

Office of the Adjudicator – Broadcast Transmission Services

Report for the period 1 April 2022 – 30 June 2022

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1. Background

On 11 March 2008, the Competition Commission (CC) announced its decision to allow the merger of transmission companies Arqiva and National Grid Wireless (NGW) subject to the agreement of a package of measures (undertakings) to protect the interests of their customers.

Arqiva and NGW overlap in the provision of Managed Transmission Services (MTS) and Network Access (NA) to transmitter sites and associated facilities for terrestrial television and radio broadcasters. In its final report, the CC found that Arqiva and NGW were the only active providers of MTS/NA to the UK television broadcasters. The companies were also the most significant providers of national MTS/NA to UK radio broadcasters with a combined market share of more than 85%. In both cases, prior to merger, the companies had exercised a competitive constraint on each other.

The CC concluded the merger of the two companies would lead to a “substantial lessening of competition” in broadcast transmission services, specifically in the provision of MTS/NA to television and radio broadcasters.

After consultation by the CC with Arqiva, its customers and other stakeholders, the Commission accepted certain undertakings from Arqiva on 1 September 2008.

http://webarchive.nationalarchives.gov.uk/20140402141250/http://competition-commission.org.uk/inquiries/ref2007/macquarie/pdf/notice_undertakings.pdf

The Undertakings are intended to mitigate the substantial lessening of competition by protecting existing and new customers over the terms and conditions of supply, including protection against future price rises and protection against changes in non-price related areas (such as discrimination issues and service standards).

The Undertakings provide for the appointment of an Adjudicator, as described in Appendix 1 (Adjudication Scheme) and Appendix 2 (Adjudication Rules). The main role of the Adjudicator is to determine disputes arising out of the operation of the Undertakings.

Paragraph 35 of Appendix 1 to the Undertakings requires the Adjudicator to make periodic reports to the Office of Fair Trading (now the Competition and Markets Authority), copied to Ofcom, covering the following points:

- Any Guidance issued
- Determinations in relation to Disputes
- The views of the Adjudicator about the operation of the Undertakings, the Adjudication Scheme and Adjudication Rules as well as any recommendations for amendments
- The views of the Adjudicator on the performance of Arqiva in complying with the Undertakings

This report covers the operation of the Office of the Adjudicator over the period from 1 April 2022 to 30 June 2022. This report will be published on the website of the Adjudicator (www.ota-bts.org.uk) with any information that the Adjudicator regards as confidential redacted.

2. Office of the Adjudicator

2.1 Adjudicator

The Office consists of Alan Watson OBE as Adjudicator and Jon Butler as Deputy, both are part time. Megan Donald is Executive Assistant and Office Manager, also on a part time basis.

Legal advice is provided by Mr Richard Pull of Goodman Derrick LLP.

The Adjudicator and Deputy have vacated the office at Ofcom, but Megan remains based there.

During the present Covid-19 crisis, the Office is continuing operation on a dispersed basis with contact being by telephone or video conference. Scheduled meetings with Arqiva and others have continued online.

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Exec asst megan.donald@ota-bts.org.uk

2.2 Budget

Expenditure 1 April 2022 to 30 June 2022 was £103,500 against an annual budget of £478,444. A contingency of £470,000 is available if needed.

2.3 Stakeholder Meetings

During this period regular communication with stakeholders has continued by phone and video conference and includes government departments, television broadcasters and radio broadcasters, both large and small:

Confidential information redacted

2.4 Arqiva

Paragraph 35 of Appendix 1 of the Undertakings requires the Adjudicator to comment on the performance of Arqiva over this period, in relation to the Undertakings.

The performance of Arqiva continues to be generally satisfactory.

3 Disputes and Guidance

In this period there have been no disputes requiring the use of the formal dispute procedure. Further information on Guidance can be found in Paragraph 6.1 of this document.

4 Publication of Reference Offers.

No new reference offers have been published in this period; previous ones can be found at:

<https://www.argiva.com/documentation>

The 2022-23 radio rate card for site access can be found at the above link within the “reference offers” tab.

5 Reporting and Audit

5.1 Regulatory Accounts

Arqiva is obliged to produce annual accounts in accordance with the requirements set out in Paragraph 15 and Appendix 14 of the Undertakings.

The Regulatory Accounting Principles and Methodologies (RAPAMS) which set out how the accounts are produced and are approved by the Adjudicator can be found at the link below, together with the regulated accounts for the period 1 July 2020 to 30 June 2021.

<https://www.argiva.com/documentation>

Look under the “regulatory” tab.

5.2 Compliance Report

Paragraph 18.1 of the Undertakings requires Arqiva to deliver an annual report to the Office of Fair Trading (now the Competition and Markets Authority) setting out steps taken to comply with the Undertakings and details of any breaches and including steps taken to remedy them.

The 2021 report has been delivered to the CMA, Ofcom, and the Adjudicator. There were no instances of non-compliance.

5.3 The Undertakings

The Adjudicator believes that the Undertakings, the Adjudication Scheme and Adjudication Rules are satisfactory at the present time and that no changes are needed.

5.4 Information Security Strategy

Paragraph 16.2 of the Undertakings requires Arqiva to produce an Information Security Strategy (ISS) which defines the measures to be taken to ensure that confidential information held in one part of the company cannot be used by another for commercial advantage.

The Information Security Strategy can be found at:

<https://www.argiva.com/documentation>

Look under the “corporate” tab.

The Adjudicator audits the Information Security Strategy from time to time. The full report of the last audit is attached to the March 2019 Adjudicator’s quarterly report.

Following the divestment of the telecoms business and subsequent reorganisation, the Adjudicator has undertaken an audit to ensure that the requirements of the ISS are met within the new structure. This audit commenced in Q4 2021 and was completed at the end of March 2022. The audit showed that Arqiva have satisfactorily met the requirements of the Undertakings and demonstrated continued compliance with the ISS. The full audit report is at appendix A to this report.

6 Planned future activity

6.1 Guidance

The Adjudicator has previously issued guidance covering Paragraphs 6 and 9-12 of the Undertakings. The Adjudicator considers that no further guidance is currently required in relation to Paragraph 6 of the Undertakings.

