



A water audit is usually established at the property level, although it is possible to combine an audit across multiple sites, and a program of water audits is often undertaken at a portfolio level.

The decision to implement a water audit is usually taken by an asset manager. However, a property manager will often be responsible for coordinating the audit process, with information and support provided by a facilities manager. The audit outcomes will be of interest to all stakeholders.

The process of undertaking a water audit should take place within a wider framework for the governance of audit and assurance activities, and should include the following steps:



STEP 1: ESTABLISH AUDIT OVERSIGHT AND SCOPE

It is important that a forum, committee or body is established to provide oversight of the audit process, to validate outcomes, and to check that recommended actions are allocated appropriately.

The scope of a water audit should be agreed by the oversight body before it is undertaken.

Determining the audit scope should involve consideration of a number of issues:

- What are physical boundaries of the property or portfolio to be included in the audit?
- What is the quality of the established water meter inventory at these locations?
- What is the quality of baseline water consumption data?
 - Is there high granularity data via local metering by user or zone, or low granularity data by building?
 - Is there reliable and up-to-date data via actual meter readings, or a reliance on estimated billing data?
- Is it beneficial and practical to include occupier leased areas as well as owner-controlled areas?
- Will the scope include infrastructure improvements such as plant replacement, leak detection and rain/greywater recovery?
- Will the scope include supply arrangement optimisation, such as tariff evaluation, sewerage abatement and water abstraction?

Property managers should triage meters within an asset, or assets within a portfolio, in preparation for intervention.

Rateable value supplies should generally be excluded from the scope of a water audit, as these supplies are typically low consuming. This is also the case for low consuming metered supplies, as the cost of interventions will likely outweigh the benefits.

STEP 2: SECURING A COMPETENT WATER AUDITOR

While there are no mandated qualifications or accreditations to undertake a water audit, the individual undertaking the assessment should have knowledge and experience appropriate to the audit's scope.

As a minimum, a water auditor should have experience in relation to energy management, the property and equipment type involved, and the processes and arrangements involved in audit and assurance activities.

Free guidance is available online on how to undertake a water audit. However, if water related infrastructure, plant and supply optimization are included in the scope, specialist industry equipment and knowledge will be necessary.

Considerations when contracting a third party to undertake a water audit:

- Specialist auditors offer fee structures based on either a fixed up-front fee, or a share of savings basis.
 - If the fixed fee structure is used, it is feasible that no opportunities will be identified, and the costs will not yield savings.
 - If the share of savings structure is used, if substantial savings are identified, you may end up paying more than under a fixed fee structure.
 - Clients will need to be engaged to confirm where the payment of these services will come from. Clients may, for example, accept a fixed fee structure to be paid out of non-recoverable funds in the event that the service yields no benefit, but that it is paid out of service charge if the savings exceed the outlay.
- Some water retailers offer water audits, and some may also offer a personalised water management package, in order to achieve the best water efficiency for the building.

STEP 3: REVIEW WATER CONSUMPTION PROFILE

The review of a property's water consumption profile is a central element of a water audit. The energy consumption profile should be compared against historical trends, with the intention of identifying the areas of greatest consumption and anomalies in expected consumption.

STEP 4: REVIEW WATER MANAGEMENT ARRANGEMENTS

Performance against historical water targets should be reviewed to determine the extent that progress towards intended improvements is on track.

Alongside this, a water audit should consider management arrangements, such as metering arrangements, processes review water consumption and arrangements to check that recommended actions from previous water audits are being deployed. There should be evidence that such arrangements are in place and are being implemented.

STEP 5: IDENTIFY WATER OPPORTUNITIES

A key component of a water audit is to identify opportunities to improve water efficiency. This is partly informed through the analysis of a property's water consumption profile, and is complemented by observation of equipment, operational practices and billing arrangements.

