HOW COOL IS MY SCHOOL?

The work of FLE Maths M Term 2 2021


Writer
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print('Area of buildings (in m^2): ' + buildArea);
var treeArea = Trees.area
print('Area of trees (in m^2): ' + treeArea);
var schoolArea = SchoolBoundary.area
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Geometry Imports
Map
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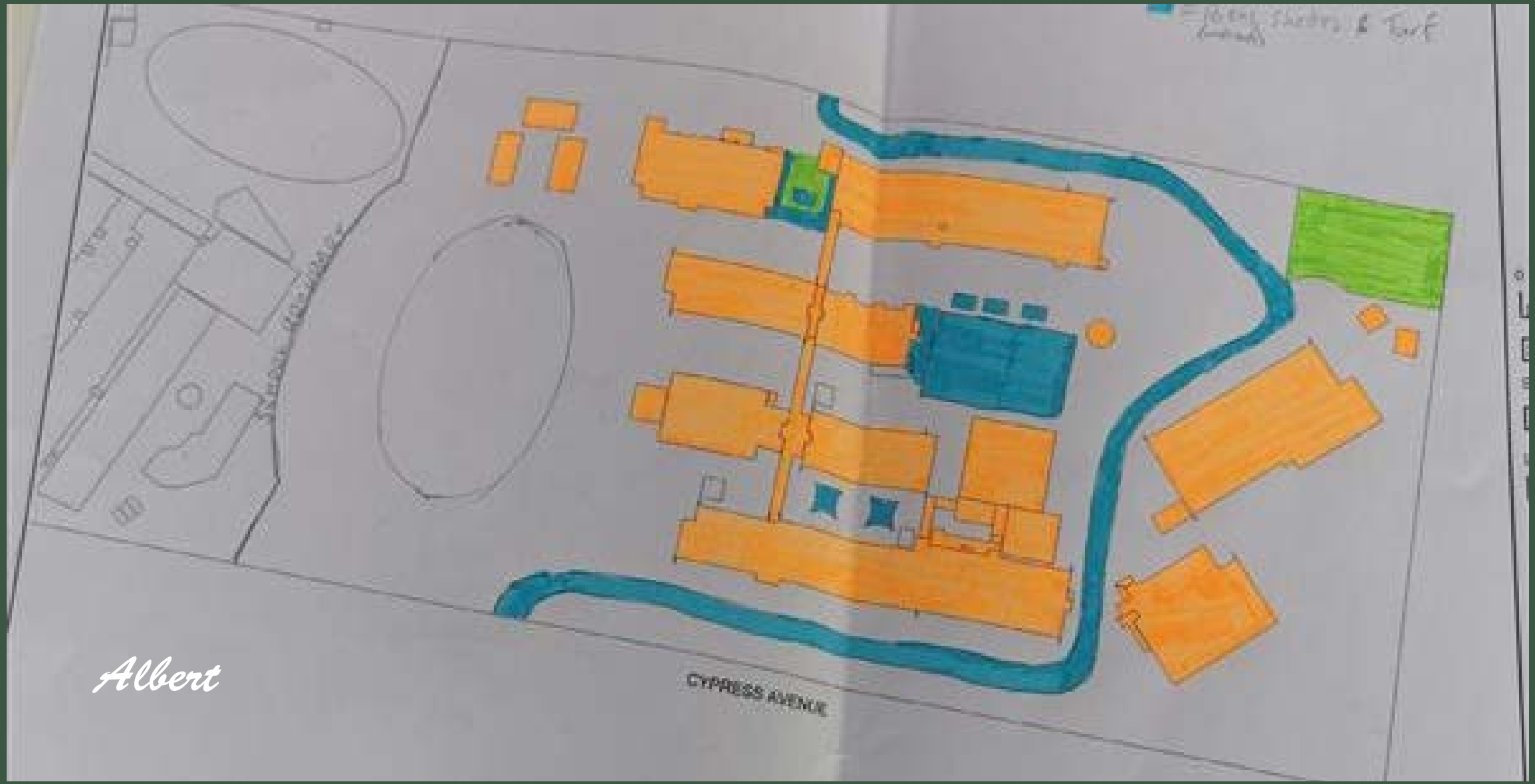
Albert



Albert

I managed to map roughly 99.4% of the total school grounds, grouping areas into one of 4 types, with a total of 13 subtypes. George

