

# ASSESSMENT REPORT 2020

## HDS315118 – HOUSING AND DESIGN

This year's exam did present some challenges to candidates particularly in reference to the questions offered in Section I. Throughout the assessment process, Markers were looking for evidence of understanding on how each of the key criterion elements were applied in the context of each question and how well the aims and brief of the question were satisfied.

## SECTION I

### Question I - Tropical Climate Design Question

Responses to this question ranged from strong to poor, with the largest group predominantly in the B-C range.

The focus of this question required candidates to annotate existing drawings and make recommendations for changes to an existing Alvar Aalto house in Finland that was to be relocated in the tropical region of Cairns (Zone I). The question did not require the use of scale or measured drawings. Candidates were required to identify and explain which existing design elements of the Alvar Aalto house were unsuitable for a hot humid climate before suggesting suitable changes.

Candidates who attained a level of A and B were clearly able to articulate the changes they would make and explain why these were needed. These candidates selected and justified key elements of passive solar design for tropical regions including:

- orientation (with private spaces oriented away from the north and east)
- ventilation (employing cross breezes, high ceilings and venting convection currents to the roof using solar chimneys and roof mounted wind turbines, as well as underfloor ventilation by raising the building off the ground where feasible)
- shading and glazing (small window openings, utilising appropriate depth eaves and window awnings, slatted window shading and wrap around veranda's)
- appropriate building materials (lightweight and light-coloured materials limiting the impact of thermal mass)
- landscaping (to provide shade and help channel cool breezes)

Very good responses also addressed additional features including water features promoting the use of evaporative cooling and provided solutions for shading the courtyard area with pergolas, sail shades or other semi-permeable coverings.

C level candidates identified some key requirements without fully justifying them. Many also did not include additional drawings or illustrations to support their ideas or use annotations to suggest solutions in sufficient detail. Lower achieving results did not recognise that reflective foil insulation, rather than bulk insulation, was required for hot climates. Many quoted the use of insulation values for temperate climates instead of reflective foil to deflect heat away. C and D level candidates also incorrectly employed double glazed windows instead of more appropriate louvred or casement windows to allow for adequate ventilation.

Some candidates annotated their responses with references to spatial re-arrangements, and proximity to neighbours and the road, although this was not a requirement of the question, as the focus was on issues of sustainability and optimal design for tropical regions. The question refers to passive design, so references to mechanical cooling, such as fans or air conditioners or heat capture using solar panels were not necessary.

Higher achieving candidates presented their responses using clear headings, sketches and illustrations to clarify aspects of their design using concise annotations that clearly addressed the required passive solar elements for this context. The use of contrasting colours and highlighters helped illustrate and emphasise these key points clearly.

A note should be made that the information sheet did not provide the sun angles for Cairns, and a number of students utilised the sun angles for Darwin, (although Townsville's sun angles, which were provided, would have been more appropriate). The fact that the sun angles were presented together on the information sheet with insulation values may have caused some confusion for students who incorrectly referred to R values for temperate zone buildings in this question. However, they should have been aware of these points as part of their course learning.

## Question 2 – Cool Temperate Design Question

The majority of candidates were able to respond to this question in a successful manner. The response requirements were somewhat easier than the Tropical question as they did not have to point out what was wrong, but rather provide advice to make the design more suitable for its desired location on South Bruny Island.

Stronger responses critically analysed the existing dwelling and were able to suggest changes to the building in relation to the following aspects:

- appropriate orientation to capture northern sun in living areas, whilst also enabling ocean views from dwelling to the south
- changes to window openings to maximise solar gain on northern aspect, but mitigate energy loss on other sides such as the southern elevation
- improve shading through either addition of roof eaves or individual window overhangs/awnings. Some candidates also included a pergola construction over the courtyard
- inclusion of opening windows to allow for cross-ventilation in warmer months to assist in interior climate control
- use of deciduous trees on the north / northwest side to assist in shading
- appropriate placement of solar panels that were angled to maximise solar gain to the north. High end responses also considered that batteries would be required, but these were minimal; solar hot water and wind turbines were also considered
- building materials such as insulation, reverse brick veneer and interior thermal mass were considered
- exceptional responses also reconfigured layout to improve liability within the interior, particularly in solar access gain to living area. The KDL area was also refined into an open plan area
- water tanks were placed at lower side of the roof and to the southeast side.

