Green Building Encyclopaedia



Academic Comment on Coursework submissions

3 Survey Site Analysis extracts

Many of the comments apply to many of the students.

Some apply to individual students

Most students will benefit from reading all of the notes

The following are guidance on a good approach

You need to understand where your project fails to address the approach and edit or add to solve it

These notes do not set out to answer ‘what do I need to do to raise my score to get a pass’

But if you response positively to them then you are likely to get a pass.

Red text is highlighting existing comments relevant to the student

Grey tone has been edited

Red text and grey tone is new for the students particular attention

Information content and order:

* Put your name and student number on it
* Front cover: if it shows the site show your building on it too
* A panoramic view picking up one elevation of your building would have been better
* Photographs of site could show the building photo-montaged so we can both see how it sits in its context
* Is it a blot on the landscape and does it respect the castle and cathedral?
* Does it turn its back on the cathedral or face it and enjoy its spectacle?
* Would this building become an important viewing platform for the cathedral and have you provided for it?
* How does it obliterate the views from city to ocean?
* Showing the building in isolation in 3D views just pretends the context does not exist if this is a diagram then it needs some labels and notes to explain itself
* The 3D drawings are inconsistent with the plans (plan proportion of escalator well to start with)
* 3D views have no N Point so solar orientation, solar access, solar penetration and shading cannot be considered
* The Context drawings show considerable overshadowing of the existing buildings do they have rights of light as we do in the UK? Do you have to compensate the existing buildings for loss of sun?

Presentation

* When you present your work in a crit you are there to present and say stuff and answer questions.
* Always assume you are presenting your work to somebody who does not know the project at all.
* Now assume you are not there and it has to present itself.
* This type of submission needs to stand-alone and speak for itself.
* It needs site plan, floor plans, sections and elevations, detail sections, servicing schematics
* Try to include information that explains the project without you there and in an order that makes sense.
* Imagine for a moment that you are presenting this information to a client or to a project design team.
* Its best to start talking from the beginning rather than waiting until slide/page 35 before opening your mouth, hoping everybody guessed what you were thinking about.
* When you open your mouth, the first thing you talk about should not be heating and cooling it should be the building use and how your building supports the use.
* Analyse the site and the problem (Brief/Programme) then offer the solution that meets your brief.
* When you finally start talking about services, you should have already mentioned the building, its use and the climate that sets the context for the services.
* Make sure the content of the document is consistent from beginning to end
* If you add ventilation and solar shading to the services strategy show them in your sections, elevations and views
* If you decide not to add them because they will spoil the architecture, then there is a lesson to be learned there.
* Don’t say your going to do one thing, then show another, without explaining the change
* Many of these low scoring submissions fail in this respect.

Ensure that the work responds to the brief.

* To compete with Apple (almost entirely free of virus) Microsoft (almost all viruses aimed at their software) as a client would probably find the prospect of promoting a virus as part of the corporate identity as a death wish. Microsoft would never make that part of their brief, so it all comes from you, can you sell the idea, I doubt it very much. However breaking into their market is something that might appeal.
* Apple would argue that Microsoft are sloppy programmers demanding more RAM to process it all, there is an analogy to be had when you break the façade and squander energy.
* If you decide to break the façade then you should consider how you will make the space comfortable for shoppers how is the heating delivered and where, how does it mitigate against cold wind and heat loss.
* If you break the façade how do you control precipitation entry?
* Water and electricity when combined in a random way make potentially interesting let alone deathly experiences.
* Warping the façade turns this into an exercise in graphic design or software manipulation and leaves architecture behind, despite MJs desire to turn out graphic designers rather than architects, I am not impressed. Please strive to be your own person aiming to be an Architect, not a clone of the lecturer, and not a graphic designer.
* Despite all of the above I will try to me helpful in the remainder of this crit.
* Use the brief sub-titles as your submission sub-titles
* Rationalise the information provided into discrete subjects
	+ (check the titles of a drawing or page reflect the content and visa versa)
	+ if there is integration or interaction between services and fabric cross reference between them
* If your stage A and B reports have different approaches explain why you changed you mind in between
* State assumptions, be critical, we can all learn by trying to be better, this or next time.