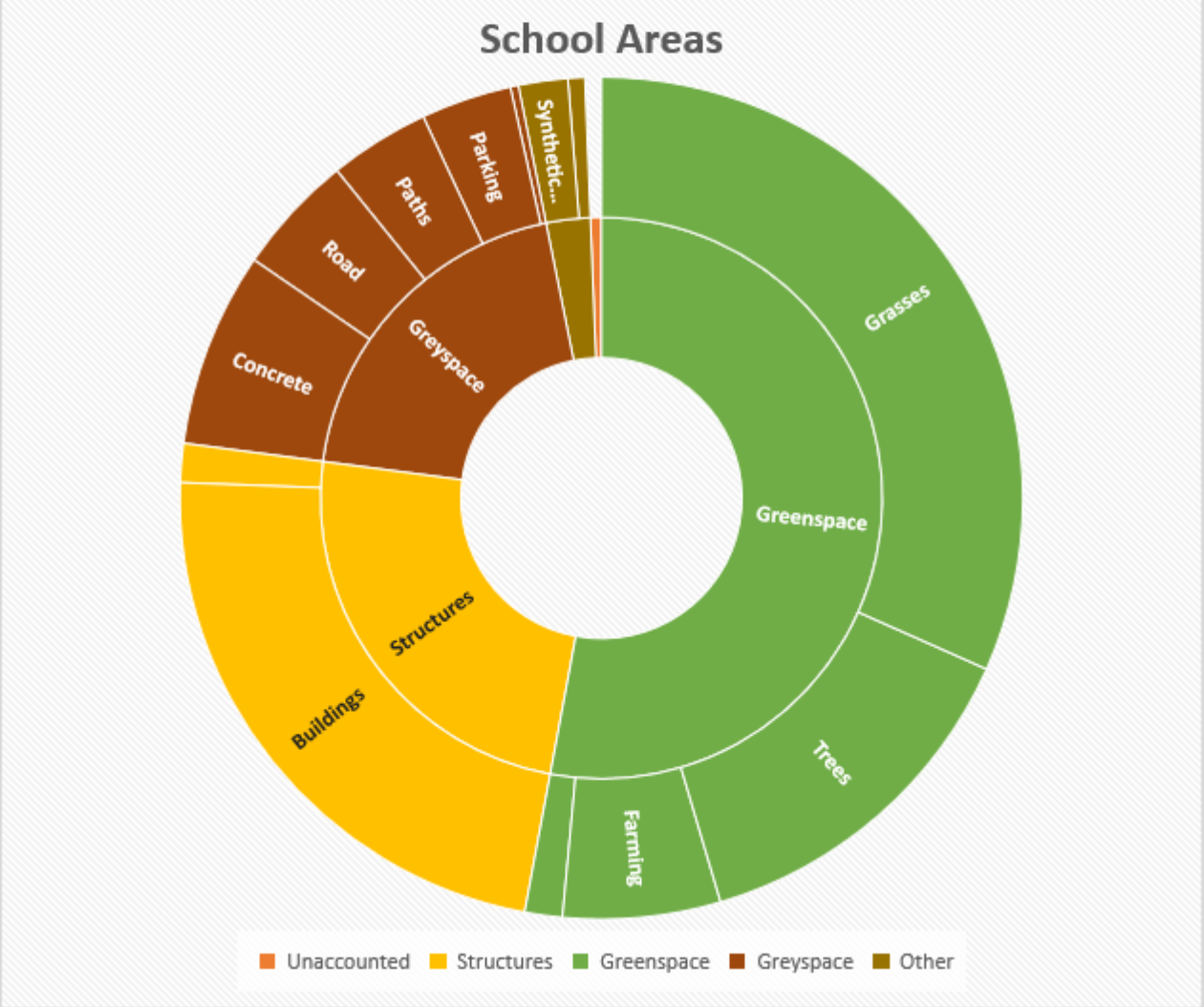
George


Synthetic Grass
Parking
Paths
Road
Concrete
Other
Greyspace
Grasses
Greenspace
Undercover
Buildings
Structures
Bushes
Farming
Trees

Map My School

George

Templestowe College has a total land area of ≈64058m²; ≈63656m² of that area has been accurately measured. This leaves ≈ 402m² of Templestowe College's Grounds unmeasured.
Using the equation m/u*100, when m = the amount of measured area, and u = unmeasured area, we can calculate the percentage of the school which has been accurately mapped. We can confirm that ≈99.4% of the school has been mapped; enough to make an informed guess about the area of various zones in the school



Templestowe College is made predominantly of greenspace and contains relatively small amounts of greyspace. Out of this greyspace, paths and roads are necessary, and parking space is important too, but large concrete areas covering the central areas of the school seems questionable. Upon closer inspection, many of these concrete areas are appear to be being used as pathways to navigate the school, but they are still extremely large, and could probably be reduced to thinner pathways, as they rarely receive much traffic. After measuring the concrete areas, they are roughly 6-12m in width, much wider than a low-traffic pathway needs to be. This means that it would be possible to thin the concrete areas by a substantial amount and replace the now concrete-less areas with trees or bushes.

Other sections of the school are necessary for its function, and therefore cannot be replaced with greenspace. The synthetic courts are necessary for the sports program, and the buildings are necessary for education facilities, and can therefore not be replaced with greenspace (Unless trees were put inside the buildings, which is technically a possibility, but it would heavily disturb traffic, and would be challenging to implement).

Overall, Templestowe College seems to have a satisfactory amount of greenspace and has only minimal room for improvement, considering budget restrictions and government standards. The School does have room to add more trees though, as many areas, especially those near the southeast of the school, are very empty, and could benefit from having trees planted on their grounds.

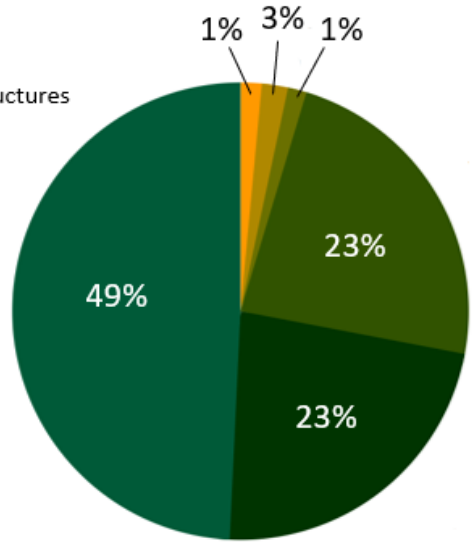
Templestowe Collage

Key:
Green-space =
Building-space =
Grey-space =
Coverings and unheated Structures =
Artificial Surfaces =
Uncovered Dirt =

Asha

Surface Type	Approximate Area in m^2	Percentage of School	Degrees °
Boundary	65867.67m^2	–	–
Green-space	32096.69m^2	48.73%	175.4°
Building-space	14833.42m^2	22.52%	81.1°
Grey-space	15203.38m^2	23.08%	83.1°
Coverings and Unheated Structures	860.03m^2	1.31%	4.7°
Artificial Surfaces	1865.10m^2	2.83%	10.2°
Uncovered Dirt	978.05m^2	1.48%	5.3°

Key:
= Uncovered Dirt
= Artificial Surfaces
= Coverings and Unheated Structures
= Grey-space
= Building-space
= Green-space