Consideration should be given to the following:

- Opportunities for water efficiency measures to reduce consumption, including water saving devices and behaviour change programmes.
- Opportunities to reduce consumption through infrastructure improvements, such as plant replacement, leak detection and rain/greywater recovery.
- Opportunities to reduce costs through supply arrangement optimisation, such as tariff evaluation, sewerage abatement and water abstraction.

Opportunities to reduce water consumption



Water saving devices and behaviour

Opportunities to reduce water consumption



Infrastructure improvements

Opportunities to reduce water cost



Supply arrangement optimisation

STEP 6: REVIEW AND CONTINUE TO IMPROVE

The outcomes from a water audit, including recommended improvement actions, should be documented and reviewed by the oversight body. An action plan should set out improvement opportunities alongside timeframes and responsibilities, and should inform the development of water targets.

Ongoing water consumption, progress against targets and the implementation of action plans should be periodically reviewed by the oversight body, or an appropriate forum with responsibility for a property's water or environmental management activities.

CREATING A WATER METER INVENTORY AND CONSUMPTION BASELINE

Establishing a water meter inventory for a property, and the consumption through those meters, enables a consumption baseline to be established, against which improvement targets can be set.

The following steps should be followed in order to establish a building's baseline water usage:

STEP 1: OBTAIN THE BILLS AND METER READINGS FOR THE BUILDING AS SUPPLIED BY THE WATER COMPANY

Rateable value supplies will not have meter readings but estimated annual consumption figures.

Some metered supplies will include both a main and a bypass meter, with the latter recording water at low flow rates. You will need consumption from both of these meters.

STEP 2: IF THE SUPPLY IS METERED, LOCATE THE WATER METER

It is usually located by the boundary of the property, often near a road. Your water retailer will be able to advise of the location details as held in CMOS, should identification prove challenging.

STEP 3: CHECK THE METER SERIAL NUMBER ON THE BILL MATCHES THE BUILDING'S WATER METER

The serial number can be found on the face of the meter, or etched in the metal meter casing.

If the serial number does not match that on the bill, or you are still unable to identify the meter, ask your water retailer to raise a C/01 form, which compels the water wholesaler to undertake a meter verification visit and will help to identify the meter, or update the meter details should they differ from the invoices.

STEP 4: READ AND RECORD THE ACTUAL READINGS FROM THE BUILDING'S WATER METER(S).

It is important to take regular recording of meter readings to enable the identification of trends in water consumption.

In most buildings, meters will need to be manually read.

How to manually read a water meter:

- Ensure that you only read the register to the decimal place, or to figures in a relief colour.
- Some newer meters are digital, and may require the display to be cycled to the consumption register (denoted by m3).

- Some meters may include a multiplier, either with 'x10' stated on the meter, or with '10' printed under the last digit on the register. In these instances, add a zero to the end of the reading.
- Some older meters may record in gallons or cubic feet.

Automatic Meter Reading (AMR) equipment can be added to meters. AMRs take a reading, log the data and communicate it to utility companies and/or property managers.

There are also prism-lensed cameras that can be affixed to meters set to take photos on a period basis and transfer the data electronically to a central database.

STEP 5: VERIFY THE WATER BILL READINGS AGAINST THE ACTUAL METER READINGS

It is usual for only large users of water, who are predominantly in the manufacturing sector, to receive regular bills based on meter readings. The water bills for most buildings will be based on estimated readings.

Submitting the readings you take to the supplier will ensure invoice consumption data tallies with the readings you take on site, and provide a host of ancillary benefits such as better budget management and minimising supplier queries.

STEP 6: CALCULATE A PROPERTY'S WATER CONSUMPTIONS

As a minimum, a property's water consumptions should be calculated annually. Ideally, more frequent usage levels should be calculated, such as monthly or weekly.

Sub-metering can provide detailed consumption data but is typically only installed in buildings with large water consuming items of equipment or areas, for example, swimming pool. However, the cost of installing sub-metering is now reducing increasing the opportunities for installation.