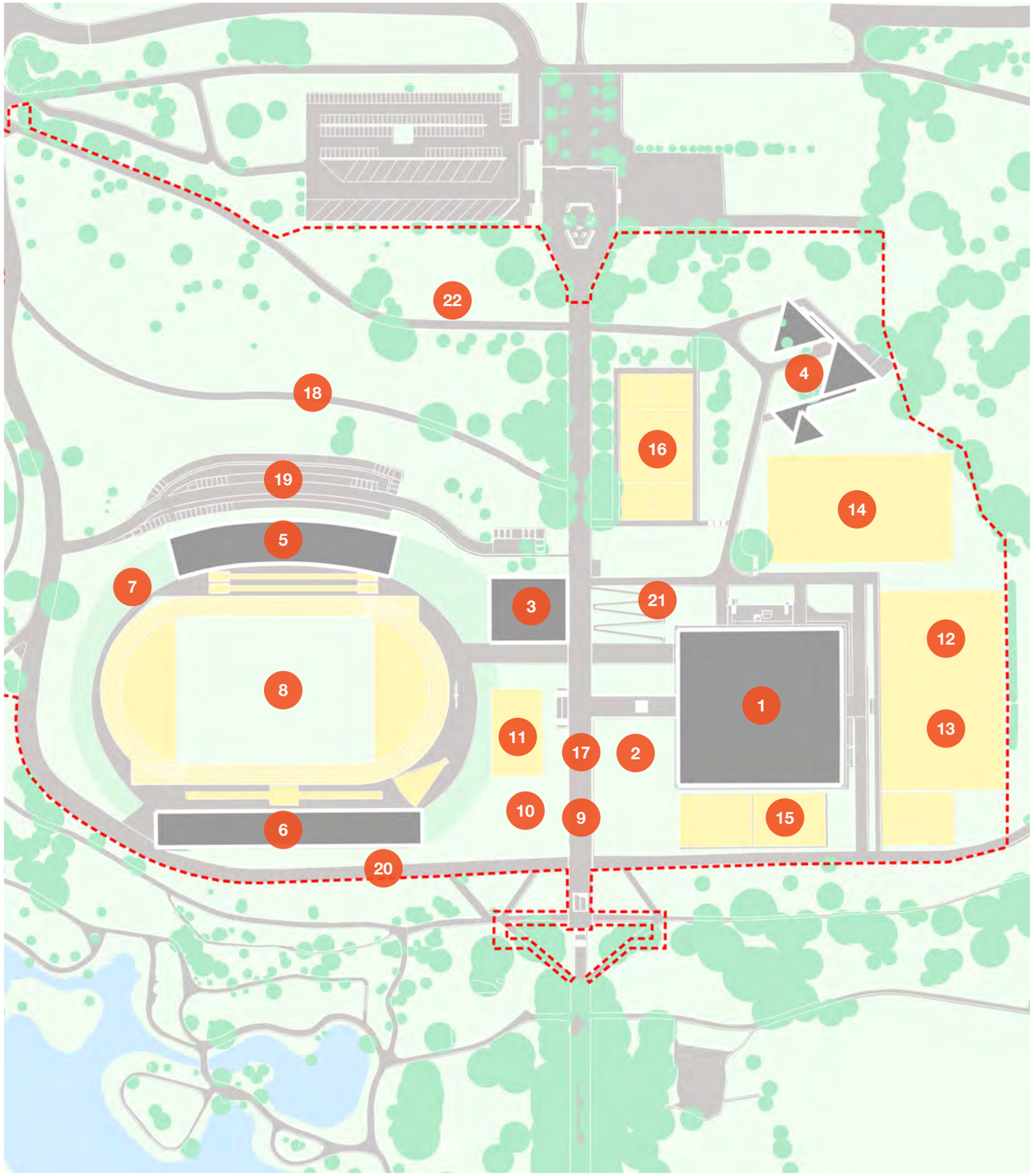


Scenario B: Lodge retained, 25m pool removed
This scenario is as per Scenario B, but with the pool space consolidated and 25m pool removed.

Main building & 25m pool
Refer to study 6.3.3 - 6.3.8.
1. Main building retained, reconfigured and refurbished. Main interventions include:
- Installation of a glazed screen, separating swimming pools from main sports hall to improve environmental conditions and building efficiency. Refer to study 6.3.5.
- Repairs and replacement of external building envelope, including roof, facade (glazing and concrete mullions), openable windows and blinds, fire exit doors.
- Gym and dry-diving facilities locations swapped. Additional mezzanine floors constructed to house gym studios. General reconfiguration of facilities to improve wayfinding.
- New small spa facility installed.
- Teaching pool removed and 50m pool extended to allow for installation of movable floor and boom.

2. 25m pool building removed.

Hub
Refer to study 6.4.1 (note: indoor athletics facility in this study to be replaced with flexible space as per study 6.4.2).
3. Hub building stripped out and refurbished as bar and clubrooms. Adjacent indoor 5-a-side football pitch and outdoor changing refurbished.

Lodge
Refer to study 6.5.2.
4. Lodge low-level building retained and refurbished, tower removed and replaced with new low-level hostel building.

Stadium & athletics
Refer to study 6.6.2.
5. West Stand retained and refurbished.
6. Jubilee Stand removed and replaced with new single-storey indoor athletics and strength & conditioning facility.
7. Stadium seating not below West Stand canopy removed and replaced with grass banks.
8. Athletics track and infield pitch retained in current location.

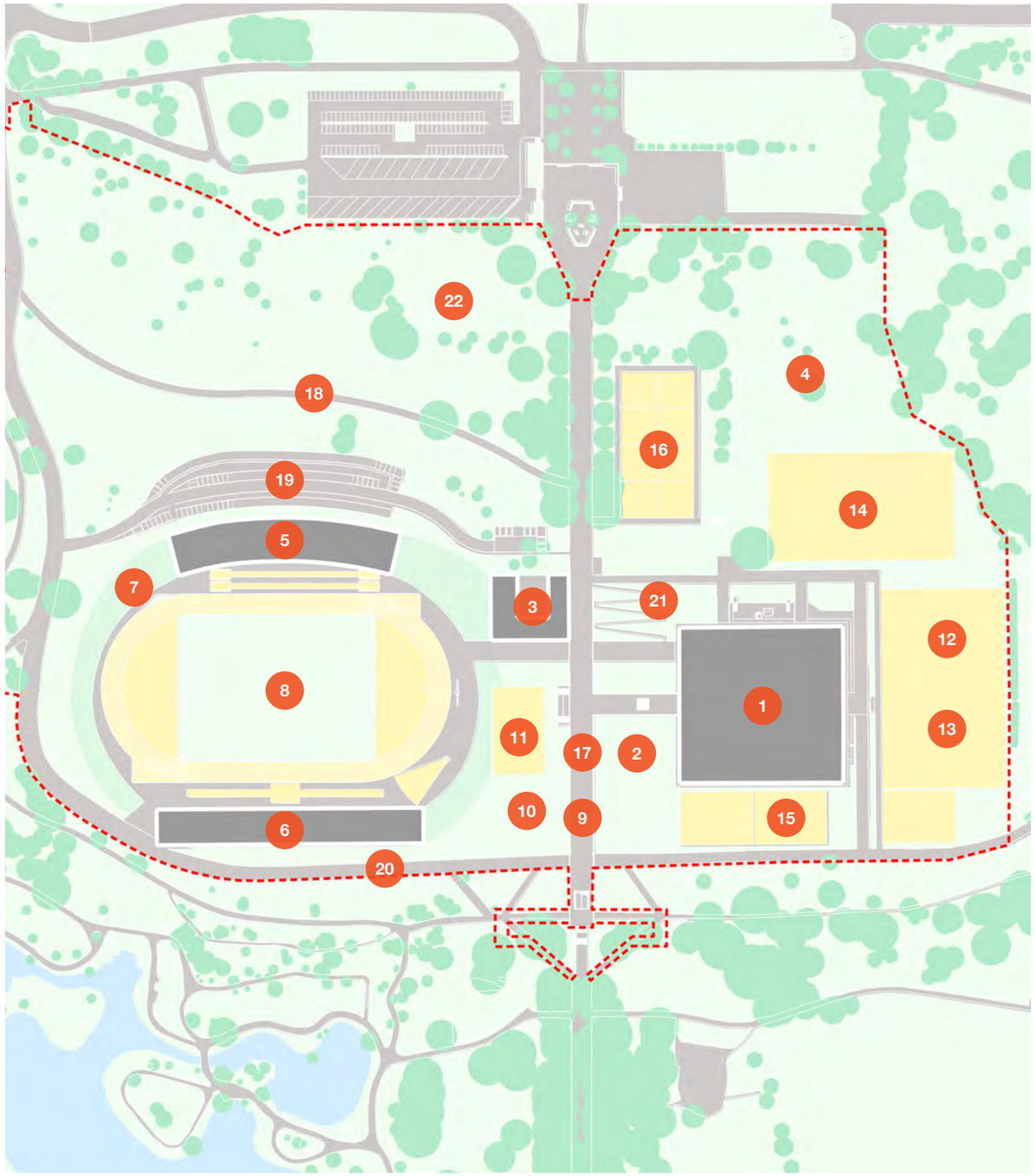
Raised walkway
Refer to study 6.7.4.
9. Raised walkway retained and refurbished, and reconfigured with new staircases and access points.

Outdoor pitches
Refer to study 6.8.
10. Outdoor hub space created around raised walkway.
11. Beach volleyball courts relocated.
12. Football dome removed.
13. Hockey pitch relocated to north of main building.
14. Additional hockey pitch constructed.
15. New small-sided football pitches constructed.
16. Tennis courts retained in current location.

Climbing & bouldering
Refer to study 6.9.
17. Existing indoor athletics and strength & conditioning relocated from below walkway (see 6), and new bouldering facility constructed below part of walkway.

Access & connections
18. Existing car-parking and hard-standing removed and area returned to parkland. New accessible pedestrian and cycle path constructed, with lighting.
19. Car-parking relocated to behind West Stand. Refer to study 6.10.3.
20. Eastern access road re-surfaced, parking and retaining wall removed.
21. New accessible ramps constructed from walkway level to outdoor hub. Refer to study 6.10.2.

Other
22. Existing houses removed and area returned to parkland.



Scenario C: Lodge and 25m pool removed

This scenario is as per Scenario B1, but with the Lodge removed and associated facilities relocated into a larger Hub building.

Main building & 25m pool

Refer to study 6.3.3 - 6.3.8.

1. Main building retained, reconfigured and refurbished. Main interventions include:
   - Installation of a glazed screen, separating swimming pools from main sports hall to improve environmental conditions and building efficiency. Refer to study 6.3.5.
   - Repairs and replacement of external building envelope, including roof, façade (glazing and concrete mullions), openable windows and blinds, fire exit doors.
   - Gym and dry-diving facilities locations swapped. Additional mezzanine floors constructed to house gym studios. General reconfiguration of facilities to improve wayfinding.
   - New small spa facility installed.
   - Teaching pool removed and 50m pool extended to allow for installation of movable floor and boom.
2. 25m pool building removed.

Hub

Refer to study 6.4.3 / 6.4.2.

3. Hub building stripped out. Indoor 5-a-side building removed. Hub re-built with 2 additional wings, creating courtyard building housing a bar, club space, education and conferencing facilities, and flexible space, use to be determined by future demand (eg. workspace, physiotherapy clinic, healthcare, soft play).

Lodge

4. Lodge removed, and associated facilities relocated into Hub.

Stadium & athletics

Refer to study 6.6.2.

5. West Stand retained and refurbished.
6. Jubilee Stand removed and replaced with new single-storey indoor athletics and strength & conditioning facility.
7. Stadium seating not below West Stand canopy removed and replaced with grass banks.
8. Athletics track and infield pitch retained in current location.

Raised walkway

Refer to study 6.7.4.

9. Raised walkway retained and refurbished, and reconfigured with new staircases and access points.

Outdoor pitches

Refer to study 6.8.

10. Outdoor hub space created around raised walkway.
11. Beach volleyball courts relocated.
12. Football dome removed.
13. Hockey pitch relocated to north of main building.
14. Additional hockey pitch constructed.
15. New small-sided football pitches constructed.
16. Tennis courts retained in current location.

Climbing & bouldering

Refer to study 6.9.

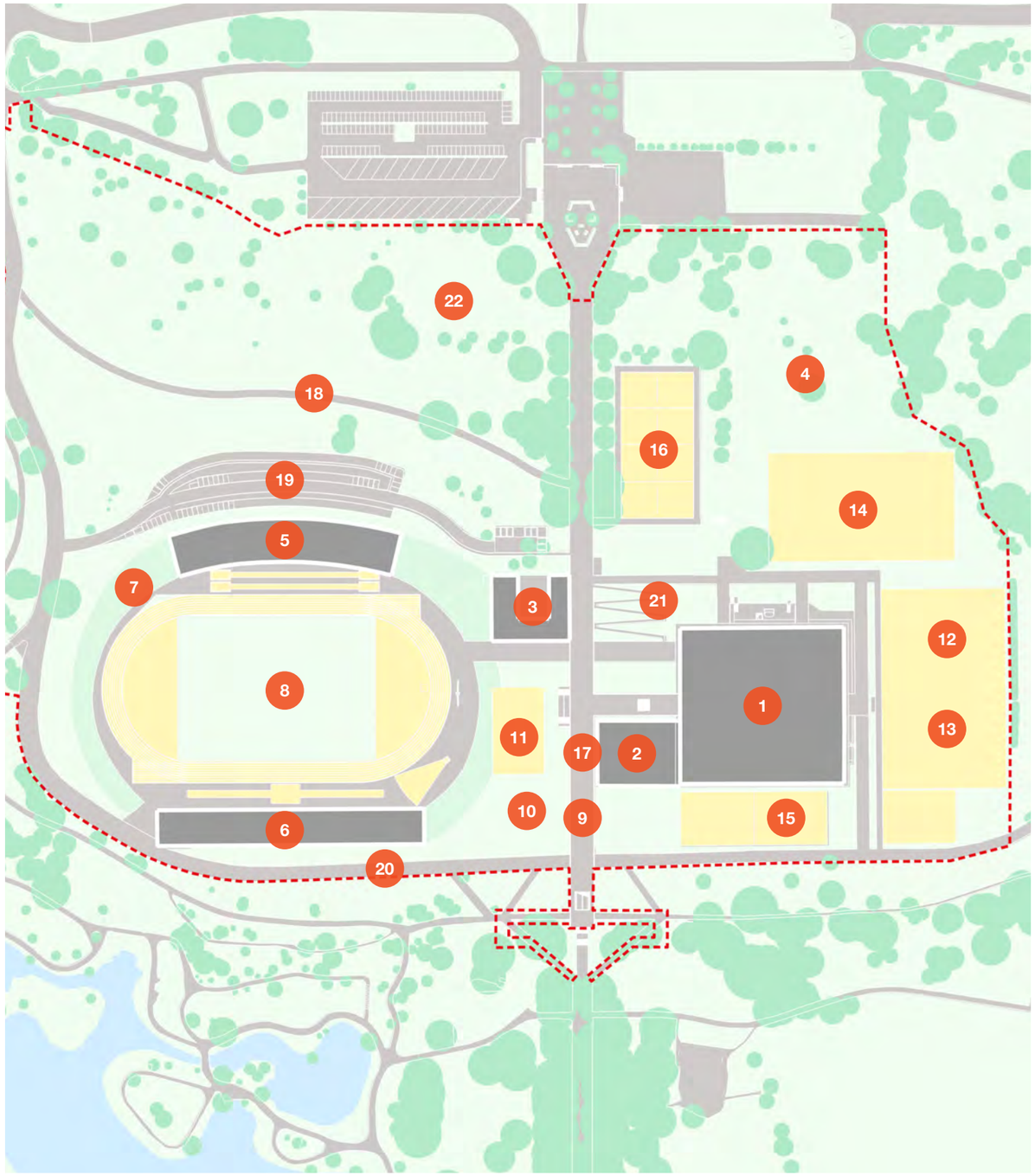
17. Existing indoor athletics and strength & conditioning relocated from below walkway (see 6), and new bouldering facility constructed below part of walkway.

Access & connections

18. Existing car-parking and hard-standing removed and area returned to parkland. New accessible pedestrian and cycle path constructed, with lighting.
19. Car-parking relocated to behind West stand. Refer to study 6.10.2.
20. Eastern access road re-surfaced, parking and retaining wall removed.
21. New accessible ramps constructed from walkway level to outdoor hub. Refer to study 6.10.2.

