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The Advanced Access Auditing Methodology (AAAM)

A New Quantitative Assessment Tool for Access Auditing

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THE ADVANCED ACCESS AUDITING METHODOLOGY (AAAM): A NEW QUANTITATIVE ASSESSMENT TOOL FOR ACCESS AUDITING

INTRODUCTION

Can neighbourhoods be considered Healthy, or Sustainable, or Participatory, if they exclude significant cohorts of our society? Can Engaged Communities be created or prosper when, for people with disabilities, the majority of the built environment is difficult to access?

People with disabilities (People with disabilities) do not constitute a static minority on or outside the fringe of mainstream society. Every person experiences restricted mobility of a permanent or transient nature in his or her lifetime.

The knowledge practice of disability studies is concerned with the in(ex)clusion of people with disabilities from political, economic, civic and social activities. Inequitable physical access across the built environment is a primary causal factor of exclusion, and should be of concern to planners. However, practising Built Environment professionals have little, if any, exposure to Universal Design at trade, technical, or tertiary levels of education.

Conventionally, non-collaborative, technical, compliance-based access audits undertaken by 'experts' are used to interrogate the accessibility of the existing built environment. The standards applied can be controversial and contested by people with disabilities. Additionally, such access audits tend to provide isolated islands of information in a 'sea' of unknown accessibility. However quantitative methods of measuring the accessibility of the built environment have recently been developed.

Understanding the lived experience of people with disabilities and the views of their representative organisations is fundamental to population health and the creation of healthy places and spaces. The conscious building of collaborative partnerships will lead, to a two way street where built environment professionals, people with disabilities and disabled persons organisations (DPOs) become more familiar with the others' experiences and knowledge practices. In order to achieve accessible, sustainable communities, disciplinary boundaries, distinctions between theory and application, and dependence on regulatory compliance along with institutional differences between academia, the commercial sphere, and government need to be transcended. A new built environment accessibility assessment tool, the Advanced Access Auditing Methodology (AAAM) developed by Melbourne consultancy *Visionary Design Development* (www.vdd.com.au) provides opportunities for advanced investigation of barriers to mobility.

QUANTIFYING EQUITY OF ACCESSIBILITY

The Limitations of Compliance-based Access Audits

Disability is a complex, multifactorial phenomenon in part created by the built environment. People with disabilities may feel estranged and oppressed by facets of the built environment and generally feel powerless to do anything about it. Current methods of measuring access in the built environment in developed countries typically take the form of technical, compliance-based access audits. Such audits are limited in scope by several factors. Firstly, the nature of the brief given to auditors; for example, a local government may engage auditing services to focus on council buildings or services provided by council from commercial buildings. Although the accessibility of the public transport node closest to these services may discourage or deny access by people with disabilities, facilities such as

railway stations are often a county/state, national government, or privately contracted responsibility and are thus unlikely to fall within the scope of a local government audit. Similarly, a private-sector audit of a multilevel shopping complex is likely to extend only as far as the car park, failing to consider whether ambulatory local residents face uncut kerbs. Secondly, the accessibility of public housing may be assessed by auditing of government-owned housing stock, but scrutiny is likely to be limited to these dwellings, lacking any notion of whether friends' or relatives' private homes are visitable by People with disabilities. Thirdly, the yardsticks used by access auditors for differing applications are far from agreed on. In Australia, for example, this involves a varying potpourri combination of: Disability Discrimination Act (DDA) (1992), Disability Standards for Accessible Public Transport 2002, Disability (Access to Premises —Buildings) Standards 2010, National Construction Code Series, Australian Standards for Access (AS1428) and the recently developed Liveable Housing Guidelines. Finally, recommendations and prioritisations contained within access audits reflect the auditor's interpretation of the selected benchmarks rather than any consensus of people with disabilities opinions.

Why Quantify Accessibility?

