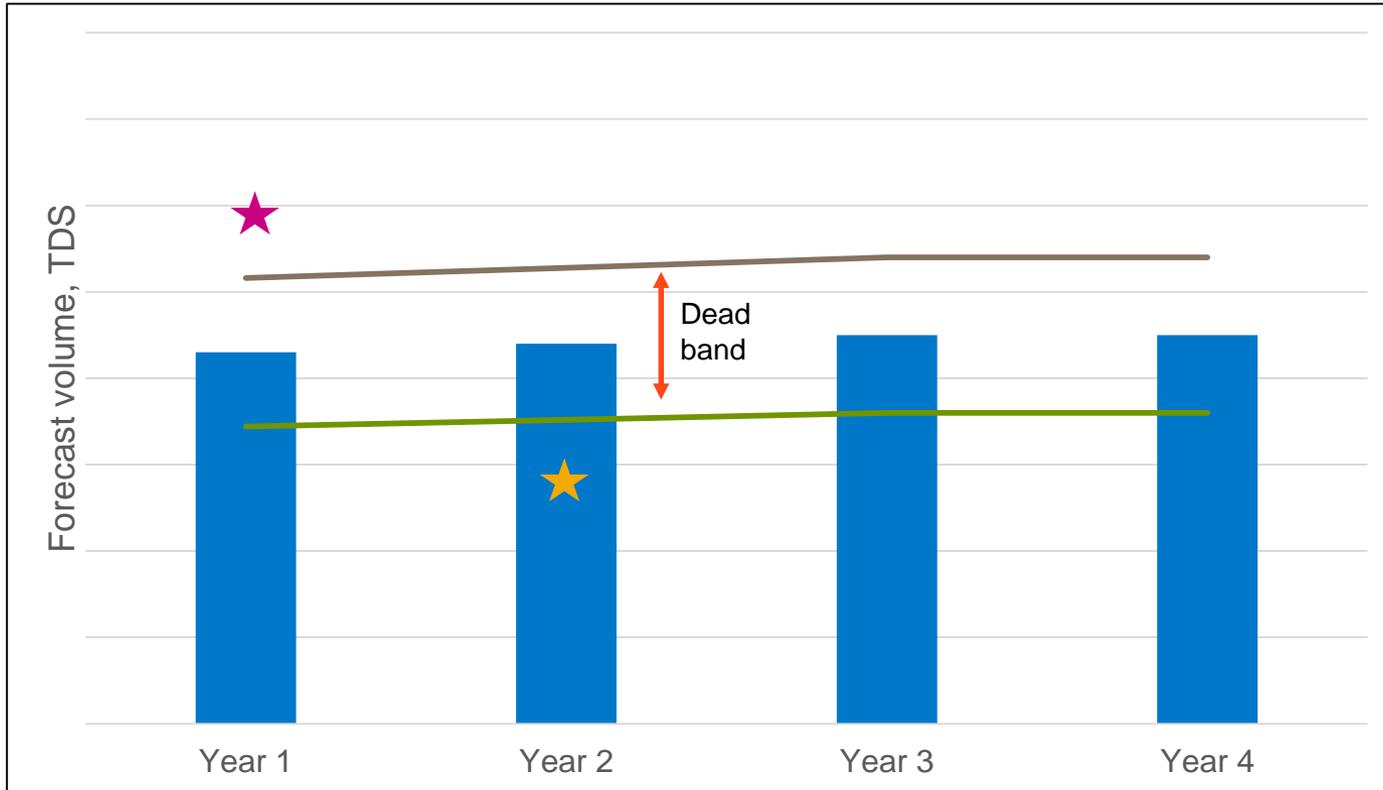


- The average revenue control will be based on forecasts of TDS.
- But how can we be confident about the forecast when we don't have reliable measurement now?
- An average revenue based on TDS forecasts incentivises companies to understate volume forecasts – giving high revenue per tonne, and any true-up for variance between low forecast and higher actual will see a larger £ per tonne in the company's favour.
- We need to protect customers from over-recovery of revenue. Over-recovered revenue from outturns significantly exceeding forecasts ought to be handed back to customers.
- But is this only for outturns outside a margin of forecasting errors?
- If companies incur down-side volume risk – under-recovery if actuals are less than forecast, should companies benefit from upside risk and keep the money when variance is favourable?