Other

22. Existing houses removed and area returned to parkland.



Scenario C1: Lodge removed and 25m pool retained
This scenario is as per Scenario C, but with the 25m pool retained.

Main building & 25m pool
Refer to study 6.3.1 - 6.3.5.
1. Main building retained, reconfigured and refurbished. Main interventions include:
- Installation of a glazed screen, separating swimming pools from main sports hall to improve environmental conditions and building efficiency. Refer to study 6.3.5.
- Repairs and replacement of external building envelope, including roof, façade (glazing and concrete mullions), openable windows and blinds, fire exit doors.
- Gym and dry-diving facilities locations swapped. Additional mezzanine floors constructed to house gym studios. General reconfiguration of facilities to improve wayfinding.
- New small spa facility installed.

2. 25m pool building and facilities retained and fully refurbished. Teaching and studio space within the building refurbished as flexible space, to be used for educational purposes or other dependant on demand. Façade refurbished and opened up with new glazing.

Hub
Refer to study 6.4.3 / 6.4.2.
3. Hub building stripped out. Indoor 5-a-side building removed. Hub re-built with 2 additional wings, creating courtyard building housing a bar, club space, education and conferencing facilities, and flexible space, use to be determined by future demand (eg. workspace, physiotherapy clinic, healthcare, soft play).

Lodge
4. Lodge removed, and associated facilities relocated into Hub.

Stadium & Athletics
Refer to study 6.6.2.
5. West Stand retained and refurbished.
6. Jubilee Stand removed and replaced with new single-storey indoor athletics and strength & conditioning facility.
7. Stadium seating not below West Stand canopy removed and replaced with grass banks.
8. Athletics track and infield pitch retained in current location.

Raised walkway
Refer to study 6.7.4.
9. Raised walkway retained and refurbished, and reconfigured with new staircases and access points.

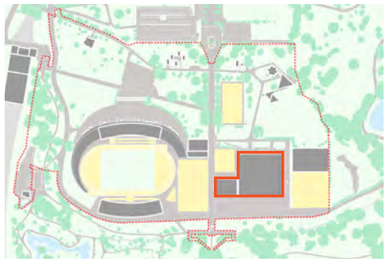
Outdoor pitches
Refer to study 6.8.
10. Outdoor hub space created around raised walkway.
11. Beach volleyball courts relocated.
12. Football dome removed.
13. Hockey pitch relocated to north of main building.
14. Additional hockey pitch constructed.
15. New small-sided football pitches constructed.
16. Tennis courts retained in current location.

Climbing & bouldering
Refer to study 6.9.
17. Existing indoor athletics and strength & conditioning relocated from below walkway (see 6), and new bouldering facility constructed below part of walkway.

Access & connections
18. Existing car-parking and hard-standing removed and area returned to parkland. New accessible pedestrian and cycle path constructed, with lighting.
19. Car-parking relocated to behind West stand. Refer to study 6.10.2.
20. Eastern access road re-surfaced, parking and retaining wall removed.
21. New accessible ramps constructed from walkway level to outdoor hub. Refer to study 6.10.2.

Other
22. Existing houses removed and area returned to parkland.

6 Design studies
6.3 The main building
6.3.1 Level 00 - Study with 25m pool



Key plan

Some straightforward moves can be made to improve circulation around the main building, such as clustering sports together.

Options are presented for the main building with and without the 25m pool. Refer to 6.3.6 - 6.3.8 for studies without the 25m pool.

What is provided?

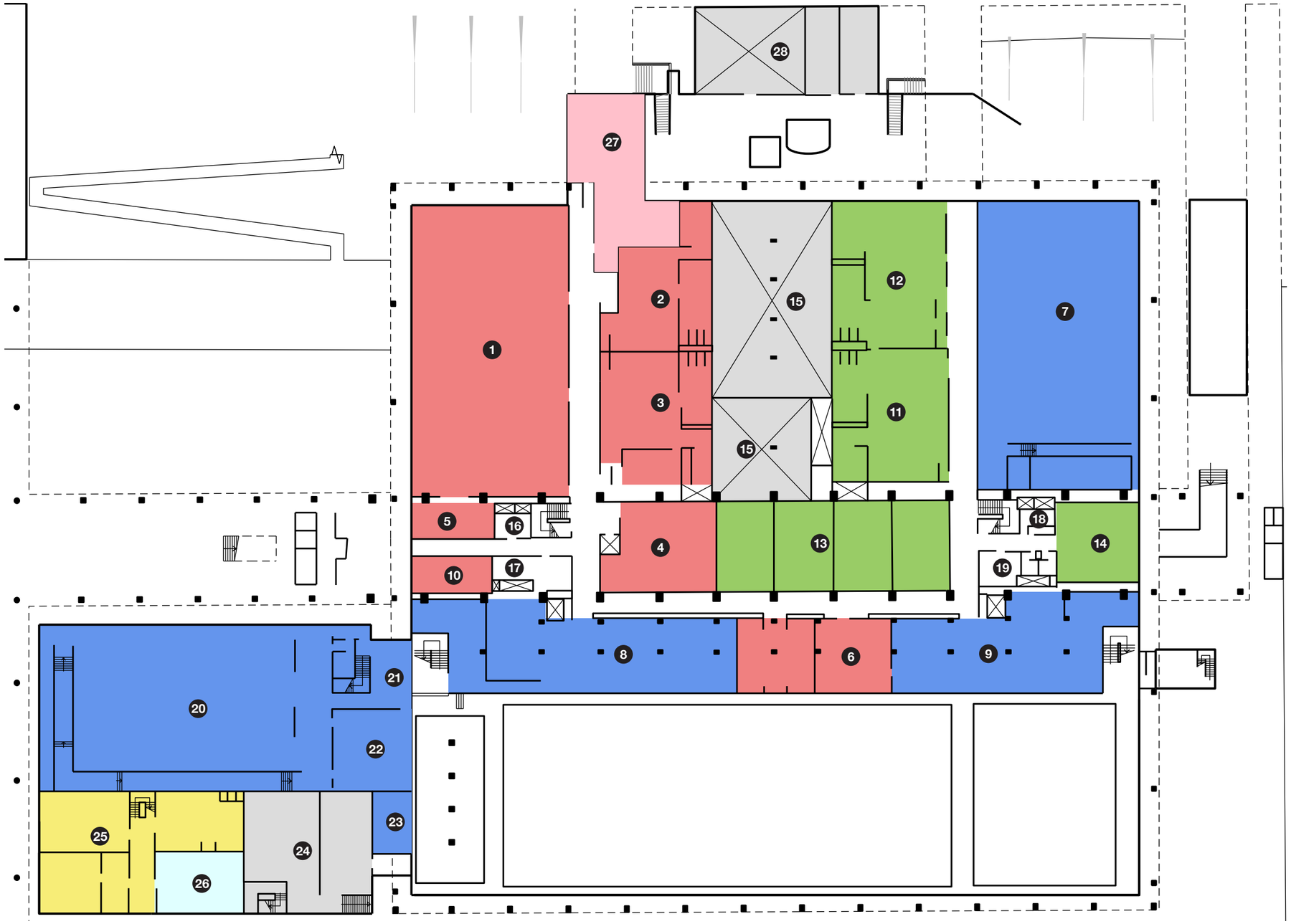
- New relocated gym, and fitness studios.
- New spa facility.
- New relocated dry diving facility.
- Refurbished changing rooms.
- Refurbished squash courts.
- Refurbished 25m pool.
- New flexible space to provide opportunity for non-sport facilities eg. workspace or soft play.

How is this achieved?

- Move gym and fitness suite to front of building.
- Move dry diving to back of building. This is in line with the Crystal Palace Diving Club's plans for a new improved diving facility.
- Convert storage to spa facility and provide alternative storage space.
- Convert classrooms to flexible space.
- Refurbishment of all facilities retained and works to building external envelope.

This study is included in Scenarios A1, B and C1.

1. Gym & fitness suite
2. Male gym changing
3. Female gym changing
4. Gym studio 1
5. Gym store
6. Spa facility
7. Dry diving
8. Female wet changing
9. Male wet changing
10. Pool store
11. Female changing for indoor sports
12. Male changing for indoor sports
13. 4no. squash courts
14. Indoor sports meeting room
15. Plant room
16. Switch room
17. Store
18. WCs
19. Store
20. 25m pool
21. Male wet changing
22. Female wet changing
23. Accessible wet changing
24. Pool plant
25. Flexible space (option to fit out as workspace / soft play / education)
26. Flexible space (option to fit out as retail / cycle workshop)
27. Staff amenities
28. Plant room



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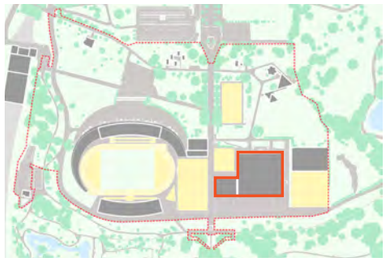
6 Design studies
6.3 The main building
6.3.2 Level 01 - Study with 25m pool



Key plan

What is provided?

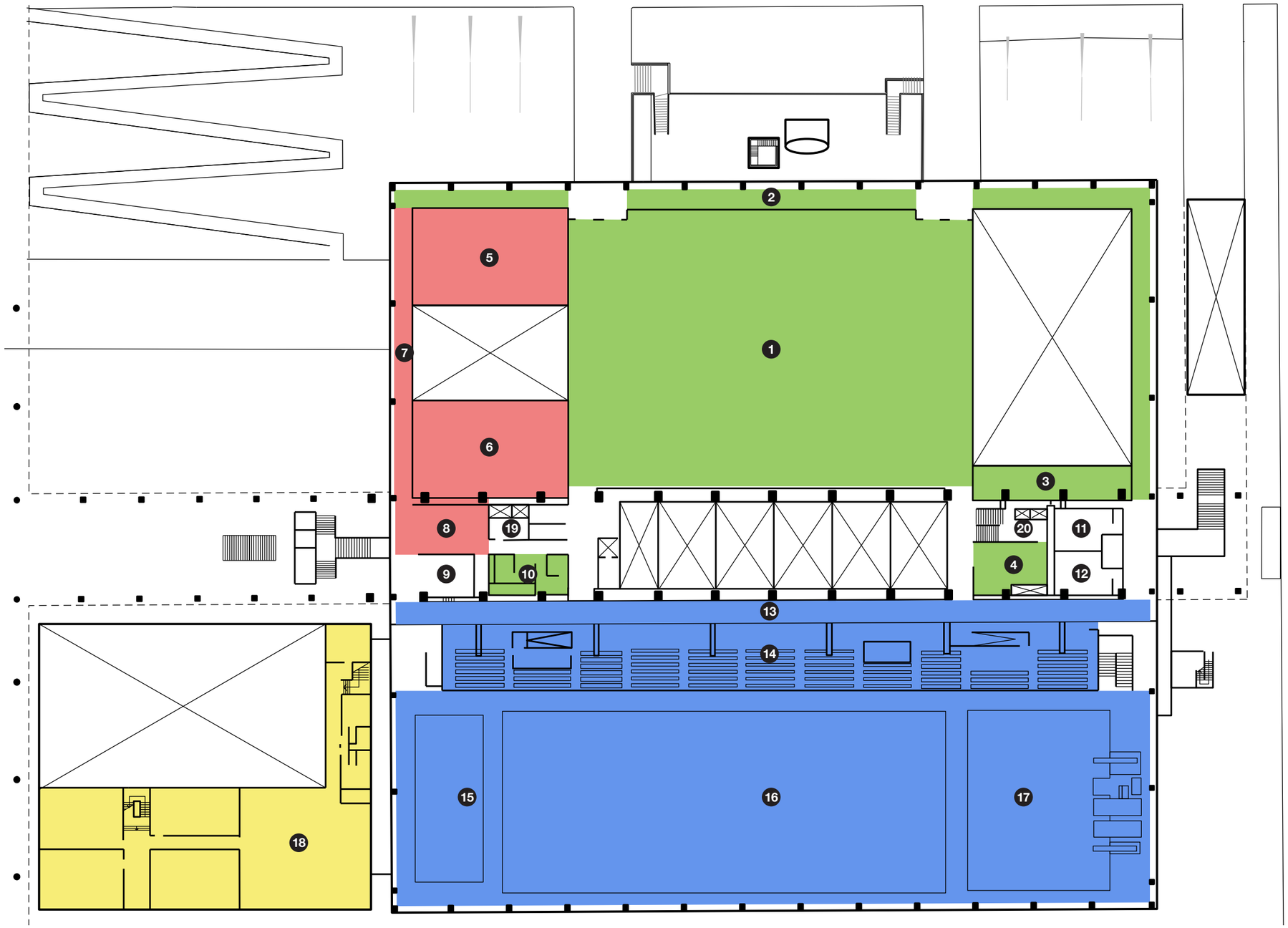
– New relocated fitness studios.
– Refurbished pools.
– New flexible space to provide opportunity for non-sport facilities eg. workspace or soft play.
– Refurbished main hall.
– Additional equipment storage for the main hal.l

How is this achieved?

– Construct mezzanine floor above gym to provide 2 new studios, consolidating gym and fitness facilities in one zone.
– Convert classrooms to flexible space.
– Refurbishment of all facilities retained and works to building external envelope.
– Construct a small infill slab above the dry diving to create additional storage space for the main hall.

This study is included in Scenarios A1, B and C1.

1. Main hall
2. Main hall storage
3. New main hall storage
4. Main hall storage
5. New mezzanine gym studio 2
6. New mezzanine gym studio 3
7. Gym studio access corridor
8. Gym & fitness lounge
9. Male & female WCs
10. Disabled changing
11. Male WCs
12. Female WCs
13. Lower concourse
14. Lower spectator seating
15. Teaching pool
16. 50m pool
17. Diving pool
18. Flexible space (option to be fitted out as workspace / soft play)
19. Switch room
20. Switch room



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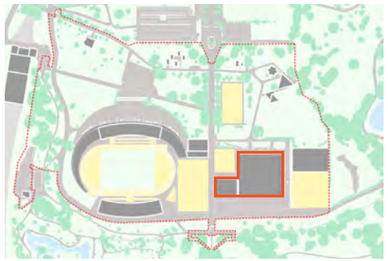
6 Design studies
6.3 The main building
6.3.3 Level 02



Key plan

What is provided?

– Refurbished and improved café.

– Refurbished gymnastics space.

– Reconfigured reception space.

How is this achieved?

