

Welcome to 5th sludge working group meeting

20 July 2016

	Agenda Item	Time
1	Design options for promoting greater use of markets within Sludge Transport Treatment, Recycling and Disposal – Ofwat (Alison Fergusson)	10:00 to 10.30
2	Environmental Regulations covering sludge treatment and use – (Facilitated by EA, Fran Lowe)	10.30 to 11.30
3	Water Company perspective (Facilitated by Anglian Water, Simon Black)	11:30 to 12:30
	Lunch	12:30 to 13:00
4	‘Other Organic Waste’ Industry perspective (Facilitated by Renewable Energy Association, Alexander Maddan)	13:00 to 13.45
5	Drivers for change (Facilitated by EA, Paul Hickey)	13:45 to 15:00
6	Actions and setting future working group sessions – Ofwat	15:00 to 15:30

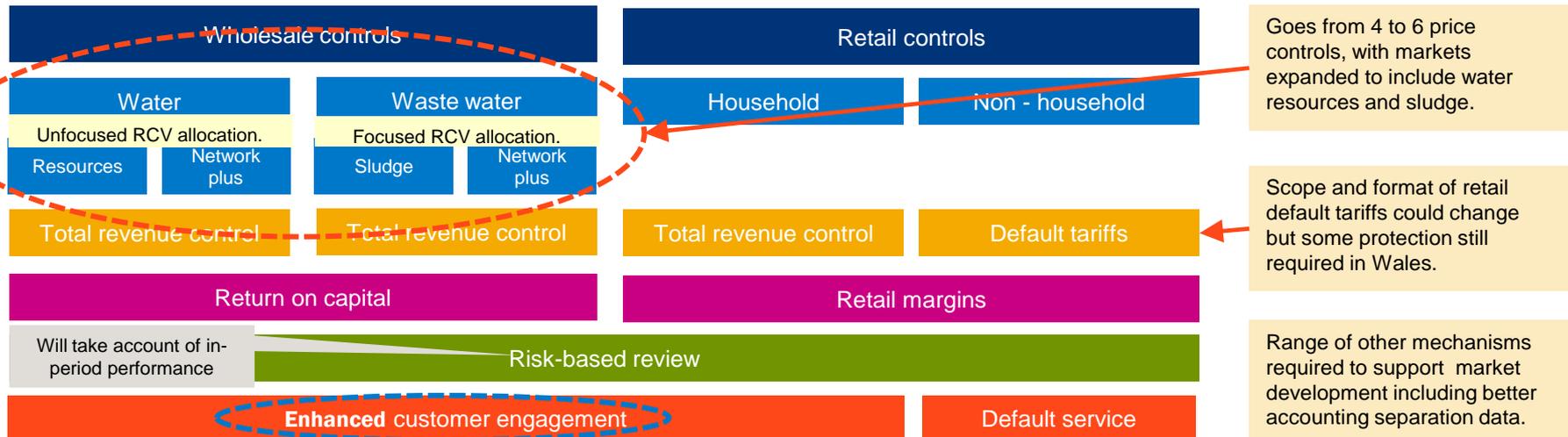
Context and introduction

Alison Fergusson

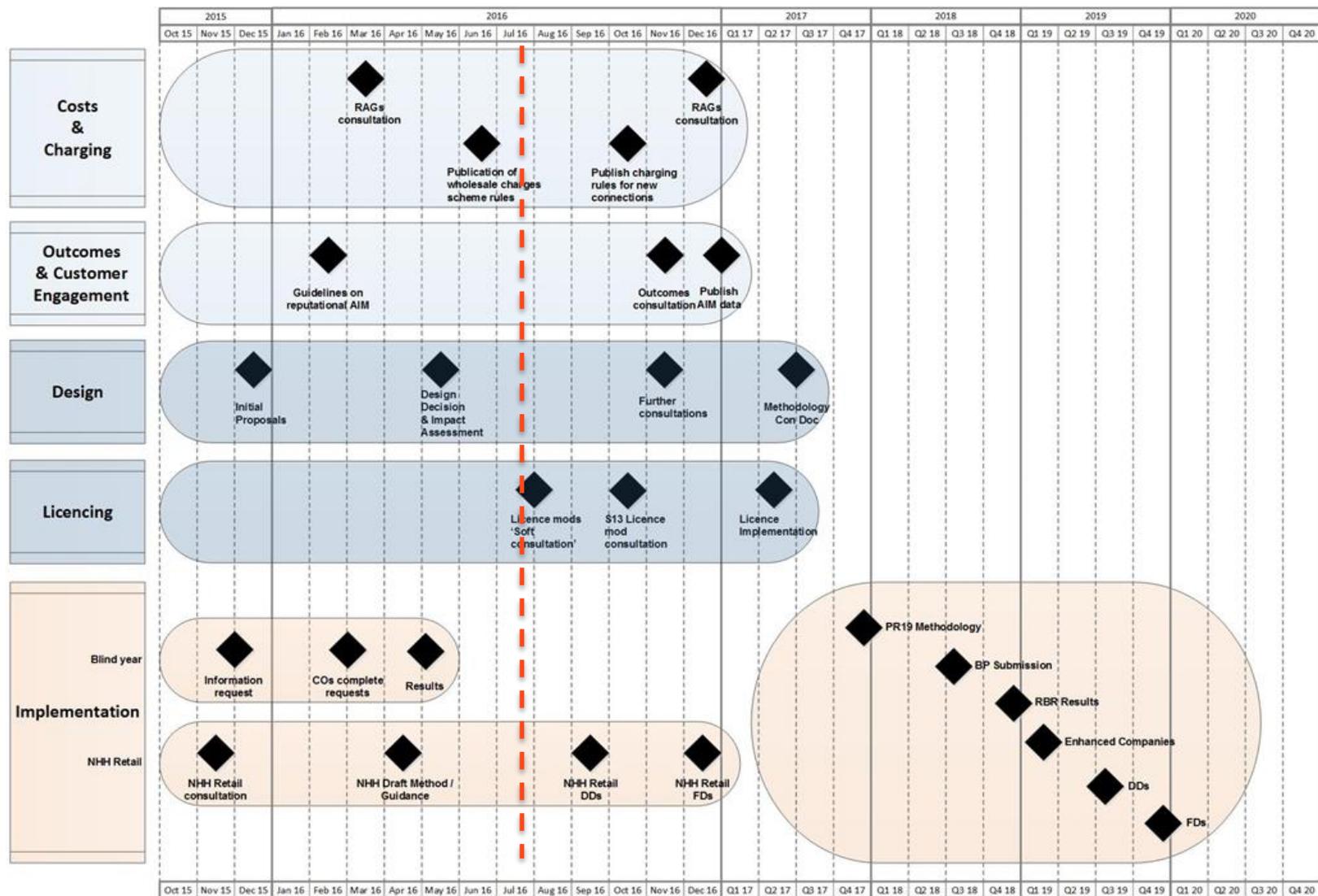
PR14 regulatory framework



Proposed PR19 approach



Timetable for Water 2020



What do we mean by sludge?

Sludge = activities of sewage sludge transport, treatment, recycling and disposal. It includes dealing with liquors generated during treatment.