Analyse the site and the buildings within and around the site

* Is the site a listed building or in a conservation area?
* History and context of site: how has this informed your design?
* You mention many new developments but I do not think they are shown on the plans
* How will your proposal respond to the new developments?
* With so many cultural buildings in the near vicinity is this building justifiable? What are its specific qualities to fill a gap in the current offering?
* Topology: the monster on the skyline in the photo is missing in your sections
* At this scale its unclear if your building is in Sections AA and BB but is missing from CC and DD
* Red arrows on plans suggest two possible entries at two different levels
* No entrance/reception is show on the two lowest floors, how do they get in?
* You say the winds are strong but only 11-12 knots which is almost still
* If the winds are strong you could have exploited them
* Wind off the sea are potentially cooling you could have exploited it
* How will you exploit any of the things you found out about the site?
* Building Location on site: plan with shadows that are closer to sunset time are misleading and are not long enough for sunset.

Site Resources:

* the harbour is close enough to exploit its resources by way of pipelines.
* Prevailing wind and and sea cooled wind could be exploited
* Solar mitigation shutters are mentioned but not needed if the windows are to the north
* Actuated windows will be necessary
* Active and passive ventilation systems are noted as potentially exploitable and needed, but mechanical ventilation and air-conditioning is already mentioned elsewhere, you need to decide and be clear.
* How do you justify scaring the face of an old friend?
* Would Londoners hate you for this?
* Show the site: nowhere is there a view (photos or sketches) of the site, showing the shape of the space and the height of surrounding buildings, if you never looked you have no idea what the challenges are, from this proposal I don’t think you even looked. If you looked you did not see or understand.
* Your building will block windows of adjacent buildings, its overhung by a large eaves overhang putting the whole building in shade most of the time.
* Determine what can be obtained free, passively from the immediate surroundings, adjacent infrastructure, existing buildings, site surface, ground, ground water, water courses, air, air movement, solar gains, daylight, moonlight.
* One statement about Urban Topography does not then explain your interpretation of the Urban Climate or Urban Heat Island Effect and your ‘building’s’ response to it.
* Existing adjacent buildings above ground will contribute nothing to the solar protection of a buried building on adjacent ground
* They may add to urban heat island effect and heat the ground around and above the buried building
* Its unclear how zones of high conductivity affect anything, it fails to explain itself
* Dismissing wind turbines due to noise in an urban area like London is a bit weak, when the reason that turbines are wrong is because its an urban area with variable skyline that will disturb the wind, and London is a shallow geographical bowl, all of which will result in inefficiency with this form or renewable energy.
* Wind turbine is mentioned and suggested it must be x m higher, than what?
* Wind study that says SW prevailing wind says very little that we do not already know
* Considering a turbine facing in one direction denies 80% of the wind for the rest of the year, the tower near the LSBU is an example of how not to do it
* The wind turbine is not mentioned again
* No analysis is made of the form of the buildings spaces and roofs
* Diagrams with more than one colour needs a legend to explain itself
* Many of the site analysis diagrams do not explain themselves, despite the interpretation you provide
* Charts without words to explain themselves are a waste of paper space
* Charts that do not show the building or even resemble the building could have been taken from anywhere else and are of no value unless explained
* Charts without explanation or interpretation or application are useless
* Weather Charts go into too much detail, but then there is no interpretation to inform the brief or the design process or choice of materials and servicing strategy
* Site plan with angled grid of lines gives no clue about what on the site determined the angle adopted, if anything
* Is there a desire line?
* Analyse the site, then show your response to it, or it just looks like post rationalization for a design that popped out of your head from no where, or copied from somewhere else
* Is the municipal waste segregation site on the same site? How do the students get there materials? How does the LA choose what to supply to the students?
* Site geography: Good scaling down maps to the site but where is the site on the borough map?
* No maps to show the location from large global or continental scale down to site
* Is the site currently a car park? If so where did you move the cars too?
* The views are noted as 60 degrees but show roughly 15 degrees.
* This and other pages should come earlier in the document.
* You have described details of the surround area but not shown them on the maps nor illustrated them
* Eventually London City Airport? But it already exists!
* What did you learn from the geology, that informs the project?
* Light Analysis: Trees to West will cast shadows in the evening not the morning look at your diagrams
* Site Topology: Is there a flood risk here? Other students identified the airfield as having flood risks
* Geology statement: its thin and not illustrated and your foundation depth is inadequate for clay.
* Geology statement: none
* I still don’t know where the Silo is
* The royal docks map: not a single word on the map to locate the text and still no site indicated
* Site Weather: Is Heathrow relevant enough what about London City Airport?
* Site Solar Access: I still cannot see the site indicated.
* I think the view of the model is orientated incorrectly compared with the map, no mention of elevated train and if it overshadows the site.
* Site Resources: only considered solar thermal and shows its plumbing not the site
* Rainwater harvesting: it’s another shame there is no schematic showing the proposals in the text and watering the farm, flowers or landscape on the site
* Rainwater harvesting could have been introduced for WC flushing at the very least
* The 2nd in line filter also needs a drain
* Could have included a diagram of RWH and WC Flushing
* Why two systems of water supply to WCs you could use rainwater for landscape irrigation
* Is there a basement if so is there a flood risk here?
* Your analysis of the site goes from satellite image to plot, without ever showing the location of the site, its orientation its surrounding context or N point.
* You mention the Thames river, normally know as River Thames or Thames Estuary
* You do not mention how far it is
* The Thames is tidal so the site is both Urban and Marine atmosphere, how will that affect your proposal
* Does a plane being brought into the building have wingspans that damage the surrounding trees?