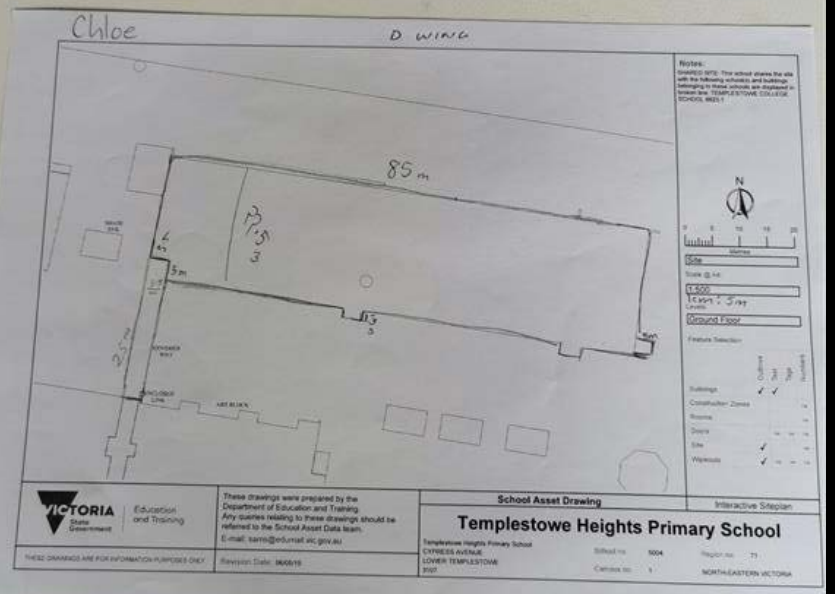


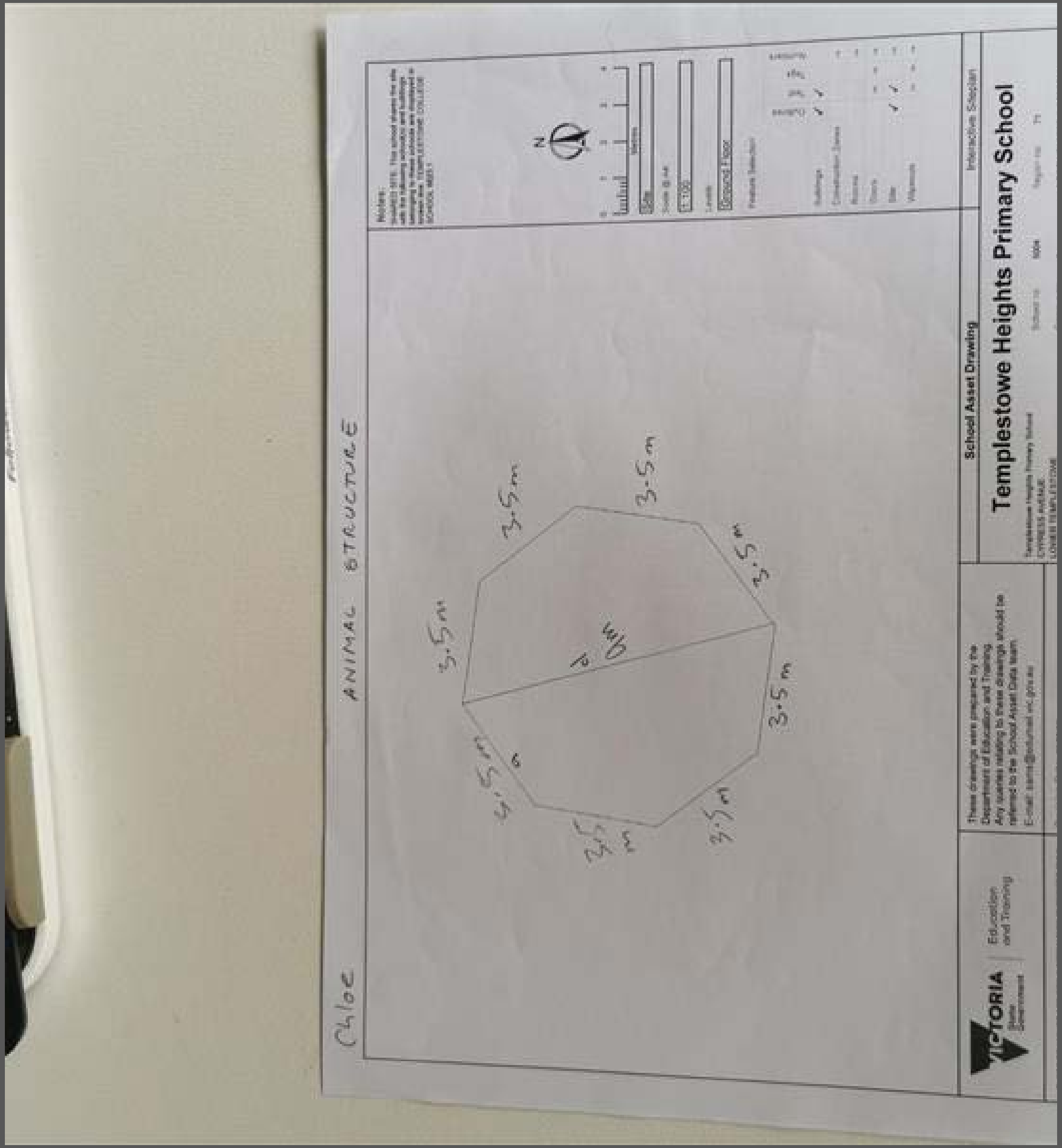
Chloe

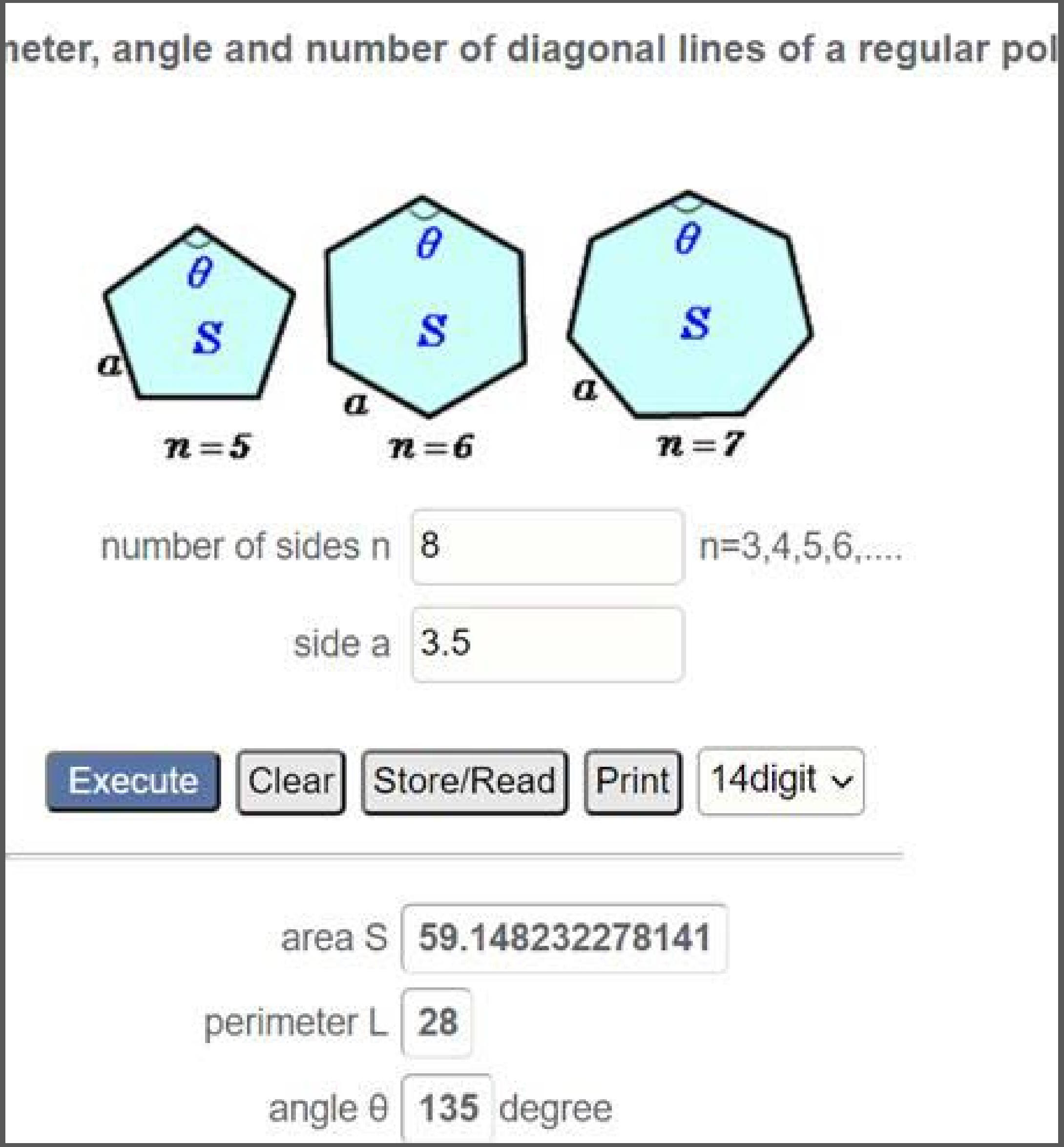
Structure	Length (m)	Width (m)	Perimeter (m)	Area (m²)	Height (m)	Volume (m³)	Shape 2D	Shape 3D
1 B wing	85	22.5	234.5	1927	5.36	10316.72	Rectangular prism	
