Taylor Wimpey
Water Data Methodology Introductory Statement

Introduction and scope

2018 is the fifth year that Taylor Wimpey has published a water footprint. Our focus has been the direct use of metered mains water across our estate. This includes temporary building supplies (TBS) for our building sites, and fixed permanent meters for our show homes, homes before sale, and offices. This includes taking readings from in excess of 10,000 meters, and making estimates for identified data gaps. For example in Scotland water consumption is not metered and estimates have been made.

There are some categories of water use that we have not considered. We have not considered water abstraction by organisations who work on our behalf, such as remediation contractors who might need to abstract groundwater to control or remediate it. We have not considered non mains sources (ground, surface or rain water). We have not considered water embodied in the goods we procure. We have not considered water used in the homes that we build, nor surface water managed by drainage systems before, during or after construction. We have not considered water discharges to sewer, surface water or groundwater. We will consider whether it is appropriate to consider these other categories of water use in our overall assessment in subsequent years.

Data collection approach

In previous years we captured mains water data alongside our energy data capture processes, including storage of water data in the UDMP (our in house utility data management platform). In addition plot water data was held on a system developed in conjunction with our energy provider Scottish Power, known as the SPBP (Scottish Power Builder Platform). Meter readings were largely conducted by in house personnel. However, our analyses indicated that the quality of water data captured through these routes was insufficient for publication.

In 2014 we employed utility specialist AJR to capture our utility data, including water data. After 2014 being a transition year, data collection was much improved during 2015 with data being directly captured by AJR. This has continued since then and is still ongoing.

AJR have provided a technical water data methodology statement which is attached to this document.

AJR
Water Data Methodology Statement

Specification of data sources

2018 has been the fourth full year where we have been responsible for all Business Units (BUs) and therefore responsible for obtaining, receiving and analysing all data. The methodology for data collection and recording was as described below. The methodology below explains the protocols in place but the 2018 data has been drawn together by AJR from multiple places as follows.

- Data held on AJR system
- Data gathered from suppliers
- Data gathered from site

Water

The data included is from a variety of sources with the preferred coming via direct data collection from site. However, on occasion, access to the meter is not possible, photographs do not turn out as expected and therefore invoices are used and as a last resort, estimation using prior consumption data. Please see below the breakdown of meter types and the normal and fall-back method of data collection.

1. Site Meters – Data collection is preferred by photograph quarterly on site by AJR site visit staff. Where a photograph is not possible, contact is made with the supplier to obtain up to date invoices where not already received and failing that, an estimate is generated using the average consumption from previous readings. Installation readings are obtained where possible from tags left with the meter or by initial invoice. Last resort would be contacting the supplier where the reading is required for a data set prior to the normal invoicing cycle. Final readings when the meter changes responsibility away from TW or is disconnected is taken from final invoices.

2. Office Meters – Data collection for offices is exactly the same as for Site Meters above.

3. Plot Meters (except Showhomes which are treated as Site Meters above) – Data collection is on site by site or sales staff at the point of handover with initial readings being gathered either from tags left with the meter or from initial invoice or as a last resort by contacting the supplier where the reading is required for a data set prior to the normal invoicing cycle. In the exceptional circumstance that readings are not taken on handover by site or sale staff, AJR ensure meter readings are taken at the earliest possible opportunity thereafter by contacting site staff to obtain or as a last resort, taking readings on the next quarterly cycle and using estimation for the handover date.

Estimates

What

Water Category A (Site, Sales and Offices) are covered by estimates as are Category B plots. There are two types of estimation that have been used. The first is reading estimation where data is held relating to supplies but we have had to estimate a year start or year-end reading using the estimated reading methodology described below. The second is supply estimation which breaks down into three areas; where no data exists for the supply or only a single reading with no other data available; where it is known that a site uses an unmetered water supply (such as standpipe); where it is not known how water is being obtained for a site. This is completed using estimated supply methodology described below.

Methodology

Reading Estimations are carried out by AJR in line with the following.

• Where Estimation date is between two known actual readings – Calculate average daily consumption between the two readings by dividing the total consumption (Later Reading minus Earlier Reading) by the total number of days between the readings (Later Reading Date minus Earlier reading Date). Work out the number of days from earlier reading date to the date of the required estimate, multiply this number of days by the average daily consumption and then add this result to the Earlier Reading. In practice, this is done by selecting the two readings either side of the required reading date on the system and clicking "Generate System Reading" button.