The following observations were made of the weaker responses:

- did not annotate changes to the original plan
- did not provide any means of shading through use of trees / eaves or window awnings
- building was poorly orientated, so livings were not exposed to northern sun, or minimal windows were orientated to the sun
- no changes to windows

- solar panels were placed away from the sun's path
- some did not give any consideration to how energy was stored
- did not illustrate the building on the building site provided
- no consideration to building material
- poor utilisation of courtyard in capturing its purpose to provide shading and improve solar access where required
- placement of water tank on northern side, or not on lowest point of roof for water collection.

## SECTION B

### Question 3 – Laneway Cafe with Universal Design Elements

The majority of responses showed some understanding of universal design principles and could lay out a functional space that met the aims of Question 3. Such responses included the following:

- understanding of layout to make the most functional use of the space
- inclusion of the correct gradient and location for the ramp and the full 8000 bench tops
- inclusion of split height exterior service counter to satisfy needs of standing clients and wheelchair clientele
- appropriate layout for accessible toilet with easy access off exterior ramp into toilet
- toilet placed in a manner as not to have direct contact with food preparation area
- the inclusion of different bench and basin heights for universal access within the interior was also considered
- good responses were also supported with small section drawings, showing critical heights for universal access of key areas of the design; e.g. entrance (ramp) and bathroom.

The following observations were made of weaker responses:

- many candidates used a gradient of 1:8 instead of the given 1:14 standard for ramp access
- many answers did not have a level landing at the top of the ramp; some even had outward opening doors
- some toilet/bathrooms were only 1000 mm wide – not meeting minimal standards for accessible design
- many bench space counter tops were less than 8000; most by a metre, or did not total 8 metres as may have been interpreted
- some of the poorer answers had wheelchair access into the café interior, transitioning through the toilet
- other responses did not consider good circulation between service and work areas, and seemed to have misinterpreted the question by focusing on interior sit-down clientele, rather than utilising the laneway as the main service area.

## Question 4 – Apartment design with two sleeping spaces

Generally, candidates showed a good understanding of functional use of space. However, there were many responses that indicated they did not understand the term 'loft', and as a consequence, did not include a 'second' floor or used it inappropriately (e.g. as a 'loft' bed in a ground floor bedroom, a loft without proper/safe access). There was some indication that students were unable to complete a response due to time constraints.

The question was written with enough room on the ground floor to easily fit all of the apartment requirements; with a smaller ground floor, students would have potentially thought more of using the staircase to access another level.

Candidates that had limited success were observed to have the following limitations:

- question expectations were not met, e.g. did not include a section drawing or drawings or, if they did, did not show how space, light or privacy considerations were met or did not indicate the cut for the section on the floorplan
- some did not use scale or used 1:50 when response asked for 1:100
- did not consider light access by blocking it in some way e.g. loft bedroom at window end of apartment or unnecessary corridors/walls
- did not resolve the issue of an unused staircase – no loft at all, no access to loft
- included windows on walls other than the 'front' wall – this may not have been appropriate at all, as it was clearly stated that there was only one window.

Some students seemed to dedicate too much of their response time towards lighting and power point placement (which was not asked for in the question) to the detriment of time required to complete more relevant aspects of their designs.