2 animal structure	7	3.5	28	59.14	2.18	?	Octagon	Pyramid prism
3								

Worked examples for calculations

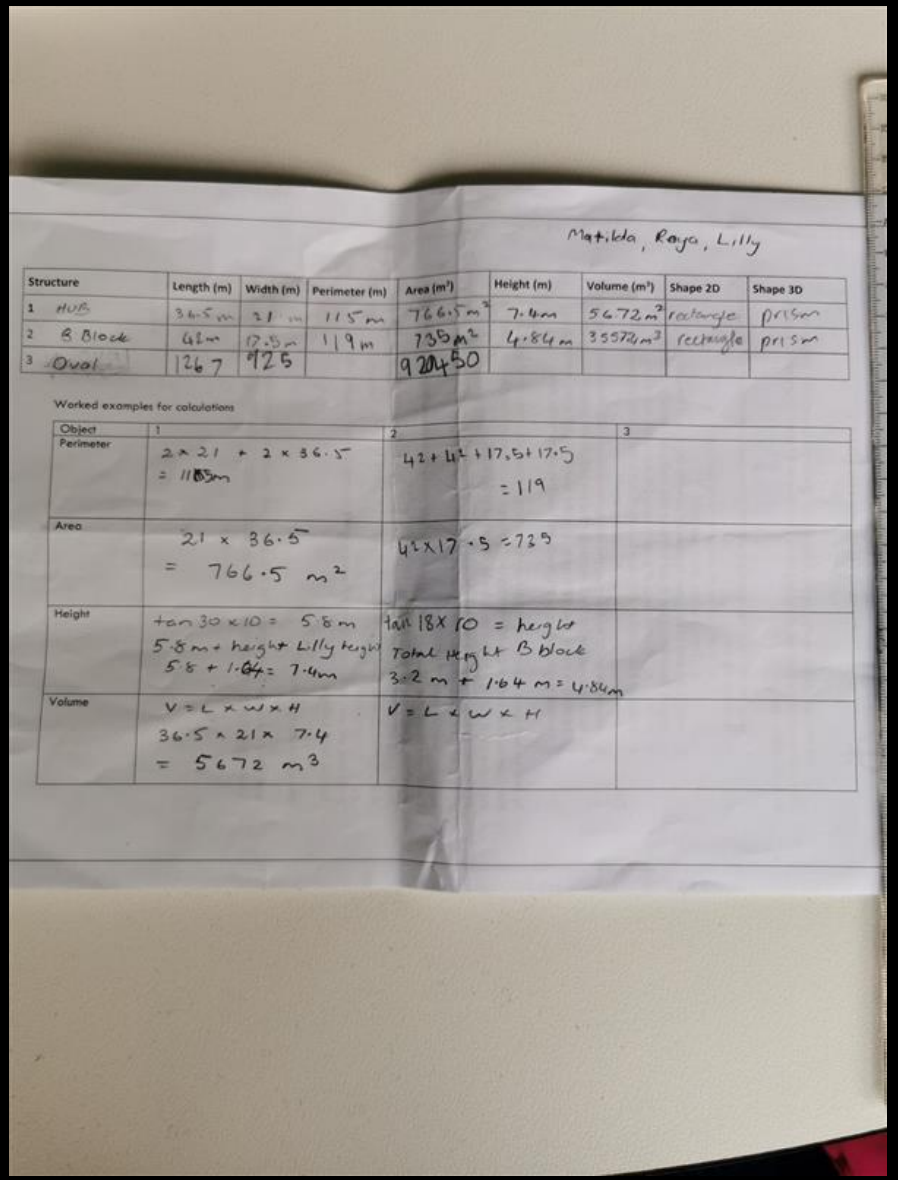
Object	1	2	3
Perimeter	85+175+3.5+5+85+6+22.5+10=234.5	3.5×8	
Area	85×22.5=1912.5+15=1927		
Height	1.76+1.6	3.64+1.6	0.88+1.6
Volume	25×3.5=176	85×22.5=3564	