Once under-performing built environment elements are identified by a compliance-based access audit there remains the dilemma of prioritisation. Available resources are rarely adequate to address all of the barriers uncovered, yet there is no systematic method of prioritising barrier removal. Auditors may suggest some elements as high priority but there remains no industry standards by which such recommendations are to be formulated. Often actions are prioritised on the basis of who complains loudest or the personal concerns of a local councillor. Quantitative barrier assessment, unlike a simple pass/fail criterion, provides a robust foundation for prioritised decision making.

To address these deficiencies the *Visionary Design Development* has devised two differing methodologies for quantifying equity of access across the built environment: the Universal Mobility Index (UMI) and the Advanced Access Auditing Methodology (AAAM). This paper discusses the implementation of the AAAM.

ADVANCED ACCESS AUDITING METHODOLOGY (AAAM)

The Advanced Access Auditing Methodology (AAAM) has been specifically devised by Melbourne Consultancy Visionary Design Development for usage by local government authorities but can be applied by a range of accessibility stakeholders. The AAAM represents a significant advance over conventional access audits in the following ways:

- Data range extends beyond minimum compliance standards to rate the accessibility performance of built environment elements capturing the 'lived experience' of barriers.
- A relational database allows instant searches by queries allowing individual selection of characteristics.
- Integrating digital photographic records of under-performing elements.
- Linking of locations to Google Maps permitting instantaneous street views.
- An Accessibility Score giving a comparative snapshot of the overall accessibility of locations including subscores for building entry, pedestrian routes, transport, street furniture and wayfinding.
- Prioritisation Matrix calculations are employed to guide prioritisation planning.

First AAAM Application

The first application of the AAAM was a project commissioned by a Local Government Authority (LGA) located in inner north Melbourne. Fifty strip shopping centres and one major activity centre were audited. Data capture covered building entrances, intersections and crossings, footpaths, street items (furniture, post & phone boxes, bicycle loops, A-boards, drinking fountains, etc), and miscellaneous infrastructure (building numbers, shorelining, signage and accessible parking). Many of the data fields went beyond pass/fail to record a spectrum of accessibility. For example building entries were recorded as either 'level' (max 10mm step) or low/med/high step entry.

Incorporation of wayfinding data is another unique AAAM feature. Navigation and wayfinding are poorly understood in the wider community, including built environment professionals. This deficit is particularly acute regarding the needs of people with vision impairment.

Huge volumes of data were generated from the 51 locations requiring appropriate management. Conventional audit spreadsheet presentation was rejected in favour of a relational database (see Figure 3). This greatly simplified the running of complex queries across multiple data fields. Examples of potential queries include:

1. Find all intersections at locations 1 to 10, which have medium or steep kerb cuts, where the road crossing surface is good but the tactiles are in poor condition, and
2. Find all footpaths at locations 11 and 35 to 50 that have drinking fountains which are well located, with good contrast but poor ease of use.

