

Response to Western Australian Planning Commission

Standards for Orientation of Subdivisions

By the Urban Development Institute of Australia (WA Division)



Level 5, 150 St George's Terrace
PERTH WA 6000

October 2007

1.0 INTRODUCTION

The orientation of lots for good solar outcomes is one of the key considerations when designing subdivisions to maximise energy efficiency.

Typically however the opportunity for improved solar outcomes will be enhanced through a combination of both efficient subdivision design practice and by a sound built form response. The clear statutory separation of responsibilities for approving subdivision design and subsequent development on individual lots presents practical constraints to the formulation and implementation of a single policy.

A key feature of this alternative Policy position being promoted by the UDIA, is to recognise this distinction and the influence other factors do have on subdivision design and the ability to orientate lots within strict parameters. It also recognises the fact that land developers and DPI officers need clarity and certainty of policy interpretation and that this is achievable through a shared understanding of reasonable and practical 'Deemed to Comply' benchmark thresholds for lots in a subdivision design.

Where a subdivision for practical reasons or for reasons of choice may not meet agreed benchmarks for a "Deemed to Comply" assessment, then we are advocating an alternative "Performance Based" assessment option in those instances which can take into account the effect of those relevant factors, (be they for example site & design constraints or innovation objectives) in the final approval decision and also recognise the various options which can apply post subdivision to efficient built form outcomes. The attached Flow Chart demonstrates the approach.

2.0 BACKGROUND

This Statement has been prepared in response to the draft WAPC policy entitled "Applying Sustainability Principles to Subdivision Designs" (WAPC February 2007). The Urban Development Institute of Australia (WA) is concerned that the draft WAPC Policy in the current format imposes a strict regime of mandatory north south and/or east west major residential streets based on lot size and anticipated dwelling types proposed. As presented it is evident that any departure from these strict and inflexible orientation standards with its requirement to justify any non-compliance, will lead to ad hoc subdivision assessments and significant delays and uncertainties in gaining final sub-division approval.

While the principles of the draft Policy are supported by UDIA, it must be recognised that the alignment of streets and disposition of lot types in any design will always be influenced (to varying degrees) by a range of factors and choices which operate in addition to the demand to optimise solar orientation. It should be recognised that good sustainable built form outcomes are equally achievable, and are being achieved, where streets and lots do not conform to the rigid and singular requirement for an east west or north south orientation of lots.

It is essential that subdivision policy retain sufficient flexibility when examining lot orientation to continue to give recognition to the many other equally important design considerations to determine the best street alignments and lot type mix and to allow design innovations. Topography, local context, conservation,

views, drainage, engineering, slope and POS together with many other factors require recognition in the evaluation of any design.

A new Policy must also recognise the many post-subdivision development control mechanisms which may apply to any subdivision area and which can operate to enhance the potential for good solar outcomes on lots of any orientation. The Policy must also recognise that developers may choose to rely on such mechanisms and built form management when innovating with designs whereby lot orientation in the extreme case becomes an irrelevant consideration in addressing solar performance.

In discussions with WA Planning Commission it was recognised that the ideal outcome is an overall 100% solar sensitive outcome through a combination of built form and lot orientation. Whilst this ideal is supported by UDIA the key issue to be recognised here is that the approvals processes for subdivision and built form are separate and independent processes with developers and the WAPC at the point of subdivision having limited real control over subsequent built form outcomes and the built form in many circumstances will actually form the majority of the solution.

Indeed the built form will generally form the most important part of the solution. The variations in lot orientation/built form approach are demonstrated in Figure 1 below along with the average benchmark we are suggesting for the deemed to comply assessment (shown in red).