Chloe
ANIMAL STRUCTURE
3.5m
School Asset Drawing
Templestowe Heights Primary School
Education and Training


neter, angle and number of diagonal lines of a regular pol
θ
S
a
n=5
n=6
n=7
number of sides n
8
n=3,4,5,6,....
side a
3.5
Execute
Clear
Store/Read
Print
14digit
area S
59.148232278141
perimeter L
28
angle θ
135
degree

MATILDA



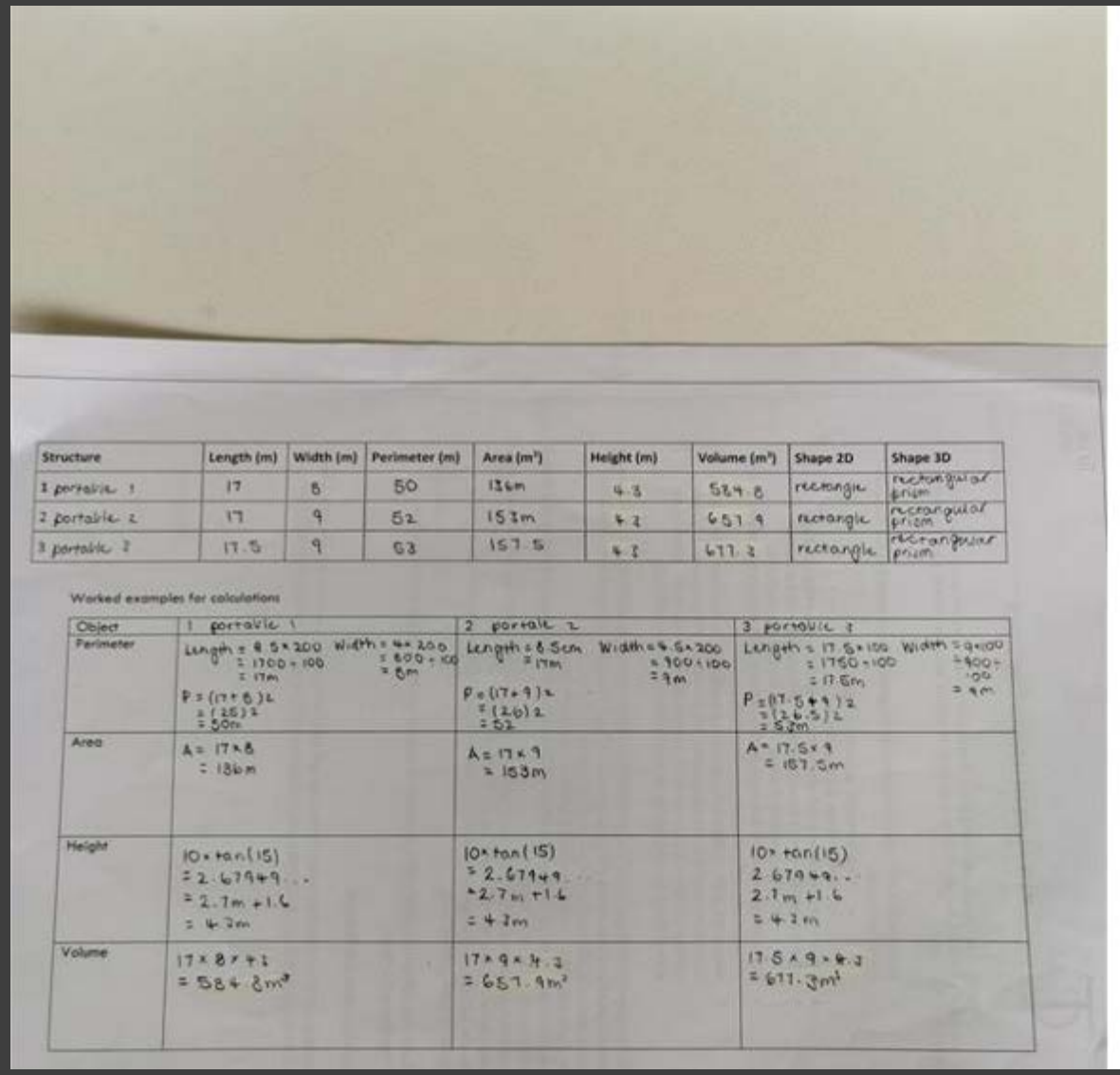
Matilda, Raya, Lilly

Structure	Length (m)	Width (m)	Perimeter (m)	Area (m^2)	Height (m)	Volume (m^3)	Shape 2D	Shape 3D
1 HUB	36.5m	21m	115m	766.5m^2	7.4m	5672m^3	rectangle	prism
2 B Block	42m	17.5m	119m	735m^2	4.84m	3557.4m^3	rectangle	prism
3 Oval	126.7	92.5		9204.50				

Worked examples for calculations

Object	1	2	3
Perimeter	2 x 21 + 2 x 36.5 = 115m	42 + 42 + 17.5 + 17.5 = 119	
Area	21 x 36.5 = 766.5 m^2	42 x 17.5 = 735	
Height	tan 30 x 10 = 5.8m 5.8m + height Lilly height 5.8 + 1.64 = 7.4m	tan 18 x 10 = height Total Height B block 3.2 m + 1.64 m = 4.84m	
Volume	V = L x W x H 36.5 x 21 x 7.4 = 5672 m^3	V = L x W x H	

Tiana



Structure	Length (m)	Width (m)	Perimeter (m)	Area (m^2)	Height (m)	Volume (m^3)	Shape 2D	Shape 3D
1 portable 1	17	8	50	136m	4.3	584.8	rectangle	rectangular prism
2 portable 2	17	9	52	153m	4.3	657.9	rectangle	rectangular prism
3 portable 3	17.5	9	53	157.5	4.3	677.3	rectangle	rectangular prism