Stealing from adjacent land and buildings

* Stealing the neighbour’s gardens to incorporate into your design or extending the site boundary by 10 m in an urban area are not what I had in mind, nor did the neighbours.
* Smoothing out the corners of neighbouring building to accommodate a new building is not free either and would require legal party wall agreements and compensation payments, which in London would be excessively high.
* Stealing many pieces of floor area from many other surrounding buildings and applying your random geometry to these stolen spaces is madness that needs to be justified.
* Where are the existing functions to be decanted to?
* But I assume your tutor allowed you do run this dream/nightmare and so I will try to respond accordingly.
* If you propose to make a building that defies any logic or business sense then should you not propose an IT solution that can make it work?
* Stealing pavement & access road space to place columns to support the ‘building’ without ever showing the column places on a plan, means you have either never considered the impact of the columns on the urban space, architecture, buildings, extensive labyrinth of basements across the square, roofs, sewers and services, space syntax, circulation, places, hard landscape, or you’re ashamed to show them to the reviewer?
* The only view of columns is an aerial oblique view, where there is no detail of the landscape and its obscured with dark shadows hinting at the affect of this selfish giant spider will have on the daylight of the space.
* Stealing existing basement space from the existing successful businesses is not feasible.
* Stealing space and trespass under existing buildings and sites, means you made a bad site choice, inadequate for the purpose, but is now potentially possible because the incumbent government has changed the ancient law to permit fraking under your house
* Stealing the internal air space from a church for platforms and noisy kit is wrong, expensive and disrespectful
* Where are the columns and staircase on the ground floor in the church? Through the pews and blocking the views.
* It better be beautiful but you have not designed it.
* Platforms block the light from the windows
* Your building appears to make an adjacent building’s external wall with windows into an internal wall what happen to the occupants of the building?
* Stealing support from the existing building would need to be investigated to determine its capacity to support the loads and the dynamic stresses.
* Consider lighter than air gases to inflate and reduce the load, but be cautious of creating lighter than air cocoons which may result in different stresses on the existing structure