At present the Adjudicator is of the opinion that no Guidance is required in relation to Paragraph 3 of the Undertakings. Application of, and compliance with, this paragraph will be monitored, and Guidance issued if necessary.

The Adjudicator holds a series of documents produced by Ofcom which cover detailed guidance for producing reference offers. Some of this is specific to the historic high power DTT reference offer and so the Adjudicator has prepared and published a summary document which covers the aspects which constitute current guidance.

<https://www.ota-bts.org.uk/guidance.html>

6.2 Audits

Arqiva use a database system to store site infrastructure records. The database records a variety of site data which includes information relating to the height, type and location of antenna systems. Information within the database is used to determine the loading which the antenna system places upon the site mast or tower. This loading (windloading) is used to calculate the site apportionment for the charges to the users of the antenna systems.

The Adjudicator has undertaken five audits of Arqiva's site infrastructure records, the first in 2016 and the most recent was published in Q3 2020. These audits compared Arqiva's site infrastructure records to what was observed on the structure by the Adjudicator during site visits.

In 2021 Arqiva replaced the KEEP site records system with a new database system from Siterra. The Adjudicator commenced an audit of the new system in Q4 2021 which was completed in March 2022. The first stage of this audit was to review Arqiva's transfer process from the old to the new system and the steps Arqiva followed to ensure integrity of the windloading and site apportionment calculations. The second stage was to undertake a detailed review and comparison of the windloading and apportionment calculations from four sample sites using historic data from KEEP and current data from Siterra. The Adjudicator's calculations were compared to Arqiva's calculations and any changes to the install base (in between data snapshot dates) were reviewed and taken into account.

For stage one, Arqiva provided satisfactory evidence of a robust data transfer and checking methodology in the migration from KEEP to Siterra. For stage two, the Adjudicator's calculations of windloading and site apportionment were identical (to 6 significant numbers) between KEEP and Siterra, and to those provided by Arqiva. The full audit report of these findings is at appendix B to this report.

7 Appendix A: Audit of Arqiva Information Security Strategy

The Office of the Adjudicator - BTS

Audit of the Arqiva Information Security Strategy

Non-confidential version – For publication

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Version No	Date	Modified by	Notes
0.1	13/6/2022	J Butler	First draft
1.0	23/6/2022	J Butler	Final confidential version
1.0r	23/6/2022	J Butler	Final non-confidential version for publication – Annex 2 (organisational structure) removed

Introduction

1. The purpose of this document is to set out the findings from the fourth audit of the operation of Arqiva's Information Security Strategy (ISS).
2. On 11 March 2008, the Competition Commission (CC) announced its decision to allow the merger of transmission companies Arqiva and National Grid Wireless (NGW) subject to the agreement of a package of measures (Undertakings) to protect the interests of their customers. Section 16¹ of the Undertakings requires that Arqiva publish an ISS to meet the confidentiality of information requirements of the Undertakings. The Undertakings also set requirements related to this strategy. The Office of the Adjudicator - BTS undertook the first audit of the Arqiva ISS during March 2011, the second audit during December 2016 and January 2017 and the third audit in early 2019.
3. This fourth audit uses the same approach as the third audit and considers structural changes within Arqiva, procedural changes and current measures employed by Arqiva to meet the requirements of the ISS. The scope of this audit is set out in this document with references to previous audits where helpful to do so.
4. A preliminary meeting with Arqiva was held in November 2021 to discuss organisational changes (since the previous audit) and the scope of this audit. Arqiva and OTA BTS held a series of meetings in Q1 2022 where Arqiva provided evidence of the ISS protocols and measures in operation, a demonstration of their Undertakings & ISS compliance training course and they shared the findings of their external ISO 27001 auditor.

Executive Summary & Outcome

5. Arqiva's Information & Security Strategy (ISS) sets out the protocols and measures to ensure they comply with section 16 of the Undertakings. Arqiva provided evidence of these in operation in the form of documents, statements, examples, and live demonstrations.
6. Arqiva supplied evidence to show they consider confidentiality of information during organisational restructuring & staff movements, and follow formalised protocols when undertaking sensitive work. Directors and Senior Managers monitor Arqiva's activities to ensure compliance with the Undertakings and are required to sign compliance statements to confirm this. Sensitive information is handled in accordance with ISS protocols and stored in appropriate systems. Arqiva test the operation of the ISS protocols relating to the electronic storage, the physical disposal of sensitive information and those relating to staff access of controlled areas. These tests are undertaken by internal and external auditors and support Arqiva's compliance with ISO 27001. Arqiva monitor staff training and awareness relating to the Undertakings and require staff to sign a code of conduct which includes ISS requirements.
7. The findings of this audit are that Arqiva have **reasonably demonstrated that the ISS protocols and measures are operating satisfactorily.**

¹ This section of the Undertakings is shown in Annex 1

Audit Scope

8. To establish whether Arqiva can reasonably demonstrate the application of the ISS protocols in the operation of their business. This is achieved through the audit steps noted below.

Audit Steps

9. The audit steps are as follows.

Step 1: Review the protocols and measures previously tested and establish whether the same are in operation or whether there have been any changes or new protocols/measures introduced.

Step 2: To agree tests and checks related to these protocols and measures as applied to real business activities within Arqiva.

Step 3: Undertake these tests and checks, and to obtain evidence as appropriate.

Audit Step 1 - Review the protocols & measures

10. Step 1 of the audit considers the protocols and measures previously tested and whether those same measures are in operation or whether there have been any changes or new measures introduced. The protocols and measures are defined in Arqiva's ISS as follows.

- Principles for Access and Use of Confidential Information
- Protocol for the Identification and Treatment of Different Categories of Confidential Information
- Measures to Ensure the Security of Confidential Information, including
 - Security of Information Storage and Systems
 - Physical Security of Confidential Information
 - Employee Disclosure
 - In the event that Arqiva is a bidder in a Competitive Spectrum Action
 - Staff Training and Awareness

11. We note that Arqiva's ISS has not changed since previous audits and these same protocols and measures are in use by Arqiva.

Audit Step 2 - The tests and checks

12. The operation of the protocols was considered through review of Arqiva documents, reports, templates, and emails relating to real business activities. This included Arqiva's audit and compliance reports, web-based training, electronic training records and web-based protocols. These were reviewed 'live' during video conference with Arqiva.