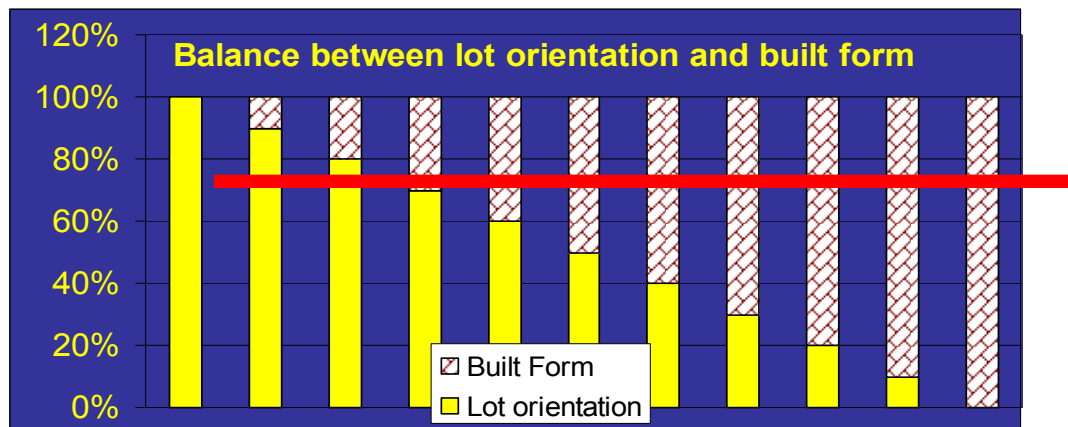


Figure 1. Lot orientation and built form opportunities to improve solar outcomes in subdivisions. (Jeremy Dawkins) with UDIA target added.

3.0 SITE AND DESIGN FACTORS WHICH AFFECT THE ACHIEVEMENT OF SOLAR ORIENTATION TARGETS

Feedback from a wide cross section of Urban Design practitioners has highlighted the very clear fact that there are many factors encountered in any subdivision design exercise which do, to varying degrees, influence overall design and in particular the orientation of both roads and lots. At a basic level the affect of these factors renders 100% compliance impossible if good responsive design is to be achieved. For this reason any Deemed to Comply Benchmark levels must build in a degree of flexibility when compliance levels are set to ensure that solar orientation objectives do not operate to the detriment of good design (These levels are discussed in 7.3).

Factors affecting compliance opportunity include the following:

- Topography, Landform and slope
- Environment and conservation imperatives
- Drainage flow paths, catchments and end of line responses
- External and fixed road alignments
- Planning context and external attractors/destinations
- Density, R Codes and lot size responses
- Need to minimise retaining wall heights
- Need to provide efficient engineering responses to enhance affordability
- Vehicle access to lots
- Security, surveillance and orientation
- Views and outlooks
- Road Engineering standards, vehicle speeds and safety
- Streetscape, active frontages and urban design presentation
- Pedestrian walkability to nodes, energy conservation and greenhouse emissions
- Public Transport linkages to centres (influencing road alignment)
- Size, shape & orientation of Application Area (where relatively small)

(As a simple example – if neighbourhood attractors/nodes are located at east west peripheries on a site sloping heavily from east to west then a proliferation of north south roads would be extremely inefficient and generate more energy conservation problems than it may address).

This is but one reality and the UDIA is happy to discuss others in detail if considered helpful. In essence these are all factors which apply across the board at some level to every application and demonstrate why realistic orientation parameters and compliance benchmarks (as we include herein) must be adopted and why 100% compliance to rigid standards is inappropriate to enforce.

4.0 BUILT FORM CONTROLS

In the introduction we comment on the importance of an holistic approach to solar performance which emphasises the importance of built form operating in unison with subdivision design in delivering best possible solar performance and energy efficient outcomes. Subdivision design and the subdivision process per se can only achieve so much.

Any Subdivision Policy must therefore include a mechanism which can give due acknowledgement (when a Performance Based assessment applies) to post-subdivision built form controls which may be in place. Mechanisms which may be recognised in this regard and cited by a subdivider as one of the mitigating factors in a Performance Based assessment include:

- Town Planning Scheme Provisions or Policies
- Structure Plan Provisions covering built form
- Operational R Code Variations addressing solar orientation
- Detailed Area Plans
- Design Guidelines

It may also be the case that a subdivider intends building on the lots to create a house and land package in which case the opportunity for individually designed solar responsive dwellings may completely obviate the need for any restriction on lot orientation. A Performance Based assessment must have scope to recognise such initiatives.

5.0 SINGLE ESTATE LOCAL STRUCTURE PLANS & COMPLIANCE

Whilst the achievement of targets can only be realistically assessed at the time of subdivision, the Policy needs to include sufficient flexibility in the Performance Based assessment process to reference Structure Plans and Estate based responses to solar orientation.

Where a Local Structure Plan applies to a single Estate (such as Banksia Grove, Brighton or Ellenbrook etc) and multiple ownership is not a constraint, the achievement of the set Benchmarks can realistically be a target which can be amortised over the entire Structure Plan area. The benefit here is flexibility. Single subdivision applications where compliance may be difficult can in effect be “offset” against higher compliance levels elsewhere, to facilitate more straight forward approvals under such circumstances where performance based assessment would apply.