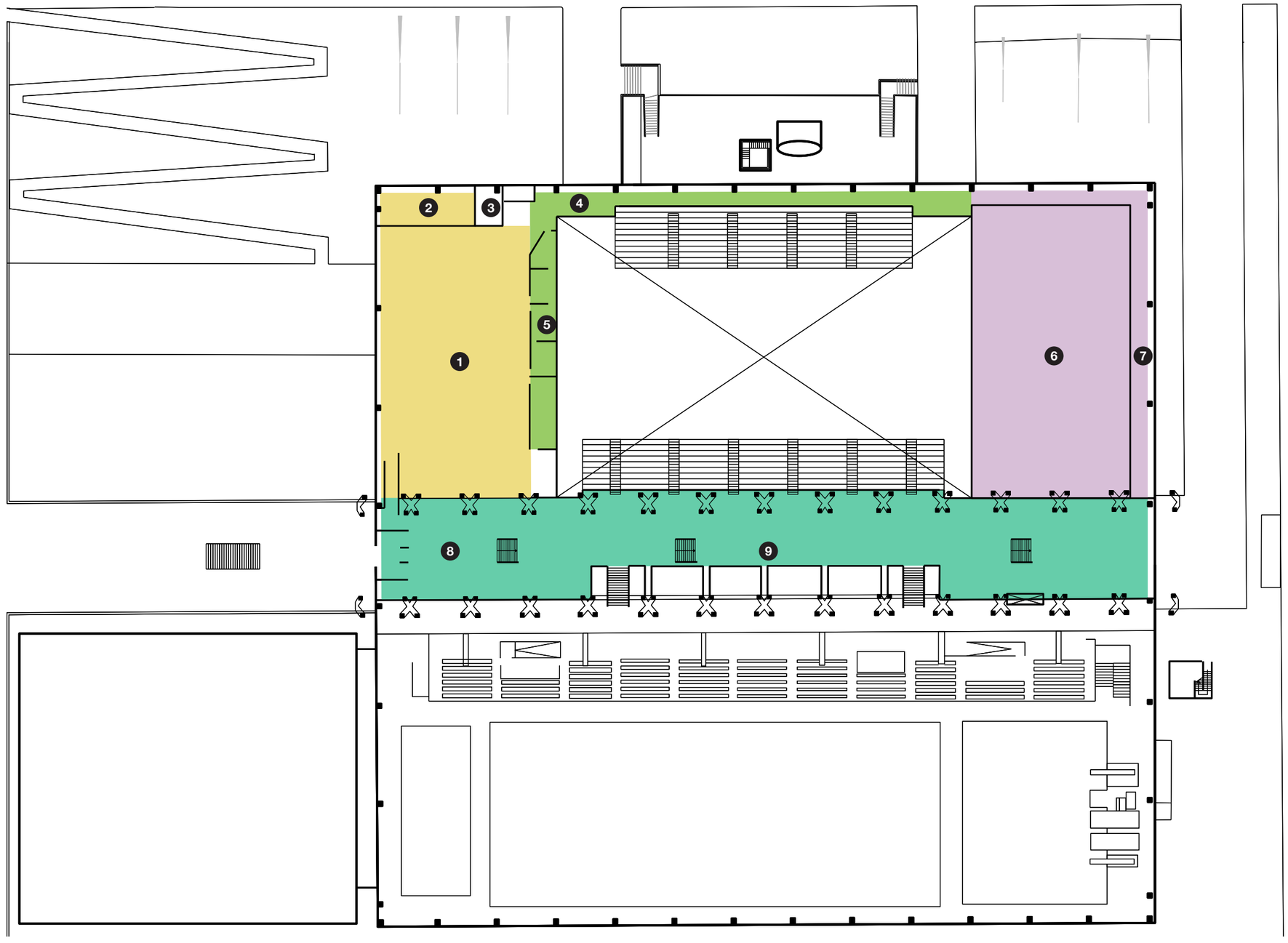
– Refurbish the café and provide a small but more attractive food and beverage offer and lounge space with longer opening hours and a range of seating. This food and beverage offer should complement that located in the new Hub (see study 6.4), which will be the main café offer.

– Reconfigure the entrance lobby with new reception desks and gates to reduce clutter and assist with crowd control for events.

– Refurbish the North balcony. The gymnastic club's plans for a dedicated space here have been considered. Whilst there is demand for a dedicated space for gymnastics, it would preclude the use of the space for other sports, and this flexibility may impact sports and events that are held in the main hall. The lack of flexibility could reduce the attraction for potential operators. Ultimately the design and flexibility of this space will require further discussion with the preferred operator.

This study is included in Scenarios A1, B, B1, C and C1.

1. Café / juice bar
2. Kitchen / servery
3. WCs
4. Main hall ambulatory
5. Main hall VIP boxes
6. Gymnastics / indoor sports balcony
7. Gymnastics store
8. Entance lobby
9. Upper concourse



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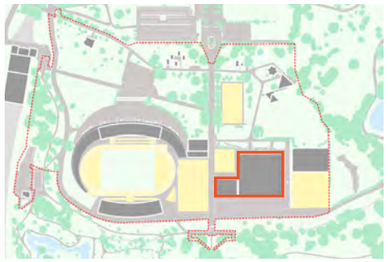
6 Design studies
6.3 The main building
6.3.4 Level 03



Key plan

What is provided?

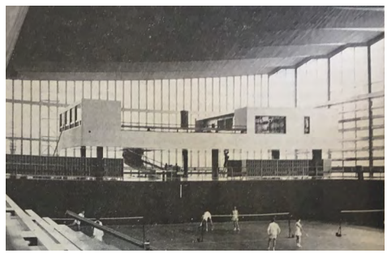
– New flexible event space for community hire and sports events.

– Refurbished pool seating.

How is this achieved?

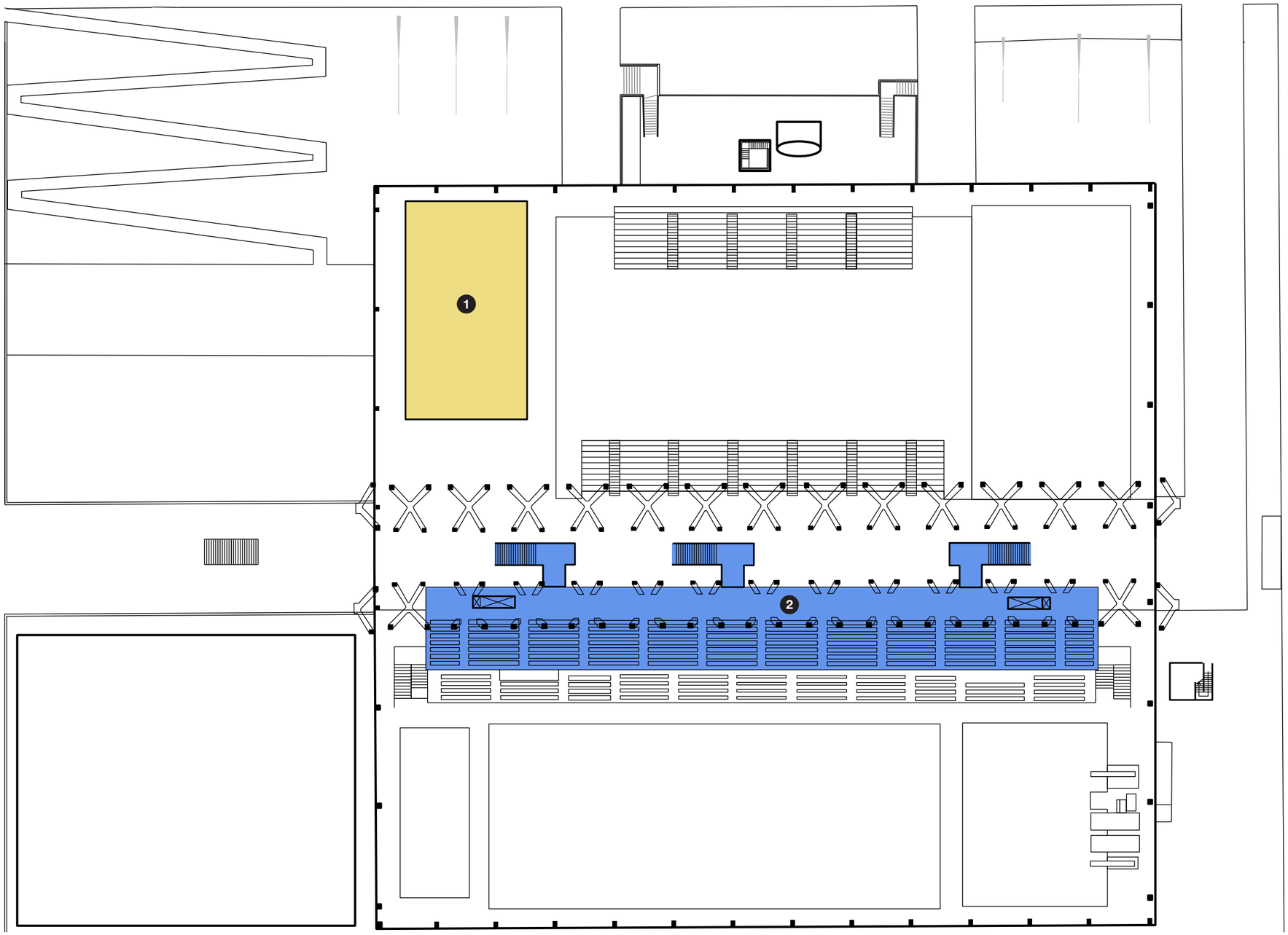
– Convert the Crystal Suite into a flexible event space with impressive views down to the main hall below. The historic images below show the original Crystal Suite, appearing to float above the sports hall, with panoramic views across the building.

– Relocate the staff offices currently situated in the Crystal Suite into alternative space on the ground floor.



This study is included in Scenarios A1, B, B1, C and C1.

1. Flexible event space
2. Upper seating



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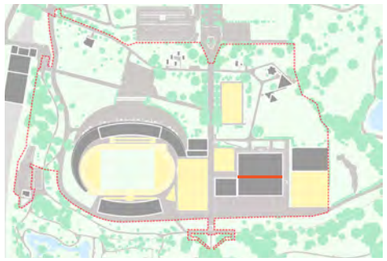
6 Design studies
6.3 The main building
6.3.5 Dividing screen



Key plan

One of the key findings of community and stakeholder consultation and design team site visits is that the building suffers from poor temperature and humidity control resulting in environments that are uncomfortable for practising sport. This deters people from using the facilities.

The problem is largely caused by the lack of separation between the dry space - the main hall, café and north balcony - and the wet space - the pools. The two spaces require different environmental conditions - much warmer on the poolside than the sports hall. However, much of the heat that is pumped into the pool space dissipates into the sports hall, resulting in a sports hall that is too warm and humid, and a pool space that is too cold.

A potential solution to this could be to install a dividing screen between the wet and dry spaces and run separate heating and ventilation systems for the two sides of the building.

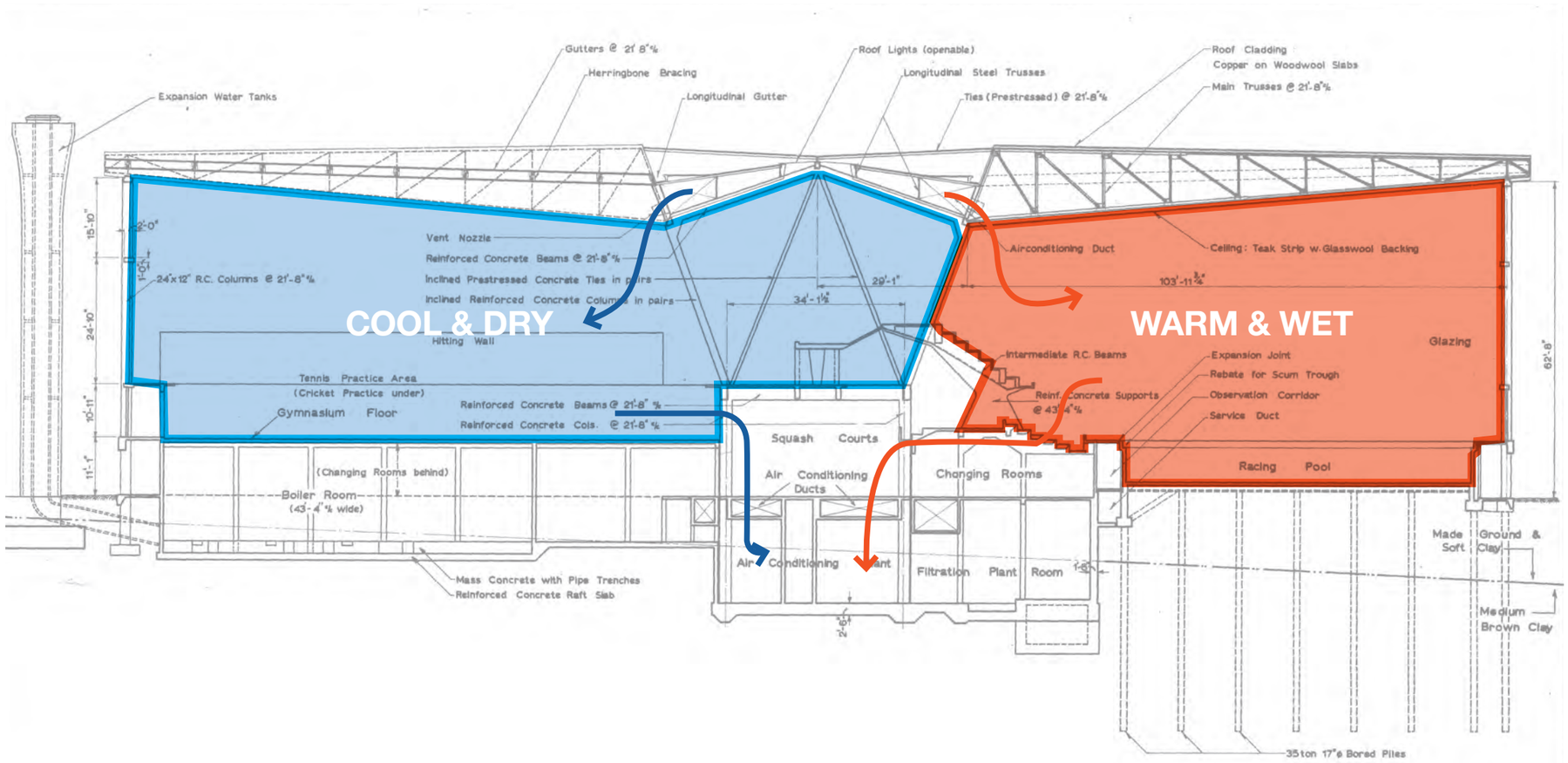
The design of the screen would have to be carefully considered, particularly with regard to the Grade II* listed status of the building. A lightweight structure would be appropriate to avoid overloading the old structure. A transparent material such as glass, or, if weight is an issue, ETFE, would provide the environmental separation without altering the visual experience of the building and the atmosphere created by multiple sports happening in one space.

What is provided?

– Improved environmental conditions in the main sports hall, café and north balcony, and pools.

How is this achieved?

– Installation of a lightweight screen between the wet and dry spaces.



The external envelope

The installation of a dividing screen would increase the efficiency of the main building, and would decrease running costs. However, this is only a worthwhile investment if the external envelope of the building is also upgraded to improve environmental control. There are currently several issues with the aging external envelope, including

– broken window mechanisms no longer allowing for openable windows.

– broken blind mechanisms.

– damaged roof access hatches, gutter and flashings, leading to leaks.

– glazing in poor condition.

These issues will need to be addressed with careful consideration to detail and respect to the listed building.

This has been accounted for in the capital cost options.

This study is included in Scenarios A1, B, B1, C and C1.

6 Design studies
6.3 The main building
6.3.6 Study with movable floor and boom in 50m pool

This study explores how the pool spaces could be consolidated into the main building, which would allow for the 25m pool building to be demolished.

This is an important consideration. The NSC offers unique swimming and watersports facilities due to the mulitple range of pools provided. However, the multiple bodies of water lead to high running and maintenance costs. Other comparable modern 50m pool facilities have movable floors and booms installed which allows the pool space to be configured according to the current use - such as 50m lengths for club swimming, 25m for swimming lessons.

The range of swimming activities offered by the NSC has been identified as an important aspect of the success of the centre. Swimming lessons are a major source of revenue for the centre. Sports consultation shows there is demand to increase the current swimming and aquatics programme. Therefore, any change to the pool configuration needs to be carefully reviewed to ensure it does not negatively impact the swimming programme and sporting output.

Other than reducing running costs, the removal of the 25m pool building may have other benefits - in improving wayfinding and circulation, and further opening up the outdoor space around the walkway.

The study shown here is based on one type of movable floor and boom technology, but multiple products are available, which would have different impacts on the existing building.

It should be noted that any movable floor installation that requires structural alterations to the existing pools brings with it inherent risk associated with work to the historic concrete structure, and heritage issues would also need to be carefully considered.

What's provided?

– 50m pool with movable floor and boom and diving pool.

– Current 50m pool, 25m pool and teaching pool programme re-provided in 50m pool with movable floor and boom.

How is this achieved?

– Review pools programme to ensure all bookings and uses can be re-provided in 50m pool.

– Extend length of 50m pool (remove teaching pool).

– Install tank for increased depth, movable floor and boom.

– Install mechanism for water temperature boosting.

This study is included in Scenarios B1 and C, where the 25m pool is removed.

The project team have reviewed the implications the loss of the 25m pool would have on the swimming programme, and cost comparison of retaining or removing it. Based on current findings and a strong response from the community and users, the preferred option identified in this feasibility study is to retain and refurbish the 25m pool. See section 15 for more detailed analysis. However this will require further detailed review at the next stage of the project.

Even if the 25m pool is retained, a moveable floor and boom in the 50m pool could be advantageous to allow for increased flexibility.