Why do we think there is scope to use markets in sludge?

There is scope to use markets because...

Potential gains from local market between WaSCs.

Unrealised gains from market with firms in wider waste markets.

Dynamically increasing demand over time - change in biosolids use and technology.

Relatively less stranded asset risk - shorter asset lives.

We know this because...

We have analysed the scope for trades between companies by geography.

We have surveyed potential entrants.

We have analysed usage patterns over time.

We have examined investment requirements.

What needs to be addressed in order to realise benefits?

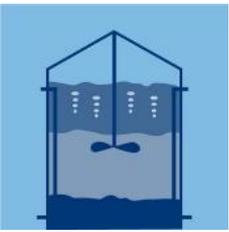
Within our influence / control

Missing information
Regulatory incentives
Cultural issues

Outside our influence / control

Environmental regulations
Transport costs

Consistent with 2011 OFT study.





Increased information transparency is likely to improve within WaSC optimisation – with resultant cost savings.

Similarly, better information may allow us to set more targeted incentives, driving further cost savings.

Increased optimisation of sludge activities across WaSCs (through competition) should start to drive more material cost savings for wastewater customers.

Interplay with wider waste markets could drive further efficiency gains over time, particularly through technological change, for wastewater customers.

Benefits may also be wider than for wastewater customers – in particular, there may be spill-over benefits into wider waste markets as: (i) capacity / assets are better utilised; and (ii) technological changes is leveraged across industries (wider UK waste market has a Gross Value Added of £5.4bn – so benefit could be much more material than implied by the size of sludge value chain).

Our proposition for customers

“Customers benefit from direct competition between and across WaSCs and wider waste firms, as they seek to better utilise capacity and seek out efficiency gains. Lower bills delivered through the resultant cost savings and the ability to generate additional value.”



Market information:

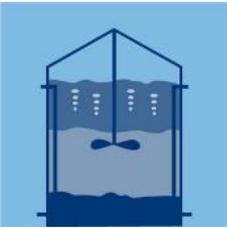
- Companies will publish information about where their sludge is produced and some quantity and quality parameters for the raw sludge;
- Companies will publish limited information on location, contract duration and the sludge volumes of successful bids, but not prices of successful contracts;
- Companies will record information on all bids received by WaSCs for sludge services and provide to Ofwat if required.

Price control:

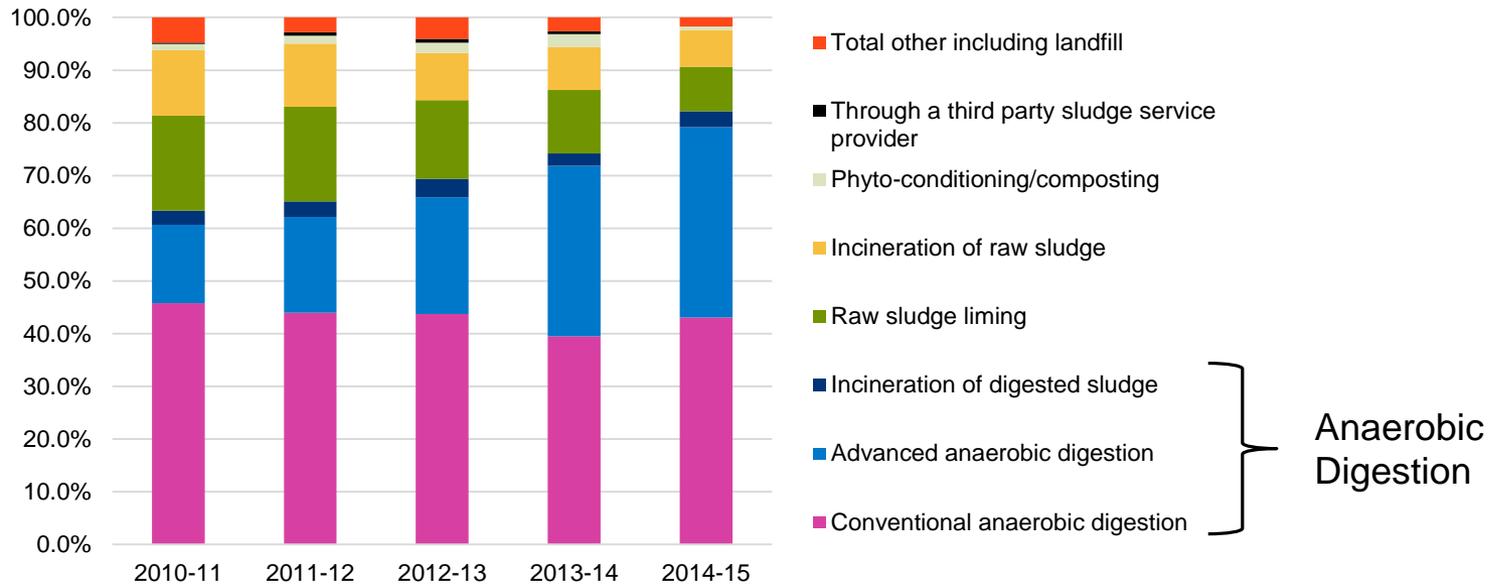
- We will set a separate binding price control for sludge activities in the 2019 price review (PR19);
- We will set the sludge price control at a company level rather than site level.



- Set up in January 2016. Meets every 6-8 weeks. Will continue for the rest of this year.
- Intended to be an open forum for constructive discussion.
- Primary role is to “kick the tyres” on the details of design and implementation on the sludge market mechanism, such as the separate price control for sludge and the market information to be published.
- Members include water companies, potential market entrants, environmental regulators.
- It is not a decision-making body.
- Agenda items so far have included:
 - Explaining Ofwat’s proposals in December consultation
 - Calculating costs and benefits of proposed changes
 - Detail of market information and data governance
 - Likely market interactions
 - Defining the boundary between sludge and other water company activities
 - How to value existing sludge assets
 - How the water company price control might work
- Slides and note of meeting published on our website.



Anaerobic Digestion is key technology for sludge treatment



Different environmental regimes that govern treatment and recycling of sludge, waste and quality digestate products are perceived as barriers to closer integration of sludge and wider anaerobic digestion markets.

Today is for us together to focus on differences, do some myth busting, and consider what we might want to do, indeed what we can do in this area to maximise value from these activities and continue to protect the environment.