Better responses:

- Included all elements of the response and had innovative solutions to getting light to the back of the apartment, e.g. including internal windows on rooms furthest from windows. This was particularly evident in section drawings that were across the length of the apartment, enabling candidates to clearly show and discuss use of space, light access and privacy.
- Considered window coverings / privacy / light control, e.g. frosted or adjustable.
- Placed bedrooms and bathroom towards the back of the space. This allowed candidates to justify their decisions easily and allowed open planned spaces to be implemented without impeding light access and flow. The stairs were also used accurately.

# EXTERNAL FOLIO ASSESSMENT

## Introduction

It is important that new candidates to this course read through the following information, as it provides valuable insight on what needs to be done and what to avoid, to achieve successful outcomes for their major folio. Folios submitted this year did not seem to vary much from those submitted in previous years, particularly in reference to critical omissions being made by candidates, referencing protocols and work standard in general. This is particularly frustrating, as it would indicate that previous reports posted on the TASC website have not been viewed by students and they have not adhered to the folio guidelines all that closely.

Advice and suggestions included in the 2019 report would have assisted students to complete a successful folio and would hopefully reduce the number of poor outcomes that were still evident in the 2020 offerings.

Summary statements have been made, regarding content sections observed by the Marking Team below.

**Criterion 6:** Locate and analyse information about user needs and influences in design projects.

## Client's Needs Analysis

Higher achieving candidates would carry out an in-depth discussion of the client's (User's) needs, providing a strong rationale and analysis. Better candidates drew their aims from these statements, and the Brief statement, as the Brief should really reflect the context of the User's Needs. An exemplar was provided within the 2019 report, providing an example of how this important phase could be structured. Some folios provided evidence that the students, or their teachers, had read the report and utilised this structure to good measure, but a large cohort did not. Lesser folios would often just have dot points of recognised needs, but with no justification given. Some other folios did not address needs at all, but just listed aims.

As recommended in previous years, the textbook, "*Nelson Visual Communication Design*" from Cengage Learning by Kristen Guthrie, gives excellent guidelines for writing brief and aims, context etc. and could be a helpful class reference book.

## The Brief

In 'A' responses, the brief was a concise statement. Some candidates tended to draw their brief statements out; often a paragraph in length, and this should be avoided.

The marking panel strongly recommends that candidates be counselled not to do café's, sporting or large-scale commercial facilities. As in previous years, a high proportion of candidates still based their brief within these genres. While this may be of interest to them, much of the matter covered in this content-rich course does not go into the intricacies of commercial design, and is essentially focused on domestic design. Therefore, most of these folios were not resolved successfully. Another genre of brief to avoid is that of animals. Essentially, the course content is about building design for climate and use of space with a focus on the needs of human beings, not animals. Folios based around the needs of animals over humans will not provide an opportunity for a candidate to explore the relationship of the built environment and human beings.

Stronger folios continue to be those that have a focus on small scale design solutions to a realistic design problem, rather than large scale industrial architecture such as hotels, sports stadiums and restaurants.

Several candidates stated that they were designing an off-the-grid dwelling. Research needs to be conducted by the candidate to fully appreciate what this means for the storage of solar power, heating of hot water or of the dwelling, and what happens when there is a period of rainy or cloudy days, etc. The study of solar panels or hot water systems is okay, but they are only part of the solution.

The Marking Team also strongly recommends that students should choose a location that is accessible, whether it be a green field site or the interior of a building for their folio. This gives them an opportunity to practice what they have learnt about designing dwellings suitable for our different climatic conditions. Students who choose overseas locations for their brief will most likely not be familiar with the site, the climatic conditions or the context that is appropriate for designing in other parts of the world. This lack of depth of knowledge flows throughout the rest of their project and usually results in weaker resolutions to their brief.

If the design is intended to be portable (e.g. towed to other locations), then research should also include the legal towing width and heights for Tasmania, and the dwelling should be designed around these limitations.