Worked examples for calculations

Object	1 portable 1	2 portable 2	3 portable 3
Perimeter	Length = 8.5×200 = 1700÷100 = 17m Width = 4×200 = 800÷100 = 8m P = (17+8)2 = (25)2 = 50m	Length = 8.5cm = 17m Width = 4.5×200 = 900÷100 = 9m P = (17+9)2 = (26)2 = 52	Length = 17.5×100 = 1750÷100 = 17.5m Width = 9×100 = 900÷100 = 9m P = (17.5+9)2 = (26.5)2 = 53m
Area	A = 17×8 = 136m	A = 17×9 = 153m	A = 17.5×9 = 157.5m
Height	10×tan(15) = 2.67949... = 2.7m + 1.6 = 4.3m	10×tan(15) = 2.67949... = 2.7m + 1.6 = 4.3m	10×tan(15) 2.67949... 2.7m + 1.6 = 4.3m
Volume	17×8×4.3 = 584.8m^3	17×9×4.3 = 657.9m^3	17.5×9×4.3 = 677.3m^3

Portable 1
10 x tan(15)
= 2.67949...
Total height =
2.7 + 1.6
= 4.3m

Portable 2
10 x tan(15)
= 2.67949...
Total height
= 2.7 + 1.6
= 4.3m

Portable 3
10 x tan(15)
= 2.67949...
Total height
= 2.7 + 1.6
= 4.3m

Poppy

Tree Height (small)
Tree 1
Shadow: 1.7 M
Height: 85cm

The Height is half the shadow length

Area of the tree shadow:
Radius= 1.7M

So the area is:
9.079202769
Or 9.1 for short

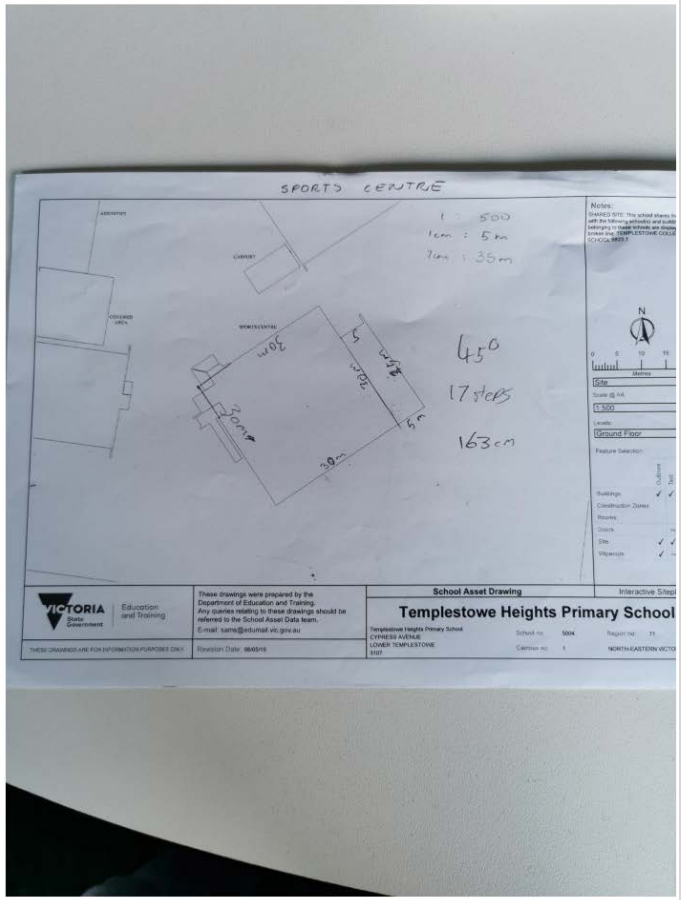
Tree Height (large)
TREE 2
Shadow: 16.4M
Height: 8.2

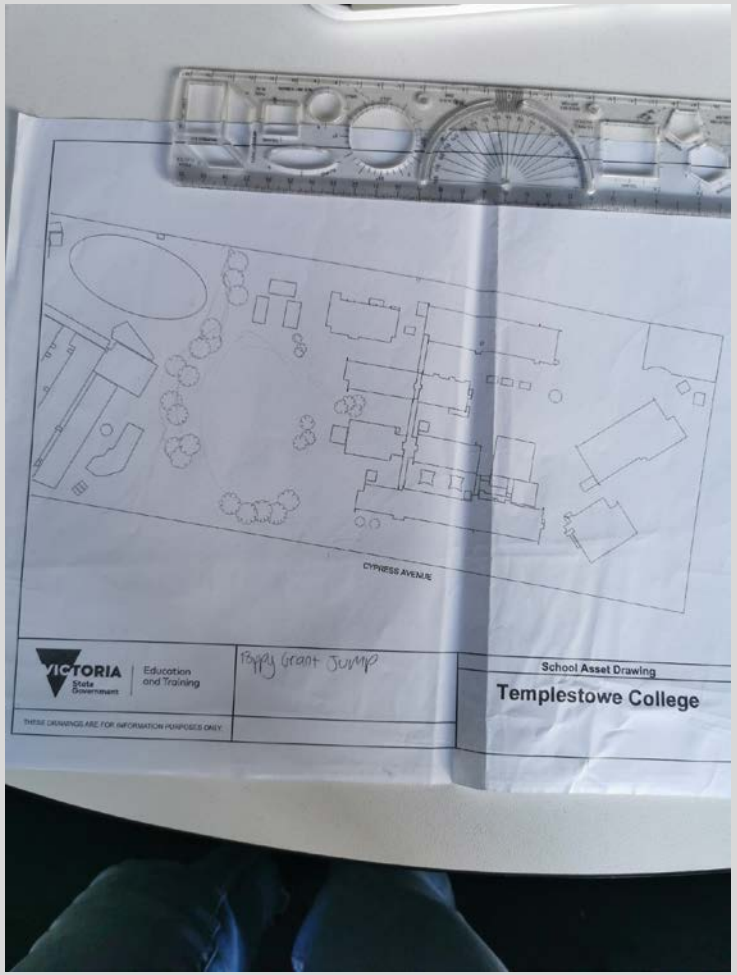
Radius: 16.4M
Area of shadow:
844.9627601