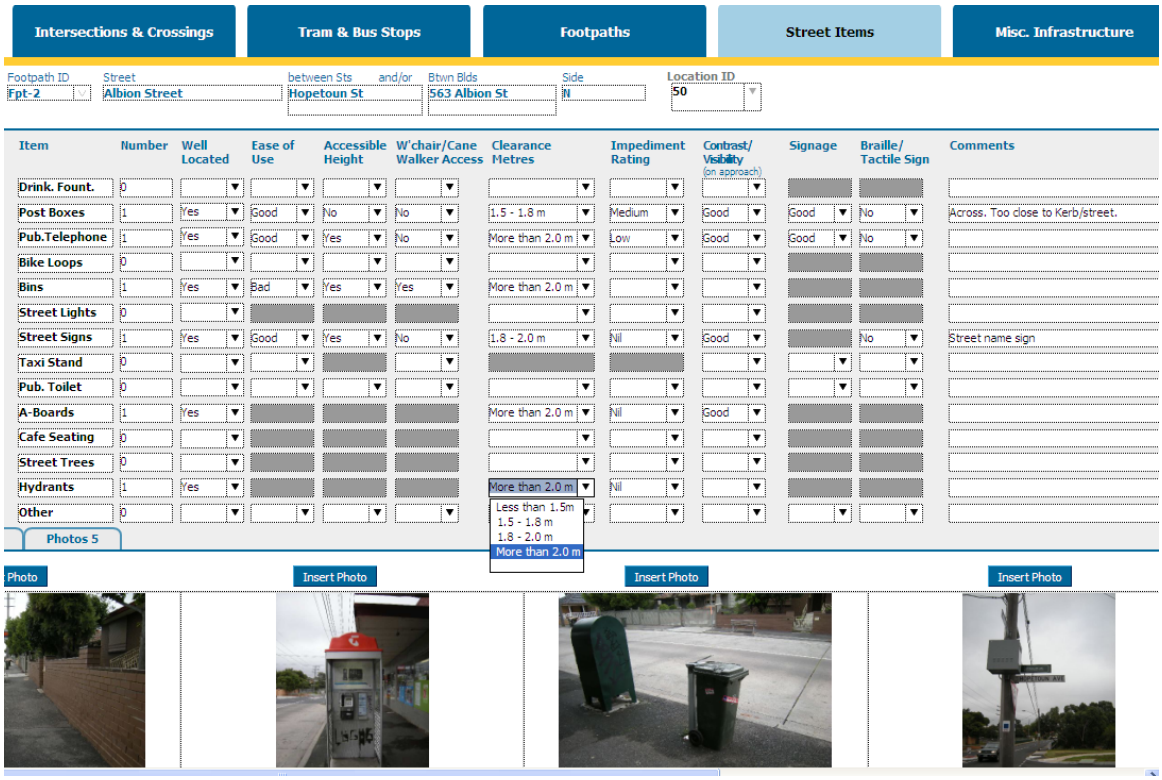

Figure 1. Screenshot of the AAAM Relational Database interface. Tab for 'Street Items' shown. Pull down selection under 'hydrants' demonstrates quantitative rather than dichotomous (pass/fail) data recording. Each field can be searched individually or in combination with others to form a complex query giving instant access to required data.

The ability to run such queries provides instant identification and retrieval of under-performing built environment elements. Another common data management problem is how to provide an overview of the accessibility performance of locations both individually and comparatively. To provide such comparisons and assessments, a series of equations were determined giving scores per shopping strip location for the accessibility performance of 1) building entry 2) footpaths, 3) intersections & crossings, 4) transport, 5) wayfinding and 6) street furniture (see Figure 2). Scores for 2) and 3) were summed and averaged to provide a pedestrian routes score. This score (7) was then added to and averaged with 4), 5) & 6) to give an infrastructure score. Final location scores 9) were the average of the 8) infrastructure and 1) building entry scores (see Figure 4). Location scores and their sub-component scores provide quick assessment of where barriers exist and their severity.

