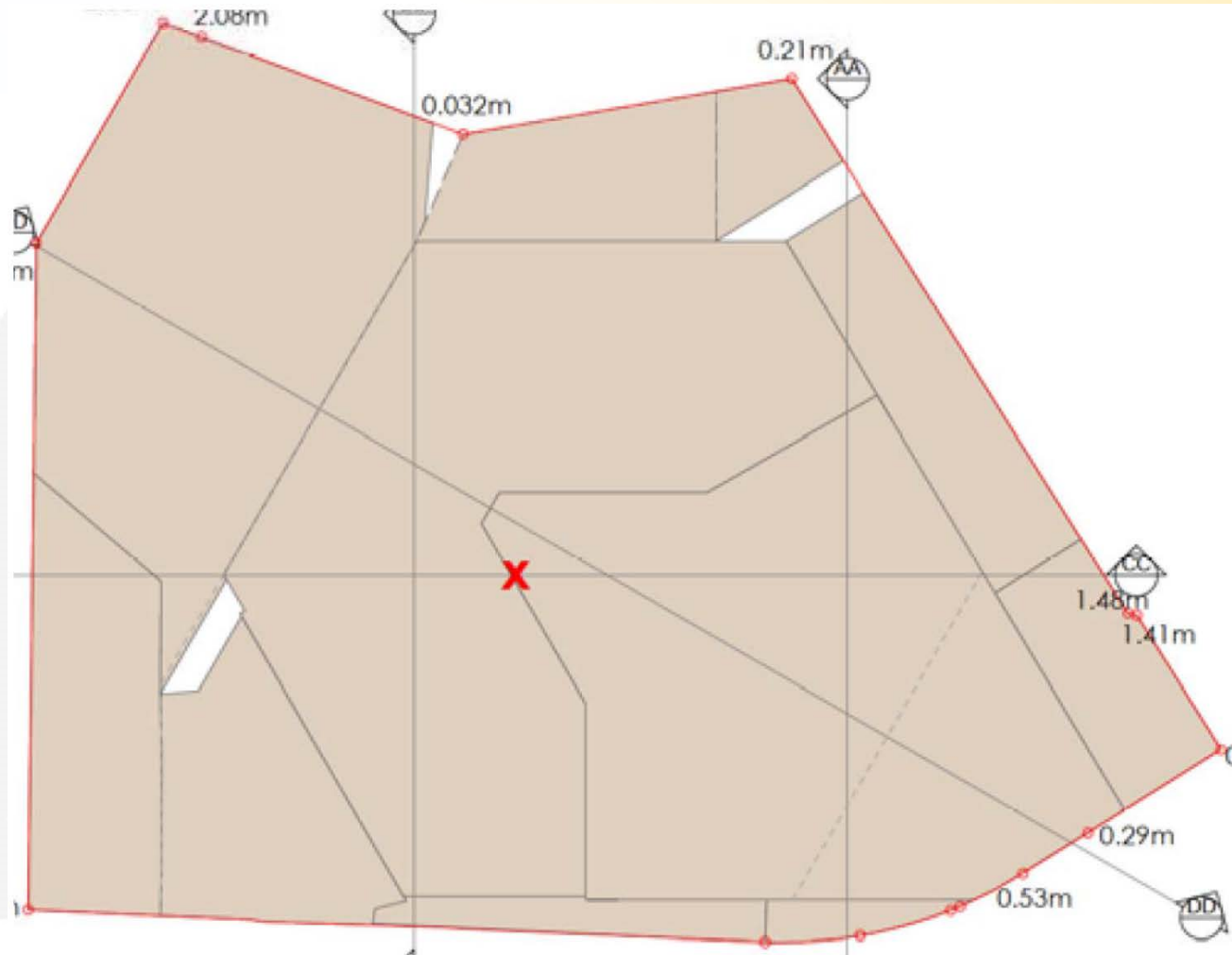




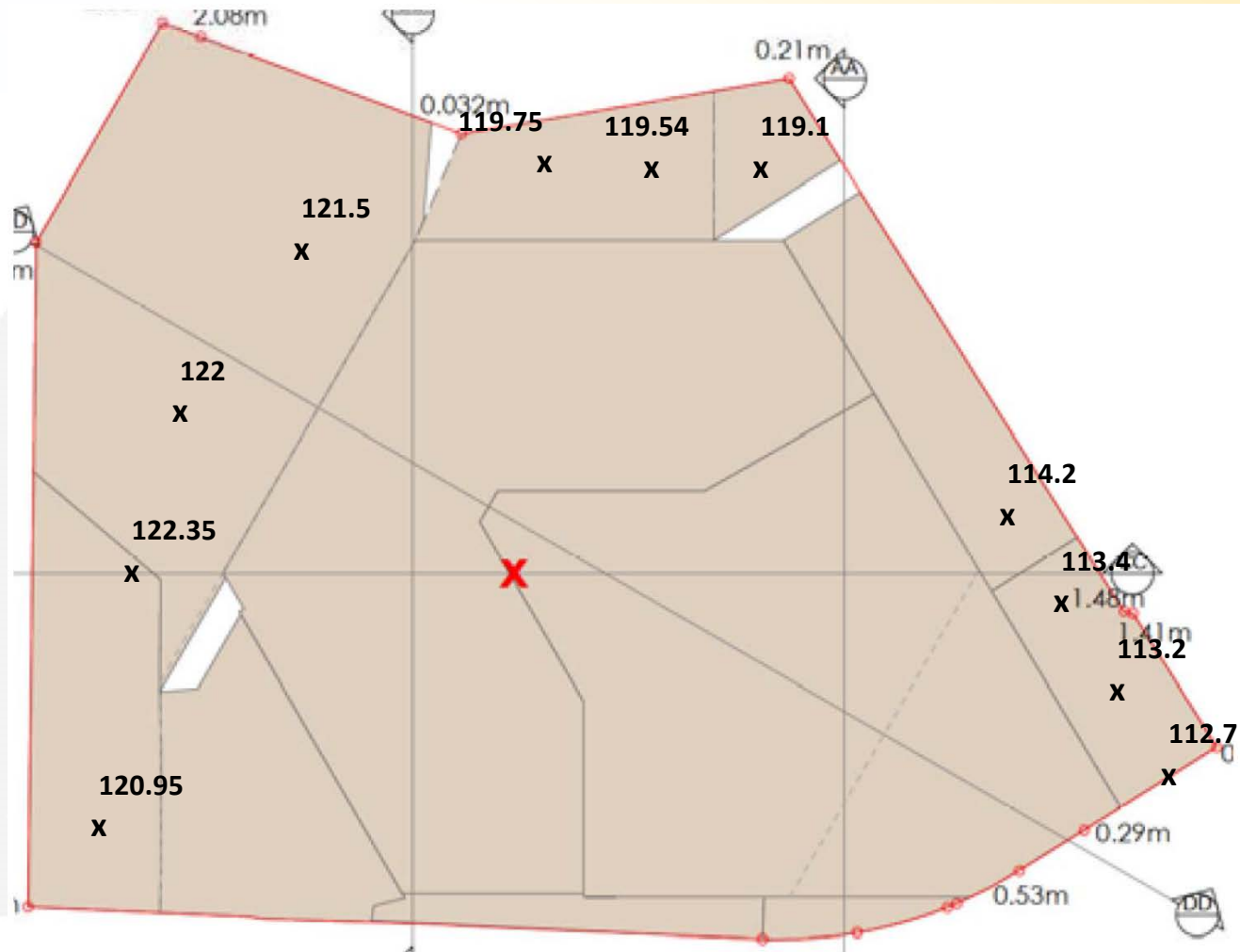
Andy Carr

Director | Carriageway Consulting Limited

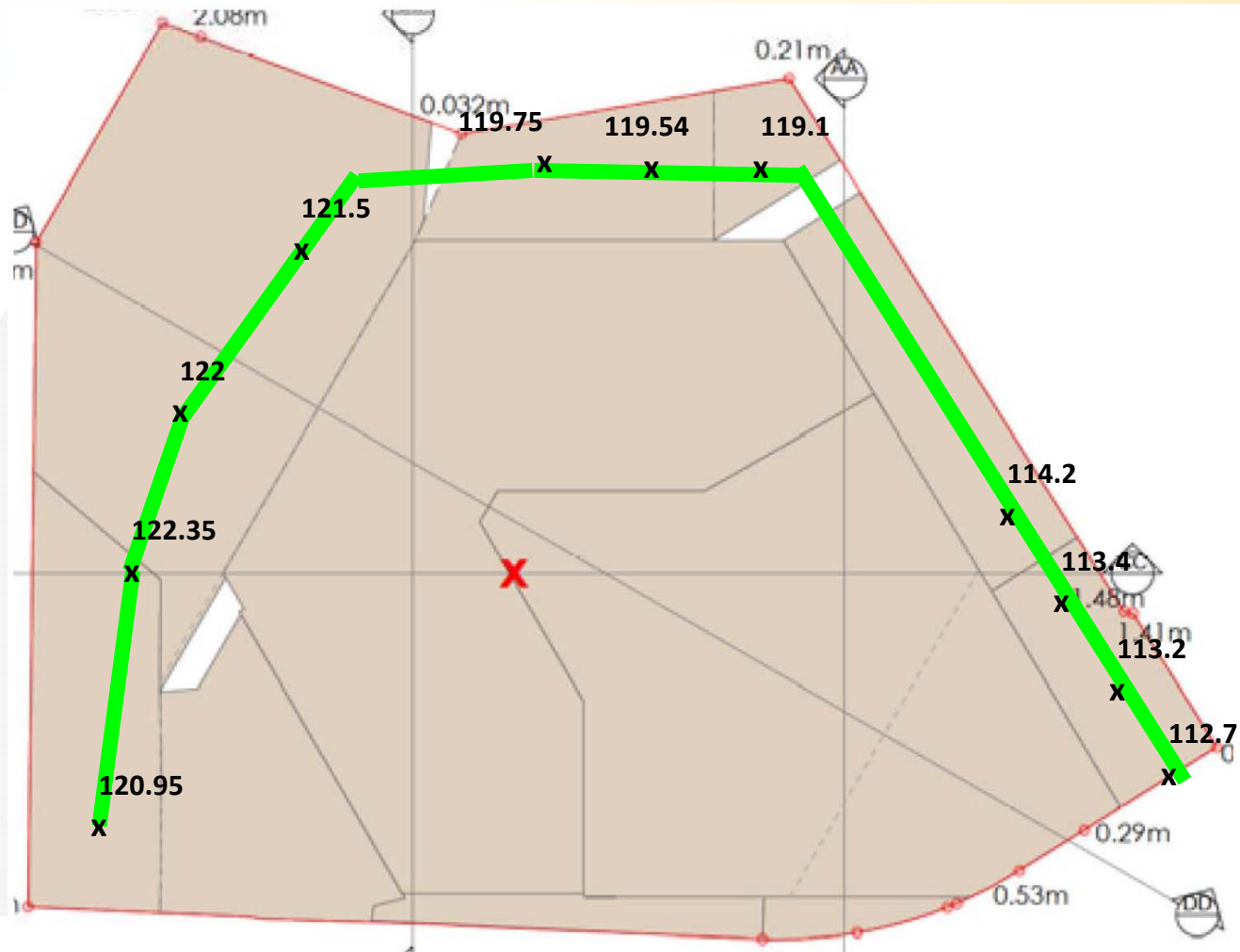