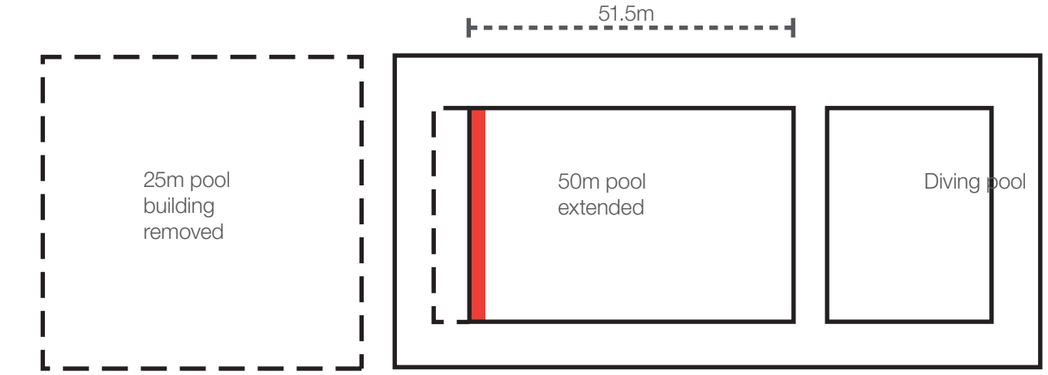
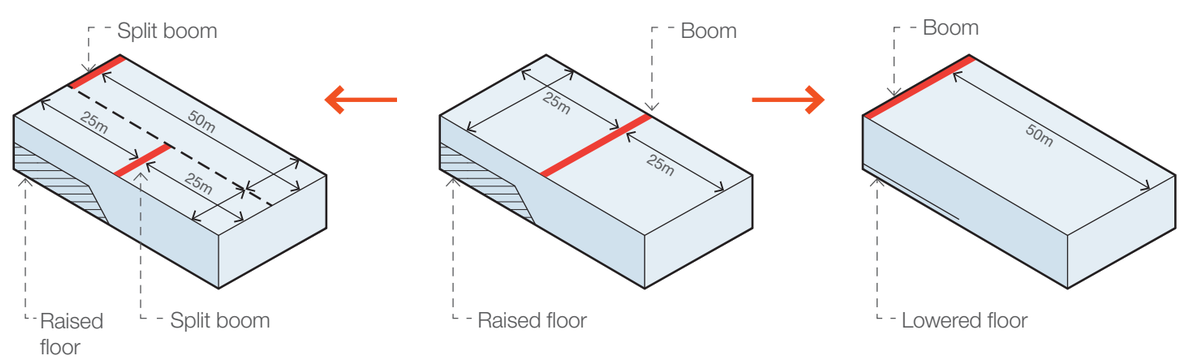
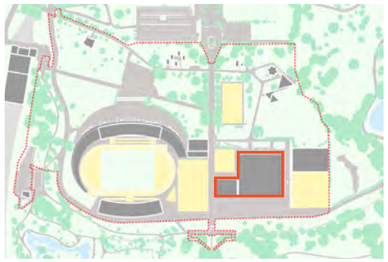


Diagram plan



Reconfiguration options of the 50m pool with movable floor and boom

6 Design studies
6.3 The main building
6.3.7 Level 00 - Study without 25m pool



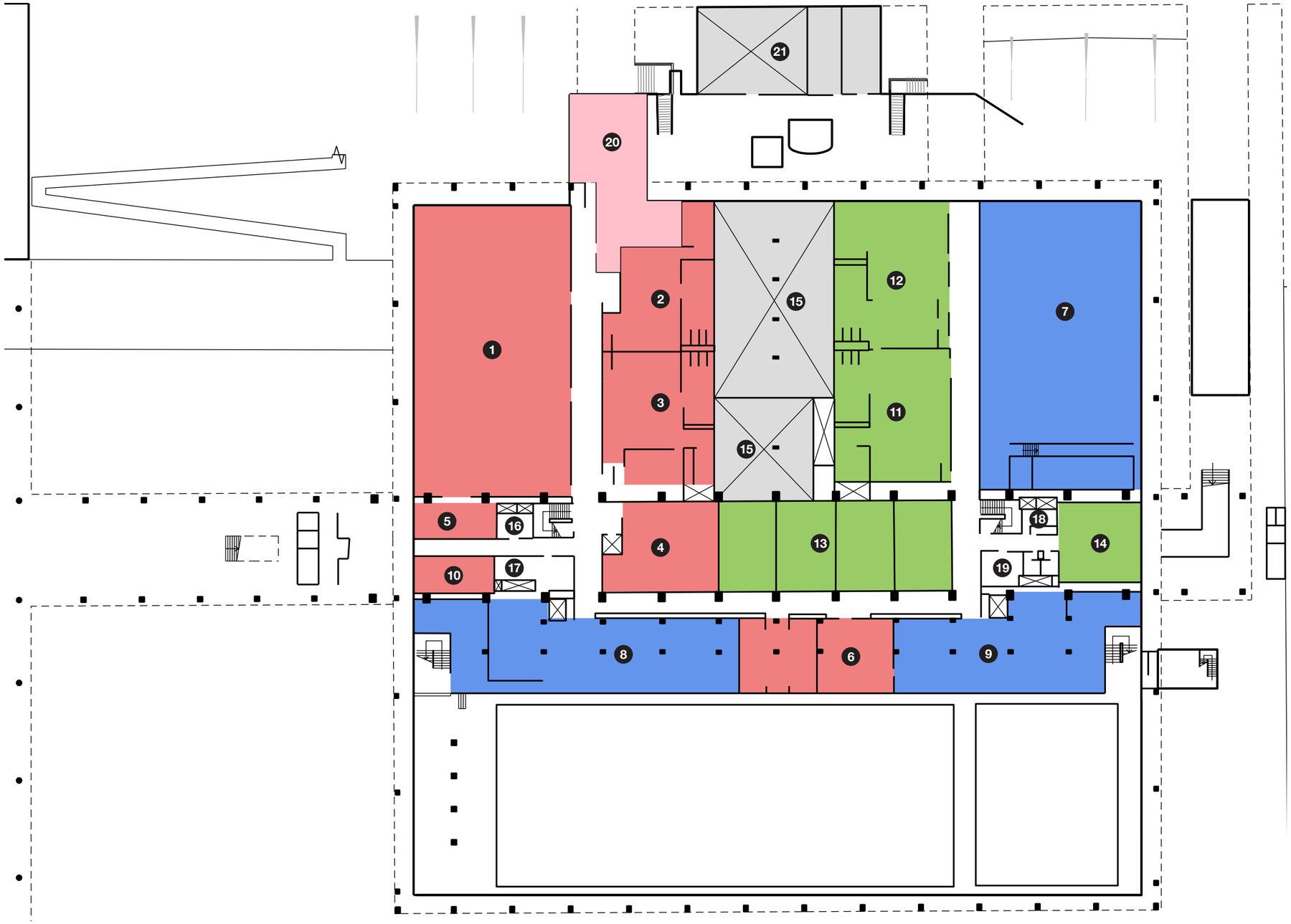
Key plan

This study is the same as the study shown in 6.3.1, except that the 25m pool is demolished and pool space consolidated as demonstrated in 6.3.6.

The removal of the 25m pool building also involves the loss of the flexible space in the eastern half of the building.

This study is included in Scenarios B1 and C, where the 25m pool is removed.

1. Gym & fitness suite
2. Male gym changing
3. Female gym changing
4. Gym studio 1
5. Gym store
6. Spa facility
7. Dry diving
8. Female wet changing
9. Male wet changing
10. Pool store
11. Female changing for indoor sports
12. Male changing for indoor sports
13. 4no. squash courts
14. Indoor sports meeting room
15. Plant room
16. Switch room
17. Store
18. WCs
19. Store
20. Staff amenities
21. Plant room



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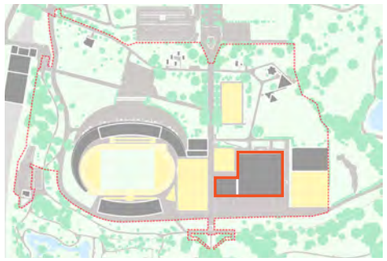
6 Design studies
6.3 The main building
6.3.8 Level 01 - Study without 25m pool

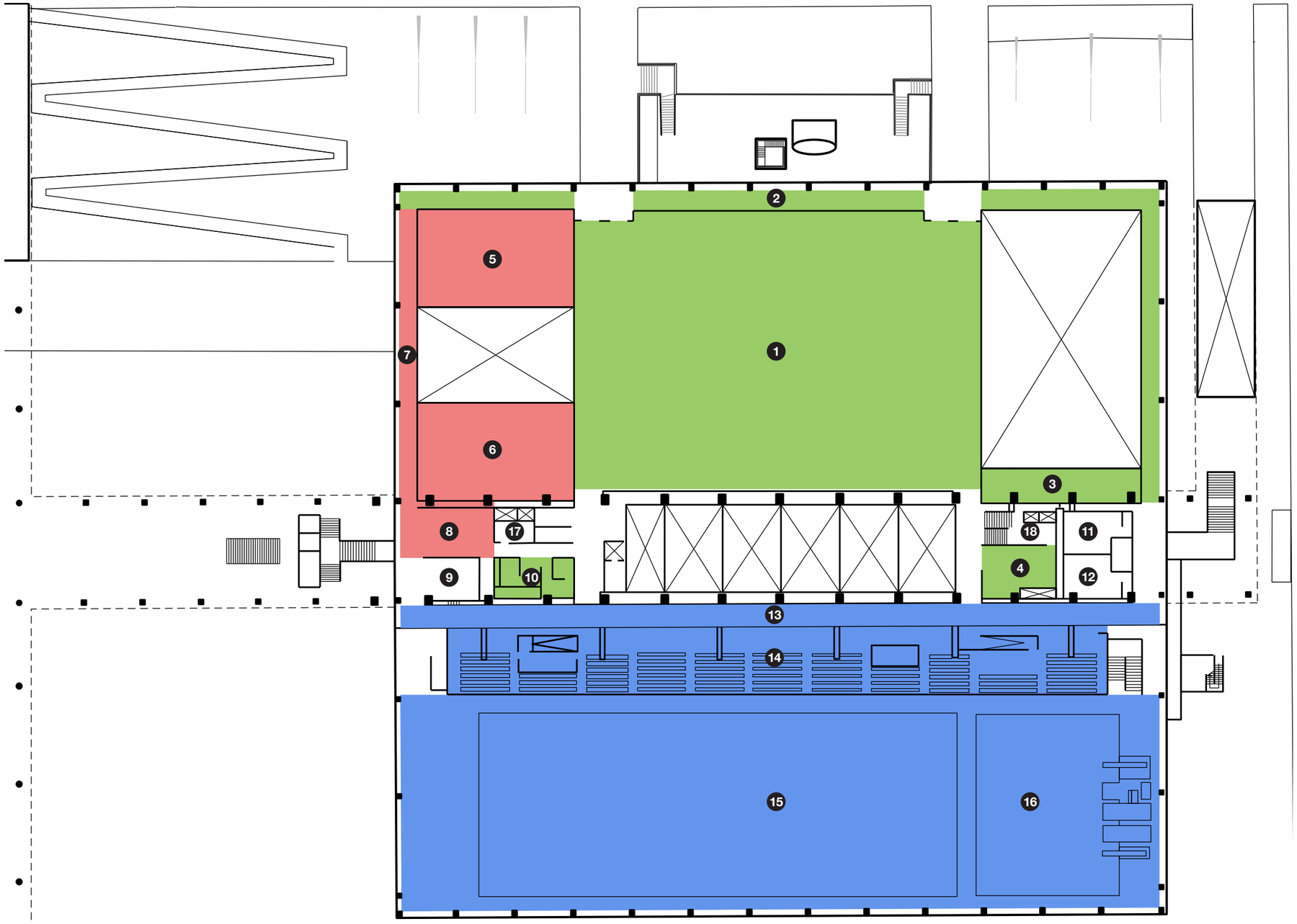


Key plan

This study is the same as the study shown in 6.3.2, except that the 25m pool is demolished and pool space consolidated as demonstrated in 6.3.6.

The removal of the 25m pool building also involves the loss of the flexible space in the eastern half of the building.

This study is included in Scenarios B1 and C, where the 25m pool is removed.



1. Main hall
2. Main hall storage
3. New main hall storage
4. Main hall storage
5. New mezzanine gym studio 2
6. New mezzanine gym studio 3
7. Gym studio access corridor
8. Gym & fitness lounge
9. Male & female WCs
10. Disabled changing
11. Male WCs
12. Female WCs
13. Lower concourse
14. Lower spectator seating
15. 50m pool
16. Diving pool
17. Switch room
18. Switch room

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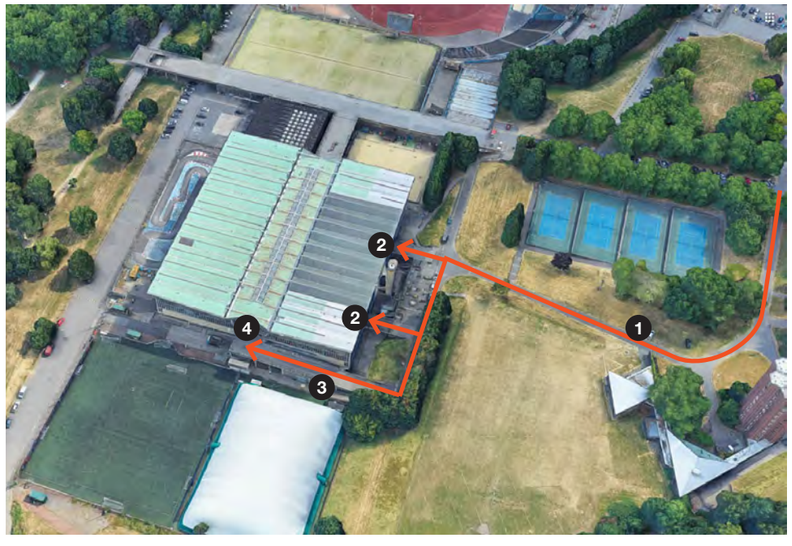
6 Design studies
6.3 The main building
6.3.9 Rear vehicle access ramp

Through consultation with existing NSC users, in particular the gymnastics club, we have been informed that the existing concrete access ramp to the rear (north) of the building is in a poor condition and not deemed fit for purpose - the structure is no longer able to take the loading of a vehicle at the top landing, which makes delivery of equipment to the North Balcony more difficult. This information is anecdotal and will require confirmation through additional surveys prior to any decision being made on the future of the access ramp.

The North Balcony is currently a flexible space, used largely for gymnastics but also for soft play and indoor sports events such as badminton, judo and fencing. Consequently the equipment in the space is constantly being moved and swapped which is why vehicle access to the North Balcony is useful. Whether this is still required in the future is dependant on the internal layout and intended use of the North Balcony. If the flexibility of the space is retained, then retention and improvement of the existing service ramp may be required. If it is intended to be a dedicated gymnastics space in the future, equipment will require moving less frequently and so there will be less demand for the ramp and it could potentially be removed.

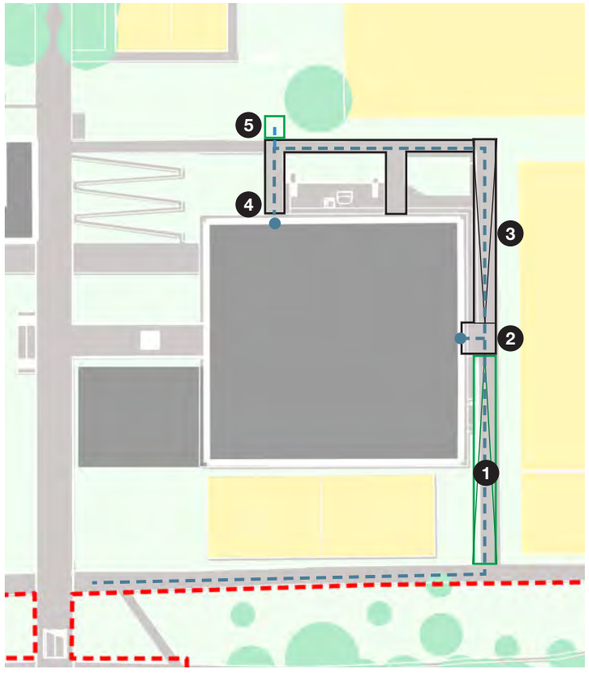
In addition to the rear access ramp there are also existing vehicle access routes into the sports hall, via concrete decks at first floor level on the west side. It is proposed to retain these in all scenarios.

Scenarios C and C1 involve the removal of the Lodge buildings and associated road infrastructure. This road network is currently to access both the sports hall level and the concrete ramp to North Balcony level. These studies explore options for re-directing the service access in these scenarios.