Solar shading studies

* Shadows on plans and views should reflect the truth of the site, The Building Virus shows sunlight from the north in the view and from the south on the plan
* 9 am 12 pm 3 pm solar studies:
	+ Misses out on the evening when solar energy can be exploited to either heat or drive cooling
	+ An absence of evening shadows from studies tells a more optimistic story than reality
	+ An absence of any shadows means the student has learned very little from the study probably just added a fancy picture that looks good and says nothing
* Summer sun path studies show the most advantageous solar access conditions,
	+ Winter would show a worse situation, work with the worst-case scenario too.
* Sun light does not penetrate below pavement, but solar gains will penetrate shallow below the pavement. Ground source heat and coolth is normally collected deeper down but pavement can be a solar thermal panel if you use the technology to exploit it
* Sun path studies at 1:50,000 - 1:billion scale tell the student nothing, but ticks a box;
* Better to analyse the site at 1:100 - 1:500 as long as the shadows from surrounding buildings, the proposed buildings and corridors all show in this analysis.
* Solar analysis can be carried out on elevations as well
* Shadow ranges are recorded but there is no evidence of analysis and learning
* Analysis in words not evidenced by illustration because of the scale of the analysis diagrams
* Sections through the site with surrounding building and proposed building will reveal a lot about the way the building will or will not get the sunlight the diagrams suggest, and if reliant upon solar gains in winter may not get any.
* The site is exposed to sunlight throughout the year is plainly not true, the solar studies make that abundantly clear, daylight plenty, but no sun in winter?
* The mesh some time screen views and sometimes permit light and heat and some times screen sun and light, it they are that clever then you need to design them in detail.
* Shadows from the East show solstice midday South angles and from the West show winter South angles, this is not convincing at all. Show summer midday and winter midday and also analyse east and west sunlight at realistic angles and in relationship to the slots on the ground.
* The site plan in the shading analysis is of the ground floor retail only, no relevance to the topic.
* There is little or no understanding of the buildings to the South of the proposal.
* Shading suggested as necessary but no solution is offered.
* Site plans and sections through sites need to show existing and proposed building and corridors location, and models need to show sun angles and context specific shadows or the initial analysis becomes nothing more than ‘a tick box exercise’ and total disconnection between analysis and application remains real.
* Use of solar gains and its solar shading or blinkering must acknowledge the range of angles of the sun on each elevation and variation in orientation, for time of day and annual seasonal differences.
* Showing solar shading or light shelves and then showing the sun angles missing the extremities of these components shows the student does not understand the purpose of the drawing/study.
* If solar shading is proposed in a detail then it should be shown in the other views of the building.
* Vertical farms could have unproductive areas that could be set aside for packing activity
* Plans, sections, aerial views and sketches need to be consistent with each other and not show the most advantageous and untrue view in each.
* Analyse different elevations separately and thoroughly. Minimum: N & S, ideally: + E & W
* Analyse heating season and cooling season separately and thoroughly.
* A study of the multiple layer mesh will reveal that there needs to be offset between layers or differing grid sizes or you get clear views through the mesh in many directions.