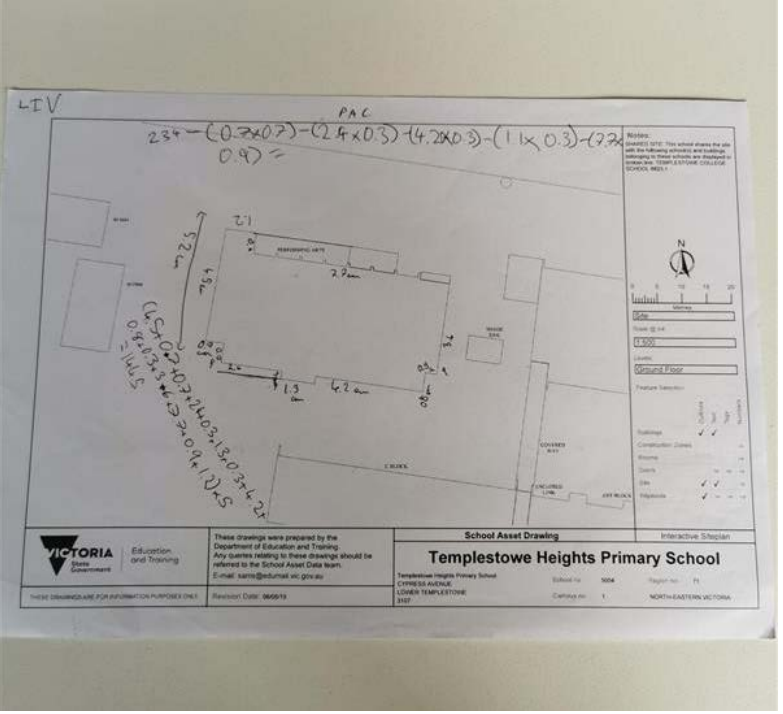
Tree Height (medium)
TREE 3

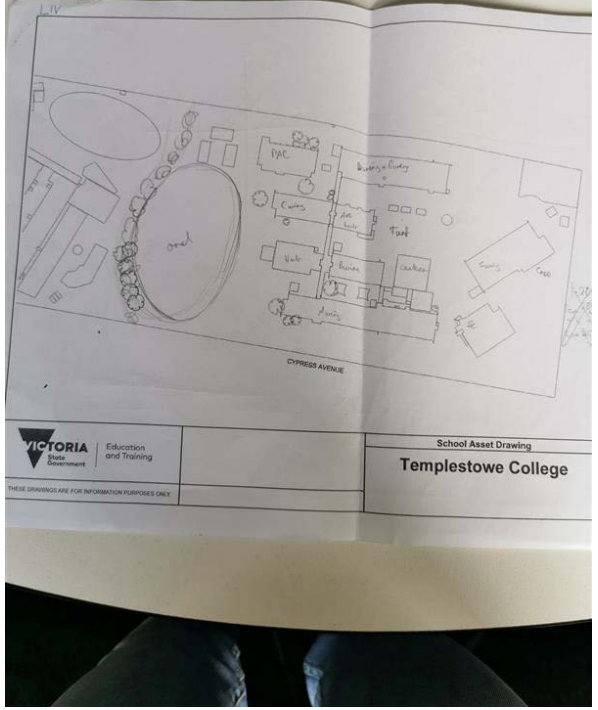
Shadow: 9.3
Height: 4.65

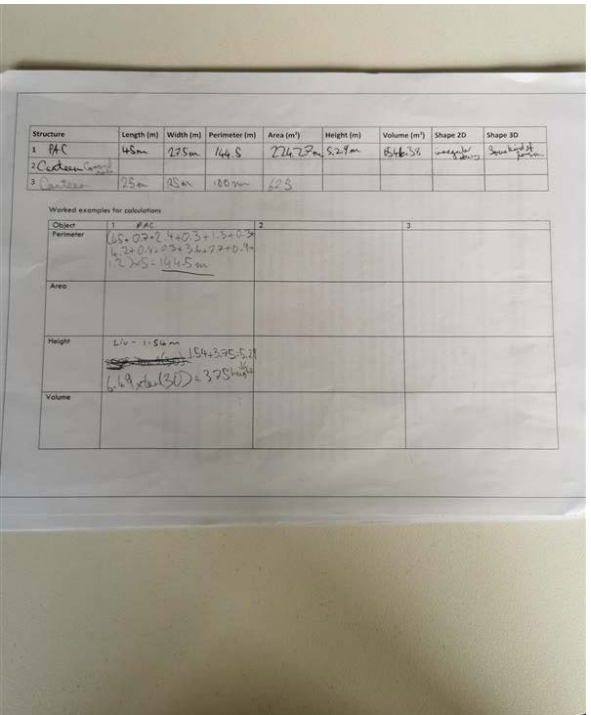
Area of shadow
271.7163486






LIV
PAC
School Asset Drawing
Templestowe Heights Primary School
Interactive Sitesplan