Simplify the Site Plan



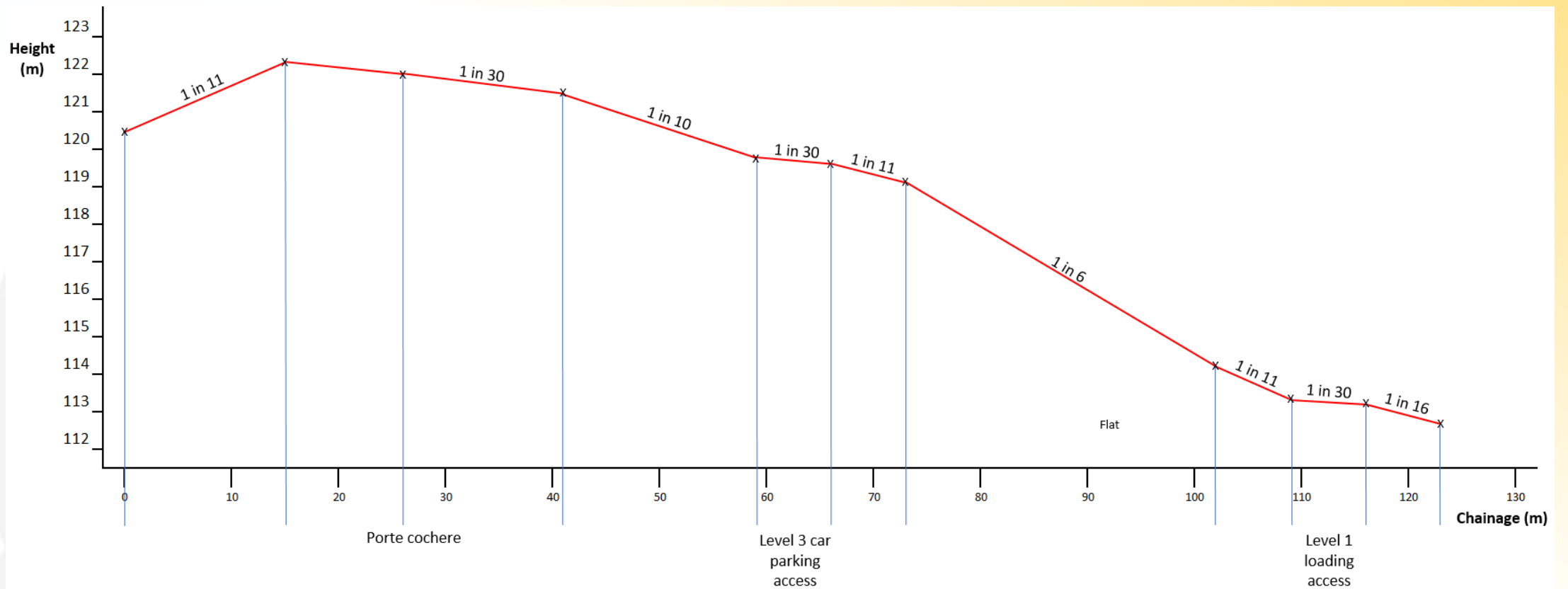
Add Levels from Updated Revised Application



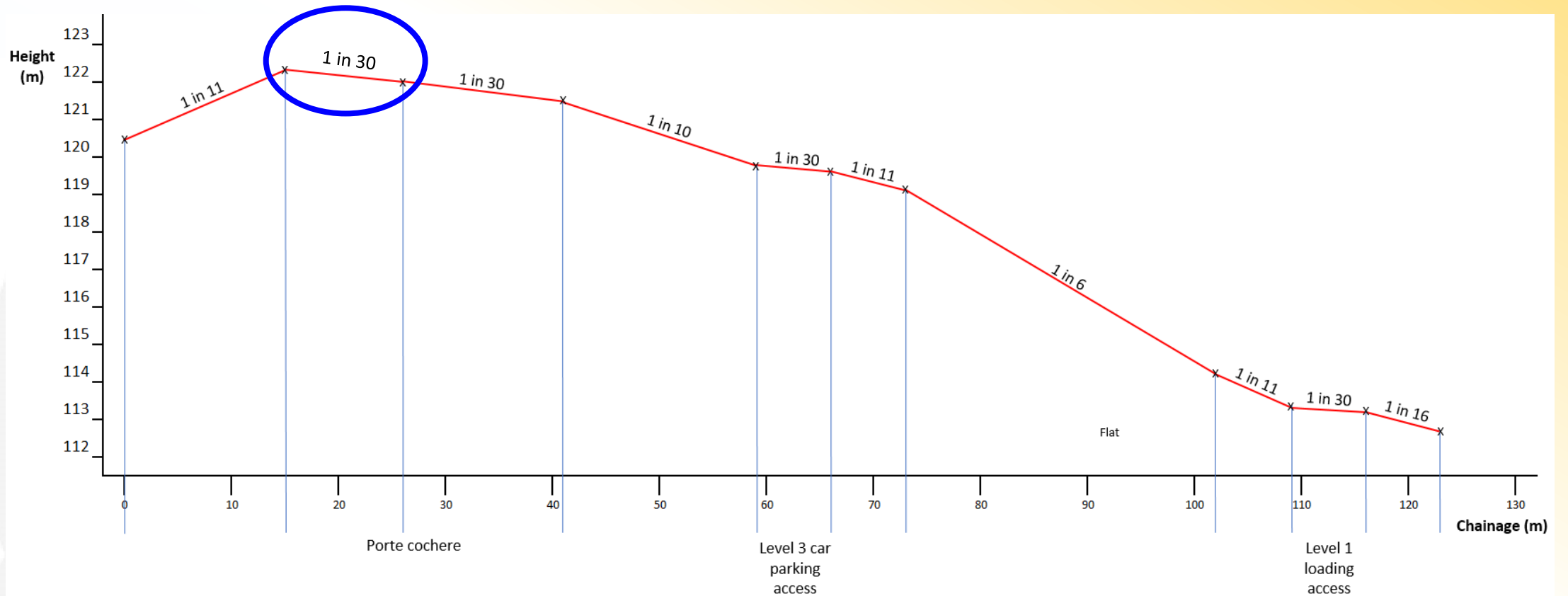
Join the Points and Create a Long Section