- No adjustments
- Symmetrical true-up (with dead band)
- Asymmetrical true-up (with dead band)
- WRFIM-type penalty for poor forecasting, but no true-up

And if adjustments are made are they in period or at the end of 5-year period?





1. Where is the most pragmatic place to measure untreated sludge produced for the price control? How would this change when considered from the view of the sludge producer (network plus) and the sludge treater (bioresources)?
2. What would you change in the draft definition of sludge for the purpose of the bioresources control?
3. How should we incentivise accurate forecasting?
4. What are the pros and cons of the different options for adjustments due to variations between forecast and actual sludge volumes?

Bioresources form of control

Khaled Diaw, Principal  
January 2017

- Ofwat is developing its thinking around the detail of how to implement the form of the wholesale price controls.
- The May 2016 Water 2020 decision document sets the framework for the PR19 wholesale controls, but there are some detailed issues to resolve.
- The purpose of today is to test some of our thinking around these detailed issues relating to the form of the bioresources control
- **This is policy in development.** The material in the slides should be taken as a guide to facilitate discussion and debate. They do not represent an Ofwat decision of position.

In summary:

- **Separate binding average revenue control for bioresources;**
  - Set using a building block approach;
  - Indexed by inflation;
  - Will deliver sufficient revenue to fund efficiently incurred costs to treat a given (expected) volume of sludge;
  - Average revenue control means that companies take some volume risk over the control period, i.e. if sludge actually treated differs from forecast. Risk can be favourable or unfavourable.
  
- **RCV protection will be extended up to 31 March 2020, investments in sludge assets beyond this point “at risk”;**
  - No risks of asset stranding in PR19 – retailers cannot choose who treat their sludge and sludge trading should take place only where there is mutual commercial advantage;
  - We will not implement an explicit mechanism to guarantee the pre-2020 RCV – allowances set to recover efficient costs

- The pre-2020 RCV will be eventually fully run-off although this is not going to happen by 2025.
- Once pre-2020 RCV is fully run-off, no guarantee on all investment: market logic
- The above requires that, from 2020, the pre-2020 RCV will need to be separated from post 2020 investment and continue to be so until it has been fully depreciated.

- Binding control – what does this mean?
  - Soft or strictly binding control?
  - Separate cost recording and allocations/ Internal wholesale charges / both?
  - Balance of risk and incentives?
- Ring-fencing of pre-2020 RCV
- Do our May proposals (namely re RCV guarantee) fit with the totex approach? Or is there a more appropriate approach?
- Trueups?
  - Expect ‘standard’ true ups to continue, e.g. for charge-related revenue over/under recovery
  - Volume risk in average revenue control means no true up for forecasting variance, relative to actual (within a certain margin of forecasting errors). But volume measurement issues?
  - Given volume measurement issues, should we set a flat control over the 5 years with end of period adjustments? or
  - Should we e.g. allow for an adjustment after one or two years (to give time to collect robust TDS measures) for the remaining control period?

# Sludge price control

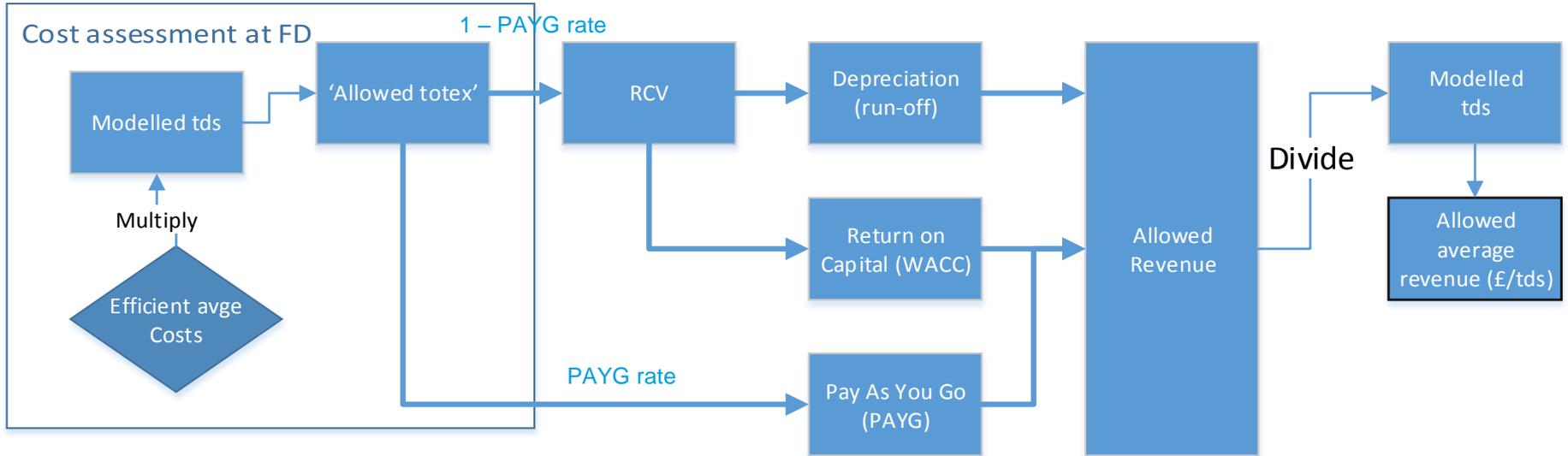
How will it work in practice?