Existing situation
1. Lodge road
2. Vehicle access to sports hall, 1st floor
3. Vehicle access ramp from 1st to 2nd floor
4. Vehicle access to North Balcony.

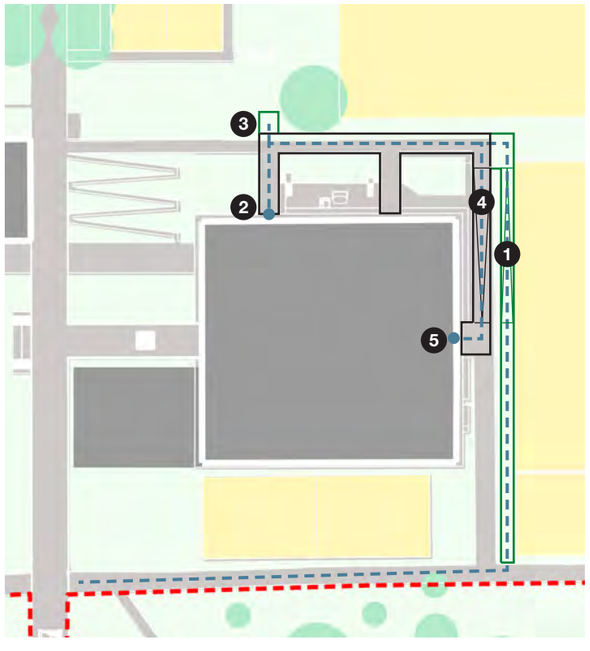
Key to diagrams
- Existing structure
- Vehicle route
- Proposed new structure
- Site boundary



Option 1
1. New concrete access ramp, 60m long, 1:10 gradient. From ground level service road to North Balcony (+2 levels).
2. Existing service access to North Balcony, 2nd floor, retained.
3. Existing ramp strengthened and refurbished.
4. Existing access to Sports Hall, 1st floor, retained.
5. Turning point.

Pros: Existing ramp structure retained. Existing podium access on west side retained. Minimises road infrastructure in the park.
Cons: Steep gradient of new ramp would require review. New ramp would form visual and physical barrier between sports hall and hockey pitch/skatepark. New ramp would partially obscure northern elevation of listed building - would require review. Could be considered new built form in the park, thus a planning risk.

This option has been discounted due to the visual impact it would have on the listed building elevtion.



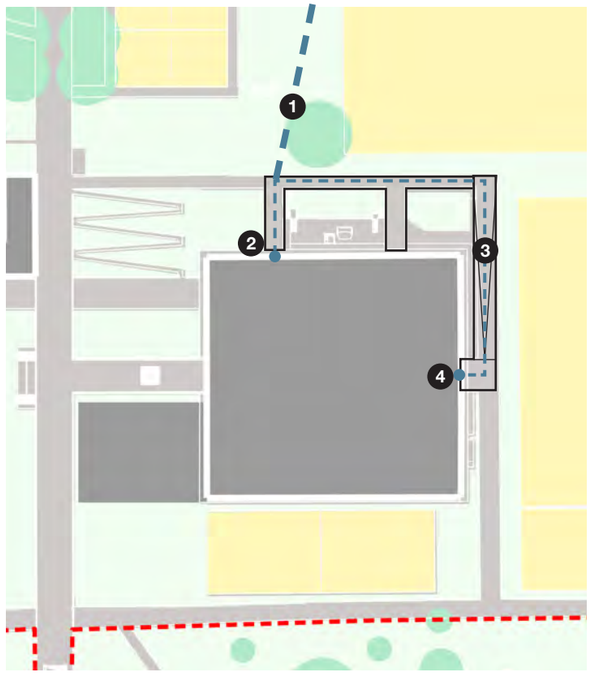
Option 2
1. New concrete access ramp, from ground level service road to Sports Hall (+1 levels).
2. Existing service access to Sports Hall, 1st floor, retained.
3. Turning point.
4. New concrete access ramp replaces existing ramp, from sports hall level to North Balcony (+1 levels).
5. Existing service access to North Balcony, 2nd floor, retained.

Pros: Minimises road infrastructure in the park.
Gradient of new ramp shallower than Option 1, and could be built into the landscape to avoid appearing as a separate structure.
Cons: Narrower ramp access, constrained by hockey pitch and existing vent structures. New ramp could form visual and physical barrier between sports hall and hockey pitch/skatepark.

This option should be taken forward for further investigation at the next stage due to the minimal impact on the listed structure and parkland in comparison to the other options. It could be included in scenarios C, C1, where the Lodge and associated road infrastructure is removed.

This study is included in Scenarios C and C1 for costing purposes, where the Lodge is removed.

6 Design studies
6.3 The main building
6.3.9 Rear vehicle access ramp



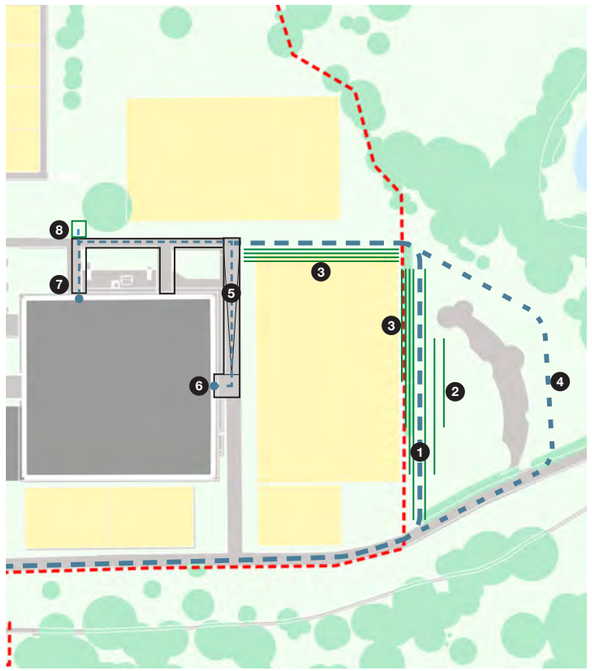
Option 3
1. Lodge road resurfaced, to become shared surface track for service vehicle access.
2. Existing access to Sports Hall, 1st floor, retained.
3. Existing ramp strengthened and refurbished.
4. Existing service access to North Balcony, 2nd floor, retained.

Pros: Existing ramp structure retained. Existing podium access on west side retained. Shared surface track could form part of cycling/wheeled sports routes. Main building is not obscured by any new ramp. Does not inctroduce new hard-standing or structures into the park.

Cons: Requires Lodge road to be retained, all the way from Ledrington Road entrance.

This option applies to scenarios A, A1, B, B1 where the Lodge buildings are retained. It could also apply to C and C1 where the Lodge buildings are removed, subject to further development of the shared surface track. This option should be taken forward for further investigation at the next stage.

This study is included in Scenarios A, A1, B, B1 where the Lodge is retained.

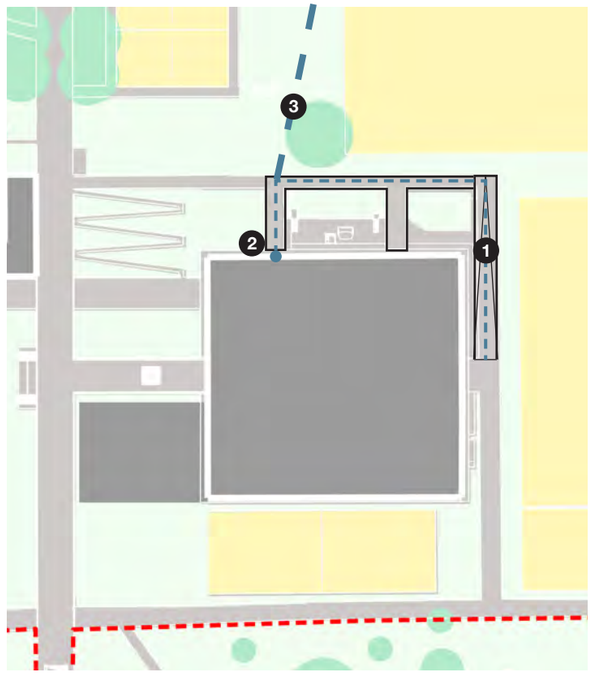


Option 4
1. New shared surface track to service vehicle access.
2. Terraced seating to facing skate park.
3. Terraced seating facing hockey pitch.
4. Alternative route for track.
5. Existing ramp refurbished.
6. Existing service access to North Balcony, 2nd floor, retained.
7. Existing access to Sports Hall, 1st floor, retained.
8. Turning point.

Pros: Existing ramp structure retained. Existing podium access on west side retained. Shared surface track and terraces could help to activate area around hockey pitch and skatepark. Main building is not obscured by any new ramp.

Cons: Requires new hard-standing track to be constructed in the park. Requires work outside NSC boundary. Requires re-grading of landscape to achieve necessary gradients along track. Terraced seating would require coordination with pitch fencing.

This option has been discounted due to the additional road infrastructure that would be required in areas of the park that are currently green. This goes against the project objectives. The new road would introduce new barriers into the landscape and separate the skate park from the NSC.



Option 5
1. Existing ramp removed. New ramp from ground to 1st floor constructed in opposite direction.
2. Existing access to Sports Hall, 1st floor, retained.
3. Option to retain lodge road and resurfaced, to become shared surface track for service vehicle access.

Pros: Existing podium access on west side retained. Main building is not obscured by any new ramp. Removal of existing ramp provides opportunity to open up and refurbish northern façade of main building. Does not introduce new hard-standing or structures into the park.

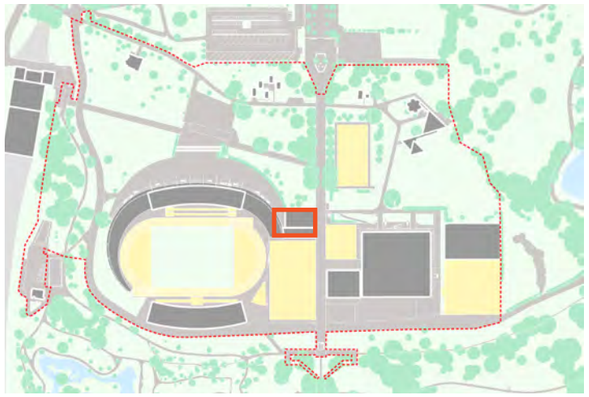
Cons: Vehicle access to the North Balcony is removed. Depending on internal layout and use, this may not be problematic. Large equipment to be delivered to/from the North Balcony would be delivered by vehicle to main hall, and then lifted via mechanical lifting device (MEWP of scissor lift).

This option could apply to all scenarios, however requires review at the next stages as internal layouts are developed in order to ensure that large equipment is still able to be delivered to the North Balcony.

Alternative options
An alternative option that has been reviewed during this study is the removal of the ramp and installation of a goods lift into the rear of the building. This was discounted due to the impact it would have on the internal layout and structure of the listed building, and also for cost reasons - taking into account the capital cost of constructing a new lift shaft and installing a lift, and the whole-life cost of maintaining it.

Conclusion
Options 2, 3 and 5 are recommended to be taken forward for further investigation at the next stage as they result in minimal impact on the listed building setting. Further development is required to determine the preferred option, and this should take into account surveys of the existing ramp structures, development of proposals for the Lodge road infrastructure, and development of internal layouts and uses.

6 Design studies
6.4 The Hub
6.4.1 Study with indoor 5-a-side football (Lodge retained)



Key plan

This study shows the refurbishment of the existing facility to provide a new café-bar and club rooms as the ‘Hub’. The indoor 5-a-side pitch is retained and refurbished, as are the outdoor sports changing facilities and indoor athletics facility, all of which are currently in poor condition.

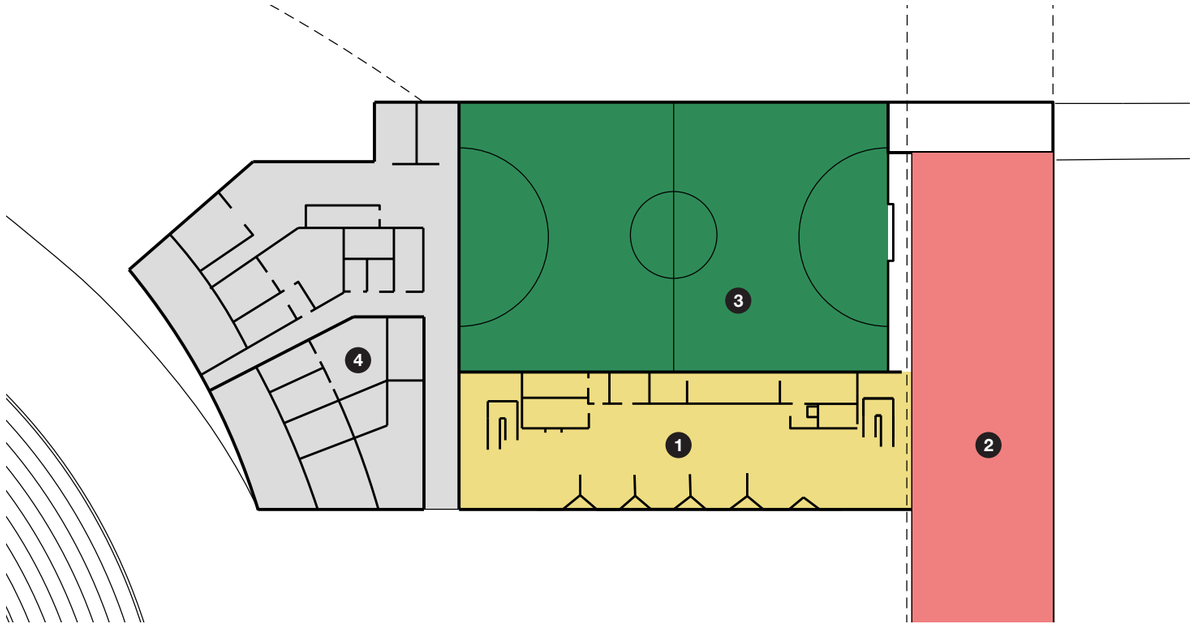
What’s provided?

- New bar.
- New clubrooms.
- Outdoor sports changing improved.
- Indoor 5-a-side football improved.
- Indoor athletics improved.

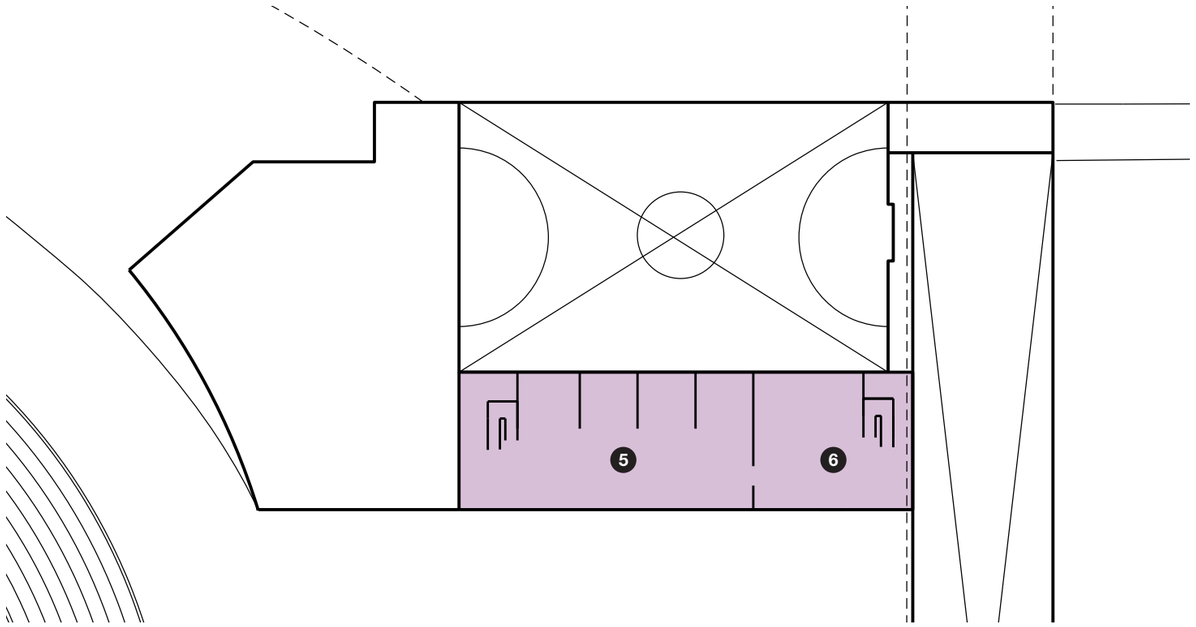
How is this achieved?

