The National Australian Built Environment Rating Scheme (NABERS) was developed for benchmarking and measuring environmental performance of existing Australian buildings, with a NABERS rating providing building owners, managers or occupants with a simple indication of how well they are managing the environmental impact of their premises compared with their peers and neighbours.

During May, a number of new ratings were launched at the DECC’s Benchmark conference series, including the Waste and Indoor Environment ratings for offices, along with Energy and Water ratings for hotels and retail buildings.

The newly launched ratings are a major revision from those received for commercialisation by the NSW Government when it won the tender to develop NABERS in 2005. An extensive work program, consultation process and trial has gone into the development of these ratings to ensure that waste and indoor environment are as widely accepted, relevant and practical as the NABERS Energy (previously known as ABGR) and Water ratings.

Waste

The NABERS Waste tool has been designed to measure the waste generation and recycling performance of office premises. Like other NABERS benchmarks, it is a one to five star scale based on the range of market performance: from worst through to market leading practice, with two and a half stars representing average performance.

“Establishing the rating scale and methodology for rating buildings is a detailed process undertaken in close consultation with industry stakeholders,” explains Matthew Clark, manager built environment – water and energy programs at the Sustainable Programs Division of the NSW DECC.

Accordingly, a technical advisory group made up of industry and government representatives guided the development of NABERS Waste.

Technical information on the waste performance of Australian office buildings to set the rating benchmarks was provided by an extensive study covering various types of offices and waste management systems around Australia.

“This involved direct data collection and analysis from operating buildings, provision of information from industry stakeholders and a literature review,” says Clark.

Assessment is made on the basis of overall waste mass, and materials diverted from disposal or landfill, which are produced from normal daily office activities. It is important to note the rating covers general office waste only, excluding any sporadic and non-office waste such as material from retail activity, construction waste and the disposal of furniture.

Materials are simply weighed over ten normal, consecutive working days to reflect the habitual waste behaviour of the building. Certain times of the year, such as end of financial year and school holidays, are excluded from the audit.

The audit measures materials to landfill, and materials to recycling, with the amount of contamination in recycling also assessed to determine the building’s true recycling rate.
Tenancy
Covers the mass of total materials generated in spaces within a building occupied by a single tenant and under the control of that tenant. This includes garbage, recycling, and other specialised streams (e.g. secure recycling, etc). A tenancy rating also considers the recycling efforts of tenants, by rating its recovery of recyclable materials.

Base building
Covers the recycling rate of all office spaces within a building and measures parameters that are under the control of the landlord or base building (ensuring that, for example, the recycling separated by tenants is being recycled appropriately – i.e. recyclable materials leaving the dock in their appropriate recycling processing streams).

Whole building
Essentially a combination of the above. Covers the mass of total materials generated by the building and all of its office tenants, and the recycling rate of the building’s recycling infrastructure where the tenant is the owner and/or has control of all services, or the building owner/manager are working in conjunction with all their tenants.

Table 1 – The three different rating types for NABERS Waste

There are two sets of benchmarks for NABERS Waste – materials recycled and materials generated.

<table>
<thead>
<tr>
<th>Recycling data benchmarks</th>
<th>Total materials generation benchmarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Star rating</td>
<td>Percentage %</td>
</tr>
<tr>
<td>0 star</td>
<td>≤25%</td>
</tr>
<tr>
<td>1 star</td>
<td>33-26%</td>
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<td>41-34%</td>
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<td>49-42%</td>
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<td>73-66%</td>
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<td>81-74%</td>
</tr>
<tr>
<td>4.5 stars</td>
<td>89-82%</td>
</tr>
<tr>
<td>5 stars</td>
<td>≥90%</td>
</tr>
</tbody>
</table>

Table 2 – NABERS Waste Benchmarks

Indoor Environment
NABERS Indoor Environment, like NABERS Waste, was developed in close consultation with industry stakeholders in a technical advisory group, along with advice provided by a specialist consultant who won the tender to the develop the tool for the DECC.