13. The tests are considered in the form of questions as set out below.

Do Arqiva....

- Consider information security during organisational restructuring?
- Use appropriate protocols for undertaking sensitive work?
- Handle sensitive information in accordance with the ISS protocols?
- Use appropriate systems for storing sensitive information?
- Use appropriate systems for controlling physical access to secure areas?
- Test that these measures are effective?
- Provide training and awareness of their ISS and the requirements of the Undertakings?
- Consider matters relating to ISS compliance at board meetings?

14. Arqiva supplied written evidence in support of their responses and live evidence was provided for review during video conference sessions with OTA BTS.

Audit Step 3 - Evidence

This section contains evidence of the ISS protocols in action set against the questions set out in paragraph 13 of this document. The evidence was provided by Arqiva in the form of documents, presentations and live demonstrations. This was provided during video conference meetings with Arqiva and in follow up sessions.

Some responses may be relevant to more than one question and are only shown against one question to avoid repetition. Each question is taken in turn with the responses and evidence beneath.

15. Do Arqiva consider information security during organisational restructuring?

15.1. Organisational restructuring and ISS

Since the last OTA BTS audit of Arqiva's ISS, Arqiva have undertaken several restructuring exercises including when Arqiva's Telecoms and Site Share business was sold to Cellnex. The sale agreement was announced on 8 October 2019 and once cleared by the CMA, the sale was completed on 8 July 2020. Arqiva report that through this restructuring matters relating to ISS were considered, communicated, and acted upon.

In 2019 Arqiva created the Media Networks team by combining Satellite and Terrestrial Broadcast divisions. Again, a significant organisational change and one where Arqiva report that matters relating to ISS were considered, communicated, and acted upon.

In both instances, staff in these teams received a presentation by the Arqiva regulatory team and these presentations were made available during the audit review. The presentations were dated April 2019 and July 2021. Each presentation was specific to the restructuring activity at the time, and each covered the following topics:

- An introduction to the Undertakings and Arqiva's ISS
- The requirements and obligations placed upon Arqiva
- What is confidential information and how it can (and cannot) be used or shared
- The auditing of Arqiva's activities and the penalties for non-compliance
- The current Arqiva structure and how this is changing to a new structure
- What this means for confidential information
- Arqiva 'before and after' organisational diagrams showing the boundaries for confidential information
- The measures in place to ensure staff are aware of their obligations
 - Monthly compliance statements for relevant managers
 - An online training course or a refresher with an assessment every 12 months. (This is being updated to reflect the new Media Networks organisation.)
 - This and other briefings of the Media Networks changes for Confidential Information
 - Separation of storage systems for documents
 - Physical separation of some teams
 - Enhanced measures if Arqiva bids for some broadcast licences
- Example scenarios to show how Arqiva ensure confidential information is handled appropriately.

In addition, Arqiva provided a presentation pack of organisational diagrams to explain the evolution of structural changes from 2015 to 2020, titled Organisational Separation for Undertakings Compliance and dated 16 October 2020.

During this audit review Arqiva presented the three PowerPoint presentations noted above and explained all organisational changes and the measures to ensure ISS compliance.

Arqiva maintains commercial business units separate to those areas dealing with Technology, Operations, Regulation, Products & Finance. These business areas come together at the CEO level. Customer account management is through separate teams under the Chief Commercial Officer reporting into the CEO. Arqiva maintains separation to comply with the undertakings and as set out in the Arqiva Information Security Strategy.

Annex 2² contains Arqiva's structural diagram and observations on the separation of account management teams.

16. Do Arqiva use appropriate protocols for undertaking sensitive work?

Arqiva's protocols are described in the following sections of this report and are not repeated here. Arqiva were able to show appropriate protocols for undertaking sensitive work in all examples noted in this report.

17. Do Arqiva handle sensitive information in accordance with the ISS protocols?

17.1. Handling of reference offers and customer bids following Ofcom licence advertisements.

When Ofcom advertise broadcast licences Arqiva may be required to produce reference offers for broadcast services. Arqiva use ISS protocols when dealing with the production of reference offers to ensure information from one licence bidder is kept separate from another. Arqiva monitor Ofcom announcements and appropriate managers are made aware of the ISS protocols and rules of engagement as and when the advertisements are announced.

The rules of engagement are set out in an Arqiva document titled 'Arqiva Regulated Business Rules of Engagement – New DAB Licences'. This document explains:

- The separation of roles and the assignment of staff to specified teams within Arqiva.
- The handling of confidential data and communication between groups.
- The requirements for statements of compliance with the Undertakings for the duration of the licence application period.
- The physical separation of the specified teams working on the joint venture and other licence applicants
- The requirements for information security and the storage of confidential information

² This annex is redacted from the non-confidential version of the report

Arqiva used the reference offers produced for Morecambe Bay N&W Cumbria & SW Scotland and the Channel Islands as examples of the rules of engagement in action. This was presented step by step with supporting documentation and email evidence to show the protocols at work. The following notes explain the steps taken by Arqiva:

The Ofcom advertisements appeared in April & June 2019. The advertisements were picked up by Arqiva's regulatory team who informed relevant Arqiva staff of the requirement to prepare reference offers and the obligations regarding confidentiality. A copy of this communication was shared with OTA BTS.

A technical team was established, and separate account managers would be allocated to each bidder as and when they appeared. A member of the regulatory team is put in place to sit between the account managers acting as information anonymiser, so protecting confidentiality. In the first instance, reference offers were produced by the technical team for Network Access and Transmission Services. After costing and internal approval these were published on Arqiva's web site in May and July 2019. Ofcom required Arqiva to produce both Network Access and Transmission Services reference offers for the Channel Islands while only the Network Access reference offer was required for Morecambe Bay N&W Cumbria & SW Scotland.

Once the reference offers were published, potential bidders approaching Arqiva were reminded of the confidentiality protocols before formal engagement. At this point bidders may raise questions which require support beyond the Arqiva account manager and at this stage the anonymisation protocol is enforced by the designated anonymiser within the regulatory team.