- Refurbish existing bar, 5-a-side football pitch, outdoor sports changing and indoor athletics track.
- Convert first floor of bar to club rooms

This study is included in Scenarios A1. An amended version of this is included in Scenarios B and B1. In these Scenarios the indoor athletcis facility is relocated and replaced with the smaller flexible space shown in 6.4.2.



Plan Level 00



Plan Level 01

N

Scale 1:500 @ A3

1. Café / Bar
2. Indoor athletics track.
3. Indoor 5-a-side football
4. Outdoor sports changing & stores
5. Club rooms
6. Event space

6 Design studies
6.4 The Hub
6.4.2 Study with education, conference and lodging (Lodge demolished)

In this study, the indoor 5-a-side pitch is removed and the Hub is reconfigured to provide a larger centre with a variety of different uses - education and conference/community spaces, and lodging accomodation in addition to club rooms, bar and workspace. This would allow for a vibrant mix of uses, creating a busy, lively atmosphere at the heart of the site.

It is assumed that the structure of the existing bar and retaining wall could be stripped back and a new building installed, with a central courtyard allowing natural light into the central spaces.

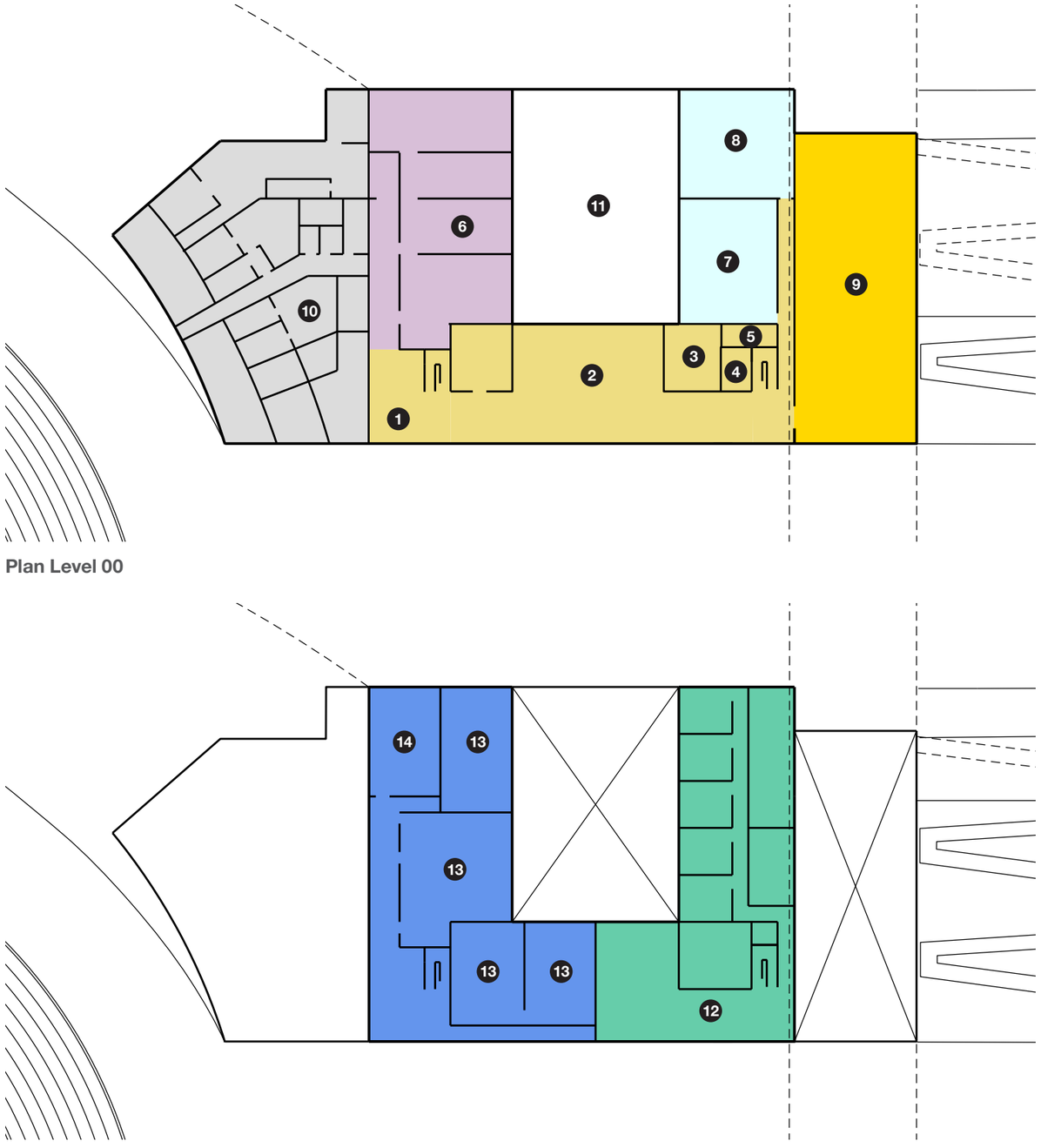
By locating conference, education and community facilties in the hub, this study could involve the demolition of the Lodge, which may have positive impacts on the running and maintenance costs of the centre. It would also benefit the wider landscape, by reducing built structures in the park, and making it possible to remove all the hard standing and road infrastructure associated with the lodge. Consolidating facilities in one central area would also improve wayfinding. However, the Lodge buildings have heritage significance and removal would need to be carefully considered and justified.

What's provided?

– New bar.
– New clubrooms.
– Outdoor sports changing improved.
– New flexible space providing opportunity for workspace / soft play / bouldering etc. dependant on demand.
– New relocated education space.
– New relocated community / conference space.
– New relocated lodging accommodation (reduced capacity in comparison to original Lodge.

How is this achieved?

– Retain existing structures of bar and 5-a-side building.
– Create 'U'-shaped building to house bar, club space and flexible community / conference space on ground floor, with central open courtyard and education space and lodging rooms on first floor.
– Create new enclosure below raised walkway for flexible space.
– Refurbish outdoor sports changing and storage space.
– Existing Lodge buildings removed.



N

Scale 1:500 @ A3

1. Entrance lobby
2. Café-bar
3. Kitchen
4. Switch room
5. Store
6. Club rooms
9. Conference room 1
8. Conference room 2
9. Flexible space (option to be fitted out as workspace / soft play / bouldering)
10. Outdoor sports changind & stores
11. External courtyard
12. Lodging accommodation
13. Classrooms
14. WCs

Plan Level 00

Plan Level 01

This study and 6.4.3 are similar in terms of capital cost and built form, the difference is in the internal use of the space (inclusion of lodging or additional flexible space). Thus for the purposes of the development scenarios they are counted as the same option and included in Scenarios C and C1. The final use would be dependant on market demand.

6 Design studies
6.4 The Hub
6.4.3 Study with workspace, education and conference (Lodge demolished)

The accommodation in the Lodge building is under-used, but this is likely to partly be caused by the poor condition of the rooms and building. We have explored the demand for accommodation on the site through consultation with operators. Initial feedback is that operators would require a minimum quantum of accommodation to make it a viable facility, which would be more than the space indicated in 6.4.2. One option that should be explored further at the next stage is to expand the Hub building with an additional floor to provide more accommodation. This increase in built form and height would have planning implications and would need to be carefully considered. At the same time, further review is required with the GLA to consider whether a larger, commercial accommodation offer as suggested by some operators is an appropriate use of the site once park masterplan, landscaping, social and community outputs and financial sustainability are weighed up

This study shows an option for the Hub that should be considered if lodging is not required. This is similar to 6.4.2, but the lodging accommodation is replaced with additional workspace.

What's provided?

- New bar.
- New clubrooms.
- Outdoor sports changing improved.
- New flexible space providing opportunity for workspace / soft play / bouldering etc. dependant on demand.
- New relocated education space.
- New relocated community / conference space.

How is this achieved?

This study and 6.4.2 are similar in terms of capital cost and built form, the difference is in the internal use of the space (inclusion of lodging or additional flexible space). Thus for the purposes of the development scenarios they are counted as the same option and included in Scenarios C and C1. The final use would be dependant on market demand.

N

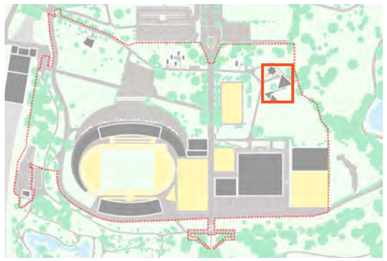
Scale 1:500 @ A3

1. Entrance lobby
2. Café / Bar
3. Kitchen
4. Switch room
5. Store
6. Club rooms
7. Conference room 1
8. Conference room 2
9. Flexible space (option to be fitted out as workspace / soft play / bouldering)
10. Outdoor sports changing & stores
11. Workspace
12. Class rooms
13. WCs

Plan Level 00

Plan Level 01

6 Design studies
6.5 The Lodge
6.5.1 Study with tower retained



Key plan

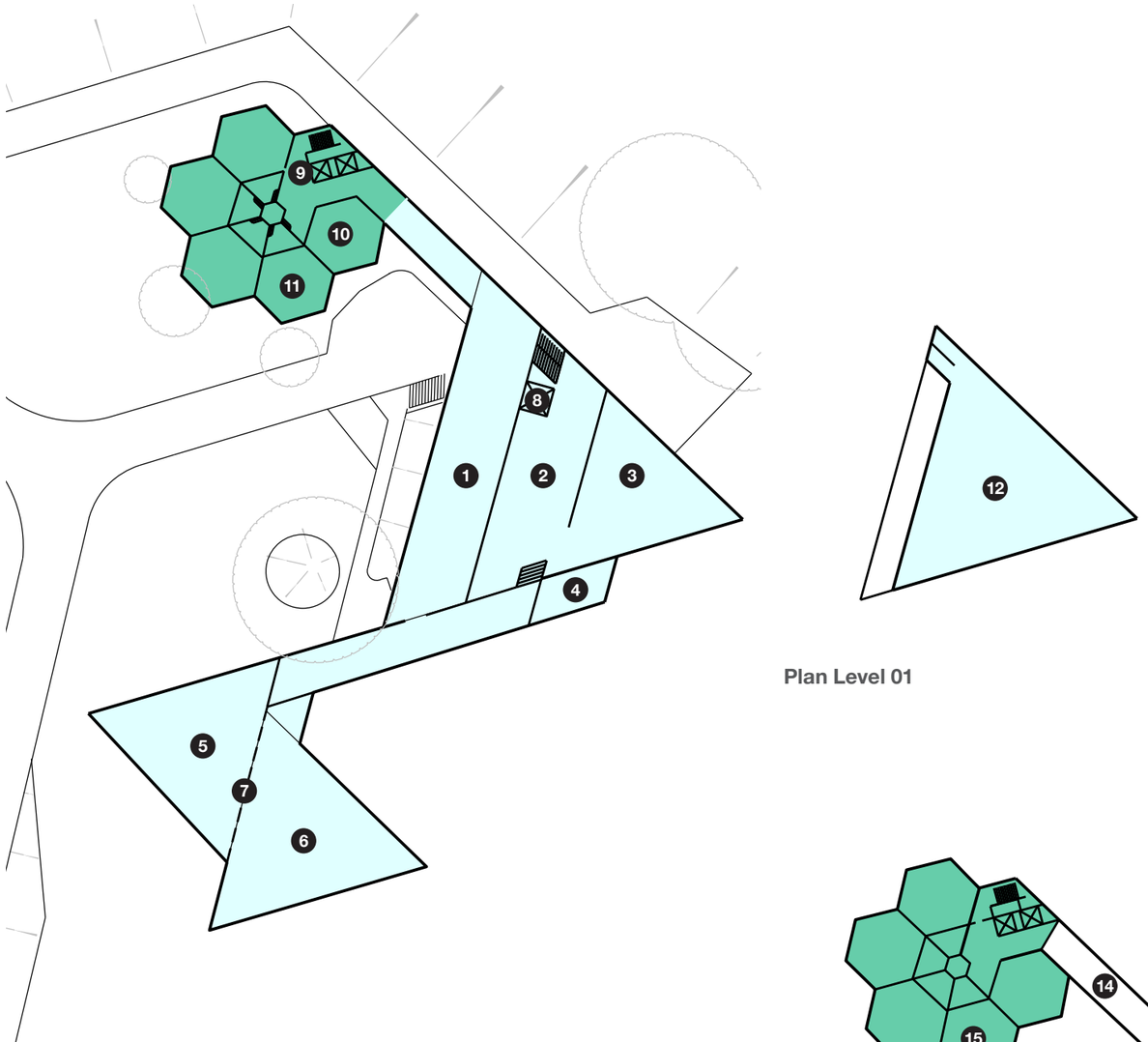
The Lodge buildings have heritage significance (they are locally listed), but are in a poor condition, and were not designed to be accessible to wheelchair users. The top floors of the tower are unsafe for use because they do not comply with fire safety standards. This study demonstrates how the buildings could be refurbished and modified to bring them up to current standards.

What's involved?

– Lodge and tower retained as education, conference, community and lodging facility.

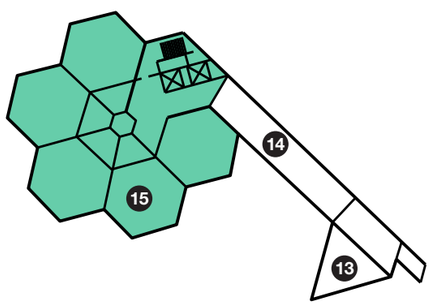
How is this achieved?

– Re-clad tower.
– Install fire-fighting lift, sprinklers and smoke vent in tower.
– Re-build one section of tower to provide accessible rooms.
– Build new extrance extension to conference centre to provide level access.
– Install lift in conference centre.
– General refurbishment of conference centre including external envelope.
– Lower floor level of conference room to provide level access.



Plan Level 00

Plan Level 01



Plan Level -1

N

Scale 1:500 @ A3

1. Entrance lobby
2. Dining hall
3. Kitchen
4. Disabled WCs
5. Paxton Suite
6. Conference room, slab lowered
7. Movable partition
8. New platform to 1st floor
9. Tower core
10. Vertical hexagon structure rebuilt at lower level
11. Tower rooms refurbished
12. Lounge / games / event room
13. WCs
14. Laundry room
15. Tower rooms refurbished

This study is included in Scenario A1.

6 Design studies
6.5 The Lodge
6.5.2 Study with new hostel

Key plan

The upgrade of the tower shown in 6.5.1 involves major structural work and is likely to be costly. It could prove to be more financially viable to demolish the tower and provide a new hostel facility, if there proves to be demand for lodging accommodation on the site. New construction in the MOL and listed park would introduce additional heritage and planning constraints.

This option involves increasing the footprint of built form in the park, which goes against our project brief. In addition, it requires the retention of all the Lodge road infrastructure and vehicle traffic may be increased with increased use of the improved accommodation. It also goes against the project objective to consolidate facilities. However, depending on the quantum of accommodation required andother uses, this option may require further review at the next stage.

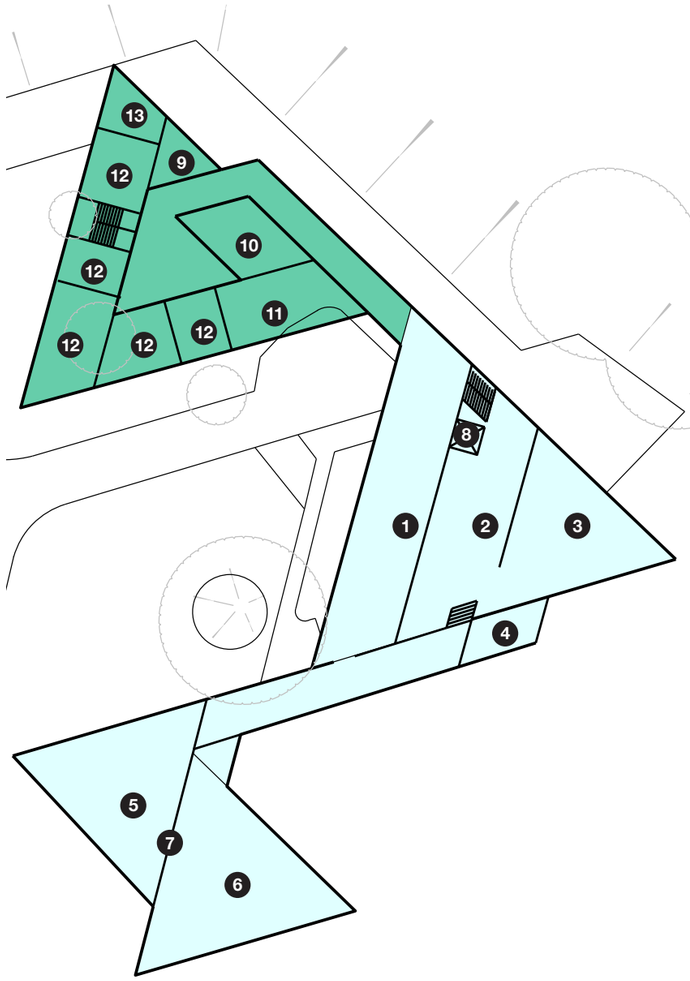
What's involved?