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Environmental Regulations: sludge treatment and use

Fran Lowe
E&B Manager, Environment Agency

Ofwat, 20th July 2016

- ➔ Regulatory framework for the water industry
- ➔ Parity with other industry sectors
- ➔ Controlled Waste Regulations
- ➔ Industrial Emissions Directive
- ➔ Emerging evidence of environmental issues

A range of organic materials

- ➔ Sewage and sewage sludge (including liquors)
- ➔ Green waste
- ➔ Other municipal waste
- ➔ Agricultural manures and slurries
- ➔ Industrial and commercial waste from food processing and retail industries
- ➔ Crop residues
- ➔ Energy crops

Sources of regulation

European

- ➔ Waste Framework Directive
- ➔ Industrial Emissions Directive
- ➔ Urban Waste Water Treatment Directive
- ➔ Sludge Directive

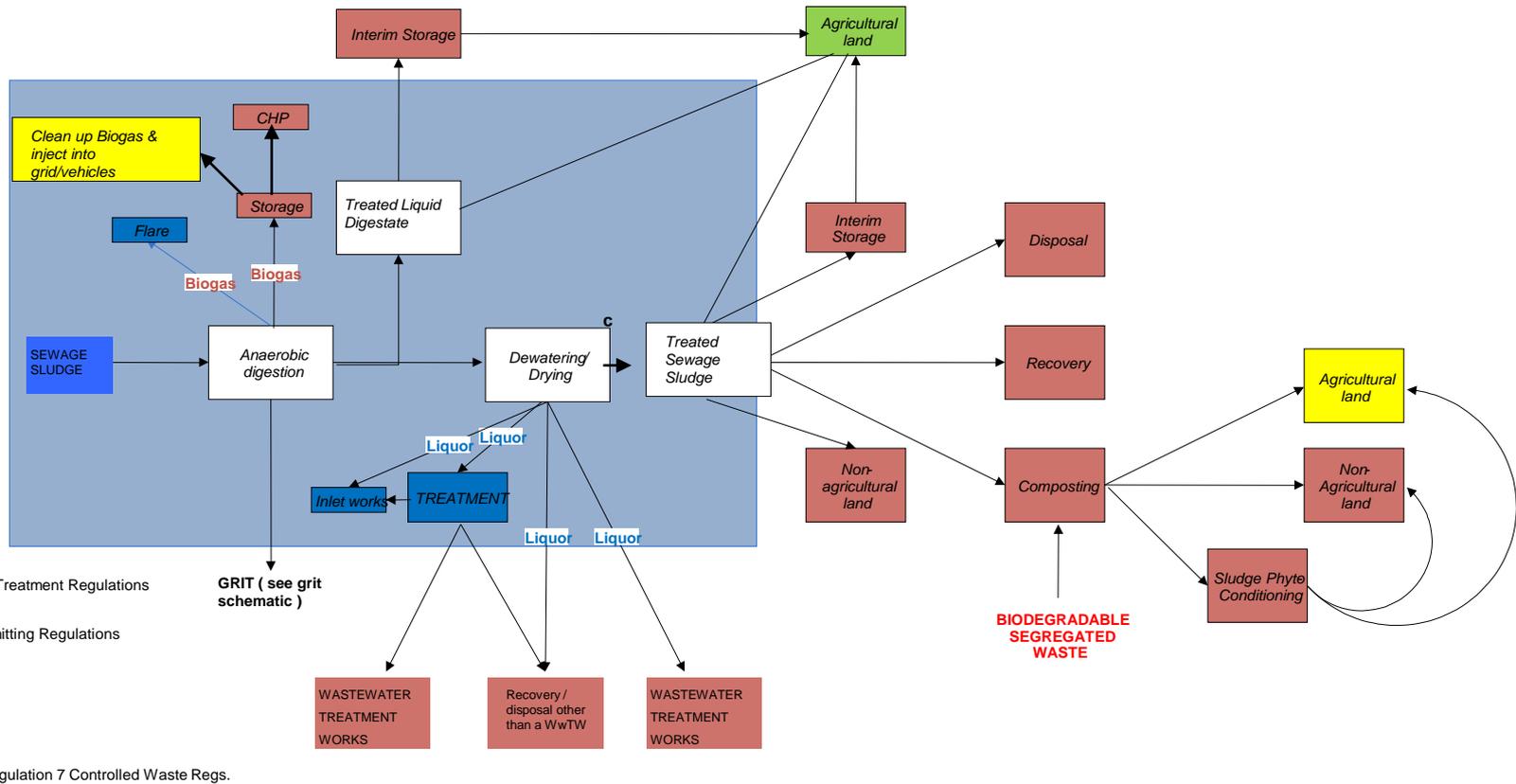
Domestic

- ➔ Environmental Permitting Regulations
- ➔ Urban Waste Water Treatment Regulations
- ➔ Controlled Waste Regulations
- ➔ Sludge (Use in Agriculture) Regulations

Disparate regulation of treatment and use

- ➔ Unregulated – e.g. non-waste materials
- ➔ Definition of waste, EoW (Waste FD)
- ➔ Compliance with quality standards and protocols
- ➔ Exclusions (Controlled Waste Regulations)
- ➔ Environmental permitting (waste operations)
- ➔ Environmental permitting (IED)
- ➔ Exemptions (T21, S3)
- ➔ Regulatory positions
- ➔ Sludge (Use in Agriculture) Regulations
- ➔ Safe sludge matrix
- ➔ Urban Waste Water Treatment Directive
- ➔ Medium Combustion Plant Directive

SLUDGE TREATMENT INDIGENOUS



The Environmental Regulatory Framework as applicable to water industry wastes – as agreed by industry/ Agency TaF – June 2011 (Version 1) edit

Sludges and waste waters

Case law confirms that sludge (including liquors) is distinct from waste water. This distinction is important in determining which legislation applies to sludge.

Interpretation of SLUDGE:

- ➔ ... Residual sludge from sewage plants treating domestic or urban waste waters and from other sewage plants treating waste waters of a composition similar to domestic and urban waste water.

Interpretation of TREATED SLUDGE:

- ➔ ... Sludge or septic tank sludge which has undergone biological, chemical or heat treatment, long term storage or any other appropriate process so as significantly to reduce its fermentability and the health hazards resulting from its uses...

Source: The Sludge (Use in Agriculture) Regulations 1989

Examples of effective sludge treatment processes

- ➔ Sludge Pasteurisation
- ➔ Mesophilic Anaerobic Digestion
- ➔ Thermophilic Aerobic Digestion
- ➔ Composting (Windrows or Aerated Piles)
- ➔ Lime Stabilisation of Liquid Sludge
- ➔ Liquid Storage
- ➔ Dewatering and Storage

Source: Code of Practice For Agriculture Use of Sewage Sludge 1996

In addition:

- ➔ Incineration, pyrolysis and gasification

Environmental permitting

3 tier system of authorisations

➔ **Exemptions** – listed in Regulations.

e.g. S3 Storage of Sludge

➔ **Standard permits** – developed by the Environment Agency for activities which can be adequately controlled by generic risk assessment.

e.g. SR2010 No15: anaerobic digestion facility including use of the resultant biogas (site based permit)

e.g. SR2010 No4: mobile plant for the reclamation, restoration or improvement of land

➔ **Bespoke permits** – where full site risk assessment is required.

Controlled Waste Regulations 2012

(2) The following waste (where it is Directive waste) is not to be treated as household waste, industrial waste or commercial waste for the purposes of Part 2 of the Act—

(a) sewage, sludge or septic tank sludge which is treated, kept or disposed of (otherwise than by means of mobile plant) within the curtilage of a sewage treatment works as an integral part of the operation of those works;

(b) sludge which is supplied or used in accordance with the Sludge (Use in Agriculture) Regulations 1989;

(c) septic tank sludge which is used on agricultural land within the meaning of those Regulations.