Unlike the other ratings tools, NABERS Indoor Environment differs in that it measures the environment’s impact on the occupants of an office building, as opposed to the occupant’s impact on a specific environmental measure, such as energy, water or waste.

As such, an Indoor Environment rating is achieved through a combination of various environmental measures, including thermal comfort, air quality, acoustic comfort, lighting and office layout.

“Methods of measurement vary across each of these indicators, depending on the type of rating, with a balance sought between scientific rigor and practical measurement constraints,” explains Clark.

Unlike the other NABERS rating types for offices, the Indoor Environment rating does not produce a single normalised output (for example, water ratings are normalised at kL/m² per annum).

Rather, points are derived for each indicator based on Australian and internationally recognised comfort ranges which combine into a total score. For example, results from ventilation effectiveness and indoor pollutants are combined to form an air quality score.

“The total score for each category is then benchmarked, with a combination of the benchmarks for each category relevant to the rating type used to derive an overall NABERS Indoor Environment star rating,” says Clark.

Table 3 – The three different rating types for NABERS Indoor Environment

Physical measurements for NABERS Indoor Environment ratings are to be conducted by an Accredited Assessor,
however, given the specialised nature of this rating. Accredited Assessors are able to utilise the expertise of sub-consultants to carry out the physical measurements required by the rating.

Furthermore, building management system (BMS) information is also allowed to be used if collected and recorded in a consistent and auditable manner.

Part of the Tenancy and Whole Building performance ratings also require a survey of occupant satisfaction with their indoor environment. Provided in multiple choice format, these questionnaires aim to elicit the level of satisfaction with various aspects of the indoor environment that cannot be fully assessed through quantitative, or physical, measurements.

With answers ranging from 1 to 7 (Very Satisfied to Very Unsatisfied), questions are similar to the following example:

**Office Layout**

How satisfied are you with the amount of space available for individual work and storage?

How satisfied are you with the level of visual privacy?

**Trials and tribulation**

NABERS Waste and Indoor Environment trials have been conducted by accredited assessors in large CBD buildings in both Sydney and Melbourne, with base building ratings and a tenancy rating conducted in each.

According to Clark, these buildings and associated tenancies were put forward by property owners who contributed to the creation of the tools.

The trials involved audits and measurement of waste and indoor environment performance of the selected buildings to the developed protocols used by accredited assessors when rating buildings.

For the Waste assessment, the cleaning contractors for each building provided staff to assist with measuring, while alternative measurement strategies were allowed for Indoor Environment to broadly test the developed standards.

*Feedback from the assessors on their experience with the trial will include consideration of the overall ease to carry out the rating, relationships with the sub-consultant (if required) and any difficulties encountered during the rating, and the possible solution to these difficulties,* he says.

While results from the trials had not been released as this article went to print, preliminary feedback has already proved useful in improving the ease of use of both ratings.

For NABERS Waste, it has been determined that large platform scales of 200kg capacity and a 0.10kg resolution offer a convenient way of weighing materials. Furthermore, it has been found that cooperation from cleaning staff is important in achieving a successful waste audit.

*The first day of the audit is the most time consuming, while managing the collection of waste streams and the contributions of cleaning staff, however as the audit progresses, the process becomes streamlined,* says Clark.

The trials also found the assessment of contamination in recycling streams to be time consuming.

For NABERS Indoor Environment, preliminary feedback ahead of the trial results has shown that thorough discussions between tenant, building manager and building owner are necessary regarding the requirements of this assessment, with planning critically important. Furthermore, trials have shown that cooperation is essential from tenants to ensure access to tenanted space is available for a Base Building rating.

It also seems that while buildings with BMS should theoretically make assessment easier, many BMS are not used to continually record data, with data often referred to on a daily basis before being overwritten.

Results from trials of the NABERS Waste and NABERS Indoor Environment rating tools will be published on www.nabers.com.au.