Arqiva use a secure network drive with controlled access to store and regulate access to information. A live walk through over video conference was shared with OTA BTS which showed the presence of restricted access areas for bidders' questions, anonymised questions, technical replies and responses. The storage space access rights of Arqiva staff were viewed during the video conference and these aligned with the post holders and their responsibilities. This showed that each bidder had a separate account manager, that each Arqiva account manager was allocated to only one bidder and that the technical teams received anonymised questions.

Arqiva keep these enhanced confidentiality arrangements in place until licences are awarded by Ofcom at which time normal 'business as usual' confidentiality arrangements take over.

17.2. Handling of reference offers, customer bids and Arqiva bids following Ofcom licence advertisements.

In the period under review, Arqiva have not bid on any licences advertised by Ofcom.

17.3. Handling of sensitive information and compliance awareness as a business as usual activity.

Arqiva Radio Account Managers and the Arqiva Regulatory Team have regular conference calls to discuss any matters relating to regulatory compliance.

Representatives across Arqiva meet monthly in a formal meeting to discuss any regulatory compliance matters including Head of Radio, Legal, Regulatory Team, Strategy Ventures Product & Marketing. The format of the meeting includes sections for Super Credits, Sale of Equipment, Renewal of Contracts, New Transmission Agreements, Network Access, Reference Offer, Adjudicator matters and Confidentiality issues.

18. Do Arqiva use appropriate systems for storing sensitive information?

Arqiva report that since 2013 they have received accreditation to the ISO 27001 standard for Information Security Management. Arqiva carries out regular internal audits to confirm the requirements. In addition, Arqiva use external auditors to test the requirements are met. The external audit reports were presented during video conference on 1st Feb 2022 and did not contain any non-compliances nor observations in regard of information storage.

The previous ISS audit reviewed Arqiva protocols document SY-SD-001-1.0 31 issued May 2018 and titled Information Classification. This has since been revised and updated to version 1.3 dated 08/12/2021. This is prepared by Arqiva's Governance Risk and Compliance team who have replaced the Information Assurance team. This twelve-page document defines the classification scheme for Arqiva's information and the inventory requirements for information assets. The purpose of this standard is to ensure that Arqiva's information assets are given the appropriate level of protection based on their classification.

Arqiva have previously provided information regarding encrypted PC storage, PC screen locking, clear desk policy and document disposal. PC security is a part of the ISO 27001 standard and is a standard item covered on Arqiva's ISO27001 external audit. The external audit report did not contain any non-compliances.

19. Do Arqiva use appropriate systems for controlling physical access to secure areas?

Arqiva consider information security and the impact of role changes when Arqiva staff move from one position to another. An individual's physical access rights and electronic access to data rights are assessed when staff move departments. Arqiva's HR system provides a flag to the regulatory and compliance team when staff move departments so assessment can be made for changes to access rights. A copy of the staff movement analysis sheet used by the regulatory team was shared during video conference review.

The widespread use of access control systems is evident at Arqiva Crawley Court. Accreditation to the ISO 27001 standard includes physical security measures and is a part Arqiva's external audit.

Arqiva presented electronic reports of internal audits of the access measures in operation. Arqiva presented external audit reports for review during video conference, these did not contain any non-compliances or observations in regard of access control.

20. Do Arqiva test that these measures are effective?

20.1. ISO 27001 compliance and audit

ISO 27001 is described as an *international standard which is recognised globally for managing risks to the security of information you hold. Certification to ISO 27001 allows you to prove to your clients and other stakeholders that you are managing the security of your information. ISO 27001:2013 (the current version of ISO 27001) provides a set of standardised requirements for an Information Security Management System (ISMS). The standard adopts a process based approach for establishing, implementing, operating, monitoring, maintaining, and improving your ISMS.*

In February 2022 Arqiva's lead security auditor shared the findings of the April 2021 NQA ISO 27001 audit report. Due to coronavirus restrictions this audit was carried out remotely but notes that assessment objectives were fully achieved. This audit is classified as a surveillance audit, a full end to end audit is undertaken every three years at ISO 27001 renewal.

The audit covers all Arqiva's business including many aspects unrelated to the ISS and the requirements of the Undertakings. In our review we focused on those areas most related to the successful delivery of Arqiva's ISS.

The audit summary notes that Arqiva's systems continue to provide the required level of control, that the organisations context is well defined, leadership is effectively demonstrated, and commitment levels are evident. It states that this is reflected in the levels of compliance and operational control appropriate to the risks and opportunities identified in the audit. The audit reviewed system administration activities, a review of site activities at Crawley Court as well as related records. The audit found no major non-conformances and no areas of concern. A small number of opportunities for improvement and minor non-conformances were observed though not in areas related to Arqiva's ISS and the requirements of the Undertakings. The audit recommended continued granting of ISO 27001 certification.

The scope of the audit covers Training & Awareness, Asbestos Management, Environmental Management, Carbon Footprint, HR, Environmental Incidents, Site Acquisition & Construction, Property Management, Continual Improvement, Projects, Learning & Development, Compliance & Cyber Security, Threats & Incidents logging & management, Product Specification, ExCo Management, Knowledge Management, IT Device Security, Ofcom – Compliance – Undertakings, Site Tours, Network Services Management, Software – Patching – Testing, Cryptographic Controls, QMS, Information Security Management, Risk Management, 3rd Party Management, and Physical Security.

The NQA audit report covers all these areas, only those relevant to the ISS were reviewed.

20.2. **Arqiva internal compliance certification**

Arqiva shared a live view of Arqiva's regulatory and compliance officers' email folders and within here emails were present which showed regulatory compliance statements for December 2022. Samples of these were viewed including those from Arqiva DTT MuxCo account manager, Corporate legal affairs, Commercial Customer Experience, PSB manager, Commercial Video team Broadcast Sales and an Arqiva Board Member. Others were present in the email though not selected by OTA BTS in the samples to be viewed.

Compliance statements are generated monthly by 15 Arqiva managers covering account management, products, operations, service excellence, commercial video, DTT MuxCo, portfolio delivery and an Arqiva board member.

The monthly compliance statements are in the form of a template which is broadly similar for each business area but with some specific questions depending on the individuals' responsibilities (legal team and board member). The statement template asks questions relating to the handling or receiving of any confidential information, and specifically asks what it is, when it was received, the source and with whom it has been shared. The manager signs and dates a declaration which states that the manager has made enquiries with their direct reports for verification purposes.