## The Aims

Higher level folios listed at least 4 – 6 aims that were tangible, practical, but not simplistic. Lesser folios would list such items as a bed or bathroom for a dwelling, pretty much stating the obvious and not doing some higher-level thinking to attain good aims to work for. Some aims were rather vague, e.g., 'design for upward of 4 people'. This is not specific enough to determine whether the final design has fulfilled the aim. Some candidates also had up to 15 aims, this indicating a lack of thoughtful consideration and more often than not, these long lists were not satisfied. Again, please refer to "*Nelson Visual Communication Design*".

## Project Context

It seems that some teachers and candidates are reading guidelines, as the expectations of the Project Context were followed more closely rather than the older formula of a "Site Context". However, the latter did still feature heavily. As this is expectation is still revolving, Markers were lenient in marking this section. Again, an exemplar was provided in the 2019 report as one will be this year.

Better candidates did produce a site context or project context statement that was relevant to the client, the stage of life or demographic state, their needs or interests, and why the development was based there and what things within the area were of relevance.

Lesser folios still used swathes of maps of different resolutions and scale to explain an area and little else, or may have explained something about the site but did not include any on-ground visuals.

## Site Analysis

Strong site analysis included a high degree of detail, backed up by a hand-drawn, scaled site map as part of this section. Some candidates also included cross-sections or topographic details. Other inclusions were:

- shadow analysis
- vegetation types & their significance
- access
- seasonal prevailing winds
- sun arcs and orientation details
- shadow impacts
- rainfall data and impacts
- potential impacts on neighbours or from existing neighbours
- existing architectural influences
- soil analysis and views.

Candidates that had visited the site and taken photos showed greater understanding and were also able to communicate and showcase the features of the site in their folios. Relevant information such as seasonal wind, solstice sun angles & arcs and rainfall was also referenced clearly.

Good quality Space Analysis included a scaled plan of the existing dwelling or area being redeveloped, and adjoining areas being impacted along with photos taken by the candidate explaining the current use or issue and what the proposed change will be undertaken.

Unfortunately, folios displaying the above elements of quality were rather light on this year. Poorer quality folios did not include much of the above and often relied on cut and paste diagrams from Google Maps, Sun Calc. and Willy Weather, with little explanation of their relevance.

North points were not included in many candidates' work and the actual dimensions of the boundaries of the block were largely omitted in site plans and analysis. Many students failed to draw a scale drawing of their block and many folios continued to incorporate diagrams from web pages without explanation or reference to their site.

Some students completing an interior spatial analysis failed to show the relationship of the room(s) being renovated or extended to the rest of the house.

### **Precedent Research**

This work was again varied. Higher performing candidates would research and include precedents that had a high level of relevance to their brief. Some would purposely direct the reader's attention to the aims being addressed. Candidates who scored well carried out an in-depth discussion, stating the relevance, how the idea could be utilised and which changes may be required. Also, candidates who went with multiple possibilities that could be used to fulfil an aim may also have scored well. Some better candidates also categorised their precedents relating to key aims, e.g. architectural styles, interior solutions and so on. These candidates often did case studies of precedents, indicating a high degree of understanding of the relevance of the precedent to the aim or brief.

Lesser folios often had examples that may have had relevance to the brief or aims, but very little justification or analysis was carried out. A large cohort of candidates still tended to create a "product catalogue"; these precedents having little impact on design decisions. Finally, although minor, many candidates used the word "precedence" rather than "precedents" for this section title, so spelling should be checked.

### **Referencing**

Consistency in referencing protocols remains an issue. Several candidates did not reference their images, either with a numeral figure or footnote under the image but did list them in their bibliography – this would have drawn a marking penalty. Generally, bibliographies were better constructed this year – closely conforming to the Harvard referencing system. This may reflect candidates using citation software that is now readily available online. However, many candidates named these "Reference List" rather than "Bibliography".

