Deliverable C

1. Design Criteria

#	Needs	Design Criteria
1	Sterile lab station	- Easy-to-clean surfaces - Organized area
2	Large freezer space	- Deep freezer - Minimum size (ft^3)
3	Sustainable & creative architectural design	- Represents an eco-friendly environment - Circular design aspects
4	Multifunctional computer lab space	- Many work tables: maximum size (ft) to fit them all - One computer per workspace
5	Portable workstation	- Must be on wheels with castors (breaks)
6	Significant security measures	- Security cameras in and around the building: minimum number of cameras for maximum security - High-quality locks for doors and storages
7	Large parking area	- Large enough parking lot for multiple trucks: minimum lot size (ft)
8	Washroom	- Minimum size: 2 stalls, 1-2 sinks
9	Kitchen area	- Minimum size for staff to cook and eat - Tables and chairs, counter space, kitchen utilities
10	Accessibility features	- Ramps for entryways - Wide enough doorways for wheelchairs to fit through (minimum size (ft)) - Push buttons for all doors to open
11	Loading dock	- Large space by the garage for a truck to back into (minimum size (ft))
12	“Lean-to” structure for car	- Max height, length, and width (ft) for truck to park safely under

Functional Requirements:

- Small offices with computers
- Boardroom for team meetings
- Multifunctional computer lab workspace with work tables (to be used by larger groups)
- Outdoor multifunctional space for cultural activities
- Portable/mobile workstation
- A small, herbarium-inspired harvesting space
- freezer
- Storage for handheld types of equipment

Non-Functional Requirements:

- Sustainable, creative, minimalist design
- Security cameras
- Parking lot for multiple vehicles
- Washroom
- Kitchenette
- Accessibility features such as ramps
- Loading dock

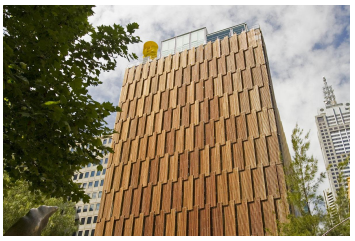
Constraints:

- Budget
- Preferred time of completion
- Slightly swampy land

2. Benchmarking

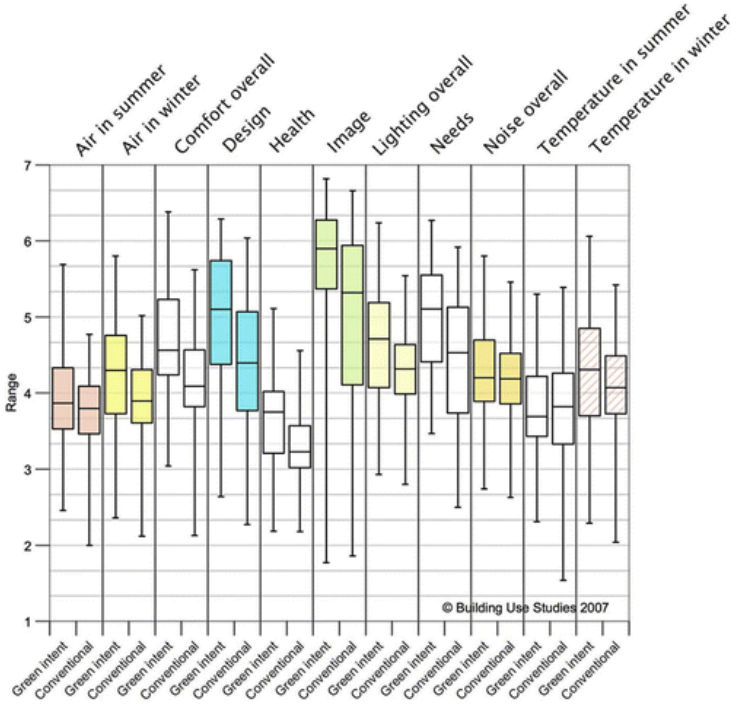
Technical benchmarking:

Specifications	Council House 2 (well-known worldwide)	Upcycle (smaller)
Company name	City of Melbourne	Integral Group
Country	Australia (Melbourne)	United States (Austin, TX)
Cost	$51 million, $12 million was invested in energy, water and waste innovation	$6,857,008
Material build	Recycled concrete, recycled timber, timber windows, sewer mining	Steel structure and metal panel skin
Sustainable elements	● Biomimicry (energy efficiency) ● Termite mound strategies ● Filtered indoor air quality	● Skylights ● Transformed recycling center warehouse ● Roll-up glass garage doors lead to a large outdoor area that serves as a front porch.