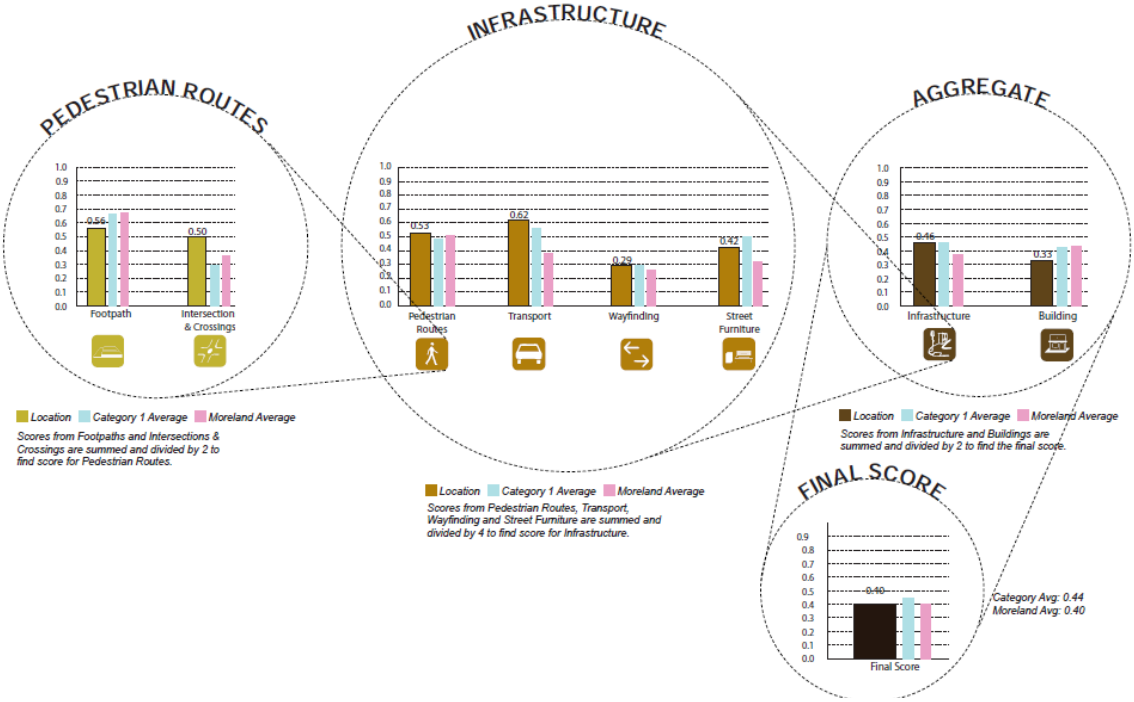

Figure 2. AAAM graphical representation of accessibility scores for a location and their comparison to similar locations and the overall audit averages.

Finally a prioritisation matrix was utilised to provide a starting point for considering what actions, in which locations, should be addressed first. Responsible authorities such as local governments are able to overlay other qualitative criteria. Six criteria were chosen for the matrix. The *Benefit* is the potential maximum improvement in the Accessibility Score by implementing the recommendations and was weighted highest (5) on the logic of greatest need. *Cost per Building* was given the next highest weighting (3) since it is important that scarce resources be utilised to gain maximum accessibility improvement per dollar. *Total Cost* (2) and *Number of Buildings* (2) were considered next most important. Finally *Isolation* (1) and *Transport* (1) were included with lowest weightings to include considerations of the difficulties people with disabilities experience travelling to shopping strips. Figure 3 shows a representation of prioritisation using the prioritisation matrix results.

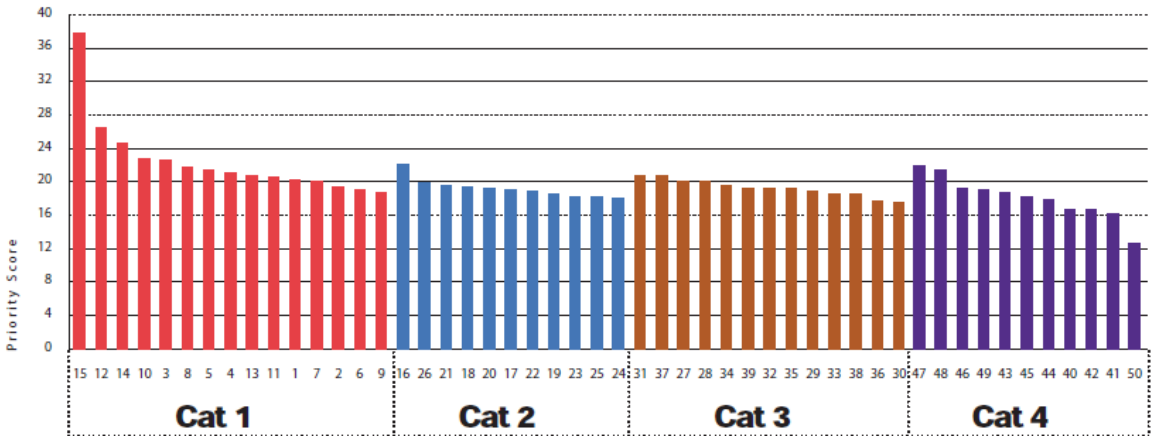

Figure 3: Prioritisation of 50 strip shopping centres by category. The higher the priority score the better the cost/benefit of interventions to improve accessibility.