- Lodge retained as education, conference and community facility.
- New hostel.

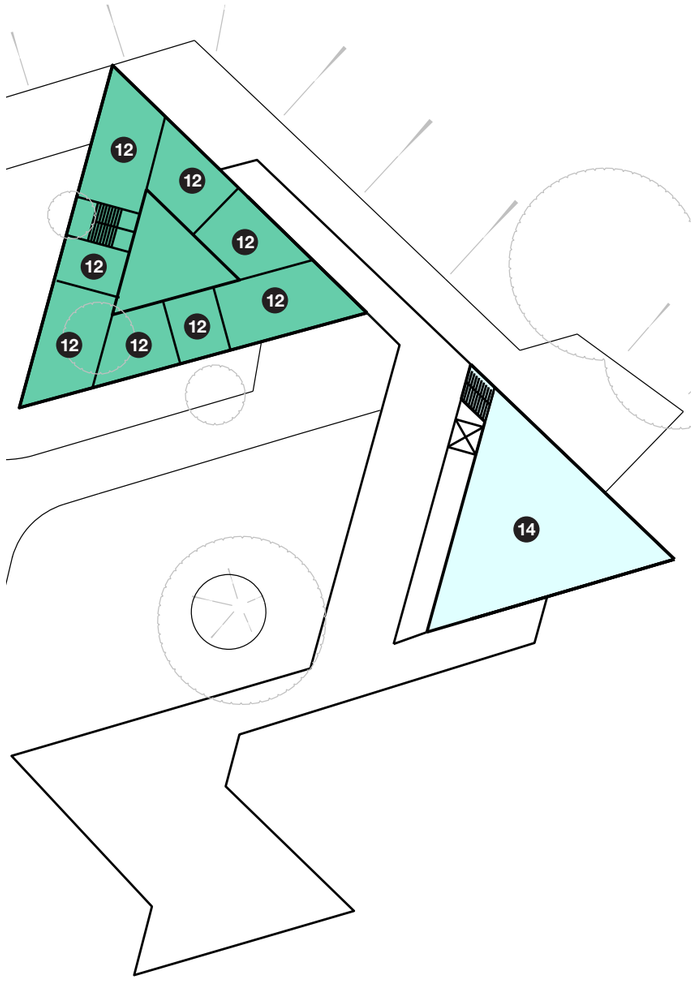
How is this achieved?

- Demolish tower.
- Build new 2-storey hostel on site of tower.
- Build new extrance extension to conference centre to provide level access.
- Install lift in conference centre.
- General refurbishment of conference centre including external envelope.
- Lower floor level of conference room to provide level access.

This study is included in Scenarios B and B1.



Plan Level 00



Plan Level 01

N

Scale 1:500 @ A3

1. Entrance lobby
2. Dining hall
3. Kitchen
4. Disabled WCs
5. Paxton Suite
6. Conference room, slab lowered
7. Movable partition
8. New platform to 1st floor
9. Lodging accommodation reception
10. WCs
11. Lounge
12. Lodging rooms
13. Store / laundry
14. Lounge / games / event room

6 Design studies
6.6 Athletics
6.6.1 History and context

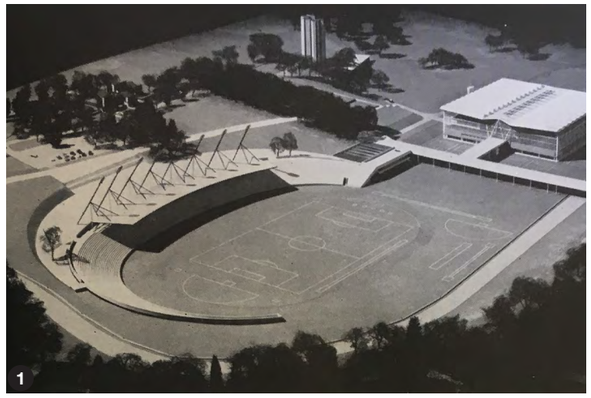
The 1964 stadium
The original design for the NSC included the West Stand only, with the concrete canopy and sweeping seating integrated into the topography of the fountain basin 'bowl', as shown in image 1 and 2. The Jubilee Stand was a later addition, completed in 1977. Whilst both stands are locally listed, only the West Stand forms part of the original set piece of the Grade II* listed main building, and this has been taken into consideration in this study.

Integration into the landscape
The West stand seating reflects the 'bowl' topography of the historic fountain basin, and is integrated into the land form. The canopy 'floats' above the seating, appearing lightweight with no solid vertical wall. As such the stand is relatively discreet in long views across the park as shown in image 3.

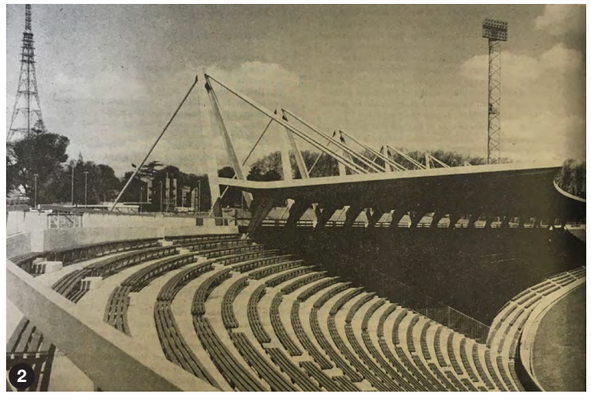
In contrast, the Jubilee Stand has considerable built mass and height as it is a 3-storey building built on level ground. It does not integrate into the landscape, instead creating a harsh boundary condition with a 'canyon' effect at the rear where this stretch of Jubilee Stand road feels enclosed and cut off and attracts anti-social behaviour. This is shown in images 2 and 3. The form of the Jubilee Stand acts as both a physical and visual barrier between the park and the NSC site.

Boundary conditions
Images 6 and 7 show how the boundary condition of the stadium has become more closed and hostile over time, with the introduction of new fencing and unmanaged shrub growth. Whilst a secure boundary is required to prevent public access onto the athletics track, alternative methods of achieving this should be explored that are more discreet and allow key vistas across the park to be restored.

Images
1 Architect's model of the original NSC design
2 The West Stand, 1964
3 The West Stand is nestled into the landform
4 The Jubilee Stand is a 3-storey building and creates a barrier between the NSC and park
5 The 'canyon' effect created by the Jubilee Stand
6 View across the stadium to the main building, when the NSC opened in 1964
7 Current view across the stadium to the main building


1


7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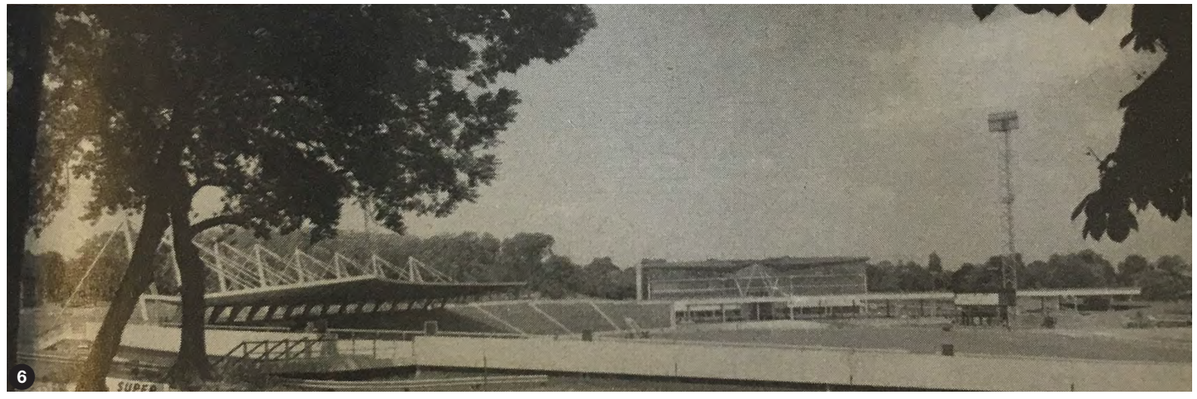

6


3


4


5

6 Design studies
6.6 Athletics
6.6.2 Capacity and demand

A sustainable facilility for the future
The Neil Allen Associates (NAA) Sporting Facility Assessment findings indicate that there is a demand for retaining the athletics training facility at Crystal Palace, including indoor and outdoor tracks. This has been confirmed through the community and stakeholder consultation undertaken as part of this feasibility study.

However, the capacity of the stadium requires further review. The current facility accommodates seating for 16,500 people, with 9,500 covered seats. The NAA study found that this is in excess of demand since UKA transferred its major events to the Olympic Stadium in 2012.

The UKA advised NAA that *'it is highly improbable that significant spectator athletics events promoted by UKA will return to the NSC.'*

The conclusion regarding England Athletics events was similar: *'The England Athletics Chief Executive set out a position where he foresaw no future use of the NSC for their championships.'*

The last nationally or internationally significant athletics spectator event that took place at the NCS was the 2012 London Aviva Grand Prix. Since then, the highest level events at the stadium have been the South of England Athletics Association championships with recorded spectator numbers at 500-1500.

There potential for events in the stadium now falls mainly in the category of regional and club competitions and the school sports sector. The NAA study found that *'there is a dearth of (recorded) event use by club level athletes – open and league meetings would be typical at other major athletics stadia. This was corroborated in consultations with local clubs, where cost, condition and centre management were cited as reasons why they were not using the stadium.'*

Consequently, the stadium is no longer used for national and international sporting events, but is too large and expensive for many regional, club and school sports uses. As such, this study recommends that the permanent seating capacity of the stadium is reduced. The reduction in maintenance and running costs this would allow for reduced hire costs, leading to an increase usage for smaller-scale events and a more financially sustainable future for the stadium.

Tha NAA report made the following recommendation:
'One advantage of the Crystal Palace stadium site is that it sits in a natural bowl. In a future configuration with significantly reduced permanent spectator capacity and infrastructure, the bowl could provide very useful informal spectating. The nature of the athletics events that are likely to be attracted to the NSC – at regional level and below – suits informal viewing: the spectators are likely to largely be other competitors, family, friends and schoolchildren.'

This has been taken into account in the following design study.

The NAA report set out the strategic direction for the stadium. The project team have re-consulted with the community and stakeholders as part of this study, and the issues raised in the NAA report have been re-affirmed.

Non-sporting events
The potential for non-sporting events to be held at the stadium requires further review at the next stage as the business plan is developed. Concerts and community events could provide a much-needed source of additional income to the facility, further securing a sustainable financial future for the NSC. The project team is also aware through consultation that the stadium is hired out for filming - again, this could be considered as an additional revenue opportunity, although no information on the costs and income related to the current business has been made available to the project team.

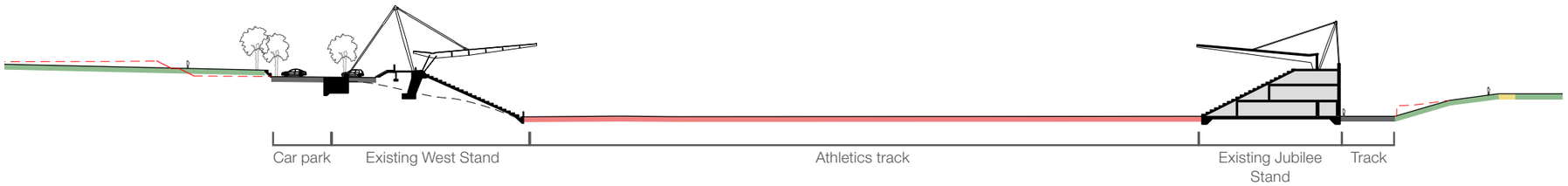
Any programme for non-sporting events would need to be coordinated with the wider business plan for the park, which also relies on events as a key income source, to ensure the two venues work together rather than in direct competition.

Current condition
The stadium facilities do not meet current standards for athletics events. Both stands would require considerable refurbishment to bring up to current standards and extend the lifetime of the structures for another 25 years. The condition surveys that have been made available to the team indicate that the Jubilee Stand is in better condition that the West Stand, which is to be expected as it is a newer structure. Of the West Stand structure, it is the external seats that are in the worst condition - the canopy and covered seating is in better condition but would still require extensive repair work if retained.

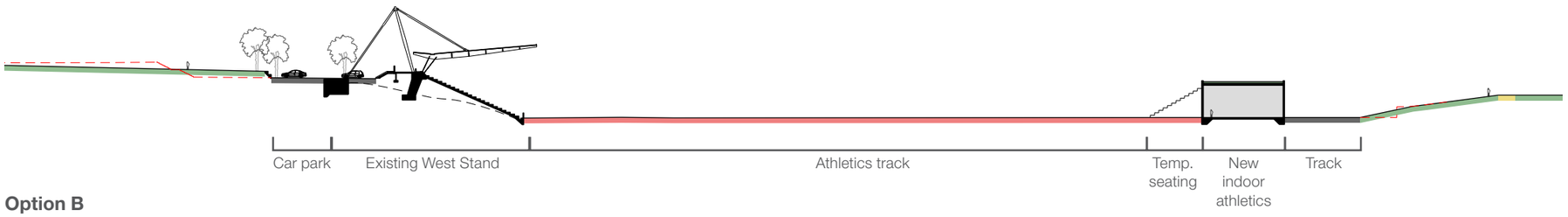
6 Design studies
6.6 Athletics
6.6.3 Athletics stadium options study

The following options explore various configurations for the stadium, looking at a range of possibilities for reducing seating capacity and improving the relationship between the stadium and the surrounding park.

The opportunity to relocate the indoor athletics facility to create an athletics ‘cluster’ is also explored.



Option A



Option B

Option A
This option involves the retention and refurbishment of both existing stadium stands.

Pros: No loss of heritage asset. Relocation of existing facilities not required.

Cons: No improvement to the integration of the stadium into the landscape. The Jubilee Stand is not able to accommodate an indoor athletics tracks, so there is no opportunity to relocate indoor athletics to create a cluster of athletics and open up space below raised walkway. No reduction in stadium capacity, therefore no reduction in maintenance costs, running costs or hire-out costs.

This option would require significant capital cost to upgrade the facility to current standards but would not necessarily offer any improvements to revenue and whole-life costs, therefore is not recommended.

Option B
This option involves retaining the West Stand, demolishing the Jubilee Stand and constructing a new indoor athletics track in its place.

Pros: The West Stand is retained. The West Stand is bedded into the landscape, and so is less visually intrusive than the Jubilee Stand. The Jubilee stand is replaced with a light-weight low-level building, improving views across the park and breaking down the barrier at the site boundary. Athletics facilities are clustered by bringing the indoor athletics facility adjacent to the outdoor track. The new building could be largely transparent, with glazed facades connecting views between the park and the track. The reduction in seating capacity allows for a more financially sustainable facility in the long term, whilst there is still the opportunity to install additional temporary seating if required.

Cons: Loss of locally listed Jubilee stand would require justification.

This option achieves the project objectives of improving the integration of the NSC into the park setting, providing a more accessible, flexible and financially sustainable facility, and clustering sports together to aid wayfinding and legibility. This option is recommended to be taken forward for further development at the next stage.

6 Design studies
6.6 Athletics
6.6.3 Athletics stadium options study

Option C
In this option the Jubilee Stand is retained and the West Stand removed.

Pros: Retention of locally listed Jubilee Stand. Relocation of existing Jubilee Stand facilities not required.