21. Do Arqiva provide training and awareness of their ISS and the requirements of the Undertakings?

21.1. Arqiva Undertakings course and ISS awareness

On 29 March 2022 through video conference, Arqiva ran the complete Undertakings and ISS awareness course. An interactive web-based course which has been updated and revised since the last audit.

The course sits on a new learning and development platform called HCM and includes questions and an assessment. This single course replaces the previous 'full' and 'refresher' courses.

The course takes about 25 minutes to complete and explains the requirements of the undertakings, what this means and how Arqiva's staff comply. It explains Arqiva's NA and MTS charges, obligations, T&Cs and contract renewals. The general provisions are explained along with the roles of Ofcom and OTA BTS, an explanation of disputes and what a breach of the Undertakings would mean. The role of the compliance director is explained along with the requirements of Arqiva's Information Security Strategy, including confidentiality and obligations.

Each section of the course contains worked examples and requires the participant to engage throughout. A final assessment will only accept course completion with an adequate pass rate.

The HCM platform produces an output report which tracks by week those staff who have completed the course and highlights any individuals with overdue courses. This report is sent to the regulatory and compliance team which, together with a leavers and starters report, is used to ensure all staff required to undertake Undertakings and ISS training do so in a timely manner. Through video conference, Arqiva demonstrated this analysis in action and showed the tracking and management of the course attendees. While this tracking process is currently done manually, Arqiva advise that there are plans for a more automated system.

21.2. Arqiva code of conduct

Arqiva have a formal internal code of conduct (document reference LG-PY-002-7.0) which applies to all Arqiva staff on both a permanent and temporary contract. A copy of this document was provided for review on 31 March 2022. The code of conduct includes requirements relating to anti-bribery and anti-corruption, fraud, anti-trust, confidentiality and integrity, implementing the code, training, and compliance with the code. The confidentiality & integrity section specifically refers to regulatory compliance, the Undertakings and Arqiva's Information Security Strategy. The training section notes the requirements for staff in certain roles to complete training on the requirements of the Undertakings on an annual basis. The document requires the signature of the member of staff to indicate that they have read and understood the requirements.

An appendix to the code of conduct includes specific ISS requirements for those Arqiva staff with access to confidential information covered by the Undertakings. The obligations in this appendix to the code of conduct are noted below:

1. Your obligations in relation to maintaining the confidentiality of Confidential Information (as defined at the end of Section 1 of the Information Security Strategy (ISS)) are to:

- Only use Confidential Information for the purpose for which it was supplied.
 - At all times, respect the confidentiality of that information.
 - Not pass confidential information on to any other business units, departments, subsidiaries or partners of Arqiva for whom such Confidential Information could provide a competitive advantage.
2. In respect of Confidential Information, you must:
- Abide by and implement the document classification policy and practice
 - Not pass customer information outside the business unit within which you work, unless it is necessary in order to carry out customer instructions and you have been specifically authorised to do so by the director responsible for the business function in which you work.
 - Comply with the requirements of the ISS.
3. If you are transferred from a role or project in which you received Confidential Information, to another role or project where that Confidential Information could provide a competitive advantage to Arqiva or another customer, then you must immediately upon transfer:
- Comply with the requirements of the ISS.
 - Identify the information which might provide the competitive advantage
 - Register it with the Director of Legal
 - Ensure that you do not use that Confidential Information in your new role and that you do not provide it (in any form whether written, verbal or in a design) to anyone outside the team from which you obtained it;
 - Confirm to the Director of Legal on a monthly basis that you have complied with these requirements
4. If you become aware of Confidential Information and you are in a role whereby it could provide a competitive advantage to Arqiva, then you must:
- Register it with the Director of Legal
 - Ensure that you do not further disclose or use that Confidential Information.
 - Confirm to the Director of Legal on a monthly basis that you have complied with these requirements
5. In the event that you are unclear in respect of what information is confidential and cannot be shared seek guidance from your manager

22. Do Arqiva consider matters relating to ISS compliance at board meetings?

22.1. Annual undertakings compliance reports

Arqiva produce annual undertakings compliance reports and provided a copy of the report titled 'Arqiva Limited undertakings compliance report September 23rd 2021 relating to the period 1 July 2020 to 30 June 2021 (the reporting period)'. The document lists all paragraphs from the Undertakings which are relevant to compliance obligations and provides a template to note status. All areas are noted compliant or complete. The document was signed by Arqiva's Compliance Director on 23rd September 2021 and was distributed to the CMA, Ofcom and OTA BTS.

22.2. Handling of confidential information at board meetings

Arqiva report the use of protocols to ensure that confidential information relating to SDN and D34 is not shared with Arqiva DTT MuxCo. These protocols involve the removal of confidential information from the briefing packs circulated to board members and DTT MuxCo directors are not present during sensitive discussions.

Arqiva have previously shared redacted documents to show these protocols in operation.

Annex 1: ISS Protocols and Measures - The Undertakings

Section 16.2 of the Undertakings states that the Information Security Strategy shall require Arqiva to implement appropriate measures described as:

- 16.2.1 to ensure the security of Arqiva's information storage systems and data systems (including data collection, storage and archiving), particularly where confidential information referred to in paragraph 16.1 is stored in systems shared between business units;
- 16.2.2 to ensure the physical security of confidential information referred to in paragraph 16.1;
- 16.2.3 to ensure that an employee of one business unit does not disclose or use the confidential information referred to in paragraph 16.1 of which the employee had become aware whilst working for another business unit;
- 16.2.4 to ensure the security of the confidential information referred to in paragraph 16.1 in the event that Arqiva is a bidder in a spectrum auction in competition with a Customer or prospective customer; and
- 16.2.5 to ensure that staff receive adequate training in relation to the Information Security Strategy

Annex 2: REDACTED - Arqiva's organisational structure and information handling

8 Appendix B: Audit of Arqiva Site Records Migration

Audit of Arqiva site records migration from KEEP to Siterra

This redacted version of the report is for publication.