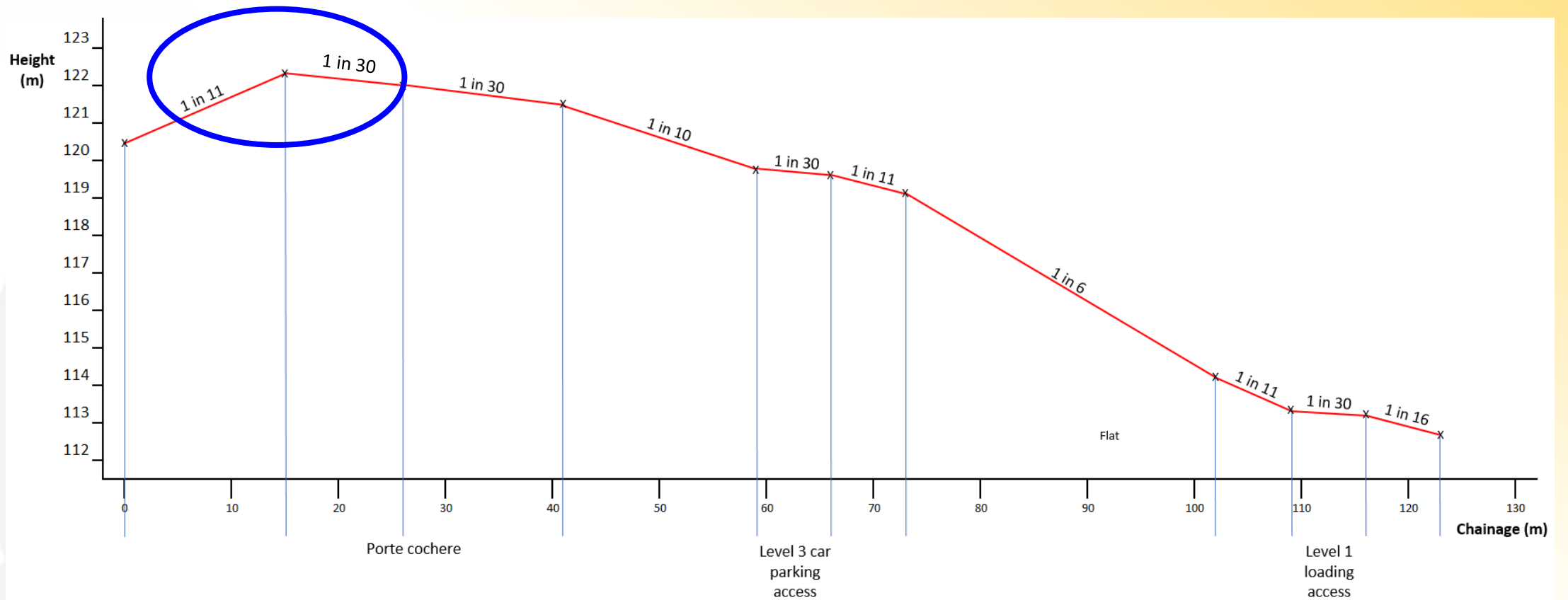
Long Section



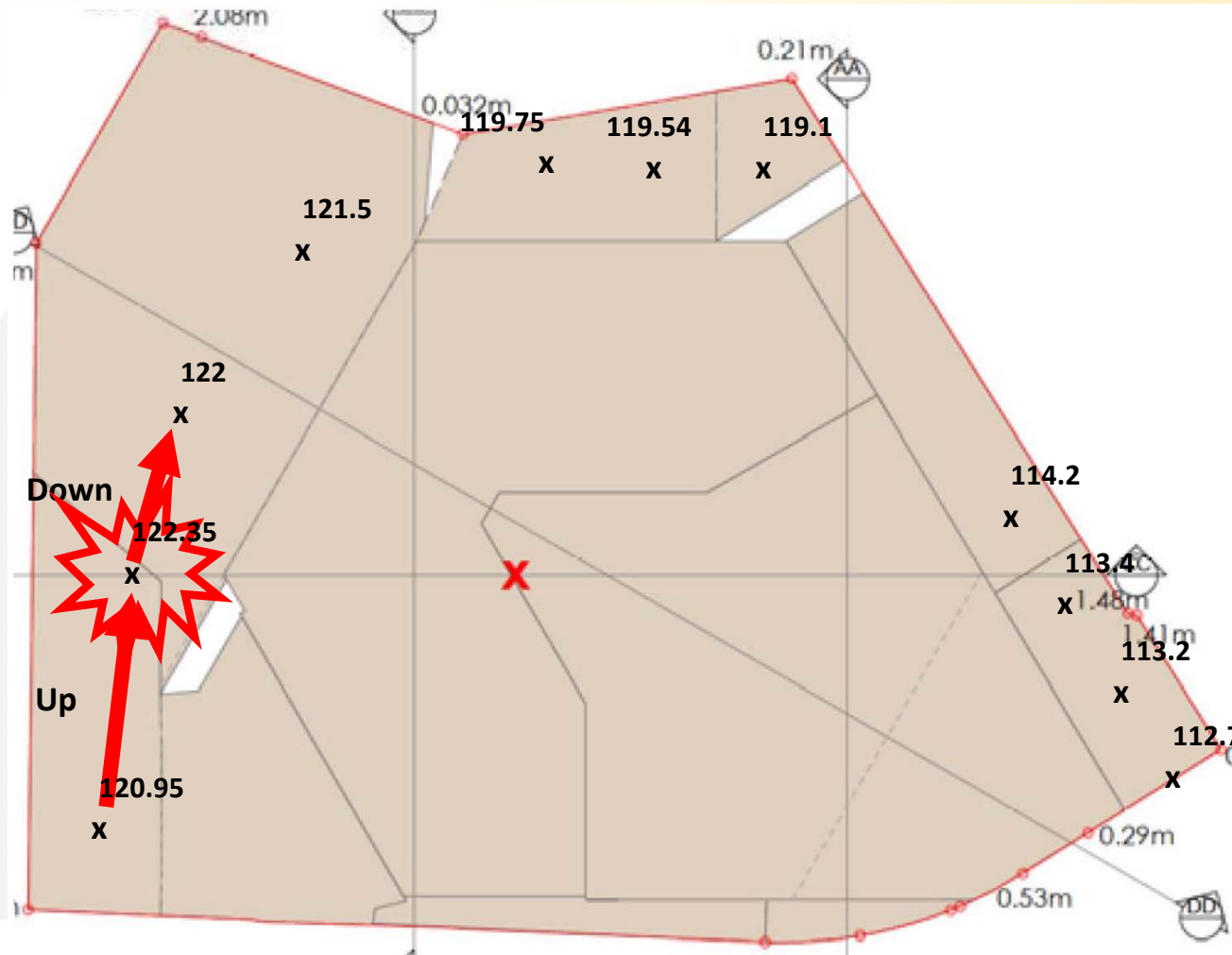
Calculate Missing Gradient



Summit Grade



Summit Grade



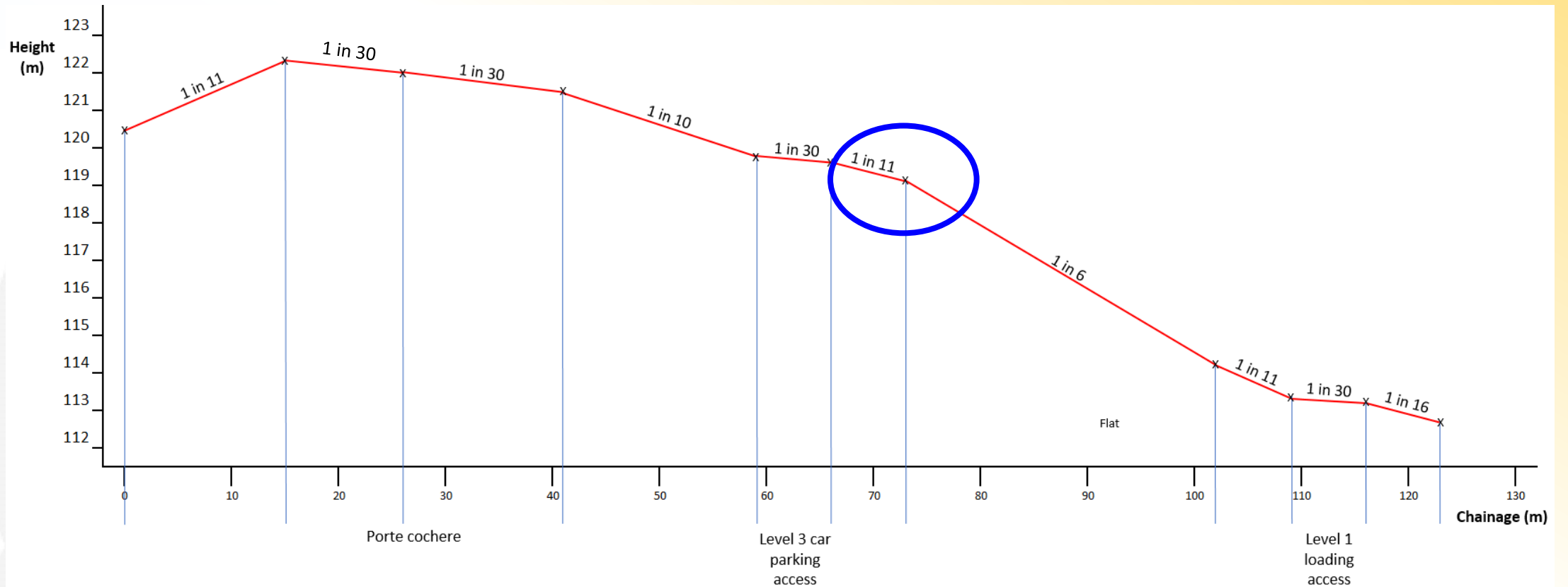
Applicant's plan shows 1 in 11 uphill, changes to 1 in 30 downhill

So total change in angle is 7.1 degrees, which equates to an overall change of gradient of 1 in 8.05

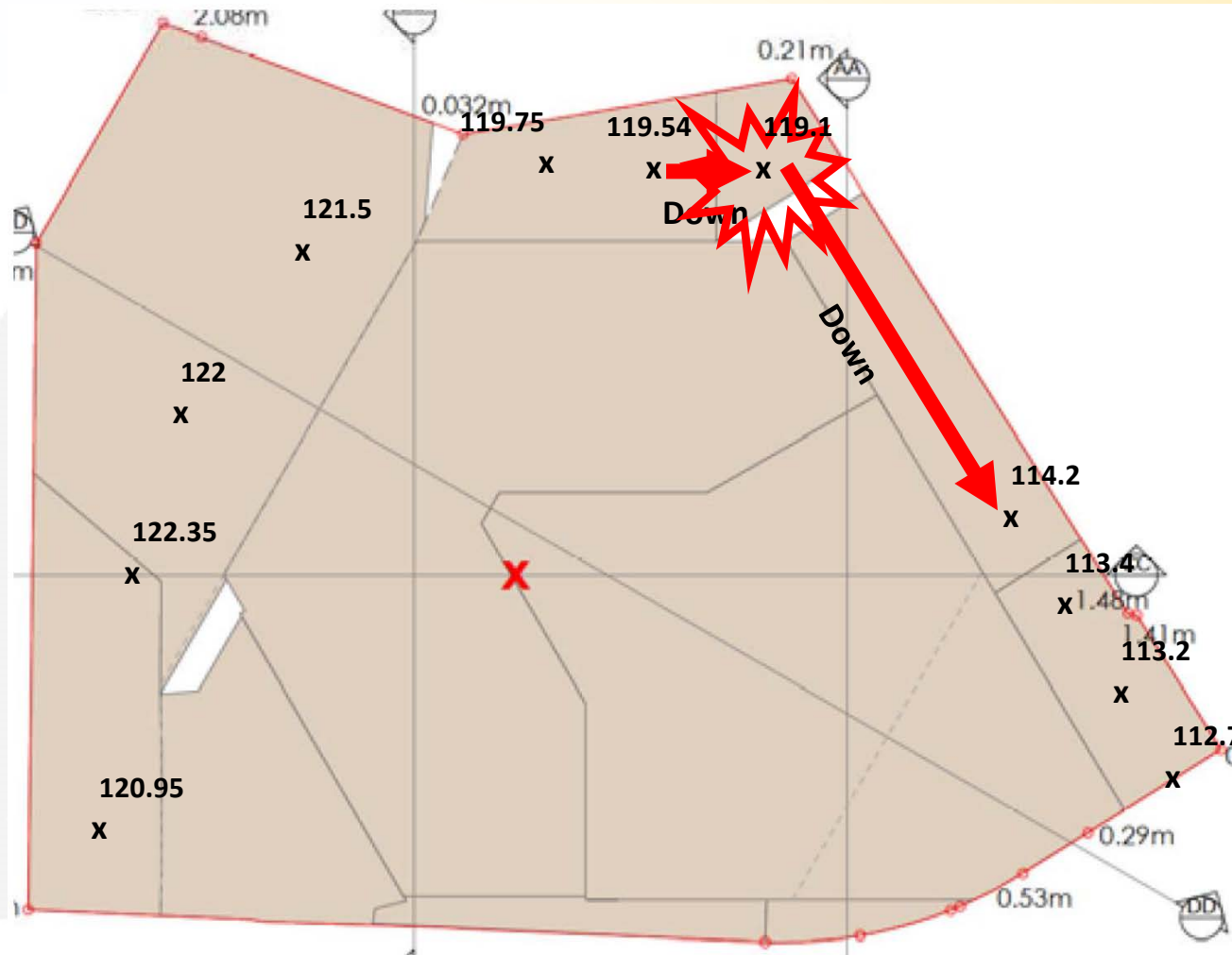
Problem: The maximum change of grade for a coach is 1 in 10.4 and for a service vehicle is 1 in 16 – otherwise they scrape or get jammed

So porte cochere remains unusable by coaches and service vehicles

Second Summit Grade



Second Summit Grade



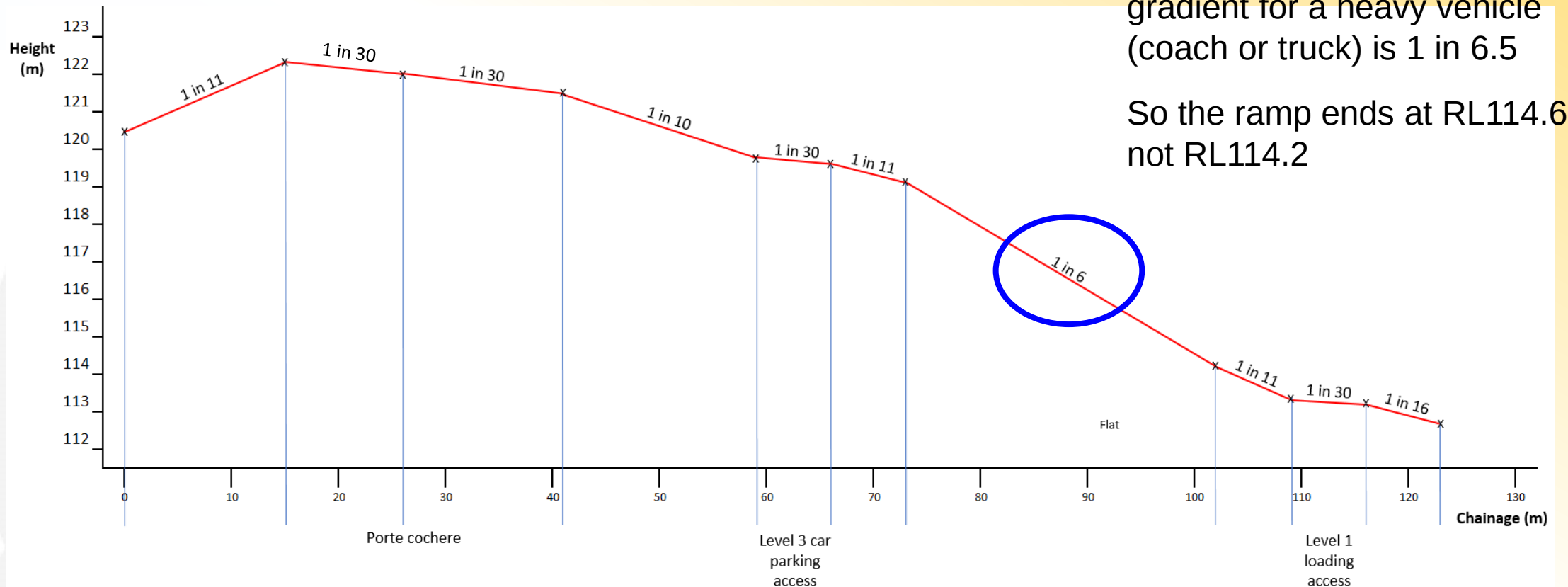
Applicant's plan shows 1 in 11 downhill, changes to 1 in 6 downhill