This option is really only available however for single ownership Local Structure Plans and would not obviate the need for an applicant to explain why compliance for an individual application may be difficult. Knowledge that an offset could effectively operate in a particular circumstance would be of use to the assessment officer. It is not however anticipated that running totals would be kept as this would present calculation and management difficulties and convert assessment into an exercise in mathematics.

6.0 KEY RECOMMENDATIONS ON APPROVALS

In preparing the revised Policy Position the UDIA makes the following recommendations:

- That a workable policy on the solar orientation of lots must distinguish between lot sizes and/or building type when establishing lot orientation criteria (E/W or N/S) as this would involve the second guessing or pre-determining of the potential house type on each lot, its design configuration and the density response all of which cannot be definitively assessed or enforced at the subdivision stage. The key factor in the Policy should be to ensure residential lots, irrespective of size, are either orientated north/south or east/west within agreed variation parameters (Refer 7.2).
- The Policy must recognise that in many cases a range of controls exist post subdivision approval which can both control and manage the built form response and in many cases now include solar orientation standards and/or incentives. Such documents, which include including Town Planning Scheme provisions, Structure Plan provisions & R Code Variations, Detailed Area Plans and Design Guidelines should be acknowledged as the primary vehicles for regulating the subsequent built form response and provide incentives for good solar design to be implemented. Depending on which of these controls are in place for any subdivision area and depending upon the manner in which the land developer will seek to control built form post subdivision, then the need for a rigid stipulation of lot orientation at the point of subdivision to achieve a solar outcome can be relaxed.
- The Policy must operate in a format which encourages innovation and site sensitive design responses in addition to meeting solar performance goals. It must also recognise energy conservation objectives at a broader level. The current proposal is extremely rigid and would operate against such quality subdivision design outcomes.
- To assist in expediting clear and consistent approvals for most subdivision applications lodged and to provide certainty and clarity for subdividers it is essential the Policy provide a clear Deemed to Comply option for subdivision design assessment whereby any design meeting set benchmarks can be approved with no further debate or conditions relating to this matter. For more complex designs where benchmarks at the subdivision level are not met a Performance Assessment becomes the alternative approval pathway option where built form response becomes a bigger consideration.
- The Policy must not regulate and correlate lot sizes to a particular street orientation because of the range of assumptions such an approach is effectively making about subsequent built form responses and the unrealistic constraint this imposes on subdivision design. A policy on the solar orientation of lots must focus on ensuring that in general lots irrespective of size are orientated either east/west or north south within set orientation parameters (see 7.2).
- That reasonable Orientation Parameters be set (see 7.2). UDIA (WA) does not support strict cardinal point approach to solar orientation with no variation. AMCORD recommends a variation between 20

and 30 degrees either side of each cardinal point and this provides the most acceptable objective of providing a reasonable basis for built form to deliver a solar sensitive outcome.

- That reasonable compliance Benchmark levels be set for lots within an application being within the parameters (refer Section 7.3) which is based on those percentages described in 7.3 which reflect practical case study review of responsive Plans.
- The Policy approach recommended by UDIA in this document should be used to build on the Liveable Neighbourhoods platform which is widely accepted by industry and represents best design practice when all factors are considered. UDIA recommends rewriting the 'Climate Responsive Design' section of Liveable Neighbourhoods to incorporate the practices outlined. This section must give equal recognition to the 'site responsive approach' and detail possible constraints that require flexible design solutions.
- Parallel investigations being conducted by the WAPC related to the production of more comprehensive built form controls being introduced to cover energy conservation objectives associated with dwelling design and siting relevant post subdivision approval. This could be done as a review of the relevant section of the R Codes or by producing generic standards which could operate as R Code Variations or as Structure Plan provisions and/or guide Detailed Area Plans.

7.0 RECOMMENDED POLICY FORMAT

Considering the aforementioned position UDIA offers the following framework for a new Policy approach.

Overall Policy Objective

To ensure that lots within subdivision application respond within set parameters to the need to meet the solar orientation criteria set out in 7.2 and recognise the potential for post subdivision approval for built form controls to supplement this objective.

7.1 Policy Principles

This Statement embraces the following key principles related to subdivision design and subsequent lot development, recognising these are two separate approval processes controlled by separate decision making agencies (WAPC and Local Councils):

Subdivision

- a) That a solar oriented lot contributes to the opportunity for a lot owner to incorporate a desirable climate responsive housing outcome, particularly reduced energy consumption;
- b) That a well orientated lot does not in itself guarantee a climate responsive built form outcome without down the line building controls;

- c) That the subdivision approval process does not control or specify a particular dwelling type or design outcomes on any lot;
- d) That site planning incentives and bonuses applied post subdivision can contribute markedly to solar responsive housing design on any lot.