Implication: WaSCs have a regulatory dispensation for the storage and treatment of indigenous sludges (unless strict interpretation of “integral” is taken)

Industrial Emissions Directive and UWWTD

- Biological treatment of non-hazardous waste with capacity exceeding 75 tonnes per day (100 tpd for AD) is subject to the IED so requires an environmental permit
- The IED provides an exclusion for activities which are covered by the Urban Waste Water Treatment Directive
- Opinions differ on whether sludge treatment activities at sewage treatment works are covered by UWWTD

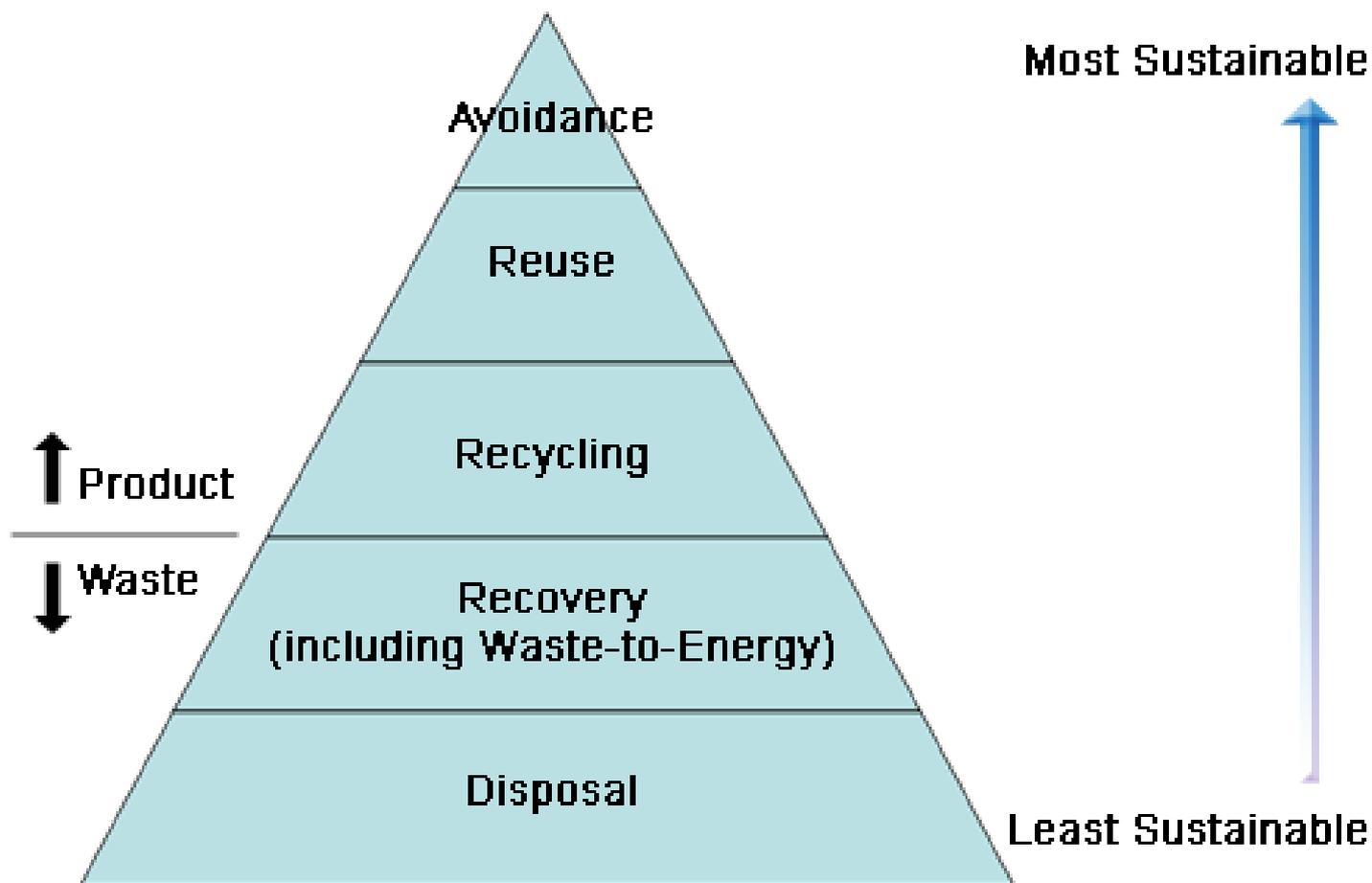
Implication: WaSCs could have significantly lower regulatory obligations and costs than other operators wishing to biologically treat sludge

Exemption T21

- (1) The recovery of relevant waste at a waste water treatment works.
- (2) Relevant wastes are listed as screenings, sewage grit (waste from desanding) only, sludges from treatment of urban waste water, centrate liquor only, sludges from water clarification, sludges from decarbonation, solutions and sludges from regeneration of ion exchangers, septic tank sludge, waste from sewage cleaning, cesspool waste and other sewage sludge only
- (3) For the purposes of this paragraph, the specific conditions are that—
 - (a) the total quantity of waste brought to the works over any period of 12 months does not exceed 100,000 cubic metres; and
 - (b) the waste is treated and stored in a secure location with sealed drainage.

Implication: WaSCs have significantly lower regulatory obligations and costs than other operators wishing to treat these water industry related wastes

Waste hierarchy



Responsibility and traceability

- ➔ Sludge Directive requires UK to report of the management of sewage sludge
- ➔ Small number of sludge producers currently makes this a relatively simple task
- ➔ Who will own the responsibility for tracking and accounting for the safe management of sludge in a reformed market

Implications: There are different recording and reporting systems for sludge and OOWs. These will need to be reconciled.

Emerging environmental concerns

- Recent examples of poor biowaste treatment suggests throughput more important than quality. Inadequately processed wastes are often more odorous and difficult to store and spread.
- Quality control of sludge produced within network plus assets? e.g. salt dosing can cause sludge to contain higher levels of plant unavailable phosphate
- Recent research into a range of contaminants in sludge raised concern about their potential impact on soil and the wider environment. The UKWIR funded Chemical Investigations Programme Phase 2 will review a wider range of substances of concern that are found in sludge
- Internal project to audit wastes which are not deemed suitable for composting has shown that a sizeable proportion of these displaced wastes are now being accepted for digestion



Thank you and questions please

Maintaining confidence & facilitating trade in sludge



Simon Black

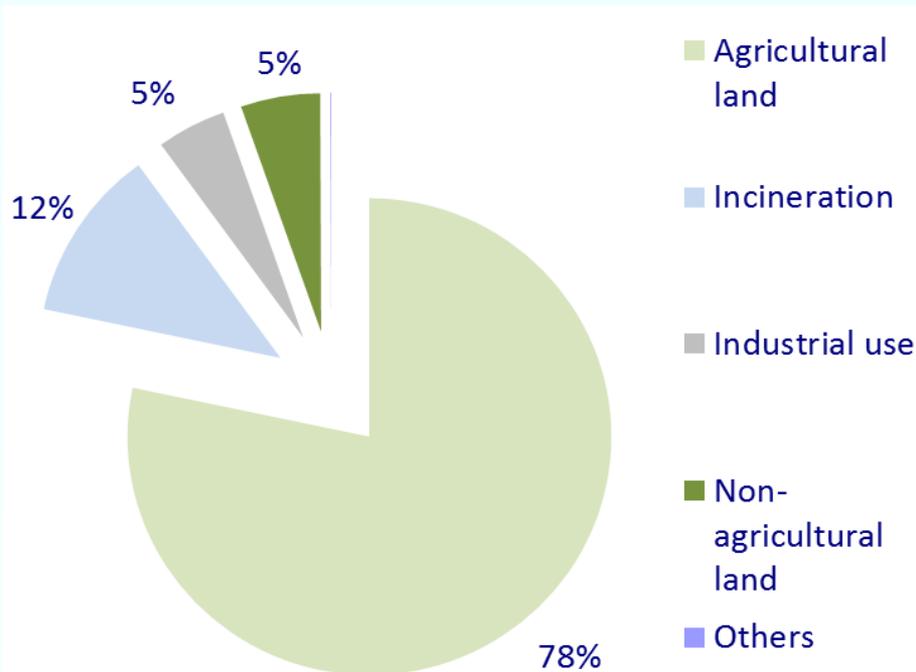
Anglian Water - Head of Recycling & Environmental
Services