INCLUSION AND ENGAGEMENT

Consultation with the local Disability Advisory Council, written surveys and telephone interviews with local people with disabilities, took into account stakeholder views prior to and during the audit period. This engagement highlighted particular concerns people with disabilities had with accessing shopping centres; these were then taken into account when capturing and processing audit data. During the on-site implementation phase only built environment professionals were involved.

SCOPE AND APPLICATION

Specific identification of under-performing built environment elements is a cornerstone of the AAAM. Going beyond the conventional compliant/non-compliant dichotomy, the AAAM provides a spectrum of accessibility assessment. While such assessments are made by built environment professionals, rather than people with disabilities, this spectrum is more readily interpreted. An example of this is the cataloguing of level, low, medium and high step entrances to buildings. A person in a manual wheelchair will know if they are able to negotiate a single low step but also know a high step, or multiple steps will present too great a barrier. Additionally, AAAM deliverables include a searchable electronic database, a comprehensive written report and segmented electronic files linkable to LGA Asset Management systems.

The AAAM identifies built environment elements giving specifics of *both* performance and compliance. By way of analysis using the AAAM prioritisation matrix is applied to maximise outcomes from resources invested.

The AAAM is of significant value to strategic, social and statutory planners. Specifically, AAAM project results are now being incorporated into the commissioning LGA's Urban Renewal, Placemaking and Asset Management outcomes strategies and systems. Documented insights into the accessibility experiences of people with disabilities at the community level, both quantitatively and qualitatively, are of direct benefit to urban and social planners. Lastly, the gathering and analysis of empirical evidence of urban-scale accessibility performance, thereby highlighting changes needed to Planning Schemes, is of considerable importance to statutory planners.

COLLABORATION

The AAAM involved significant inter-disciplinary input. Data collectors have all completed or currently studying, post-graduate built environment degrees. These include: architecture, urban planning, interior design, property valuation and landscape architecture. Throughout the pre, peri and post implementation stages regular 'brainstorming' sessions were held to determine the methodology for the AAAM. These sessions were convened by *Visionary Design Development* Dirtectors who have expertise in the knowledge practices of architecture, planning, access consulting, vision impairment and disability studies. The built environment professionals involved all expressed the value of participation in the AAAM giving them many insights into the accessibility of the built environment which they had not experienced in their studies. In turn the development of the AAAM was enhanced by the multiple disciplinary perspectives.

CONCLUSION

The AAAM represents an advancement of the current access auditing tools available to LGAs and built environment professionals. In particular the quantification of accessibility provides a logical, robust approach to both identification of barriers and prioritisation to remove them. The AAAM can be targeted to where interventions are most necessary. This should make most efficient and effective usage of the often scarce resources available.

Inter-disciplinary collaboration between built environment professionals is a core component of the AAAM. Such collaboration provides valuable insights into accessibility, virtually absent from the curriculums of current trade, TAFE, university and continuing professional education courses. The AAAM is an advancement over current compliance-based access audits providing superior data ranges and data access. AAAM accessibility scores give a snapshot of a complex environment and provide a basis on which to prioritise capital works to remove barriers. AAAM allows a meta-disciplinary assessment of the complexity of delivering a built environment of equitable accessibility for people of all physical and sensory abilities.

Please Contact *Visionary Design Development* for further information including presentation of the UMI to council.

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