Artistic elements	• Art wall	• Local artists painted the interior to preserve community character
Size	135,000 square feet, 10 stories	76,494 square feet, 2 stories
Sustainability certifications	Six Green Star rating certified by the Green Building Council of Australia	Well known in the community, but smaller building to be known worldwide
Picture		

User benchmarking:

The following table demonstrates the results of a survey run on 177 sustainable buildings in the UK by building use studies in 2007. The table measures different categories by satisfaction level, with one being very dissatisfied and seven being satisfied. Based on the table that compares green buildings to conventional ones, it is seen that in all categories, green buildings have a higher satisfaction level than conventional ones. The image stands out with almost complete satisfaction from survey takers.



From "Are users more tolerant of 'green' buildings," by A. and B. Leaman and Bordass, 2007, Next Generation Sustainable Construction, pg 662-673, https://www.tandfonline.com/doi/full/10.1080/09613210701529518.

Upon completion of the study, it was determined that while communities perceive green buildings to be a superior image, there are certain imperfections that this perception may obscure. Some of these include that most green buildings try to overly complicate their structures, creating unneeded and wasteful complexity. Basically, rather than overdoing the "green factor," the better approach is to simply build a green building with the addition of some slight modifications to make said production greener.

References

Adrian Leaman & Bill Bordass (2007) Are users more tolerant of 'green' buildings?, Building Research & Information, 35:6, 662-673, DOI: 10.1080/09613210701529518

Caballero, P. (2019, September 26). *Upcycle offices / Gensler*. ArchDaily. https://www.archdaily.com/925492/upcycle-offices-gensler

Council House 2 Building. Melbourne. (n.d.). https://www.mickpearce.com/CH2.html

Upcycle. The American Institute of Architects. (n.d.). https://www.aia.org/showcases/6280260-upcycle

Upcycle: Projects. Gensler. (n.d.). https://www.gensler.com/projects/upcycle

3. Target Specifications

	Design Specification	Relation (=,<,>)	Value	Units	Verification Method
	Functional Requirements				
1	Small offices with computers	<=	5	Offices & computers	
2	Boardroom for team meetings	=	1	N/A	
3	Multifunctional computer lab workspace with work tables, to be used by larger groups	>=	7	People	
4	Outdoor multifunctional space for cultural activities	=	1	N/A	
5	Portable/mobile workstation	=	1	Large table	Wheels
6	A small, herbarium-inspired harvesting space	=	1	N/A	
7	Freezer	=	1	Unit	
8	Storage for handheld equipments	=	yes	N/A	

	Non-Functional Requirements				
1	Sustainable, creative, minimalist design	=	yes	N/A	
2	Security cameras	=	TBD	units	
3	Parking lot for multiple vehicles	>=	TBD	cars	
4	Washroom	>=	2	stalls	
5	Kitchenette	=	1	N/A	
6	Accessibility features such as ramps	N/A	N/A	N/A	
7	Loading dock	=	1	N/A	
	Constraints				
	Budget	=	TBD by prof	$ (CAD)	
1	Preferred time of completion	<	2	years	
2	Parking lot or lean-to must fit 1-2 big trucks	=	Standard Chevy Silverado 1500		Check size and lot radius for turning vehicles around
3	Slightly swampy land	N/A	N/A	N/A	Fill in land if required

4. Reflection

The client meeting significantly enhanced our understanding of the essential requirements that needed to be met. Before the meeting, we were unaware of the limitations we would have, such as budget constraints, spatial boundaries, and electrical accessibility. These questions directly influenced our ability to imagine the design thoroughly, and they were all addressed during the meeting.

Additionally, the client meeting significantly impacted how we ranked the importance of our criteria. While ranking them, we considered how much the client emphasized certain features. If the client spent a lot of time talking about a certain quality and described it in detail, we would rank it higher than something the client mentioned briefly.

Deliverable B requires no revisions as it was completed after the client meeting. Therefore, we maintain that our original rankings were based solely on the insights gathered during the meeting.