Agenda

1. Maintaining confidence & the Biosolids Assurance Scheme
2. Satisfactory Sludge/Use Disposal
3. Barriers to sludge trading
 - a) Environmental
 - b) Renewable Energy Incentives

Water 2020 Implications

Currently 11 WaSCs united in ambition to maintain confidence in biosolids recycling by adopting best practice (BAS) – also creates a level playing field



Post 2020 there could be say 100 companies handling sludge containing materials – a very different & commercialised market?

Maintaining Confidence in Biosolids

Must demonstrate biosolids are beneficial
to agriculture and the environment as a
whole

That it is a safe and sustainable practice

That they are a valuable resource



Must maintain support from food chain
stakeholders

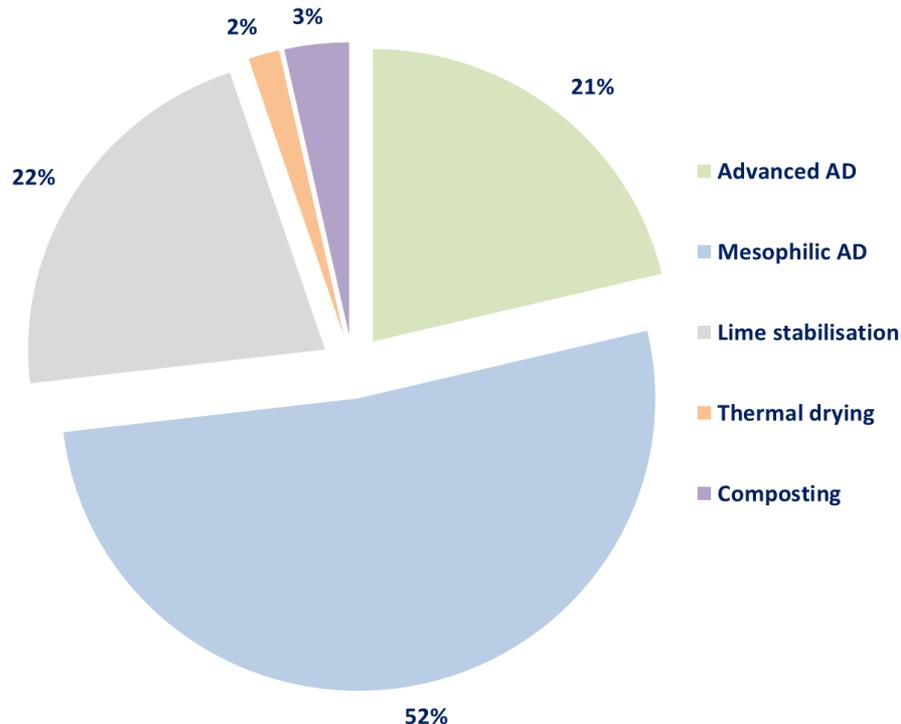
Must have Government support

and a clear regulatory framework which
supports biosolids use as a resource rather
than waste

Sewage Sludge Treatment

Various treatment technologies used to produce biosolids

73% output treated by AD with advanced AD treatments gradually replacing lime treatment and conventional AD



Higher quality products reduce the potential for odour nuisance

Odour probably has the greatest impact on public perceptions

So odour control is directly linked to maintaining confidence

Recycling to Agricultural Land

3.6 million tonnes per annum biosolids
are recycled to agricultural land

Applied to 146,000 hectares/annum

Biosolids product is mainly *cake* at 20 –
25% dry solids



It can be safely & securely stored in field
heaps before spreading & incorporation
Estimate 170,000 truck loads and 9,000
field heaps

**There are very few problems and the
current systems work well**

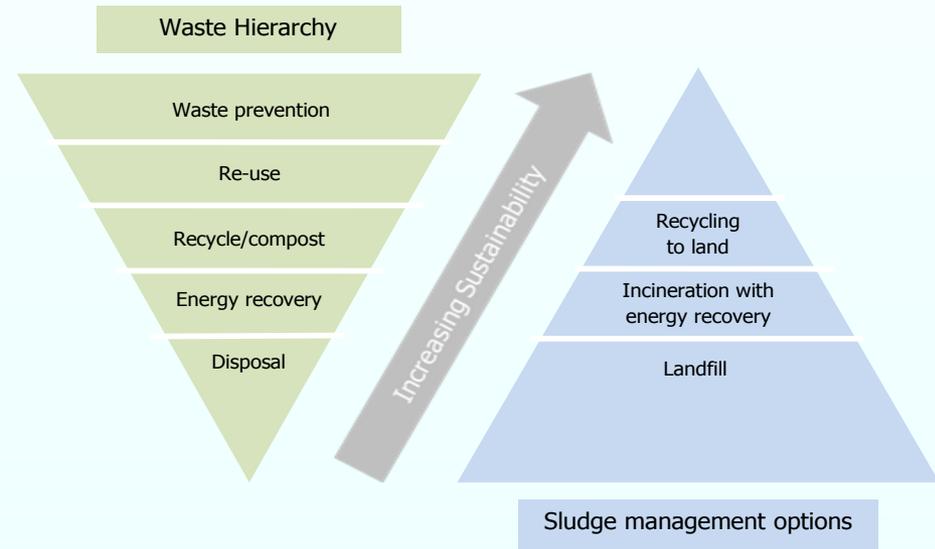


Recycling to Agricultural Land

Aligns with UK the Government recycling strategy and the EC Circular Economy

Nutrient value to UK agriculture

£25m/annum - mainly Phosphate (4.5%) and Nitrogen (4.0%) plus Sulphur, Potash and Magnesium



Strong demand from farmers – it is worth £170/hectare in nutrients alone

Anglian Water sell it as  for £2.8m/annum - reduces customer water bills

Biosolids - a resource with considerable value!



Improved soil structure

Increased water retention capability

Increased life in soil (from microbes to earthworms)

These lead to.....



- Less soil work and energy required
- Increased crop yields & reduced risk of yield loss
- Maintaining soil structure and nutrient levels
- Reduced risk of diffuse pollution
- A natural provision of nutrients &
- Greenhouse gas reductions

It will be essential to maintain the benefits to soil & the environment. THIS IS NOT WASTE DISPOSAL!