So total change in angle is 4.3 degrees, which equates to an overall change of grade of 1 in 13.4

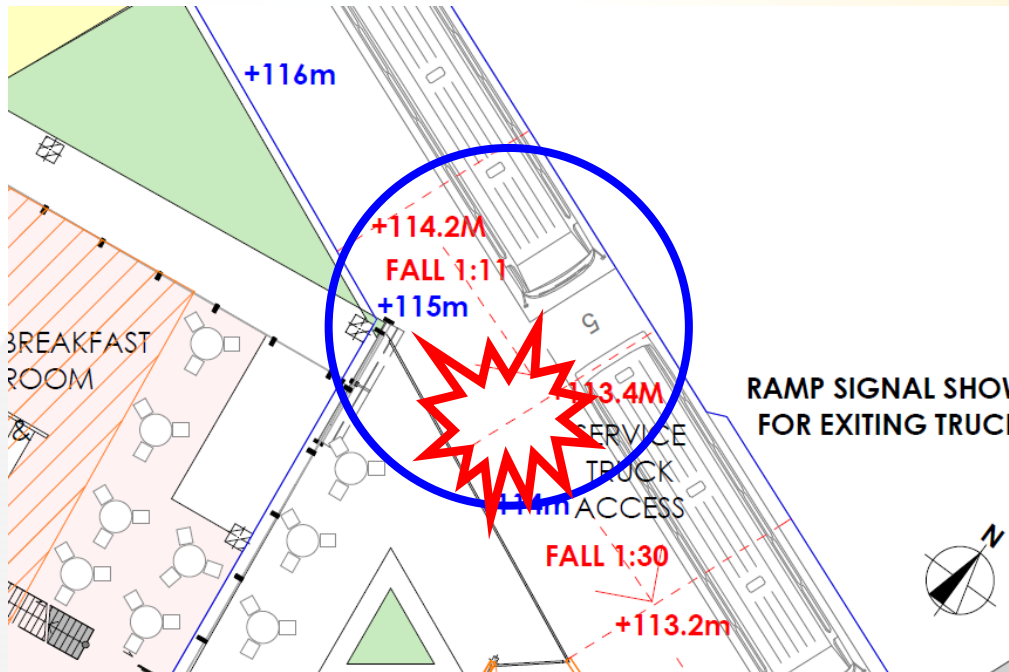
Problem: The maximum change of grade for a service vehicle is 1 in 16 – otherwise they scrape or get jammed

So service vehicles are unable to get to the loading bay

Steep Gradient



Miscalculation of Gradient



Change in level from 114.2m to 113.4m (0.8m) over a distance of 7m

Equates to a gradient of 1 in 8.8 **not** 1 in 11 as shown

So total change in angle is 4.6 degrees, which equates to an overall change of grade of 1 in 12.5

Problem: The maximum change of grade for a service vehicle is 1 in 16 – otherwise they scrape or get jammed

So service vehicles are unable to get to the loading bay

Summary: Perimeter Road

Applicant's plans show:

- Change in gradient near the porte cochere is too severe
 - Coaches and service vehicles cannot travel past the porte cochere
- Two other locations have changes of grade that are too severe for service vehicles
 - Service vehicles cannot access loading bay
- 1 in 6 gradient of ramp is too steep for heavy vehicles

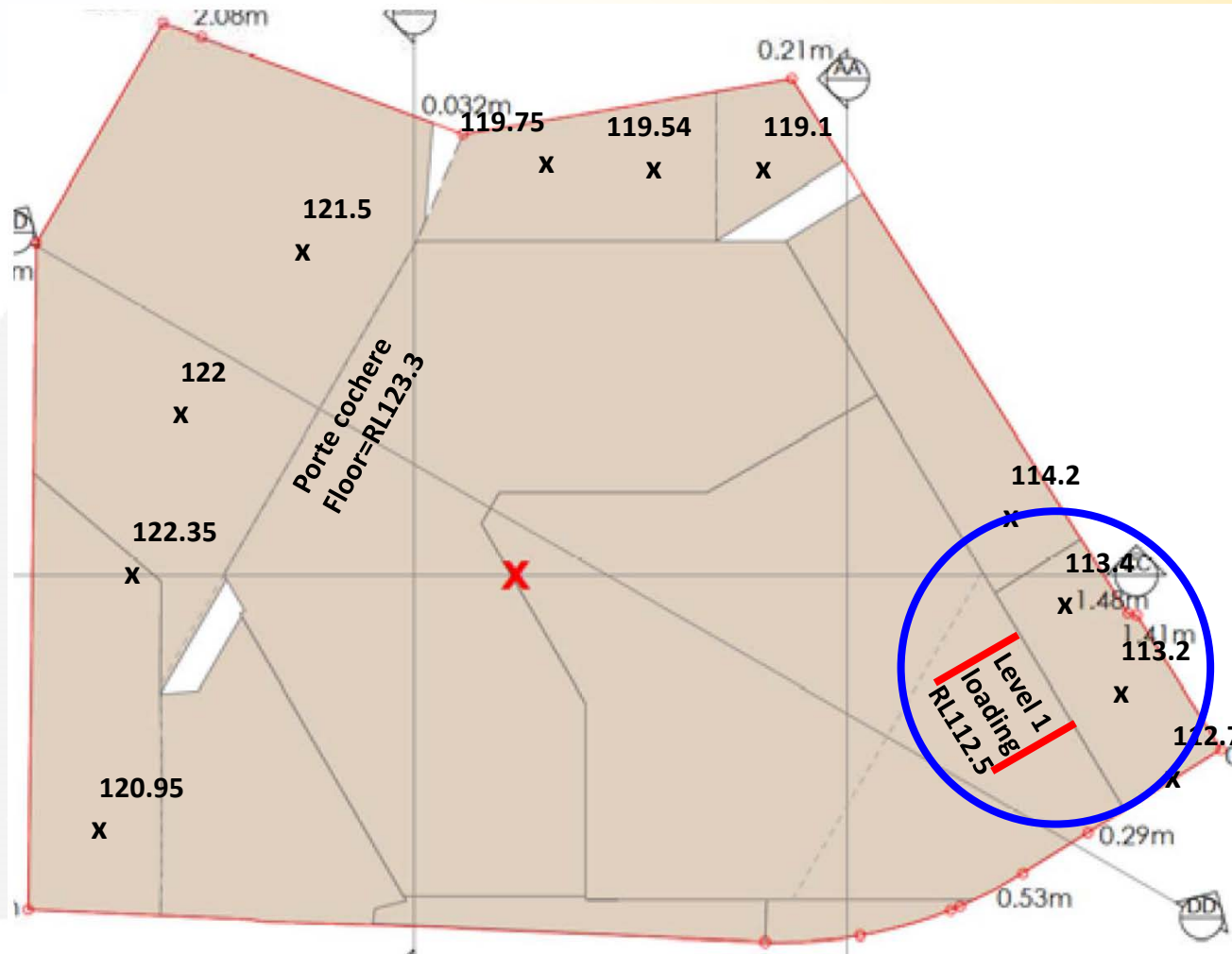
No viable transportation solution has yet been presented

Porte Cochere

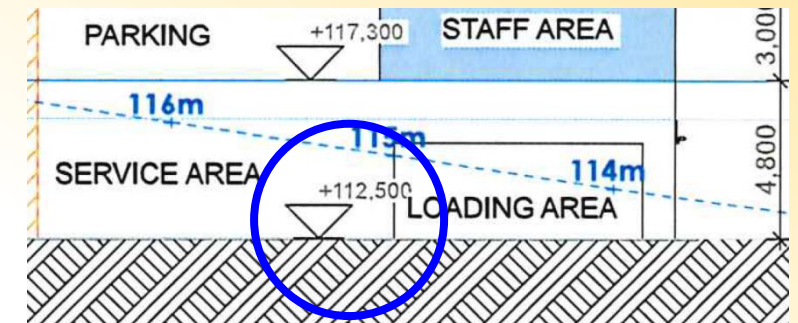
Change in levels:

- Area near porte cochere now shown at RL122
- Application as lodged showed RL123.1 here
- Therefore additional earthworks are required
- Additional effects due to construction traffic as more material moved off site
- Retaining wall on western side of the site needs to be 1.1m higher