Version No	Date	Modified by	Notes
0.1	14/4/22	J Butler	First draft for comment
1.0	11/5/22	J Butler	Addition of Arqiva response
1.0r	11/5/22	J Butler	Annex 1 redacted for publication

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1. Summary

Arqiva use a database system to maintain broadcast transmitter site infrastructure records. Information from this database is used to determine the share of the site charges to each user of the structure. In 2021 Arqiva migrated from their KEEP database to a new database called Siterra. This document records the scope and outcome of the Adjudicator's audit of this migration.

The first stage of this audit was to review Arqiva's transfer process from the old to the new system and the steps Arqiva followed to ensure integrity of the windloading and site apportionment calculations. The second stage was to undertake a detailed review and comparison of the windloading and apportionment calculations from four sample sites using historic data from KEEP and current data from Siterra. The Adjudicator's calculations were compared to Arqiva's calculations and any changes to the installed base (in between data snapshot dates) were reviewed and taken into account.

For stage one, Arqiva provided satisfactory evidence of a robust data transfer and checking methodology in the migration from KEEP to Siterra.

For stage two, the Adjudicator's calculations of windloading and site apportionment were identical (to 6 significant numbers) between KEEP and Siterra, and to those provided by Arqiva.

2. Introduction

In previous years, OTA-BTS has audited Arqiva's site records by visiting a sample of transmitter sites and comparing what is observed on the structure to data sets extracted from Arqiva's records database called KEEP. The first site audit was undertaken in March 2016 followed by four other audits in subsequent years. A total of 2845 antennas were included in these audits.

In 2021 Arqiva migrated to a new database called Siterra and ceased operation of the KEEP database. For the 2021/22 audit, OTA-BTS decided to review Arqiva's migration process and undertake checks on the 'before and after' windloading calculations and site apportionment values for all antenna systems at four sample transmitter sites.

The four selected sites were those visited in the previous OTA-BTS KEEP audit and the data set from KEEP provided at the time would be compared to a new but similarly presented data set from Siterra. As the data sets would be compared some months apart it was likely that changes to the installed antenna base would occur and Arqiva were asked to provide explanations for variances. Any changes to the installed base would be considered in the OTA-BTS calculations of windloading and site apportionment so that a like for like comparison could be made.

Two of the sites (Carmel & Kilvey Hill) each have two structures and the remaining sites (Rowridge & Icomb Hill) each have one structure. All structures are designated Broadcast except for the tower at Carmel which is designated Wireless.

2.1. Antenna Systems & Site Apportionment

Arqiva use a database system to maintain site infrastructure records. The database records a variety of site data which includes information relating to the height, type and location of antenna systems. Antenna information from the database is used to determine the loading which the antenna system (including feeder) places upon the structure. At each transmitter site, the total windloading of all antenna systems plus the windloading of the structure(s) is equal to the total site windloading. This site total is apportioned between all users and this apportionment percentage is used in the calculation of the customers charges.

Some elements of the charges to broadcasters are based on the percentage wind loading upon the structure caused by the antennas delivering the broadcaster's service. The charges to Arqiva's broadcast customers are influenced by all antennas on a structure irrespective of whether the antenna is for a broadcast service or something else. As such, the accuracy of all antenna records is important and all are considered in this audit.

The windloading of each structure is apportioned to either all broadcast or all wireless customers depending upon whether the structure is designated as Broadcast or Wireless. Guyed masts at Arqiva sites are typically designated Broadcast, based upon the original reason for construction being for broadcast customers. Many (but not all) secondary towers at Arqiva sites are designated Wireless, based upon the original reason for construction being for wireless customers.

Windloading site apportionment is used to divide up common site costs associated with Network Access charges. The allocation methodology of common site costs and charges is described in the

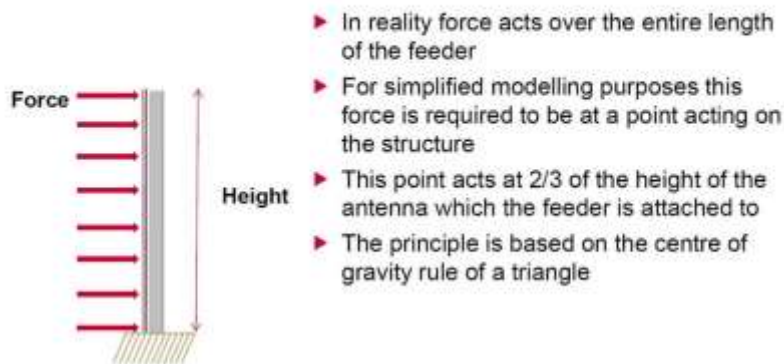
document titled Regulatory Accounting Principles and Methodologies 2020/21 which can be found on Arqiva's web site¹.

2.2. Site Apportionment calculation methodology

For each antenna or other similar asset, the database contains the force it transfers to the structure when the wind speed is one metre per second. This is expressed in Newtons (N). The database also shows the height of the asset on the structure and by multiplying this height by the force we can show the bending moment (windloading) of the asset in Newton metres (Nm).

For each length of feeder or other similar asset, the database contains the force each metre transfers to the structure when the wind speed is one metre per second. This is expressed in Newtons per metre (N/m). The database also shows the length of the feeder on the structure and by multiplying this length by the force per metre we can show the total force the feeder transfers to the structure. This is expressed in Newtons (N). The length of the feeder is also the height of the feeder so we can calculate the bending moment (Nm) of the feeder by multiplying the total force the feeder transfers to the structure by the height of the feeder and then multiply this by two thirds. The two thirds rule comes about as the mid point of the resultant force based on the centre of gravity of a triangle. Arqiva provided the helpful diagram shown below.

Basic Principles of Calculation – Point of Resultant Force on Feeder



Even without any antennas, feeders or other assets on the structure, the structure itself will be subject to the force of the wind and so the structure has an unladen bending moment expressed in Nm. This remains the same irrespective of what is attached to the structure. This bending moment is allocated to either broadcast or wireless customers depending on whether the structure is designated a Broadcast or Wireless structure.

¹ <https://www.arqiva.com/documentation/regulatory/corporate/Arqiva%20RAPM%20FY21.pdf>

The total site bending moment (Nm) is the sum of the bending moment of all antennas, feeders or other assets on the structure plus the bending moment of the structure(s).

The structures bending moment is allocated to either all Broadcast or all Wireless assets on the structure. Each asset in this category is allocated a fraction of the structures bending moment based upon its percentage bending moment relating to all assets in this category.

