Company No. 9276929

MARKET OPERATOR SERVICES LIMITED ("MOSL" OR THE" COMPANY")

Minutes of a meeting of the Technology Advisory Group to MOSL (the "**TAG**") held by videoconference on 17 August 2020 at 13:00

Present:	John Davies (JD)	MOSL CIO and TAG Chair
	Jacob Tompkins (JT)	Water Retail Company
	Richard Reed (RR)	Wave (for Amy Duffield)
	Emma Askew (EA)	Wessex/ Water2Business
	Quentin Gallagher (QG)	Portsmouth Water
	Paul Tate (PT)	Waterlevel
	Dhiraj Sood (DS)	South East Water
	Stuart Reid (SR)	Castle Water
	Neil Pendle (NP)	Waterscan
	Nathan Morgan (NM)	Waterscan
	Paul Williams (PW)	Everflow
	Laura Allan (LA)	Business Stream
	Darren Thresh (DT)	Yorkshire Water
	Joe Stepney (JS)	Thames Water (for Mike Potter)
	Chris Douglas (CD)	Anglian Water (for Wesley Thomas)
In	Andrew Johnson (AJ)	Company Secretary and General Counsel
attendance:	John Briggs (JB)	Chief Technology Officer – Item 2
	Ricardo Wissmann-Alves (RWA)	Head of IT Operations
	Emma Whitcroft (EW)	IT Delivery Manager – Item 2
	Ian Helmschrott (IH)	Carlier Consulting – Item 2
	Spencer Mattia (SM)	MOSL Programme Manager
	Katherine Moore (KM)	MOSL SQL Developer – Item 4
	Liz D'Arcy (LD)	MOSL Portfolio Manager- Item 4
	Miles Robinson (MR)	MOSL Operations Manager- Item 2
	Matt Edwards (ME)	Anglian Water – Item 4
Apologies:	Sean Brookfield	Waterplus
	Laura Allen	Business Stream

1 Introductions and Welcome

1.1 JD introduced himself and thanked everyone for making the effort to attend the inaugural meeting. He set out his hope that the TAG could influence the strategy and technology of the NHH, and potentially the wider domestic market. In particular, there would be an opportunity to share views on the approach to be taken for the Bilaterals programme.

1.2 One of the objectives of forming TAG was for Trading Parties to share information and to hear from relevant third parties. Today TAG would hear from Matt Edwards, Chief Data Officer and Head of Enterprise Data at Anglian Water, one their data quality challenges and initiatives.

1.3 Each of the TAG members introduced themselves, in turn, and stated which Trading Party they represented.

1.4 JD then summarised the agenda. He invited the TAG members to suggest, under AOB, potential topics for future sessions.

2 Bilaterals Transaction Programme

2.1 JB introduced the item, describing to the TAG members the current technical design and then the target architecture high-level view, which would see the services decomposed into micro-services, in a distributed and loosely coupled model. A pilot was underway to move CMOS to a public cloud, and to build a CMOS API gateway. The move to the target architecture would be a project by project build, with the development spread over time.

2.2 EA enquired about moving to a consumption-based model, where costs were 'pay-as-you-go', rather than fixed. JB confirmed that this was the direction of travel, moving away from VMs. JD confirmed that moving to a public cloud would be a good future TAG topic, to share views on issue such as consumption-based pricing models **(ACTION: JD - 30 September 2020).**

2.3 JB moved on to describe the Bilaterals high-level solution design, the heart of which was the messaging hub and the forms validation service in addition to a portal, which would support the LVI and MVI forms and the reporting dashboard. The latter would be based on the data warehouse, using Power BI. The new web services would be more modern interfaces designed to encourage Trading Parties to integrate. C&C's Swim Portal would continue to be available, and supported, for those Trading Parties who wished to use it.

2.4 JB explained that Kubernetes Clusters would be used as the platform for containerisation, with Angular 9 for the portal and Azure Front Door as the entry point for client applications. For storage, MOSL would migrate from Oracle in CMOS to SQL Server, which was already used for MOSL applications.