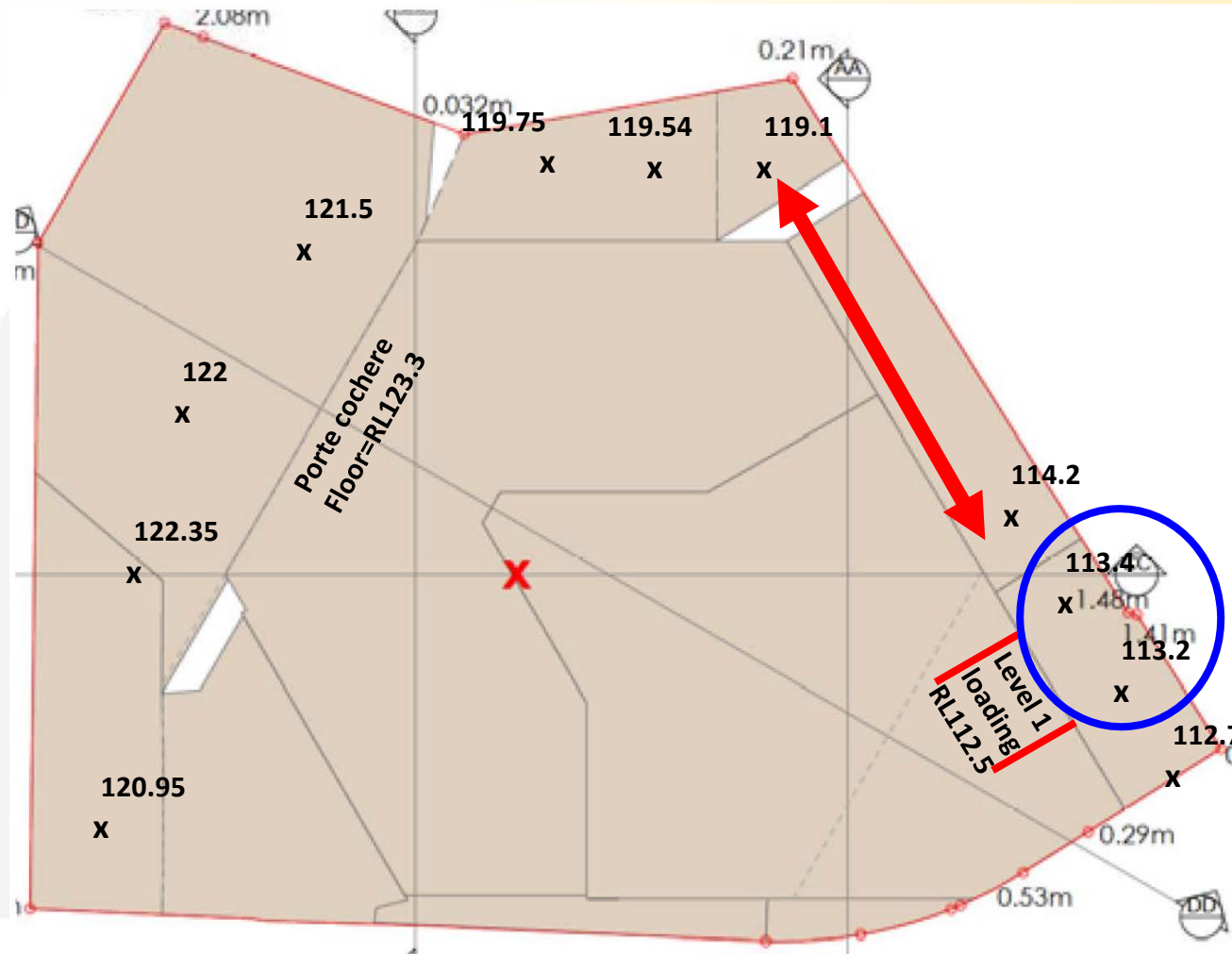
Loading Bay Access



Problem: Levels shown on perimeter road are at least 0.7m higher than the level shown on plan of cross-section



Level of Loading Bay (Option 1)



If the loading bay is at RL112.5 as cross-section plan shows, then the adjacent perimeter road needs to be lower

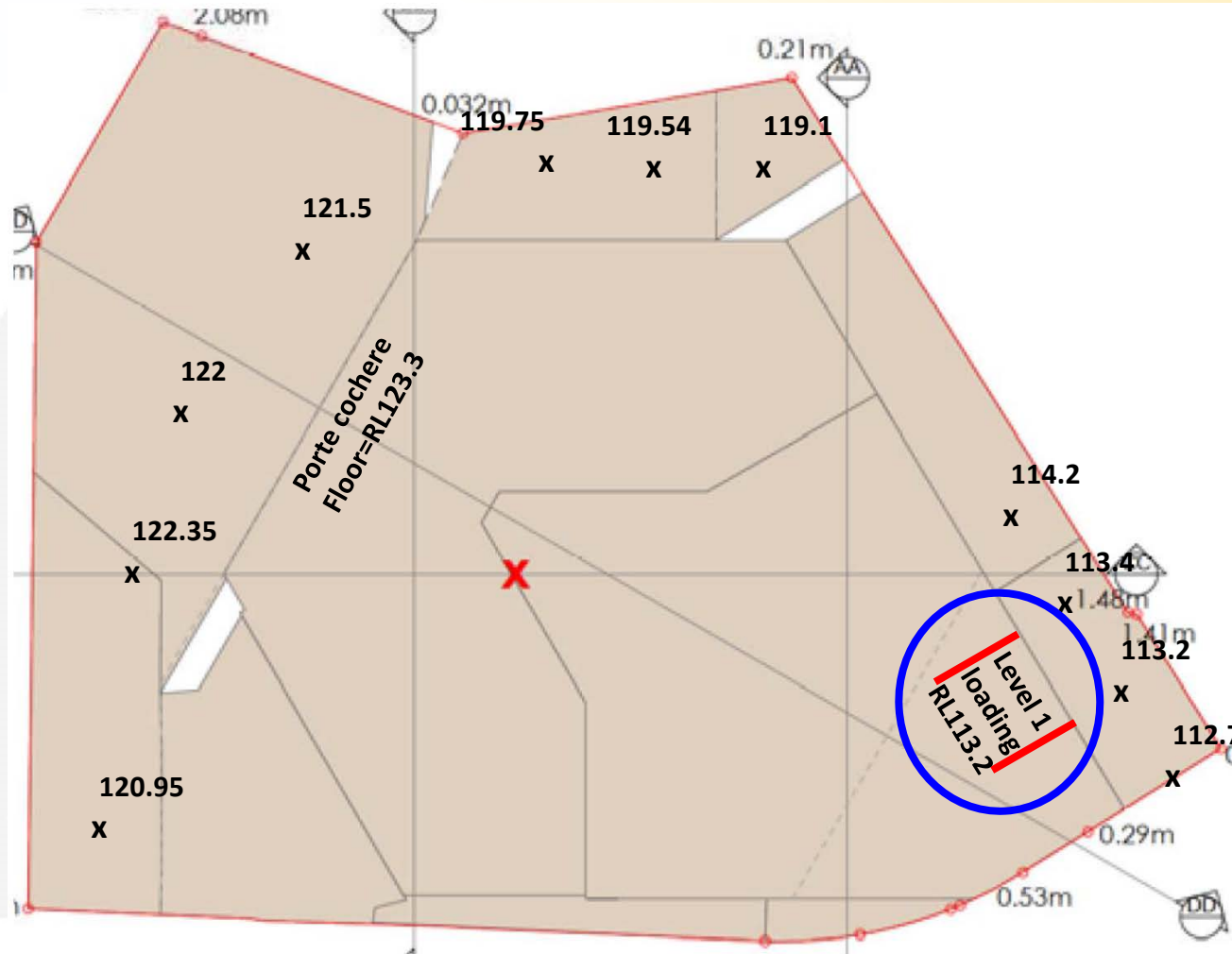
To do this, the gradient of the roadway needs to be steeper

The plans show that this is already 1 in 6

It would need to change to 1 in 5.3

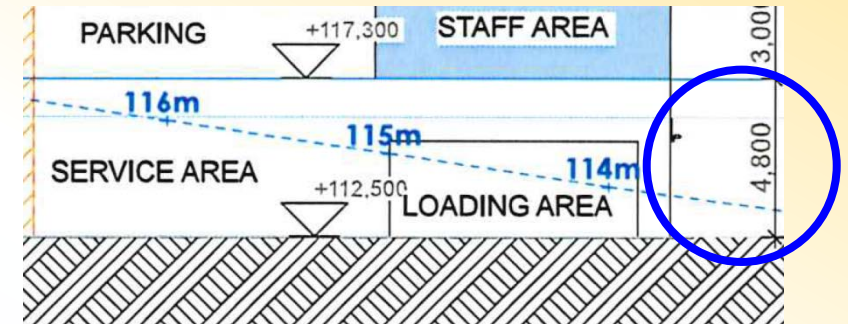
Coaches and service vehicles cannot traverse a gradient of more than 1 in 6.5

Level of Loading Bay (Option 2)



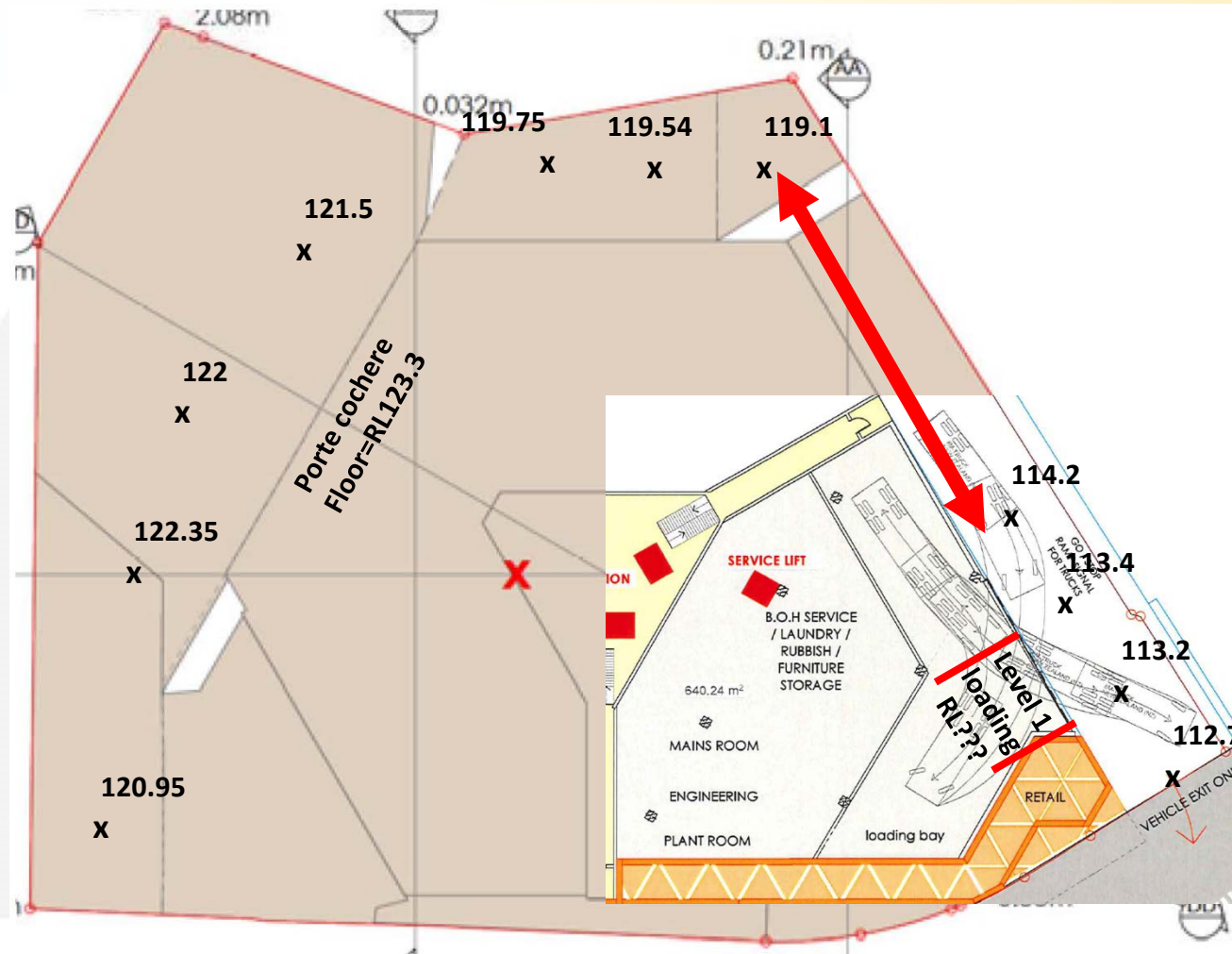
Loading bay could be elevated to the perimeter road (RL113.2)