For example, a broadcast structure containing 10 broadcast antennas each with the same bending moment will mean that each broadcast antenna is loaded with 10% of the structures bending moment.

The site apportionment (%) of each antenna, feeder or other asset is calculated by dividing its bending moment (including any fraction of the structures bending moment) by the total site bending moment.

The higher up the mast and the bigger the antenna or feeder then the greater the bending moment and a greater site apportionment leading to a greater share of the site costs and charges.

2.3. Asset status and apportionment

Each entry in the database has an associated status flag. The status designates whether the entry is associated with an asset which is categorised as installed, planned, redundant, remove or reserved. All reserved and installed assets are allocated site apportionment and are included in the apportionment calculations. Those which are categorised as planned, redundant or remove are not included in the apportionment calculations. In essence, only the revenue generating entries are apportioned site costs and charges whether that be an operational antenna or space reserved on the structure. Arqiva may choose to delay the removal of redundant or remove categorised assets until some time after their use has ceased. This may especially be the case if removal entails working close to other operational antennas which may need to be depowered for removal works to proceed. Combining these removal works with other planned works is safer and less disruptive to operational systems.

The move to Siterra from KEEP has introduced an expansion of the 'installed' category to include 'Installed – To be removed' and 'Installed – To be swapped out'. This helps Arqiva in the day to day management of site assets but does not change the apportionment methodology noted above.

3. The migration from KEEP to Siterra

The Siterra database contains details of around 1500 sites. This is reduced from the 7500 sites recorded in KEEP due to Arqiva's sale of non-broadcast towers to Cellnex in 2020.

The migration from KEEP to Siterra included all technical parameters plus workflow information such as the antenna status and whether the antenna was planned, redundant, installed etc. The Siterra system provides enhanced workflow functions which allow historic changes to be readily accessible.

Siterra differs from KEEP in the way structural loading calculations are undertaken. In KEEP, these calculations were undertaken within the KEEP ecosystem while in Siterra the data is offloaded to

Qlik Sense for overnight structural loading calculations, the results of which are loaded back into Siterra.

Siterra and KEEP output site apportionment data to external financial systems which in turn calculate the charges to Arqiva's customers. In effect, there is no change to the method in which customer charges are calculated.

Arqiva's Technology & Transformation department were responsible for the migration from KEEP to Siterra. The migration process began by analysing one site to customise and align databases ready for migration. A batch of 25 sites were chosen for the initial migration test with manual checks of each data point. Arqiva used JIRA test management platform to help manage the migration and track issues. Once the initial 25 sites were satisfactorily migrated Arqiva moved the remaining 1500.

Arqiva used MicroStrategy and QlikSense for analytics and data validation during the migration process. In addition, extensive manual checking of KEEP vs Siterra was undertaken. Arqiva outlined the validation methodology in a presentation to the Adjudicator. As and when the analytics and manual checks highlighted issues at individual sites, all sites were then checked to ensure the same issue did not repeat. JIRA was used to track and manage these outcomes and actions. Any and all differences were investigated to six significant figures. Arqiva report that the migration process highlighted some historic errors within KEEP which were corrected in the migration to Siterra. In effect a data cleansing exercise. These were limited to non-broadcast antennas and any consequential differences in apportionment are reported as extremely small. The Adjudicator notes that based on findings from previous KEEP audits, some small errors in KEEP are not unexpected and it is helpful that Arqiva have taken this opportunity to perform data cleansing.

4. Data supplied for the audit

Arqiva supplied a dataset in spreadsheet format containing both the historic KEEP data and the current Siterra data for all four sites. The data for each site includes the following parameters for each asset on the structure:

Site ID, Site Name, Antenna ID, Antenna System Name, Related Antenna ID, Latest Antenna Status, Broadcast/Wireless Antenna, Antenna Mean Height, Antenna Type, Antenna Leg, Antenna Bearing, Antenna Quantity, Feeder Quantity, Antenna Bending Moment (Nm), Antenna Force under 1 m/s Wind (N), Apportioned Structure Bending Moment (Nm), Feeder Bending Moment (Nm), Feeder Force under 1 m/s Wind per Metre Length (N/m), Site Apportionment for Antenna (%), Structure Id, Structure Height, Site Apportionment for Antenna System (%)

A total of 545 lines of data were supplied from KEEP and 1474 from Siterra. The reason for the difference is in the way assets are recorded in KEEP compared to Siterra. In KEEP, feeder is recorded in the same line as the associated antenna and is referenced with the same ID as the antenna, while in Siterra, each feeder is recorded on a separate line with a unique ID. In addition, individual antenna systems with multiple panels or elements on the same bearing are recorded in the same line and are referenced with the same ID in KEEP, while in Siterra, each element is recorded on a separate line

with a unique ID. These differing approaches make no difference to the windloading bending moment or apportionment calculations for each antenna system.

5. Audit analysis

The following analysis questions are addressed by the Adjudicator through bending moment and apportionment calculations using raw data supplied by Arqiva. All calculations were to six significant figures. Tests were carried out through bending moment calculations for individual antenna systems which were then summed across category, type, structure and site. The sums across each grouping were compared from KEEP to Siterra, a checksum approach. In addition, the individual antenna systems windloading and apportionment calculations were compared and considered.

The force (in Newtons at a wind speed of 1 m/s) of each structure, antenna element, feeder and other assets is supplied to Arqiva by the original manufacturer. This audit does review the original manufacturers data and relies on the raw data presented in the KEEP and Siterra databases.

ANALYSIS QUESTIONS:

- 5.1. Is the bending moment of each structure the same in Siterra as it is in KEEP?
- 5.2. Do differences in the antenna schedules between Siterra & KEEP have satisfactory explanations?
- 5.3. Is the sum of the wireless antenna bending moment on each structure the same in Siterra as it is in KEEP, when taking into account antenna additions and removals between the data snapshot dates?
- 5.4. Is the sum of the broadcast antenna bending moment on each structure the same in Siterra as it is in KEEP, when taking into account antenna additions and removals between the data snapshot dates?
- 5.5. Is the site apportionment of each antenna system calculated correctly in KEEP and in Siterra?
- 5.6. Is any difference in antenna system site apportionment between Siterra and KEEP reduced to zero when a bending moment offset is applied equal to the bending moment change due to new antenna additions and removals between the data snapshot dates?
- 5.7. Do the sum of the individual antenna system site apportionment percentages equal 100% at each site?
- 5.8. Has the bending moment of broadcast and wireless structures been allocated appropriately and accurately?
- 5.9. For individual antenna systems, is the bending moment the same in Siterra as it is in KEEP?
- 5.10. Do all antenna systems wholly categorised as planned, redundant or remove have zero site apportionment?
- 5.11. Do all antenna systems wholly categorised as installed or reserved have site apportionment greater than zero?