Building

- e) That the R-Codes, Town Planning Schemes, Structure Plans and other Building Controls as administered by local councils contain significant opportunity for addressing good solar dwelling design separate to the subdivision process;
- f) That desirable climate responsive housing outcomes rely on a dwelling being correctly configured and oriented on a lot;
- g) That to achieve optimal energy-efficiency living areas of a single residential dwelling should face north with the dwelling having sufficient solar setback (towards the southern boundary of the lot) to ensure good winter sun access to suitably located and sized windows and to allow ventilation by cooling breezes in summer and adequate shading;
- h) That in medium density and row housing, the northern façade should contain the main living areas and open onto outdoor space with adequate shading for summer;
- i) That where the built form extends to two storeys on single and medium density dwellings the setback must ensure adequate solar access for dwellings to the south of a two storey house. This may require the use of larger setbacks, rear laneways or only allowing a portion of a house to be built to two storeys;
- j) That apartment blocks should also be situated on a block with one face to the north. With single loaded apartments with the long axis east-west, living rooms and balconies face north and bedrooms face south. With double loaded apartments where the long axis runs north-south, one side receives morning sun and the other afternoon sun which needs to be well shaded in summer.

The principles are predicated on a clear distinction being drawn between the subdivision process (WAPC) and the building license/development approval processes (Local Councils) with the former the focus of this statement.

The approach recognises the fact that the subdivider will in most circumstances not be able to anticipate the built form outcome on a lot or control the outcome as that subdivider may not be part of the building process. There is and should remain potential for a wide variety of built form outcomes on a lot and these cannot be specified, or even identified as part of the subdivision approval process.

7.2 Solar Orientation Parameters

As mentioned above, in meeting the Overall Policy Objective it is neither practical nor desirable to relate lot size to a mandated street orientation as a way of achieving a solar outcome. This is a very blunt approach and fails on a number of levels, in particular:

- the assumptions it makes about subsequent built form type and density;
- the difficulties which a site may present & the local context of a design; and

- the approach of the subdivider to developing the built form aspect of the Estate.

(As an example a 360m² lot in an R60 area could be a single dwelling or a duplex which based on the draft policy affects preferred orientation).

The only practical response is to set the Orientation Parameters and Benchmark targets (refer 7.3) for Deemed to Comply based on compliant lots being orientated either east west or north south irrespective of site area.

The UDIA supports practical Orientation Criteria as established by AMCORD being utilised within the new Policy. The present WAPC Draft suggests an overly strict and rigid standard based on orientation to the cardinal points without any variation. This is not the approach used elsewhere or one which is demonstrated to have any real benefit over a slightly more flexible approach.

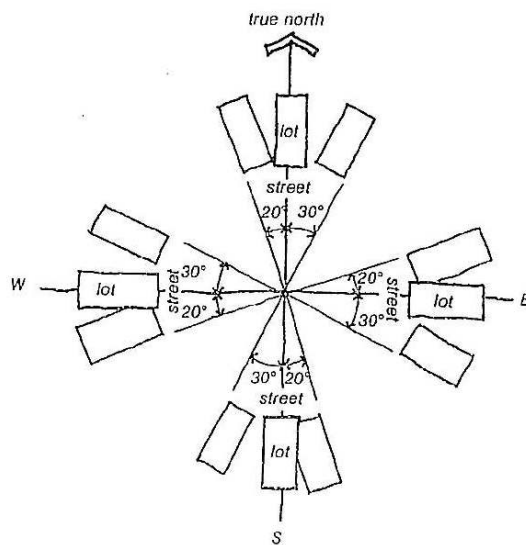


Figure 1: Orientation diagram from AMCORD

AMCORD presently recommends a variation is acceptable between 20 & 30 degrees either side of the points of the compass. Figure 1 above demonstrates the standard. UDIA supports the AMCORD standards as the Orientation Parameters to be used in the new Policy when determining subdivision compliance levels.

7.3 Deemed to Comply Orientation Benchmarks

During the development of this Policy case studies were undertaken to help establish a reasonable benchmark level for the percentage of lots within an Application Area which must meet the set Orientation Parameters for the “Deemed to Comply” assessment to apply. The Benchmark needs to be a level which reasonably reflects the fact that many factors influence orientation and conspire to ensure that 100% compliance to a rigid standard is not possible, practical or even desirable.