However, cross-section plan shows 4.8m height clearance provided in loading bay at RL112.5



With the loading bay at RL113.2, this reduces to 4.1m, which is insufficient for a truck

Applicant's Swept Paths at the Loading Bay



Applicant's own swept paths show the trucks entering the loading bay on the steeper part of the perimeter road (1 in 8.8)

Truck would have severe crossfall with risk of toppling

So this part of the roadway needs to be flatter

Therefore the gradient of the preceding part of the roadway needs to be steeper

But it is already 1 in 6 and steeper than coaches and service vehicles can traverse

Summary: Loading Bay

Applicant's plans show different heights for the loading bay and the adjacent perimeter road:

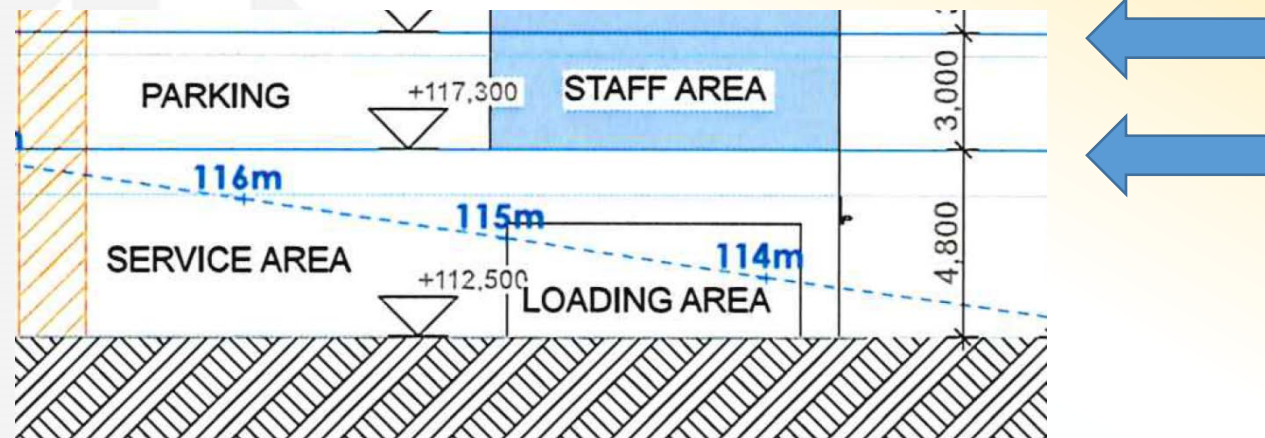
- If the loading bay height is as shown on the plans (RL112.5) then:
 - Gradient of perimeter road needs to be increased to 1 in 5.3
 - Unusable by coaches and service vehicles
- If the loading bay height is as per the adjacent perimeter road levels (RL113.2) then:
 - Height clearance within the loading bay is 4.1m
 - Insufficient for a truck (4.5m needed)
 - Loading bay unusable
- Truck enters loading bay on steeper part of roadway, not the flatter part
 - Risk of toppling

No viable transportation solution presented

Summary: Loading Bay

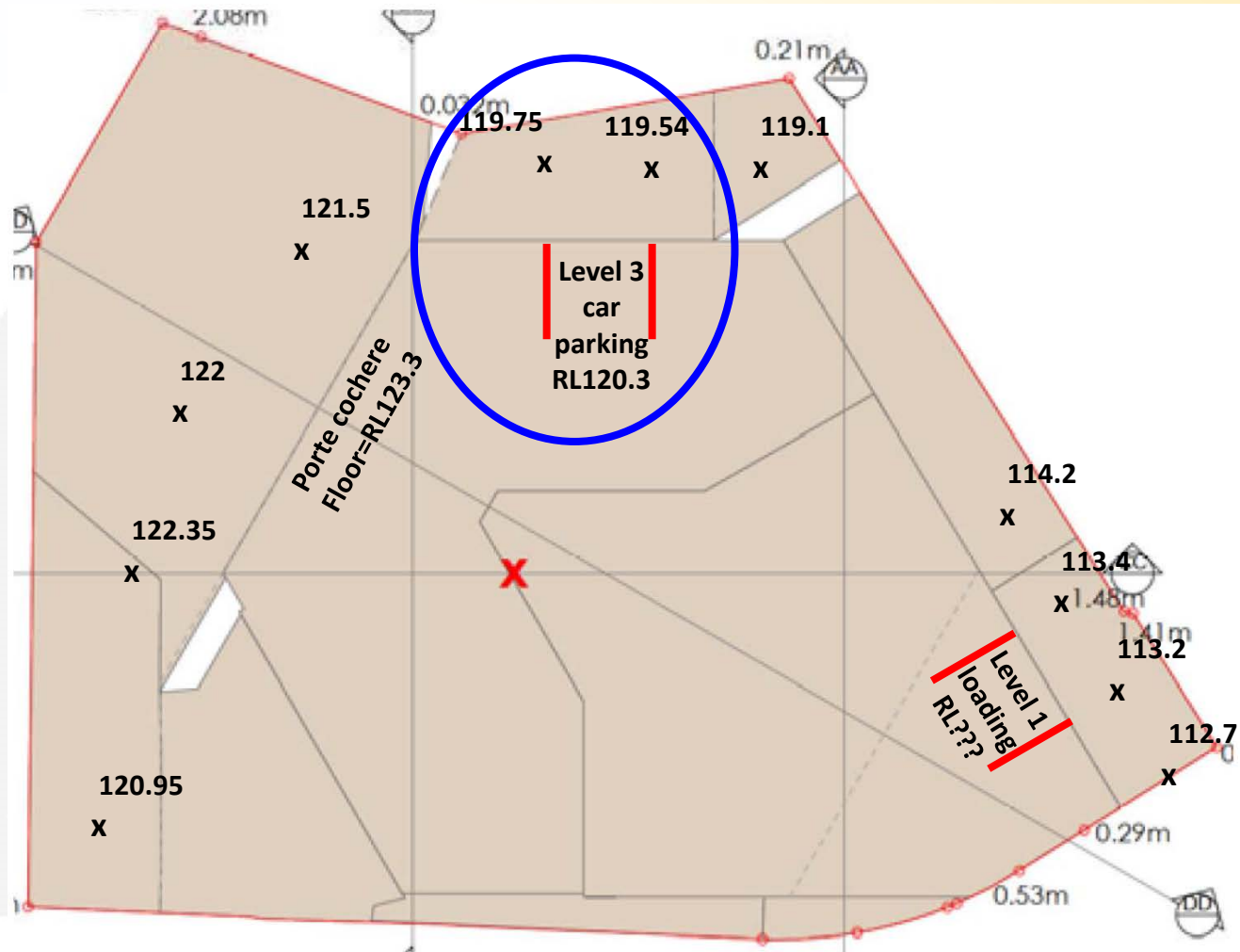
And also:

- The cross-section plan makes no allowance for the thickness of the floor itself

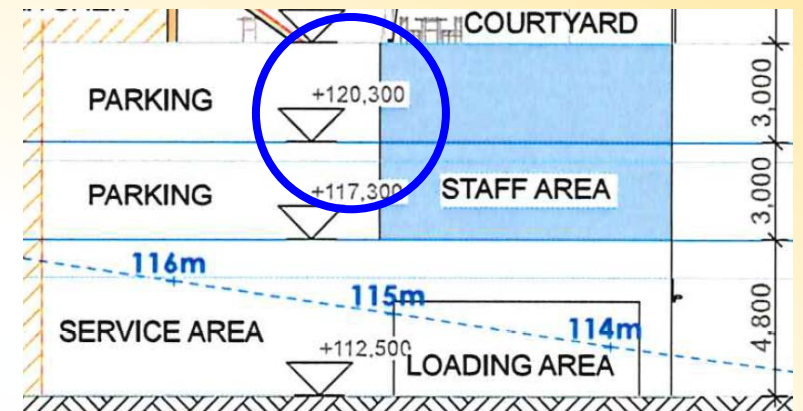


- AS2890.2:2002 requires a height clearance of 4.5m for trucks
- The applicant's plans even without any adjustments mean that the floor thickness can be no greater than 0.3m