Daniel Davies

Cost assessment could be based on

1. Cost-modelling exercise as at PR14
2. Observed average total cost in 2017/18 (or average over a number of years); or
3. Stand-alone estimate of long-run average cost.

**Step1: Calculation of control for first year  
(At PR19 determination)**



NB excludes tax and other adjustments (for simplicity)

# Sludge price control - Adjustments



# Adjustments to the bioresources price control

## Assumed form of control:

- PR19 allowed £/tds = allowed building blocks revenue / expected sludge generated in-area (no stranding risk in AMP7)
  - Actual allowed revenue = PR19 allowed £/tds \* actual sludge generated in-area
  - PR19 allowed £/tds to be indexed by the relevant inflation index (CPI or CPIH)
  - Pre/Post 2020 RCV could lead to different allowed returns and/or run-off rates
- Possible adjustments include:
    - Totex incentives
    - Outcome delivery incentives
    - Change in “blended” PR19 allowed £/tds
    - Differences between expected and actual sludge generated
    - Differences between allowed and actual revenue
  - Are there others missing?
  - Objective is to ensure the appropriate incentives and customer protections are in place



# Proposals for comment – Totex & ODIs

- Totex incentives
  - Efficiency incentives from totex incentives, e.g. ~50:50 sharing of over/underspend
  - Is there a case for larger company share in AMP7 to provide stronger incentives for market efficiency ahead of market opening and to more closely reflect operations of markets?
  - Adjustment at price control level, applied at end of period in NPV neutral terms to Network Plus control – so as not to affect market price in AMP8
  - Important to get incentives/pricing right for processing out of area sludge (SRMC plus margin) and allocation of costs to this income as part of totex incentive
- Outcome delivery incentives (financial rewards or penalties)
  - Proposed in plans and set out in FD whether in-period or end-of period, and whether revenue or RCV adjustments
  - ODIs may be in place for new investment for customer protection
  - Competitive entry should not erode incentives or distort competition – one approach would be to apply adjustments to the network-plus price control revenue/RCV
- If differential returns/run-off rates apply between Pre/Post 2020 RCV, may be a need for adjustments to reflect the change in the “blended” PR19 allowed £/tds (possibly covered by Totex or ODI adjustments)



# Proposals for comment – allowed revenues

- Differences between expected and actual sludge generated
  - Adjustment not required if actual allowed revenue determined by actual volumes
  - TDS is preferred to population equivalent because:
    - %DS is directly measured to calculate TDS, whereas PE is approximated based on assumptions, e.g. number of properties, occupancy rates, trade effluent volumes and loads, transient population, forecasts of population and housing developments
    - TDS forecasts are based on PE and vary by the effluent process type (filters, aeration, chemical dosing) – a simple PE figure does not have this level of granularity
    - TDS is well understood both inside and outside the water industry. PE is not fully understood or used by other industries
- Differences between allowed and actual revenue
  - End of period true-up for over/under collection of allowed price control revenue
  - Could use forecasting incentive to penalise significant under or over-collection
  - Suggest adjustment made should be applied at wholesale wastewater level to Network Plus price control
    - in part because we consider that for end-user customers, prices should continue to be set at wholesale level to recover prices from all wastewater controls (separate prices should only be set where customers can take action to change costs)