It was pleasing that only a couple of academic integrity issues were reported, but this would seem to be in response to poor referencing protocols, so it is important that future candidates avoid this occurring to them in the future. To assist further, teachers should read through final drafts prior to submission to TRACS and consider submitting versions to Turnitin for checking prior to uploading too.

There is an increase in the number of candidates using software to produce final drawings and some concept work. Again, improvements were observed here as many candidates did reference this software and the "blocks" they used. Only a minority did not.

It is also highly recommended that candidates utilise plagiarising check software such as Turnitin themselves to help address any plagiarism issues that they may have missed. All candidates should make themselves very familiar with the TASC [Academic Integrity Guide](#) document to mitigate poor referencing and adhere to appropriate protocols.

## Criterion 7: Use and document the design process

Statistics indicate that a large cohort of candidates are still struggling to go beyond satisfactory standards in this criterion.

### Design Development

A and B students showed clear design development using accurate drawings that comply with architectural conventions, including appropriate scale bars or dimensions. In-depth discussion outlining and justifying the changes being made and considerations for the next iteration were also evident. Their plan drawings were often supplemented with elevation or section drawings with relevant annotation.

Stronger candidates also regularly reflected back to their aims, or listed the aims that were being addressed in their annotations.

Lower scoring folios did not always include key furnishings in their concept work, thus not providing strong evidence that they had checked that room proportions were workable.

A high number of candidates included drawings that were not drawn to scale or were bubble diagrams. These would be best described as rough drawings only. Although this is appropriate if labelled as brainstorming sketch work, such drawings do not meet satisfactory standards for 3 concept designs drawn to scale as indicated in the folio guideline.

Design development drawings need to be clearly presented and be large enough to be legible. Scale, scale bars, dimensioning and an indication of the north location are also a critical part of the design process. These elements were often absent. Absence of some of these elements would also have resulted in marking penalties being applied.

Some candidates did use full dimensioning in their final presentations, but there needs to be evidence of scaling in the concept phase too, as mentioned above.

Some design concepts were basically the same from concept 1 through 3 with very little design development and minimal discussion. Design analysis for a many of candidates was very superficial providing an explanation of what was included but no justification and clarification of the design evolution.

Some designs had negative aspects highlighted in concept 1, but continued to include these in other concepts and in many cases also featured in the final design even though the feature had been identified as a negative. This was often closely linked to some candidates creating concepts with intentional "faults" in their design work that are "set to fail", such as "there are no windows in the design, this will have to be addressed in the next design".... or "a toilet could only be accessed externally". This would often suggest that the candidate had undertaken "Reverse Design" – where they came up with one concept and then tried to de-construct it to form lesser iterations of it. This is not an appropriate design practice.

Overall presentation still needs consideration. Weaker projects had quite small drawings with minimal detail that were difficult to interpret clearly. Stronger projects included either hand drawn images that were accurately presented and contained appropriate supporting annotations. Some candidates did choose to use CAD in this phase too, and these were generally easy to visualise and assess. It is important that hand drawings are done with appropriate weighted pencils so that scanned copies are clearly legible. Digital annotations do allow for easier reading and more ordered discussion of design details. Even in stronger folios, candidates often had drawings scaled too small, making the text the main content on the page rather than the visual design work.

Some folios also had completely different design developments, totally different shape or forms not having any connection to the previous iteration, so the student was coming up with a fresh idea every-time, rather than developing their original concept further. It is suggested that students experiment with different forms as part of their preliminary brainstorming work, which can still be included within the folio, so long as it does not push the folio over 20 pages. However, this should not be confused with retaining one overall footprint shape and then changing then developing the interior space alone.



**Criterion 8:** Generate design solutions which respond positively to the brief and identified aims

### **Design Resolution**

Strong folios clearly showed a resolution to their design problem. High scoring candidates created well refined drawings to scale (with scale evidence included i.e. a scale bar), dimensions and the direction of north. They provided in-depth narratives, discussing the design features presented within each drawing whether it be the floor plans, elevations, section drawings and 3D drawings.