These studies indicated that recognising these factors (refer list in Section 4.0) most subdivisions in general should still be able to strive to achieve between 70% to 80% of the total lots meeting the solar orientation parameters (depending on the size of the Application) with aspirational targets set for even greater compliance over time. The Benchmarks are as follows:

- For subdivisions of less than 250 lots, a 70% target and 75% aspirational target for lots meeting Orientation Parameters.
- For subdivisions of more than 250 lots, a 75% target and 80% aspirational for lots meeting Orientation Criteria.

Where these are met then the Overall Policy Objective is deemed to be satisfied.

7.4 The Pathway Approach to Approvals and Compliance Benchmarks

Pathway A – Deemed to Comply

It is likely that most subdivision applications lodged would work toward a Deemed to Comply subdivision Assessment which will greatly improve the current levels of compliance in WA. It is critical therefore that this pathway provide for realistic benchmark compliance levels and both certainty and clarity. This will not only assist the subdivider in preparation of the design but equally importantly will assist the resource strapped WAPC in being able to expedite quality approvals with excellent solar orientation outcomes. This Pathway can in itself provide a massive incentive for all subdivisions to focus strongly on solar orientation of lots irrespective of any subsequent built form controls which may be applied.

We recommend that a first pathway option set a percentage total of the single lot count which must meet a benchmark level whereby those lots must be within the Orientation Parameters set in Section 7.2. These simple benchmarks represent the core value of the Policy and the ‘Deemed to Comply’ standards. Based on our assessment and case studies we recommend the following Benchmarks:

- For subdivisions of less than 250 lots, a 70% target and 75% aspirational target for lots meeting Orientation Parameters.
- For subdivisions of more than 250 lots, a 75% target and 80% aspirational for lots meeting Orientation Criteria.

The subdivision is automatically 'Deemed to Comply' when the Solar Orientation Policy benchmarks are achieved (Note: If one boundary complies with solar orientation the lot should be included in the count).

Pathway B – Performance Based

There will always be situations where compliance cannot be achieved either by virtue of more challenging site conditions or by choice for reasons of design innovation and / or a focus on the built form. Where such circumstances apply and Deemed to Comply benchmarks are not met then the Performance based Assessment performs a very important role in the subdivision process.

The performance based evaluation should be in place to recognise and respond to:

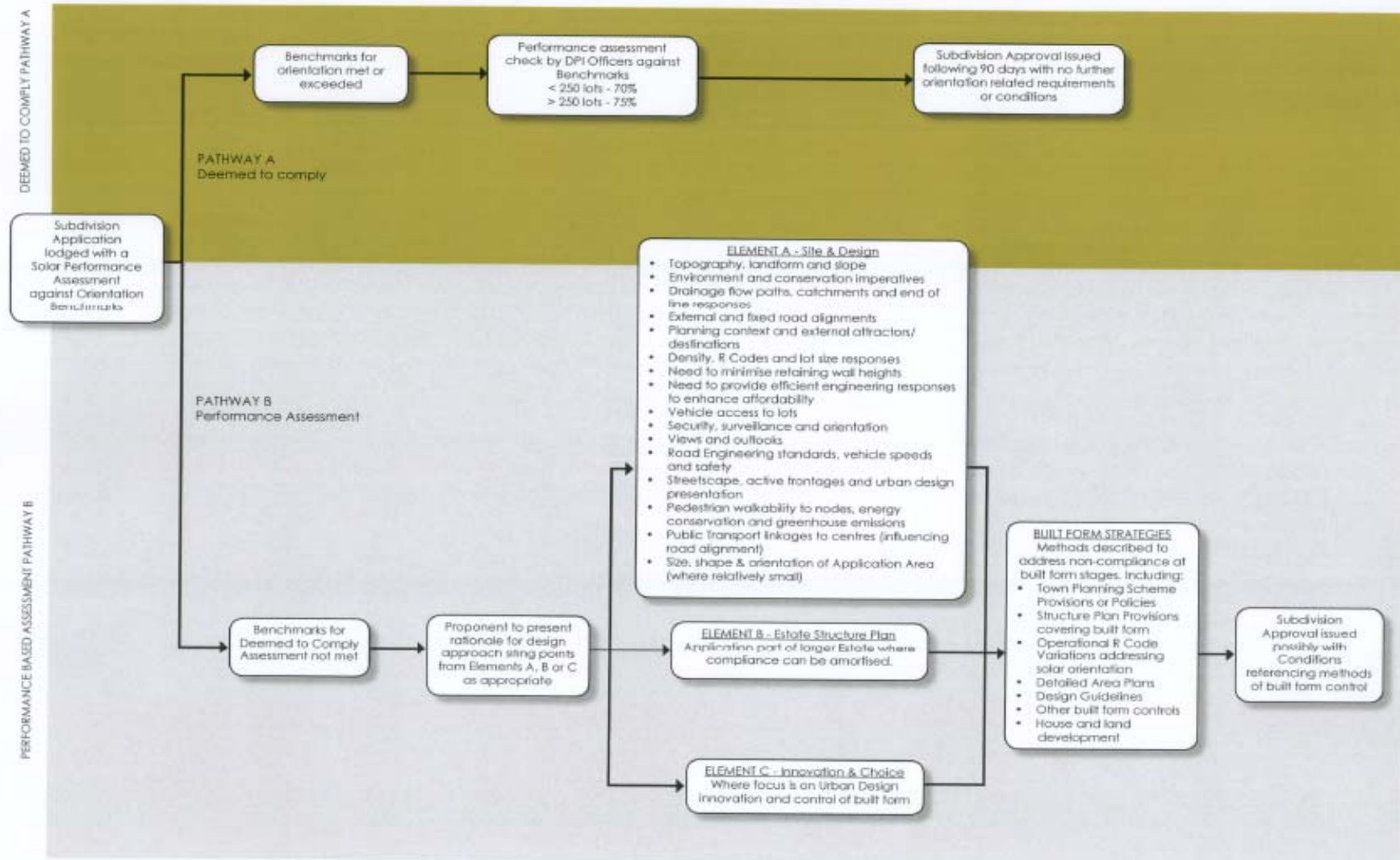
- More complex site design situations where more extreme factors other than the solar orientation imperative need to be granted significance in the assessment of the design plan;
- Situations where suitable built form controls are in place and will apply post subdivision;
- Reason of choice whereby a subdivider is creating a design based on other urban design considerations (i.e. curved streets) where solar performance is being achieved at the built form level; and
- The situation where a smaller application area is part of a larger estate where the compliance calculation is being amortised over that entire estate.