* A study of the mesh sections and profiles would reveal how the light is permitted or blocked.
* Solar studies without a north point are probably wrong
* Orientation: is mentioned but no N point, and then talks about materials
* The street map does not show the building!
* The text is incredibly repetitive
* Solar PV and Solar thermal are mentioned facing south but they are not shown anywhere and will be overshadowed by the Church and its big eaves overhang.
* There is no South facing part of the roof, its flat, if you copy text from elsewhere edit it to suit your project
* The light well is ignored in the solar analysis
* The only light reaching this building is from the morning east and possible evening west but illustrations suggest southerly summer and southerly winter angles, this is fundamentally wrong
* The building does not want to be cooled in winter
* Thermal Efficiency: Heal loss and heat gain: I have finally worked out where the site is, without your help!
* Now would be a good time to show the building not just the circulation routes (not movement patterns)
* We could see the relative positions of rooms and circulation and windows and rooflights (if any)
* Spelling: has, glazed,
* Section is not orientated so no interpretation can be done.
* Little or no information on method of construction, walls, roof, partitions; types of insulation, Surface materials, thermal mass and decrement delay so I cannot judge what you know or how you have responded to the heat gain or loss
* Copying out of date English or current American details that have nothing to do with existing buildings external walls shows you do not understand the existing building (probably solid brick wall) and what you plan to do to upgrade it.
* If you did use cavity wall the distortions will make it expensive to make and would fail technically.
* No construction of roof, floors and partitions to consider.
* No construction of the façades, its distortions, its holes, its mitigation, and its services.
* Solar access was excellent until you added the tall trees on the south side of the building
* The solar exposure diagrams suggest the direction of the sun but your PV panels appear to point in the wrong direction.
* 3D views show no N point
* No indication for glazing and solid walls, nothing can be leaned from the 3D views
* Plans showing windows are remote from plans
* Response to solar gains and ventilation:
* What level is this and which other upper floors are shading it?
* Scale is probably wrong again 1:300 at what size?
* Morning solar gains are more about light and less about heat
* Afternoon sun is much more about heat as well as light
* Last page says nothing about page title and lists materials communicating nothing
* Colour codes on plans are not accurately defined, distinguish between, needs legends:
	+ lines (walls) arrows (sun) areas (Heat generating functions) (Controlled and uncontrolled areas)
	+ Showing red arrows on your plans as solar gains and heat movement passing though partitions and party walls shows you do not understand heat
	+ showing arrows without explanation or any analysis means you have learned little and communicated nothing
	+ Arrows from sun to room ignoring external walls, windows, party walls and partitions is wrong.
	+ An area with broken façade is uncontrolled but you might want to control it.
	+ opaque walls obliterate views of cathedral
	+ bookshelves against glass walls means you do not know your own building and you are making it up as you go along
	+ Wall to escalator core looks like it could play an important function but its materials are not declared
* Concrete as an external wall is solar shading on an south elevation
* ‘Concrete cooling thermal material’ needs to be explained, I am not sure you understand in what way.