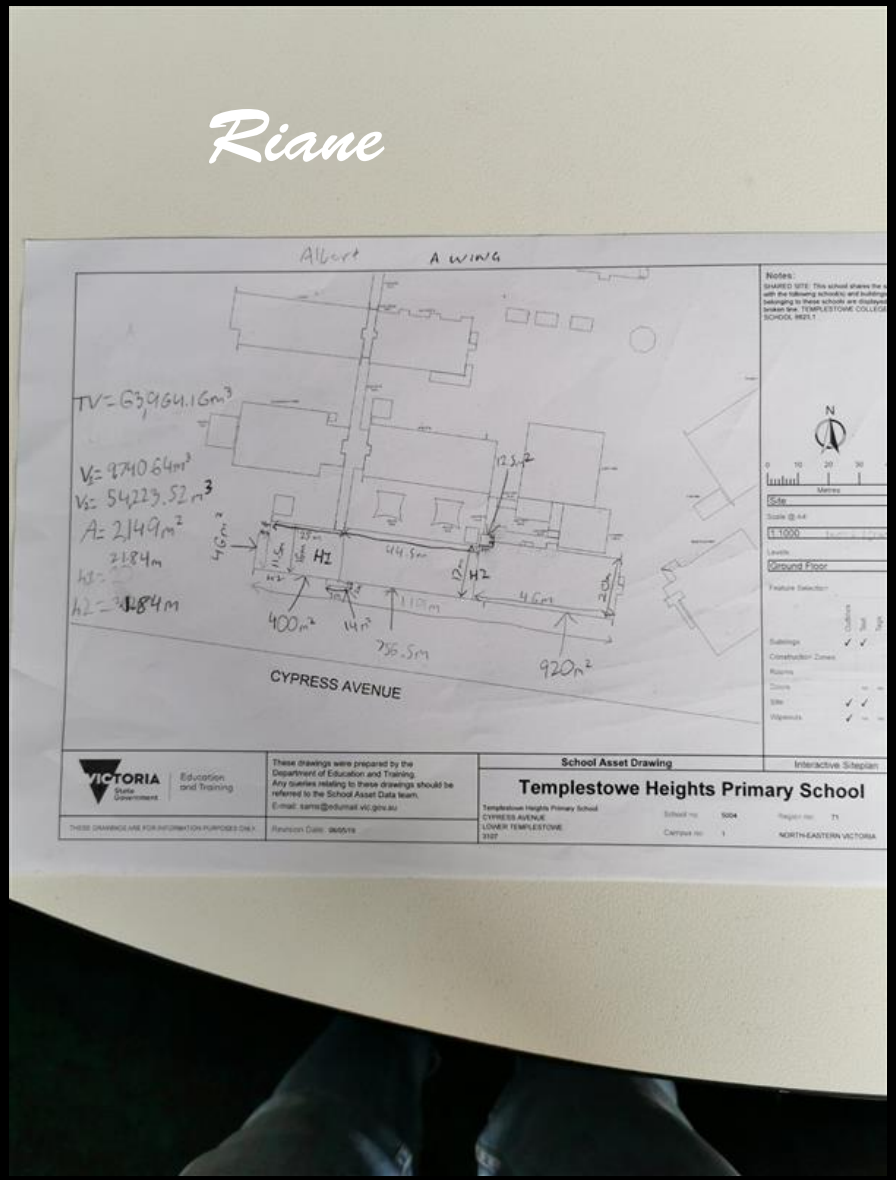

PAC
CYPRESS AVENUE
School Asset Drawing
Templestowe College


Structure
Length (m)
Width (m)
Perimeter (m)
Area (m²)
Height (m)
Volume (m³)
Shape 2D
Shape 3D
Worked examples for calculations
Object
Perimeter
Area
Height
Volume


Cypress Ave

LIV

Riane



Building	Length (m)	Width (m)	Perimeter (m)	Area (m²)	Height (m)	Volume (m³)	Shape 2D	Shape 3D
A wing	119	20	278	2380	31.84	75779.2	rectangle	prism
B wing	42	17.5	119	735	4.84	3557.4	rectangle	prism
C wing	45.5	21	133	955.5		0	rectangle	prism
D wing	85	22.5	215	1912.5		0	rectangle	prism
B Corridor			0	0		0	rectangle	prism
C corridor			0	0		0	rectangle	prism
Canteen Covered area	39.8	14.4	108.4	573.12	x	x	rectangle	prism
Canteen	25	25	100	625	6.41	4006.25	rectangle	prism
S wing			0	0		0	rectangle	prism
Sports	35	30	130	1050		0	rectangle	prism
Portable 1	17	8	50	136	4.3	584.8	rectangle	prism
Portable 2	17	9	52	153	4.3	657.9	rectangle	prism
Portable 3	17.5	9	53	157.5	4.3	677.25	rectangle	prism
HUB	36.5	21	115	766.5	7.4	5672.1	rectangle	prism
PAC	45	27.5	145	1237.5	5.29	6546.375	rectangle	prism
Shade Sails (AB)	18	9	54	162	x	x	rectangle	
Shade Sail (HUB)	11.7	10.6	44.6	124.02	x	x		
Shade Sail (PAC)								
Shade sails (courts)								
Gazebo								
Tree								
Oval	1267	925		920450	x	x	oval	
Paddocks								
Water tanks								
Carpark								
Basketball court (canteen)								
Basketball court								
Total school								

Collaborative Class Excel Spreadsheet

Tiana

Dear Peter Ellis,

My research has shown:

That the school contains almost equal parts in building/concrete areas (46.8%) compared to green areas which contain grass and trees (48.6%). The rest of the school is made up of fake grass (3%) and areas with open structures (1.6%) such as shade sails.
Of course there is a road running through the middle of our school which nothing can be done about. Taking that away would bring the grey area roughly down to 35%.

My recommendations are:

That more trees are planted near the oval and paths around the school. I think the ratio of grey to green space is good. But most green area on the map is made of grass, which provides students no shade. Trees are spread apart so the coverage is so-so. It would be best to have them close together and near areas where all students walk through.

Kind regards

Dear Peter Ellis,

Poppy

My research has shown:

My research has shown that 50% of our school is green space. Green space has been shown to help improve mental health of children and adolescents, so having this much green space is really good! The other 50% is made up of 27% grey space and 23% buildings. This is a good balance between the green space.

My recommendations are:

My recommendations are to keep the green space as it is, try not to pave it or cover it with buildings.

Kind regards

Dear Peter Ellis,
My research on our school, has shown that the current amount of greenspace is 49%, building is 23% and grey-space (concreate, paths, carpark, etc...) is 23%. The rest of the school is made up of uncovered dirt, artificial surfaces like the Astro Turf, and artificial coverings and structures. This means that 51% of our school is covered by artificial surfaces. 50% of our school covered by greenery and that is fantastic, but we can do better. Most of the greenspace is just the oval and grass. The actual surface area of greenspace is much smaller and we have no reason not to try and improve.

My recommendations are that we need more trees and bushes planted, including in the open patches of grass. Having grass covering is the first step, but to create a better environment for the school we need more bush and trees. Even if trees take many years to grow, waiting would only delay growth further. "The best time to plant a tree was ten years ago, the second best time is now." This proverb captures what I mean perfectly. Did you know that we have over 978.05m2 of uncovered dirt? I only managed to calculate a portion of how much there is, but I know, and have seen around the school patches of dirt and empty garden beds. These should not be empty, but flourishing. We could also try creating roof gardens, this one is just an idea, there will probably be problems this, like oof gardens can only grow smaller plants, and the plants might be too heavy. But it is one that I think will be interesting to think about.

Kind regards, Asha

- Overall summary:

- Our school is about half covered in trees, bushes and grass with 49% of the grounds covered in green space, the rest is either built up with classrooms or other buildings or has been built with roads, concrete or fake grass/turf. This is a pretty good ratio for green space to built space, this can be shown in a comparison to box hill high school which only has 19% green space.

- Letter to peter Ellis:

- My research has shown that our school is doing well with how much green space we have, while this is a good thing some of our space that is green is dying. My recommendations are that we try take more care with our plants.
- Kind regards, Chloe