In presenting a case under the Performance Assessment the subdivider may cite those items listed in Section 4.0 and describe how the design responds. The subdivider may also cite the manner in which the issue is to be addressed as part of the built form approach referencing as relevant those mechanisms (or others) as described in Section 3.0. For large single developer Estates it should be a straight forward matter of arguing for a more overall based assessment of performance rather than a subdivision by subdivision assessment.

Pathway B is particularly suited to complex or smaller projects, often with higher density, that have multiple site constraints and require more flexible design solutions. In these circumstances ideal orientation may be harder to achieve but recognises that an energy efficient dwelling can still be achieved with careful attention to design.

Operationally, Pathway B would be mandatory for any subdivision that fell below the 'Deemed to Comply' Targets. In this situation the subdivider would need to demonstrate why any of these factors operate to render compliance with the Solar Orientation Targets either unfeasible or undesirable and / or demonstrate other means of achieving climate responsive housing designs.

UDIA DRAFT POLICY - SUBDIVISION & SOLAR ORIENTATION - PATHWAYS FOR ASSESSMENT



7.5 Comment on relationship with Residential Design Codes (R-Codes)

The R-Codes and wide use of R-Code Variations already provide the best basis for controlling the siting and design of residential dwellings on a lot throughout the State. While the built form outcome is not the focus of this position statement, it is clear that the R-Codes will need to be reviewed to accommodate the objectives of a solar orientation policy because, in their present form, they may conspire against good solar outcomes. For example, north facing lots on the south side of a street where street front living areas and outdoor living space would not be afforded privacy because of the requirement for open streetscapes and 'visually permeable' front walls or fences. Similarly, there is a risk that the R-Codes could prevent medium density development on a suitably zoned lot should solar orientation policy override other requirements.

The R-Codes should support an orientation policy by providing incentives for efficient site planning that result in good solar capture. This could be in the form of incentives offering increased site coverage for those sites offering good solar outcomes. We note that this approach is already being widely applied through Local Structure Plans and has wide acceptance and acclaim.

8.0 SUMMARY

UDIA supports an improved and expanded section being included in Liveable Neighbourhoods which addresses solar orientation and energy efficiency objectives by using the approach formulated in this Draft Policy.

To more simply describe the operation of this Pathways Approach we have included a simple Flow Chart as an attachment.

We look forward to further discussing this matter with the WAPC.