Below ground

* Mentioning an existing 30m borehole, says nothing; what have you learned from that?
* How have you responded to the borehole data analysis and geology of the site?
* You assumed GSHP would be okay.
* Where are the underground tunnels, do they cross the site?
* Where are the sewers and mains?
* Where are the existing drains?
* If you analyse one bit of the building show which bit so orientation can be established and further analysis can be fruitful.
* Daylight entering a building will not act like air movement, curly arrows are potentially misleading to the reader and the writer.
* Warm air will rise out of the spaces via perimeter slots, cooler air could enter to replace but will they fight each other for supremacy?
* Hot will win but stalemate may occur.
* Show hot stale air as red and cold fresh air as blue
* The slots at street level will need to be protected (vehicle resistant balustrades?)
* Will emergency services vehicles be blocked by these barriers?
* Animals and termites know that different profiles at either end of the burrows can create wind pressure differentials that can generate air flow, what are you doing to exploit this phenomenon?
* Are you considering any form of cowls to enable or drive air flow?
* What happens when it really windy and rainy will there be controls to prevent excess airflow and water entry?

Non-UK Projects

* If the project is not in the UK virtually everything you may have been taught in a UK course needs to be reconsidered for the other country’s climate.
* Mediterranean climate buildings must consider solar gain overheating, solar shading, decrement delay, thermal mass as the primary issues to address, heating season is secondary but still important.
* Metal cladding and foamed plastic insulation as the external walls and roofs will permit solar gains to over heat the interiors in 20 minutes
* Does the external random shape size position components constitute solar protection blades?
* Are these components shown in the section?
* The glossy view of the accommodation answers very little more than the section and ends up raising many new questions
* High performance argon glazing will prevent the heat from getting out through closed windows
* A priority must be to have secure window ventilation to ventilate and prevent burglar entry
* A composite metal deck concrete floor contradicts precast floors with embedded heating pipes and denies the opportunity for exploitation of any thermal mass at ceiling level.
* Every tenant would be forced to invest in air-conditioning units, fitted all over the facades and light wells leading to further acoustic and thermal pollution and carbon outputs.
* Or the tenants will move out and the developer will sue the architect for loss of rent or sales.
* Stainless steel facades in a sunny country will lead to excessive glare, migraines, and accidents.
* Where addressing air leakage is regarded as fundamental no methods are described to achieve it.
* Air permeable insulation does little to stop heat passing through in the air
* Analyse you building use(s) and the conditions required for it/them and the conditions created by it/them.
* Consider passive and active building fabric solutions to meet those needs before mechanical and electrical services.
* Gallery archives probably need tightly controlled temperature and moisture conditions
* Consider if there are ‘excess to requirements’ from one activity that can deliver the ‘requirements’ of another.
* If so how?
* Can ‘gains’ from one side of the building be moved to or shared with the other side and visa versa?
* If so how?

Describe your existing building:

* (if you do not know, state your assumptions)
* A statement that every interface building will generate different conditions is a cop out;
* Is your building intervention to be autonomous from the interface buildings or scavenge from their conditioning services?
* And who is paying the bills?
* Will there be sub-metering?
* Are you a tenant or a sub-tenant?
* Including site plan (site boundary/orientation/North point/scale/street names if referred to in text),
* Structure: Foundations/basements/columns/wall/cores/floors/roof
* Building Fabric: External envelop: façade walls/soffits/roof/partitions
* Services:
	+ Sewers, Mains, Underground tunnels, extensive basements
	+ Heating, source/fuel/distribution/outlet/Hot water/Ventilation/Air conditioning/lighting
* Consider the interdependence and appropriateness of existing building fabric and services
* E.g. What kind of building fabric and heating/ventilation systems
* E.g. mismatch of Lightweight fast response building fabric and slow acting heating systems
* E.g. raised access flooring isolates the concrete floor from the solar gains, and isolates the underfloor heating from the room its trying to heat
* Analyse the existing and determine its strength and weaknesses and potential for reuse what can be kept, improved or removed salvaged and reuse or recycled.
* Building close to existing windows shows a lack of understanding of rights of light, and ventilation let alone T&C Planning permission

Modifications

* If you decant one activity to make way for your new activity, explain where the existing activity moves to.
* If you remove, replace or relocate an item explain the reasons why and what will put back in its place or in another place, to play the same function or what has been put back to do something differently.

Repeat and modify the exercise for proposed modification

* Make sure your proposals address all floors not just the interesting bits
* But no need to show every floor plan if they are all the same in every respect except floor number
* If wind has to play a significant role in your building at it is a number of stories above the existing how do the lower floors benefit?

Repeat and modify the exercise for proposed buildings

* Make sure your proposed methods match in words and drawings
* Additional floors: make sure the structural grid match or add a transfer slab between
* Where supporting structure will clash with existing show it and understand it don’t guess or ignore it.

Repeat and modify the exercise for existing case studies:

* Attempt to describe the building you are working with, with your own analysis of the existing as a drawing
* Measure wall thicknesses, look at surfaces and analyse what it’s made of,
	+ tap it to see if it is solid or hollow.
	+ Use a lighted match/lighter to see reflections in glass layers in multi-pane glazing.
* Be careful to avoid including aspirational information in a case study, only include what they did.
	+ If the schedule of ingredients fails to list cement substitution then to include information on cement substitution might be misinterpreted as being included in the building.
* Case studies should be carried out by the student and not copied wholesale from other sources or there is very little learning carried out by the student.
* Please avoid case studies that are substantially observation without criticism,
	+ be critical, draw conclusions and lessons leaned.

[Brian Murphy](http://www.greenspecdownload.co.uk/index.php?cID=916) NGS [National Green Specification](http://www.greenspecdownload.co.uk/index.php?cID=1) GBE Green Building Encyclopaedia

A14 extracted issues related to Site and Existing buildings and Surrounds 24th February 2016