2.5 In terms of the delivery methodology EW had joined in May as the Bilateral programme's IT Delivery Manager, heading up a new team using the Agile SCRUM methodology. EW clarified that this did not mean the project was expecting to issue new releases every fortnight, but that the process would be less linear than a traditional waterfall project methodology, with more conversations and interaction. In response to questions it was confirmed that the system would be built in an abstract way to mitigate the impact of process changes and that it was anticipated that the foundation components would be delivered first, followed by the application capabilities.

2.6 MR introduced a discussion on the proposed implementation approaches, beginning by explaining the three different interfaces; LVI, MVI and HVI.

2.7 Further options were presented to the TAG members for their views:

2.7.1 Option 1: Deliver a web portal first;
2.7.2 Option 2: Develop a web portal and system integration in phases;
2.7.3 Option 3: Simultaneous delivery of the web portal and system integration; or
2.7.4 Option 4: A hybrid of these.

2.8 MR and IH explained the possible pathways open to deliver the web portal and system integration. They thanked those Trading Parties who had returned their questionnaires on the topic. This had shown that the majority of wholesalers had a high degree of integration of the bilateral transactions with their internal system, largely achieved through portals. Retailers were more likely to be using manual encoding of bilateral transactions or using C&C SWIM-Pool where there would be integration of bilateral transactions with their internal systems. Most Trading Parties were looking to integrate into the HVI. Where they used C&C SWIM- Pool they expected this to provide their

integration. Those Trading Parties building their own integration preferred to utilise a web service/JSON interface.

2.9 The TAG discussed the options. It was suggested there was a desire to prove integration with one process and then add in further processes, rather than waiting for a large number at once. There should be some consideration of the order of the processes, based on the benefit to the Trading Parties. However, TAG members confirmed that the existing processes would likely remain until the point at which all services were in the new Bilaterals hub.

2.10 The TAG members voted on the options presented by MR, with option three the clear first preference of the majority, with 12 of the TAG members present supporting it; simultaneous delivery of the web portal and system integration.

2.11 All TAG members who had yet to complete the Bilaterals process questionnaire were asked to complete it asap. Additionally, the Bilaterals website contained the proposed process priority order, which TAG members were invited to feedback on, as discussed.

3 Break

4 Data Quality and Insight

4.1 JD introduced the second topic of the meeting – the key market issues of data quality and the availability of accurate consumption data. Data quality and driving data insight were key to MOSL's three-year strategy. JD outlined the problem statement. Data was disparate across the market, with simple data such as water company boundaries difficult to access and with no agreed data quality standards. There was an opportunity for groups like TAG to drive a data quality strategy for the NHH market, perhaps even extending into the domestic market. He encouraged the TAG members to work on ways to share data and to support initiatives such as Northumbrian Water's Innovation Festival, led by their CIO, Nigel Watson.

Customer Segmentation

4.2 KM opened the discussion on the issue of customer segmentation. CMOS lacked a consistent way of identifying customers. The SIC code data was poor quality. A recent example was the how challenging it had been when MOSL had been asked to identify public houses during the pandemic to coordinate the disposal of excess beer.

4.3 The MOSL team had matched CMOS premise data to external sources, such as the Post Office file, and mapped this to a standard based on SIC Codes, enabling classification of premises in CMOS to increase to 70% (from circa 40%). There was now potential to develop a water industry segmentation standard, for example, based on water usage profile or those customers with multiple sites.

4.4 The next steps would be to socialise the findings with a group of Trading Parties to explore commercial data sets for data enrichment.

Consumption Analysis

4.5 JB described to the TAG members how the team had begun deriving market insight from the data and developed ways to improve it. R1 Settlement report data had tended to be used, as it was the most up-to date, however, it was also the least accurate Settlement report data, and R1 data was

often later reversed out. The team was now analysing all Settlement run report data to derive consumption data, and using the mean, and weighted mean.