Biosolids Recycling is Safe and Sustainable

Sludge (use in agriculture) Regulations 1989

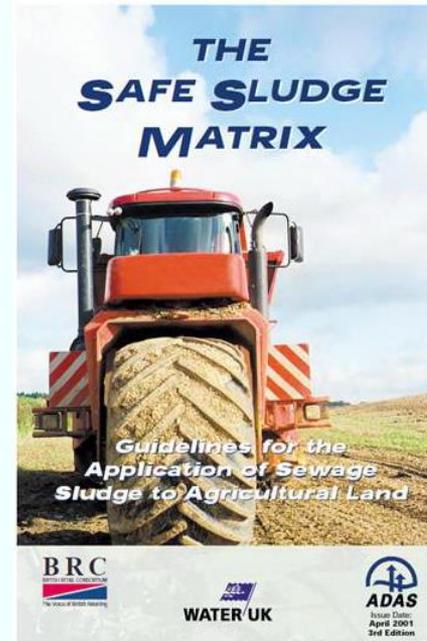
Environmental Permitting Regulations S3 exemption for field storage

Product testing for microbiological parameters, elements and nutrients.

Soil analysis for elements and nutrients.

Safe Sludge Matrix (since 2001) defines treatment standards and minimum periods between application and harvest/grazing.

HACCP principles for treatment processes.



THE SAFE SLUDGE MATRIX

CROP GROUP	UNTREATED SLAGS	CONVENTIONALLY TREATED SLAGS	ENHANCED TREATED SLAGS
FRUIT	X	X	✓
SALADS	X	X (20 month harvest interval applies)	✓ (20 month harvest interval applies)
VEGETABLES	X	X (17 month harvest interval applies)	✓ (17 month harvest interval applies)
HORTICULTURE	X	X	✓
COMBINABLE & ANIMAL FEED CROPS	X	✓	✓
GRASS & FORAGE - GRAZED	X	X (Sheep injected or ploughed down only)	✓ (3 week no-grazing and harvest interval applies)
GRASS & FORAGE - HARVESTED	X	✓ (No grazing in season of application)	✓ (3 week no-grazing and harvest interval applies)

NOTE: ✓ All applications must comply with the Sludge (Use in Agriculture) Regulations and DETR Code of Practice for Agricultural Use of Sewage Sludge (to be revised during 2007).
X Applications not allowed (except where stated conditions apply)

MATRIX CROPPING CATEGORIES

Fruit	Salad (e.g. ready to eat crops)	Vegetables	Horticulture	Combinable and animal feed crops	Grassland and forage	
					Harvested	Grazed
Apple, pear, etc.	Lettuce, spinach, etc.	Peas, beans, etc.	Soft fruit, greenhouse and polytunnel based production	Wheat, barley, oats	Maize (silage), forage	Corn, forage
Strawberries, raspberries, etc.	Spinach, rocket, etc.	Carrots, potatoes, etc.	Orchards, nurseries, etc.	Forage crops, etc.	Forage crops, etc.	Forage crops, etc.
Soft fruit (raspberries, etc.)	Onions, leeks, etc.	Tomatoes, aubergines, etc.	Plant nurseries, etc.	Forage crops, etc.	Forage crops, etc.	Forage crops, etc.
Soft fruit (strawberries, etc.)	Garlic, shallots, etc.	Pumpkins, squash, etc.	Plant nurseries, etc.	Forage crops, etc.	Forage crops, etc.	Forage crops, etc.
Wheat, barley, etc.	Asparagus, etc.	Onions, leeks, etc.	Plant nurseries, etc.	Forage crops, etc.	Forage crops, etc.	Forage crops, etc.
Maize, forage, etc.	Asparagus, etc.	Onions, leeks, etc.	Plant nurseries, etc.	Forage crops, etc.	Forage crops, etc.	Forage crops, etc.

The Water Industry is consolidating this into the Biosolids Assurance Scheme.

To provide increased transparency and reassurance to food chain stakeholders

Biosolids Assurance Scheme

Water Industry initiative to provide reassurance to the food chain and consumers.

Brings together regulations and best practice into a single transparent Standard.

Sets a minimum Standard – protects the environment & creates a level playing field for all, whilst facilitating sludge trading.

Stakeholder input and support are essential to maintain validity and credibility.

Third party audit by NSF Certification

Aspiration for UKAS Accreditation

Commitment from Water UK Board
to achieve 100% BAS compliance



The Standard - Content

Intended for sludge processors and biosolids recyclers to agricultural land

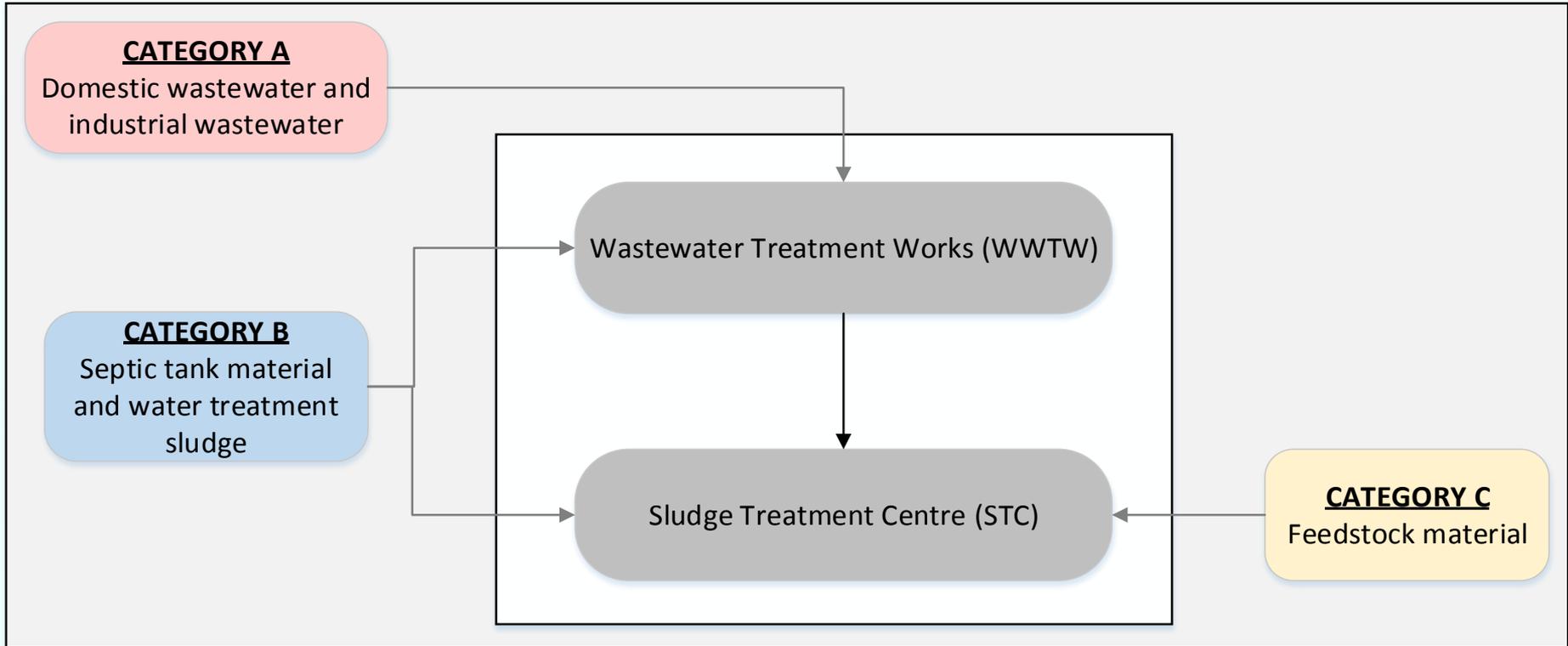
A Hazard Assessment underpins the Standard