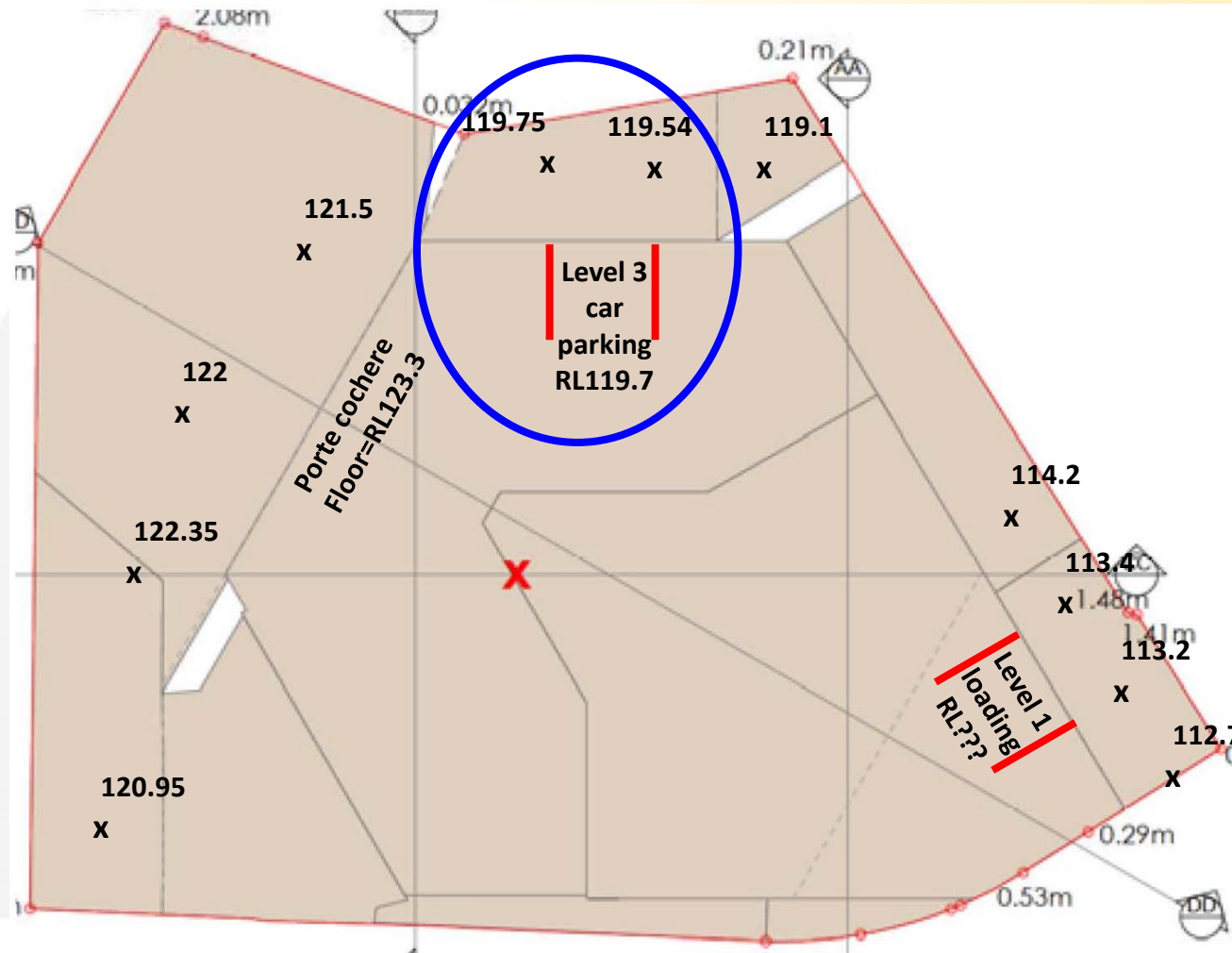
Car Park Access



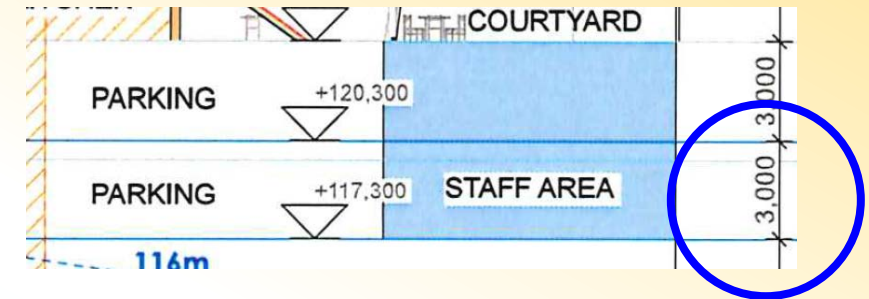
Problem: Levels shown on perimeter road are at least 0.55m lower than the level shown on plan of cross-section



Level of Car Park (Option 1)



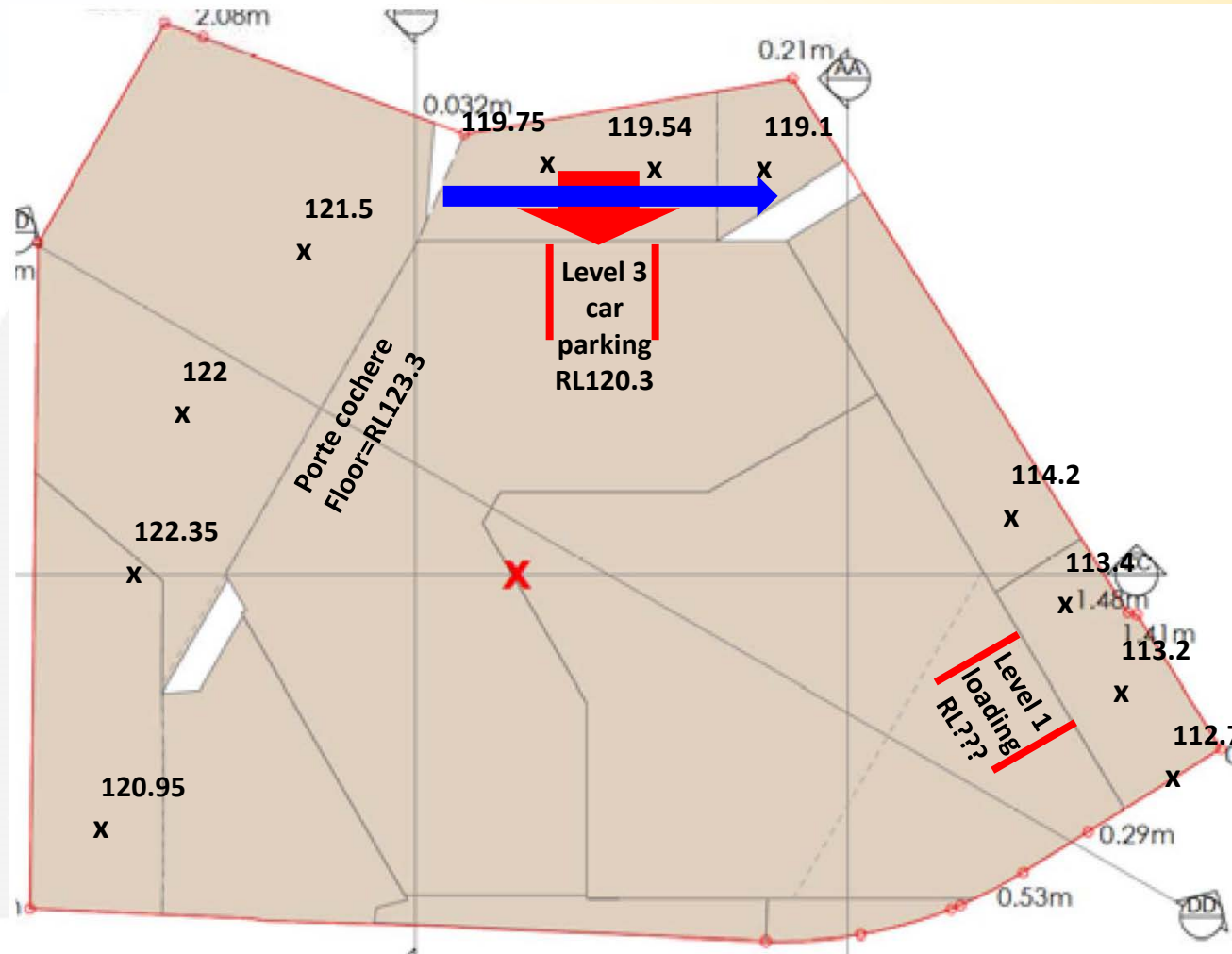
If the level of the car parking is reduced by 0.55m to match the roadway then the height clearance of car parking below reduces to 2.45m



This means headroom of lower level would be 2.15m (allowing 0.3m floor depth) which is too low for cars

Coaches and service vehicles cannot traverse a gradient of more than 1 in 6.5

Level of Car Park (Option 3)



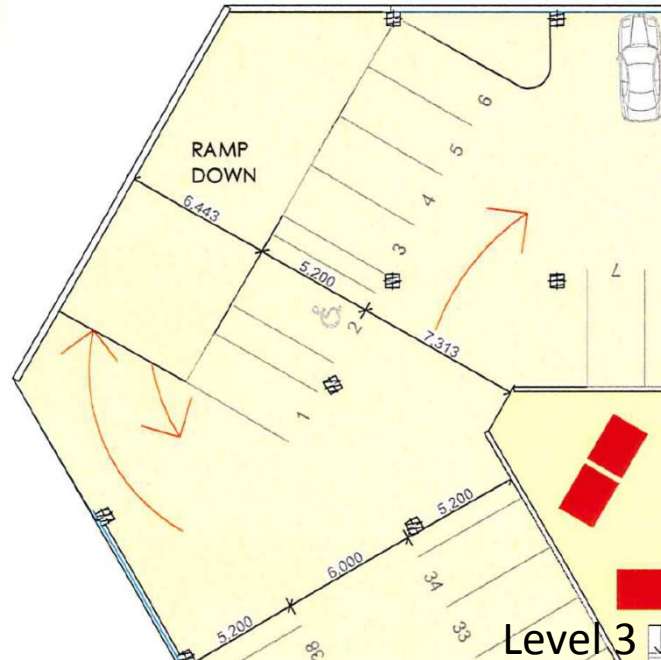
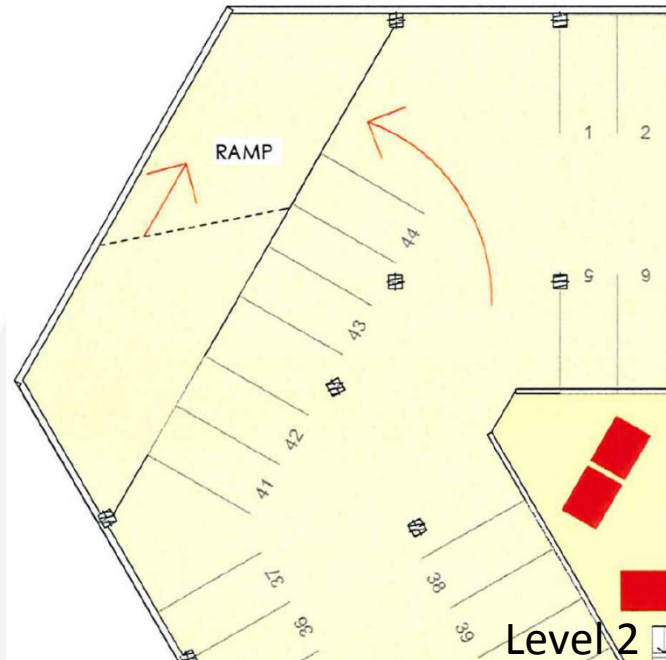
If levels were retained then a ramp could be created up to the car parking level

Ramp gradient would be 1 in 6.5 and usable by cars

But would mean a 1 in 6.5 crossfall for coaches and service vehicles

Coaches and service vehicles could not traverse this

Internal Ramp in Car Park



Length of ramp is 11.5m

Required change in height between floors is 3.0m

Therefore gradient is 1 in 3.8

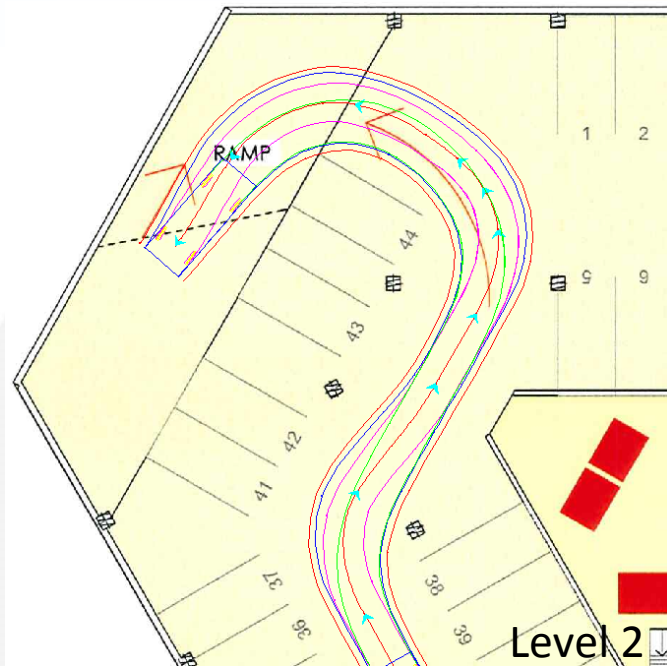
So transition ramps needed or cars will scrape bodywork or get jammed