6. Summary of findings – Report versions

The report is initially produced in draft form (version 0.xx) summarising the findings and noting any observations regarding the accuracy of the data migration from KEEP to Siterra. The draft report is shared with Arqiva who may comment upon factual accuracy prior to final issue. The final version has document reference 1.xx and includes any Arqiva response to the findings. The Adjudicator will be responsible for any actions following production of this report. The OTA-BTS web published report redacts analytical data from the full report which may be commercially sensitive for Arqiva.

7. Summary of findings – Results

Tables showing calculations of the results are contained in Annex 1².

7.1. Is the bending moment of each structure the same in Siterra as it is in KEEP?

YES – The apportioned structural bending moment for each asset was summed for each structure from the KEEP data and compared to the same for the Siterra data. The resulting summations were the same.

7.2. Do differences in the antenna schedules between Siterra & KEEP have satisfactory explanations?

YES – Arqiva provided notes for any asset where there was a variation between KEEP and Siterra.

7.3. Is the sum of the wireless antenna bending moment on each structure the same in Siterra as it is in KEEP, when taking into account antenna additions and removals between the data snapshot dates?

YES – When the asset changes from the list below were taken into account, the total sum of the antenna system bending moments upon each structure were the same.

- Carmel – Removal of 1m dish
- Icomb Hill – Addition of one planned and one installed system
- Rowridge – Removal of 2.4m dish, feeder remains

7.4. Is the sum of the broadcast antenna bending moment on each structure the same in Siterra as it is in KEEP, when taking into account antenna additions and removals between the data snapshot dates?

YES – There were no changes and the total antenna system bending moments upon each structure were the same.

7.5. Is the site apportionment of each antenna system calculated correctly in KEEP and in Siterra?

² Note that Annex 1 is redacted from the document on the OTA-BTS web site

YES – The Adjudicator completed windloading and apportionment calculations separate to those supplied by Arqiva and the results aligned.

7.6. Is any difference in antenna system site apportionment between Siterra and KEEP reduced to zero when a bending moment offset is applied equal to the bending moment change due to new antenna additions and removals between the data snapshot dates?

YES – The Adjudicator calculations showed this to be the case.

7.7. Do the sum of the individual antenna system site apportionment percentages equal 100% at each site?

YES – The Adjudicator calculations showed this to be the case.

7.8. Has the bending moment of broadcast and wireless structures been allocated appropriately and accurately?

YES – All Wireless and all Broadcast assets have appropriate allocation based on the supplied categorisation and wind force data supplied by Arqiva.

7.9. For individual antenna systems, is the bending moment the same in Siterra as it is in KEEP?

YES – Arqiva mapped the systems to each other, these were reviewed and agreed by the Adjudicator.

7.10. Do all antenna systems wholly categorised as planned, redundant or remove have zero site apportionment?

YES – The Adjudicator analysis showed this to be the case.

7.11. Do all antenna systems wholly categorised as installed or reserved have site apportionment greater than zero?

YES – The Adjudicator analysis showed this to be the case.

8. Responses from Arqiva following the 2019 2020 audit, updated 2022

Arqiva provided the following response:

Office of the Adjudicator – Broadcast Transmission Services

Antenna Records Audit 2021-22

This document is provided as an update to the action plan previously captured in reports from earlier antenna data records audits.

Actions since the 2019-20 Audit

Following the Keep audit for the Office of the Adjudicator in 2019-20, Arqiva has continued with a number of actions to review and address data quality.

Transformation Programme

A significant programme of work has been put in place to update key business systems across Arqiva. This Transformation Programme was started in 2020 looking at data in the whole Arqiva business. This was ahead of the separation of the Arqiva Telecoms business and sale to Cellnex. With this sale, the programme was updated to ensure that the necessary focus was achieved on the ongoing Arqiva business data and the migration to the new business systems.

As part of the separation, Arqiva retained responsibility for the data on all of the sites that Arqiva operates its customer's managed services on. Cellnex migrated the data for the sites that they had future responsibility for into their own systems.

Arqiva planned a process of data separation, checking, migration and validation to ensure that the necessary data that was available in the previous Keep system prior to migration was moved into the new and ongoing Siterra system. This also addressed the calculation of Site Apportionment as detailed in the current antenna records audit report.

Data Governance

Within the wider Transformation Programme an initiative to highlight and improve the data quality – Think Data – was put in place. A dedicated team to address Data and Orchestration has been established and rules developed to implement a number of Master Data Management processes. The data used in these processes is owned by designated Data Stewards who are subject matter experts in the specialism related to their data.

After establishing the original initiative, additional focus on data governance has been put in place in the start of 2022 with a Data and Insight team to support particular areas of the Arqiva business data.

Currently a number of further activities are being addressed to refine the business Data Glossary and to address how data quality can be improved across the business. Further work on this is expected throughout the next months.

9. Arqiva's response to the audit findings

Arqiva provided the following response:

Arqiva has continued to recognise the scale and complexity of data used in the regulated broadcast transmission business as the basis for some key parts of ongoing customer charges.

In implementing the Transformation Programme, specific focus has been placed on the data that is critical to deriving relevant elements of customer service charges. This has involved a significant commitment of time and effort to plan for and to manage the changes required.

Arqiva welcomes the findings of the audit that firstly, the data transfer and checking methodology was robust and secondly, that the calculations of site apportionment carried out by the Adjudicator were identical to those provided by Arqiva for the relevant systems.

Arqiva will continue to focus on maintaining the necessary data quality and improving the relevant records where any issues are identified.

10. Annex 1 – Tables of the audit test results – REDACTED for publication