• Where Estimation Date is prior to earliest known reading but at least two actual readings exist for the supply – Calculate current daily supply average (using latest reading and closest actual reading to 1 year apart). Work out the number of days from the nearest actual reading to the required reading date, multiply by the number of days between this date and the required reading date and then deduct the result from the nearest actual reading. In practice, the system holds the closest average to a year using the latest reading and the one closest to 365 days ago and the system user enters the date it requires a reading for and then clicks the "Generate System Reading" button.

• Where Estimation Date is after latest known reading but at least two actual readings exist for the supply – Calculate current daily supply average (using latest reading and closest actual reading to 1 year apart). Work out the number of days from the nearest actual reading to the required reading date, multiply by the number of days between this date and the required reading date and then add the result from the nearest actual reading. In practice, the system holds the closest average to a year using the latest reading and the one closest to 365 days ago and the system user enters the date it requires a reading for and then clicks the "Generate System Reading" button. Supply Estimations have been carried out by AJR in line with the following.

• Where there is none or only one reading available for the supply and therefore no daily average consumption data exists, supply estimation has been used.

    o In Category A, this has been estimated by taking the average annual consumption for the supply type across the individual BU and applying this as the estimated supply consumption for any sites meeting the above criteria. Where no average exists for the individual BU (Scotland as an example) then the average across TWUK has been used.

    o In Category B, this has been estimated by taking the average consumption for plots from installation to legal completion across the individual BU and applying this as the estimated

supply consumption for any plots meeting the above criteria. Where there is no average consumption for the individual BU, the overall average for TWUK plots has been used.

• Where a plot, site or office is using an unmetered water supply or where the water supply type being used on site is not known, supply estimation has been used.
 o In Offices (Category A), this has been estimated by taking the total known metered consumption within offices and dividing this by the number of Full Time Employees (FTE) for the offices which these meters are known to serve. This resulting average cubic metres per FTE has then been multiplied by the FTE for unmetered offices to provide an estimated consumption.
 o In Sites (Category A), this has been estimated by taking the total known metered consumption within site meters and dividing this by the number of sites being supplied by these meters. This has been done at BU level except where no metered consumption was available in which case this was carried out for that BU using TWUK figures.
 o In Plots (Category B), this has been estimated by taking the average consumption for plots from installation to legal completion across the individual BU and applying this as the estimated supply consumption for any plots meeting the above criteria. Where there is no average consumption for the individual BU, the overall average for TW plots has been used.

Risks to Data

Please see below an explanation of our assessment of the data and where the underlying risks are in regards to the accuracy.

• Data Quality – The data collection has been comprehensive in 2018. In regards to Category A Meters, we have mitigated against risk by communication with suppliers as well as trying to qualify data retrospectively. We have also introduced a site visit checklist that covers how site are receiving water used for the build process such that although we cannot control unmetered sources, we can at least be aware of them and include them within estimations methodology previously described. Furthermore, this means we also become aware of situations where plot supplies are being used for building purposes and re-define them within the data.

• Data Accuracy – We have been able to validate a significant amount of Category A data. However, Category B Plot Data has been refined where immediately obvious as to errors and how they require refining. The problem with water data accuracy as regards plots is the haphazard nature of the number of digits read by the site / sales staff at the point of handover. We have provided support sheets to assist with meter readings.
 o We consistently query with site on receipt all readings where reading format is not obvious compared to meter type
 o We consistently query with site on receipt all readings where apparent consumption is in excess of 5 cubic metres for a standard plot

• Data Scope – Using the above-mentioned site checklist, water data scope is known to be comprehensive in 2018 and we are confident we are capturing all known metered water consumption.
 o Office Meter Estate believed to be fully complete and accurate. Supply estimation used for offices with no meter as previously described using FTE data.
 o Showhomes believed to be complete (i.e. Where meters installed currently)
 o Analysis has been completed for Site Meters by BU compared to number of active sites less those where water usage is known to be from an alternative (Unmetered) source to ensure we have all sites accounted for.