Ramp must therefore be:

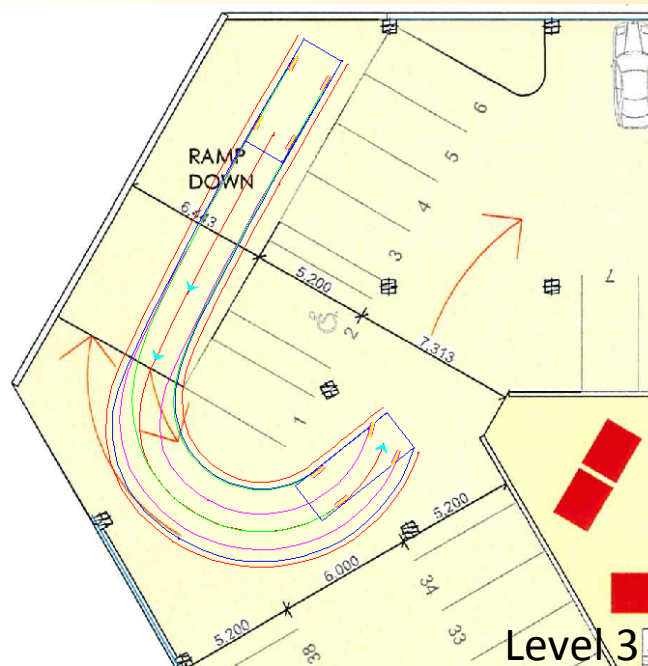
- 2m at 1 in 6.7 (transition)
- 7.5m at 1 in 3
- 2m at 1 in 8 (transition)

Problem: Main part of ramp at 1 in 3 is much greater than Standards permit

'Best Case' Swept Paths of Vehicles on Ramp



Blue line: vehicle bodywork
Red line: 0.3m clearance to vehicle bodywork



Car travelling up ramp on minimum radius occupies the full ramp width

Even if it could move to the side, it requires the full width to turn at the top

Therefore ramp and approaches can only operate as a single traffic lane

No robust controls proposed on ramp, so high potential for one car to encounter another

Valets would need to reverse on the ramp and around a blind corner



CARRIAGEWAY
CONSULTING

Summary: Car Parking Areas

Applicant's plans show different heights for the car parking level and the adjacent perimeter road:

- If the car parking level is lowered then there is insufficient headroom in the parking level below
- If the perimeter road is elevated then the gradient of the perimeter road becomes steeper and cannot be traversed by coaches or service vehicles
- If a ramp is provided into the car park then this creates adverse crossfall and the perimeter road cannot be traversed by coaches or service vehicles

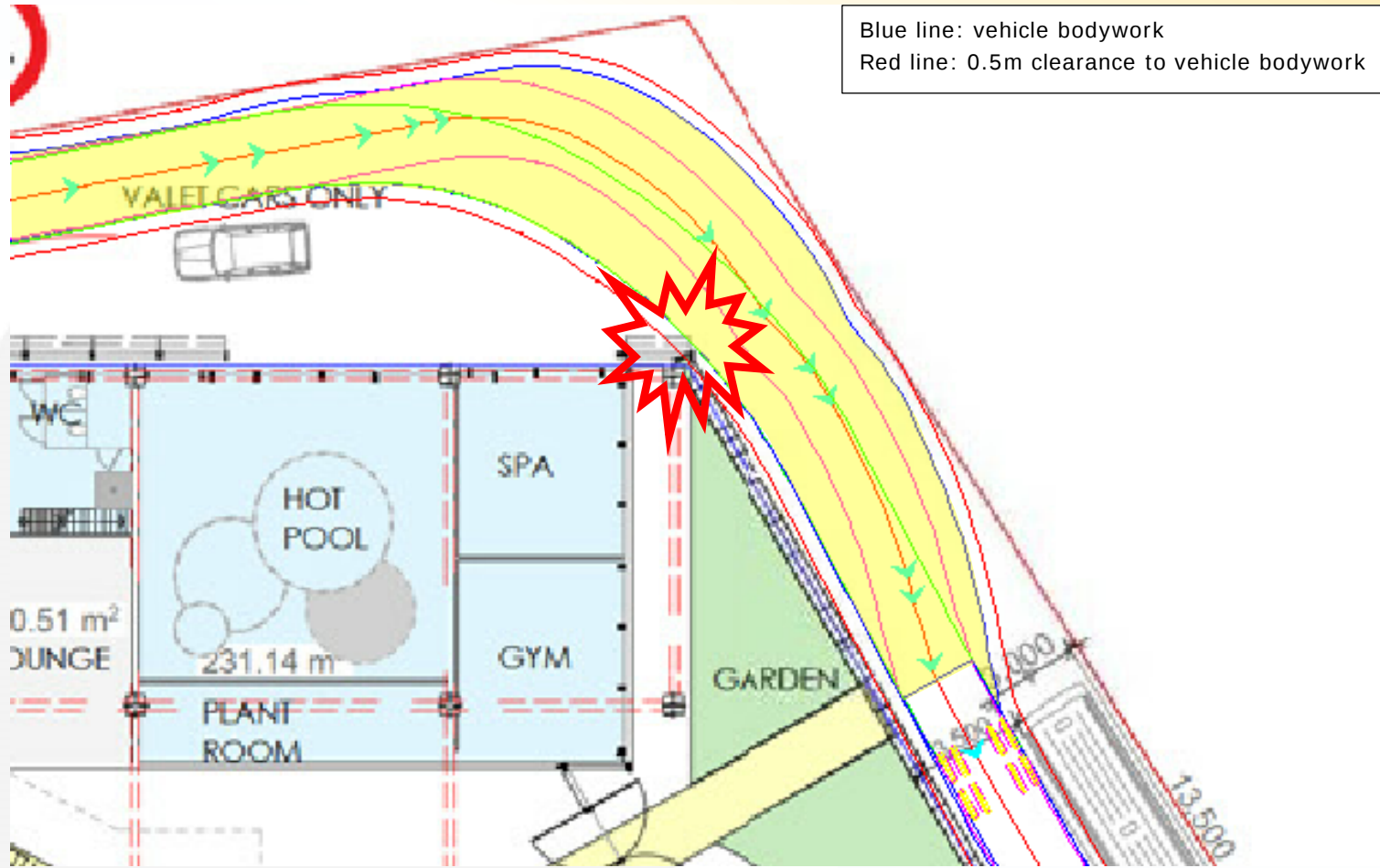
Summary: Car Parking Areas

Internal ramp between the two car parking levels:

- Gradient is too steep to comply with Standards
- Can only function as one traffic lane due to swept path requirements
 - No robust controls proposed to avoid vehicles meeting one another

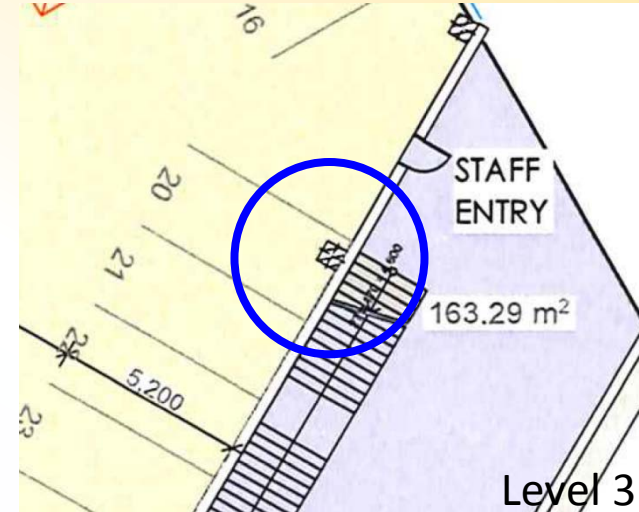
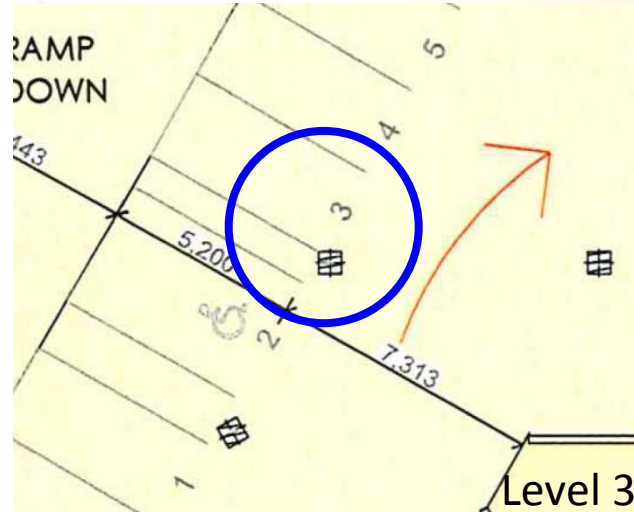
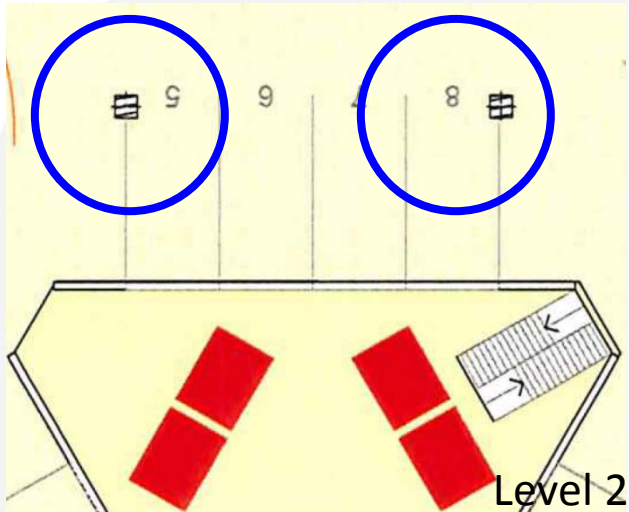
No viable transportation solution presented as yet

Coach Strikes Building?



Other Issues (1)

Unusable car parking spaces shown on plans (7 in total)



Other Issues (2)

- A coach parked in space 1 cannot exit unless coaches in spaces 2 and 3 are moved
- Service bay cannot be used while coaches are parked adjacent
- Unit-type vs guest room type accommodation: shortfall in car parking spaces
- Non-compliances with at least five District Plan rules not identified or discussed in the application

Moray Place / Filleul Street Roundabout

- Austroads Guide to Road Design Part 4B ('Roundabouts'):
 - Lack of deflection for vehicle exiting the site
 - Sight distance deficiency
 - Narrow islands / reduced footpath widths do not align with aims for the Strategic Pedestrian Network

Conclusions

- Major design deficiencies evident in initial application
- Amended design continues to have major design deficiencies
- No workable transportation solution presented for:
 - Perimeter road
 - Access to loading bay
 - Access to car parking
 - Access between car parking levels
- Design issues regarding proposed roundabout