References made to regulations, codes and best practice within the Standard



The Standard is sub-divided into sections:

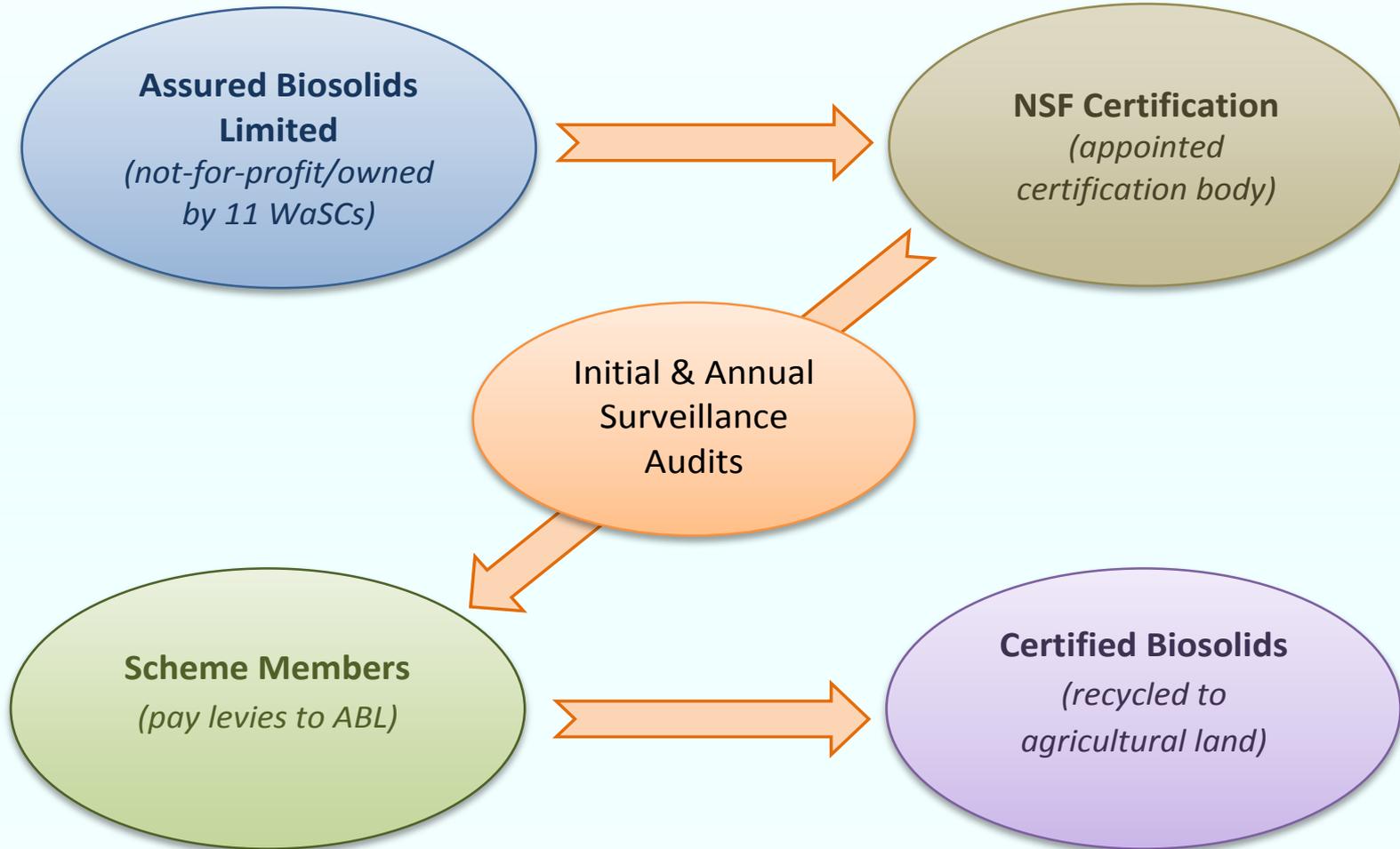
- Source materials
- Sludge treatment & controls
- Transport & storage controls
- Application controls; soils, nutrients, crops
- Application controls; environment
- Calibration, record keeping & complaints



Risk identification and control measures are recorded

Pre-acceptance assessments completed for other feedstock materials

Biosolids Assurance Scheme



Summary

Industry committed to 100% BAS certification

Dovetails with farm QA schemes = reassurance

Technical Advisory Committee enables the scheme to evolve to market needs

Will be supported by a promotional website



BAS Certified Biosolids - the quality Benchmark

Mitigating the risk of trading

Satisfactory Sludge Use/Disposal

Definition of measure

Satisfactory Sludge Use/Disposal – includes; compliance with the **Sludge (Use in Agriculture) Regulations, EPR Regulations** in so far as they apply to the recycling &/or disposal of sewage sludge containing products and residual wastes, and compliance with the **Safe Sludge Matrix**

1. **Total compliant tds**, utilised via any route.
2. **Percentage of overall tds production utilised in a compliant manner** (= 1- unsatisfactory use/disposal tds utilised/total raw tds production)

The industry is committed to achieving 100% BAS compliance

BAS compliance includes performance against best practice

Measure should include BAS compliance in future

Environmental legislation – “a trading barrier”

Sludge trading between WASCs -

- no barriers, as SUAR (Sludge Use in Agriculture Reg's) apply.

Co-treatment including sludge –

- materials immediately deemed a waste, regardless of whether the co-treated materials are wastes in isolation
- materials don't meet any of the existing QPs /EOW standards & SUARs don't apply either, adding admin costs, delays & associated operational cost.
- perception is that the material entering the process is more important in determining end uses, than the risk posed by the final product!



Environmental legislation – “a trading barrier”

Co-treatment including sludge (cont'd)

- The Industrial Emissions Directive (IED) includes an exclusion for UWWTD residual sludges.
- Exclusion ceases when any other waste is mixed with UWWTD sludge
 - Impact varies from process to process – secondary containment/BAT.....
 - All directly associated activities also captured e.g. CHP permits.
 - Significant impact to customer bills



Environmental legislation – a solution?

- SUAR, supported by BAS, currently provides robust controls & assurance
 - Sludge perceived as a “valuable resource, not as a waste”.
- Review classification of “what is a waste” – removing materials which are caught when mixed. A secondary resource perhaps?
- Sludge would be more appealing to research/innovation & for trading with third parties.
- OOW’s would be more appealing to the water industry !
- Any change in legislation must promote co-treatment - for all parties.