Geo Spatial Analysis

4.6 LD continued by explaining how the NHH market had created national retailers, but there was a diverse geography across the NHH market. Insights and observations were possible through the use of GIS tools, such as ESRi, to take high consuming SPIDs and overlay these with water scarcity data. This demonstrated that 42% of the highest consuming SPIDs were in water bodes with less than 50% water resource availability.

4.7 More work was required, and next steps included standardising water resource zones and then sharing the findings with a group of Trading Parties for views and consideration of options for enrichment or applications, including commercial ones.

4.8 One of the TAG members challenged if this work was within the remit of MOSL, as it appeared to be moving into the commercial space. In addition, they argued that, on data quality, if a customer could not be identified in CMOS then MOSL's role was just to provide the facility to do so. Having correct asset data, such as meter coordinates was, arguably, a higher priority.

4.9 Another TAG member added that end-customers wanted information to understand their consumption and water quality and suggested that MOSL should focus on the customer's needs.

4.10 JD acknowledged the concerns raised and assured the TAG members that MOSL's objective was to better understand the data and ways to improve data quality, in particular for water efficiency purposes. There was no intention to impede or encroach on areas of commercial market competition.

Anglian Water: Property Data Quality Initiative

4.11 JD introduced ME, Anglian's Chief Data Officer, who described the problem statement; Anglian had inconsistent national data but was now a national company. COVID-19 had highlighted the importance of connected locations of all customers, e.g. in providing priority services. Gaps sites, if unidentified, were unknown consumption that was attributed to leakage. There were significant challenges around disputed boundaries and properties billed by other companies but served by Anglian.

4.12 Anglian used SAP for billing, utilising Post Office file data, and a GIS system for operations, utilising Ordnance Survey's AddressBasePremium. ME presented a slide that highlighted the areas of greatest unmatched properties between the two systems. There was a clear prevalence of these around the water network boundaries, which remained 'disputed' and suffering from Water Act 1991 legacy issues.

4.13 There was no consistent forum for wholesalers or retailers to drive change – an open market strategy was needed. This would encompass developing consistent definitions and approaches to water and sewage network boundaries and the need for sharing mechanisms for the benefit of markets and national infrastructure. Unique property identifiers were needed to support the matching process, that was currently such a challenge for Anglian and the rest of the market.

4.14 The TAG commended ME for a fantastic presentation. It was agreed that accurate and insightful data was a primary role of a market operator, but would need to engage wholesalers, retailers and customers as well, all of whom would benefit.

4.15 The TAG members discussed the conclusions of the data discussion. Whilst remaining mindful of

not encroaching on commercial areas where Trading Parties were in competition**,** they concurred that there was a need for:

- Accurate data – the data quality mandate was clear and should be MOSL's primary role;
- Standardisation of data definitions and approaches across wholesalers, retailers and end-customers;
- Enforcement of said standards to ensure adherence; and
- Working together, rather than each Trading Party running its own isolated initiatives

4.16 **ACTION: JD would share a plan on a page for all data quality/insight related work (bringing together multiple Business Plan initiatives). The team would then engage TAG members directly to seek input/feedback, before presenting back at next TAG meeting – 30 September 2020.**

5 AOB and Close

5.1 TAG members would be invited to suggest future TAG meeting topics, by email, when a further meeting date would be proposed **(ACTION: JD 30 September 2020).**

5.2 There being no further business, JD declared the meeting closed at 16.00.

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Chairman- Technology Advisory Group

Glossary

API: Application Programming Interface
AWS – Amazon Web Services
CMOS – Central Market Operating System
GIS – Geographic Information System
HVI – High volume interface
LVI – Low volume interface
MAC – Market Arrangements Code
Members -The Trading Parties who are party to the MAC
MVI – Medium volume interface
NHH – Non-Household
Power BI – a business analytics service by Microsoft
UI – User Interface
Vacants – NHH premises reported as vacant on CMOS
VM – Virtual Machines
Scrum – an Agile methodology
SIC – Standard Industry Classification
SPIDs - Supply Point Identification number
TAG – Technology Advisory Group