Strong folios provided an evaluation that discussed and rationalised how each aim was achieved. Essentially though, all aims originally listed should have been addressed in a comprehensive manner.

Like last year, many candidates claimed that a “particular” aim was addressed within the evaluation, but there was no evidence of this occurring throughout their concept work or within their final section of realisation drawings and annotation.

Some lower scoring candidates did supply a set of drawings as prescribed in the folio guideline, but not always well detailed and with little discussion or no narrative at all explaining the design features.

As indicated earlier, some candidates that listed a high number of aims may have struggled to address these all in a comprehensive manner and this would have affected the outcome. However, those who may have only listed 2 to 4 aims would have restricted their opportunities to score highly.

Another issue is that students often labelled drawings as “cross-sections” rather than “section” drawings and the section lines on the plan were often not labelled, i.e. A-A or had arrows on either end pointing the direction the view is looking towards.

There should be a marked increase in the drawing quality and annotations of the final floor plan in Criterion 8 including wall thickness and materials, all drawn to Australian Standards, whether drawn by hand or produced by CAD.

There is exponential growth in the use of CAD. Some work produced was very good, but some work was not meeting architectural standards. As mentioned in previous years, if students want to use 3D software for their floorplan, elevations and sections, it should produce drawings to Australian standards.

Sketchup was used effectively in some folios for producing a 3D representation of the student project, particularly when the student has produced quality preliminary drawings to acceptable standards.

The inclusion of storyboards and colour schemes are not relevant, unless one of the aims is associated with the element of design “colour” and a mood or feeling they are trying to achieve. Nor are they required in the final design section of a folio. Some of this information can be provided within precedent research, but best to avoid catalogue style precedent work. Lighting and power-point location plans are also not relevant to Housing and Design folios, and are not required in a folio, with the exception of universal or accessible design folios, with a particular reference to switch heights.

### **General advice for future students**

#### **Pencil Scans and Spell Check**

Please ensure hand drawn drawings are drawn with a sharp HB or HB pacer and scanned to 300 DPI and is clearly legible. Undertake a spell check too.

#### **Folio Publishing**

Seek guidance and instruction from your teacher in using design elements and principles in the publishing of your folio. PowerPoint is a reasonable publishing software, but pages using design templates take up too much available space, so

just use blank pages. Adobe InDesign is another recommended publishing software. It is also important for candidates to adhere to the folio guidelines and stay within the 20 Page limit. A contents page is not necessary.

### The Use of CAD in Folios

The inclusion of CAD has the potential to positively impact student's time management and development of architectural discourse and skills, as well as benefits such as greater efficiency, more precise drawings, and the ability to easily edit designs. Additionally, the use of CAD can resolve difficulties that often occur in the design of complex forms. However, the course syllabus does not prescribe CAD as a teaching and learning component of this course, and the already rich content of the course would certainly inhibit time required for teachers to provide instruction to students how to use an architectural design software competently. Students who have studied CAD can use this skill set to their advantage and would not be penalised. Obviously, on the flip side, those who are visually strong, artistic or natural draftsman are certainly advantaged, too.

However, the quality of student work, whether it be created using CAD or by hand should be marked on its merits, not necessarily effort. As to whether students choose to use CAD or to draw by hand, – these are just the tools – what is crucial is that scale, proportions, appropriate conventions along with appropriate annotations and narrations of the design are used to a good standard.

It is important though that traditional drawing techniques be developed by the student. There is a connection between a student's ability to draw by hand and their ability to design. A sketch demonstrates a process of thinking, interpreting and understanding, that often gets lost in CAD work. This calls for the need to develop foundational skills, and practice the design process, so complacency does not creep into design development as creative thinkers. By including traditional methods in the design process, students can express their ideas creatively and authentically. This is a critical skill for all students to possess for their end of year exams if they are to succeed to a high standard.