Renewable Energy Incentives – “a trading barrier”

Renewable Obligation

- (Sludge) plants commissioned before 1st April 2017 have 20years grandfathered ROCS, thereafter nothing.
- Earliest (sewage) plants commissioned in 2002, thus 60MW capacity will reach end of RO contracts by 2022 & a further 48MW will finish by 2025.

Feed in Tariffs

- Sewage sludge specifically excluded from this scheme
- FIT available to support CHP power from the AD of OOW's, although consultation proposes to remove this from all AD above 500kW.

Renewable Energy Incentives – “a trading barrier”

Renewable Heat Incentive (RHI)

- Available to sewage AD plants, incentivising injection of biomethane to grid.
- Grid isn't always close to the AD plant &/or grid can't always accommodate
- RHI tariff continues to fall & is uncertain up until commissioning

Contracts for Difference (CfD)

- ‘New kid on the block’ in terms of sludge plants, incentivising renewable power from sludge & OOW's.
- No sludge plants have been delivered to date.
- Scheme remains unproven & unclear - possible lower limit of 5MW?

Renewable Energy Incentives – “a solution?”

To facilitate trading

- sludge & OOW's should be aligned in terms of renewable energy incentives
- greater certainty is required, to promote future investment, through pre accreditation



Maintaining confidence & facilitating trade in sludge





Environmental Regulations

A Waste Industry Perspective

Alexander Maddan - Agrivert Ltd
20th July 2016

Content

- Co–Digestion
- Non–EA Regulatory Influence
- Sludge Treatment at OOW Plants
- Third Party Sewage Sludge Processing and Recycling

Co-Digestion Practical Feasibility

- No UK-based evidence to rely on that demonstrates the benefits of OOW/Sludge co-digestion
- International evidence suggests it is feasible and deliverable – but can that translate to the UK?

Co-Digestion Practical Challenges

- De-packaging
- Grit
- Odour
- Retention time
- Biological stability
- De-waterability
- Sulphur/Siloxanes
- OOW is not homogenous
- Does OOW risk a strategic asset?

Non-EA Regulatory Influences

- Certain subsidy requirements do not allow double benefit. e.g. If a plant is WRAP funded, it is not allowed an RHI claim
- PAS 100/110 End of Waste status currently disallows sewage sludge as an input material
- Local Authorities demand PAS 100/110 for their OOW to qualify for recycling targets
- Feed-in-Tariff not available to sewage sludge – and probably now not offered at all over 0.5MWe/hr

Non-EA Regulatory Influences

- 2 x ROCS not available after April 2017
- Does Contracts for Difference (>5MW/hr) allow sewage sludge as a fuel?
- RHI is marginal as a viable subsidy – gas vs electricity?
- Animal Plant and Health Authority (APHA) requires Animal By-Products Regulation adherence for OOW. Whilst novel process is allowable, >70deg C for >1hour at <12mm particle size is the basic standard
- ABPR places stringent traceability on recycling routes

Non-EA Regulatory Influences

Income £/mW	Assumption	ROCs	FITs	Basis
ROCs	1.8 ROCs	76.98		Current auction values
ROC Recycle		0.65		Estimated
FITs	> 500kW		78.10	Per degression tables
Embedded Benefits		9.00	9.00	Range c. £3-15 (location dependent)
Brown Power		44.29	44.29	Current similar PPA pricing
		130.92	131.39	
RHI	> 600 kW	17.30	17.30	Per published rates
£/mW		£148.22	£148.69	

- **ROCs:** closed to new installations from 31 March 2017
- **FITs:** degressing and likely to close
- **RHI:** degressing. Value assumes use of heat generated

Questions

- Is it co-location, not co-digestion?
- Can WASC justify risking strategic assets for commercial gain?
- Can regulations and/or standards allow co-digestion in the future?
- Is there any feedstock to co-digest?

OOW Industry Sludge Treatment Options

- Regulation currently make it near impossible economically

Assume point 1 is cured:

- Good source of P for compost **+**
- Fair calorific value for AD **+**
- Odour **-**
- Public benefits **-**
- Gate fee/ Transport cost **-**

Third Party Sewage Sludge Processing and Recycling at WASC Sites

Current Status

- Few WASC's currently have third party processing activities
- Most WASC's use third party recycling activities

Why?

- Different Capex/ Opex budgets hide the advantages
- Perceived strategies needing to own in-house processing solutions
- Risk of recycling (farmers, public opinion and the weather) drives outsourced solutions

An Example of Third Party Outsourced Sewage Sludge Processing and Recycling

- In 2004 in Newcastle Upon Tyne, Agrivert built (DBO) a processing and recycling plant for Northumbrian Water (NWL)
- It reliably treated 32,000 tds/yr
- It cost £1.6m









An Example of Third Party Outsourced Sewage Sludge Processing and Recycling

- Totex (minus polymer & power cost) to NWL was £131.37/tds, including Agrivert margins
- 1 monthly meeting with NWL
- The plant was always hungry for sludge
- NWL bought it back fully refurbished in 2014 as the Howdon AAD process began

Why didn't Agrivert Deliver the AAD Plant?

- Despite our AD experience and reputation, we were not engineering framework contractors
- We estimated a £16m delivery cost, it cost £26m
- Framework engineering contracts kill innovation and are not effective

Opportunity

- Offer >12 year contracts (bankability)
- Offer large volume to spread costs
- Allow third party contractors to take complete Totex risk
- Have a long hard look at how many WASC employees are really involved in the Totex solution

Outcome

- Capex of processing plants will drop dramatically
- Opex should rise to securitise recycling outlets, it will fall in logistics



Outcome

- Totex will fall
- Sewage sludge will be strategically more secure
- Innovation will flourish
- Energy recovery will be maximised
- External investment will flow into the sector

Why has it not Worked Before?

- There is a glass ceiling in WASC's that currently prevents it
- Recycling contracts are paid deminimis cost/t to haul and spread, so examples of quality operators to deliver are rare
- WASC's deliver engineering as part of their culture, its an international culture!



THANK YOU

Alexander Maddan

07702 700910

amaddan@agrivert.co.uk

Environmental Regulations sludge treatment and use: Drivers for change

Paul Hickey
Deputy Director, Environment Agency

Ofwat, 20th July 2016

Environmental Regulatory Boundaries

- ➔ Key boundary will be between the sewage (network+) business and sludge business
... point at which sludge is separated from effluent stream and held in storage tank / lagoon
- ➔ Does this market boundary align with environmental regulation boundaries between 'sewage treatment and disposal' and 'sludge treatment and disposal/use'?
- ➔ Need to fully understand which materials move across this boundary. Are there sludge derived materials which may re-enter Network+ assets?
- ➔ Are there materials which are put into the head of STWs which should/could go into sludge treatment facilities

Constraints and Opportunities: sludge treatment and use

Recognised that water and waste sectors can have different perspectives on the future market opportunities.

- ➔ aspects of environmental regulation that will constrain WaSCs and waste management companies from participating fully in the market – and why?
- ➔ new opportunities that could be realised by amending environmental regulation without compromising environmental protection
- ➔ any unintended consequences or market distortions created by the interplay of Ofwat proposals and environmental regulation