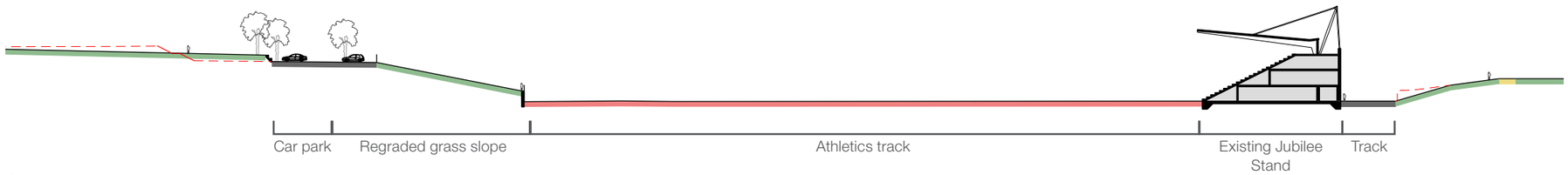
Cons: Limited improvement to integration into the park and view, because the Jubilee Stand, which is the more obstructive of the two as it does not bed into the landscape, is retained. No opportunity to relocate indoor athletics to create cluster of athletics and open up space below raised walkway. Loss of locally listed West Stand would require justification, especially as this forms part of the original NSC design.

This option has been discounted because it retains the stand of least architectural and heritage value, and also does not fulfil the potential to create an athletics cluster with a new indoor track facility and does little to improve the relationship between the park and the NSC especially along the Jubilee Stand Road boundary.

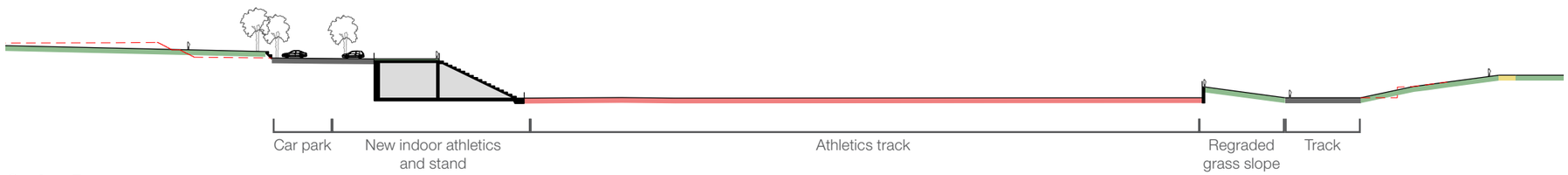
Option D
Both existing stands are removed in this option. A new indoor athletics facility and stand is build into the landform in place of the West stand.

Pros: Significant improvement to the integration of the stadium into the park. Athletics facilities are clustered.

Cons: Demolition of both stands and construction of a new building embedded into the hillside will involve significantly higher costs than the options above due to the complex construction involving excacation. The new indoor athletics space would be likely to be of lower quality than the new structure proposed in Option B, as its underground location prevents daylight, sunlight, views and natural ventilation. With both stands removed, fencing would be required to the perimeter of the track to prevent public access into the stadium. Loss of both locally listed stands would require justification.



Option C



Option D

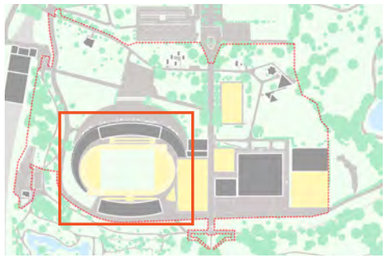
Conclusion
On reviewing heritage, cost, landscape and opportunities for facility improvements as set out in the pros and cons above, Option B has been taken forward as the preferred option and is included in development scenarios B, B1, C, C1.

The primary decision to be made when considering the reduction of stadium capacity to create a more accessible, flexible and financially viable facility is the removal or retention the existing stands. Following review of the above options against the project objectives and vision, the option recommended here proposes to retain the West Stand and remove the Jubilee Stand. The West Stand forms part of the set piece of the original iconic 1964 NSC, thus could be considered to have greater heritage significance. The West Stand is also more sympathetic to the park setting and is of greater architectural value and quality.

Consequently, although the Jubilee Stand is in better condition, the cost benefits of retaining the Jubilee Stand over the West Stand are outweighed by the benefits to wider park and to wayfinding and legibility within the NSC that are delivered by removing it. Jubilee Stand is also no longer fit for purpose and is no longer an appropriate structure for the park setting given the reduction in the scale of stadium events. Removal of the Jubilee Stand is in line with the intention of the 2007 park masterplan.

Whilst the West Stand would require extensive refurbishment to be retained for another 25 years, restoring the original stadium vision would be a great celebration of the legacy of athletics at Crystal Palace.

6 Design studies
6.6 Athletics
6.6.4 Athletics & stadium study



Key plan

This is a study for a more financially sustainable and accessible stadium facility, in line with Option 2 of the previous page. It shows how the seating capacity can be reduced to approximately 3000 seats by retaining the West Stand and seating below, removing the rest of the seating and replacing with grass slopes that could be used for informal seating. This reduces the running costs of the stadium, making it more affordable to a wider range of users.

The Jubilee Stand is demolished, and replaced with a new indoor athletics and strength and conditioning facility, which allows the space under the walkway to be opened up, and also helps integrate the stadium into the park. High fencing around the stadium could be reduced by using level changes combined with low balustrades as a way of controlling access. The size of indoor athletics facility shown here is a 120m long housing a 60m long straight, which exceeds the size of the existing facility. Feedback from consultation is that there is demand for a longer straight. The size will require further review at the next stage and in terms of cost and planning implications and in consultation with UKA.

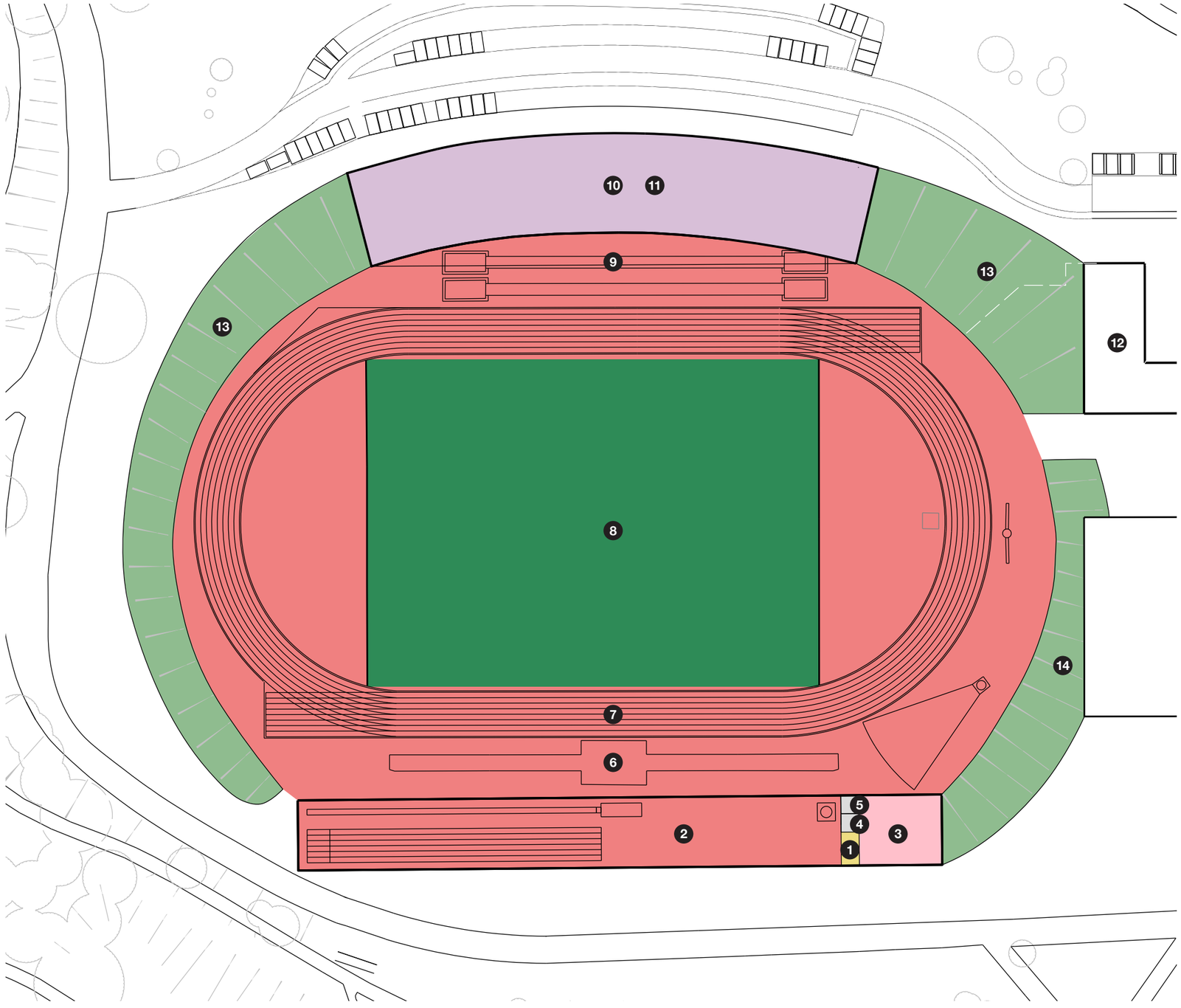
What's provided?

- Outdoor track in current location.
- Infield pitch in current location.
- New indoor athletics and strength & conditioning building.
- Reduced seating capacity in refurbished West Stand for a more accessible and sustainable stadium.

How is this achieved?

- Refurbish and retain West Stand and integrate remainder of seating into the landscape with grass banks suitable for temporary seating.
- Replace Jubilee Stand with new indoor athletics and strength and conditioning building (relocate Jubilee Stand facilities).

This study is included in Scenarios B, B1, C, C1.



6 Design studies
6.7 Raised walkway
6.7.1 History & previous studies

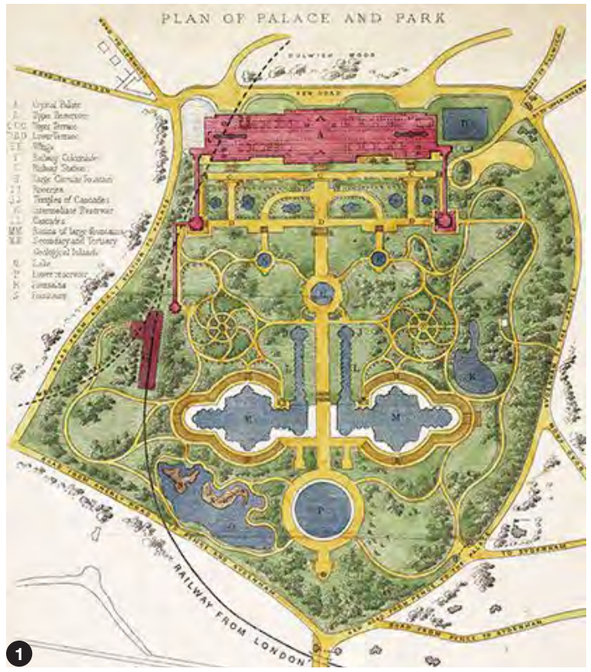
The following pages explore options for the future of the raised walkway: demolition, part-demolition and retention.

The raised walkway was part of the original 1964 NSC building, and due to its design association and physical attachment to the Grade II* listed main sports hall, it is also part of the designation for the purposes of listed building control. Proposals to remove or further adapt the original walkway to improve accessibility (such as introducing or adapting new stairs, and removing sections and or lower ramps) would have a direct impact on the historic fabric and character of this outlying part of the listed building.

The raised walkway is located on the 'Paxton Axis' - this central route running the length of the park was one of the key features of the Victorian park design. Where it could be considered that the intervention of the NSC in the 1960s has detracted from the heritage significance of the earlier 19th century elements of the surrounding registered park and conservation area then removal of the walkway could be seen as a heritage benefit for these other heritage assets - in particular where the route and view of the Paxton axis would be part reinstated. However, it could also be considered that the significance of the registered park and also conservation area is also part reliant on the post war changes, which together with the underlay of the 19th century parkland could be seen to add up to a sum greater than its parts or phases. This is not necessarily a case of direct competition between heritage assets, harms and benefits, but more complex.

Previous proposals for the park and NSC have recommended removal of the raised walkway in order to re-establish the original character of the Paxton Axis (see images 4 and 5). However, these studies have not looked in detail into the impacts this would have on the main sports hall internally.

The walkway functions as an access route into the main building, allowing for entrances at mulitple levels (originally intended as separate spectators, competitors, and service entrances), with the main entrance on the 2nd floor above ground. It has been infilled below with more recent structures containing an indoor athletics track and a weightlifting club. In all options, these are proposed to be relocated (see 6.6.2).



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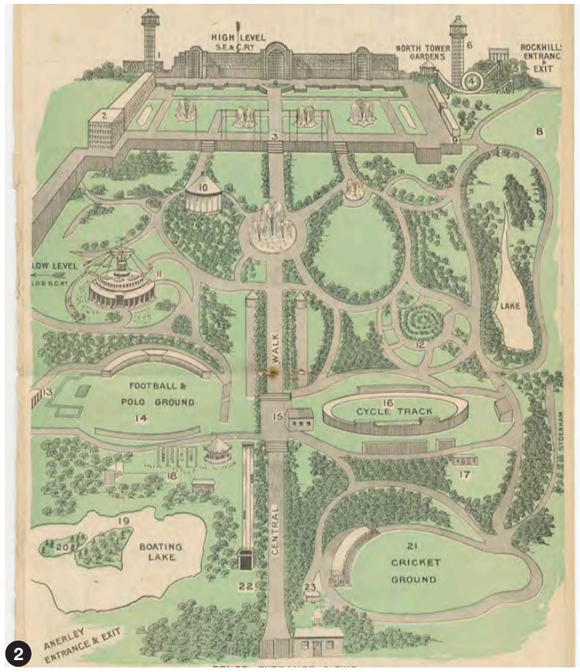

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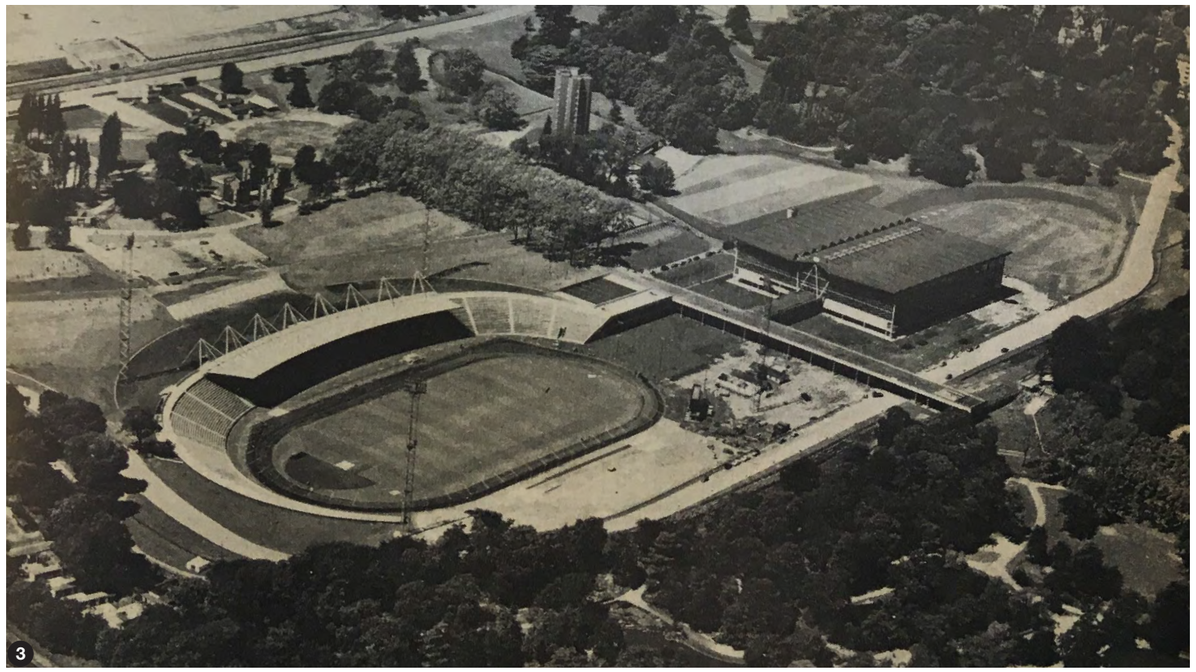
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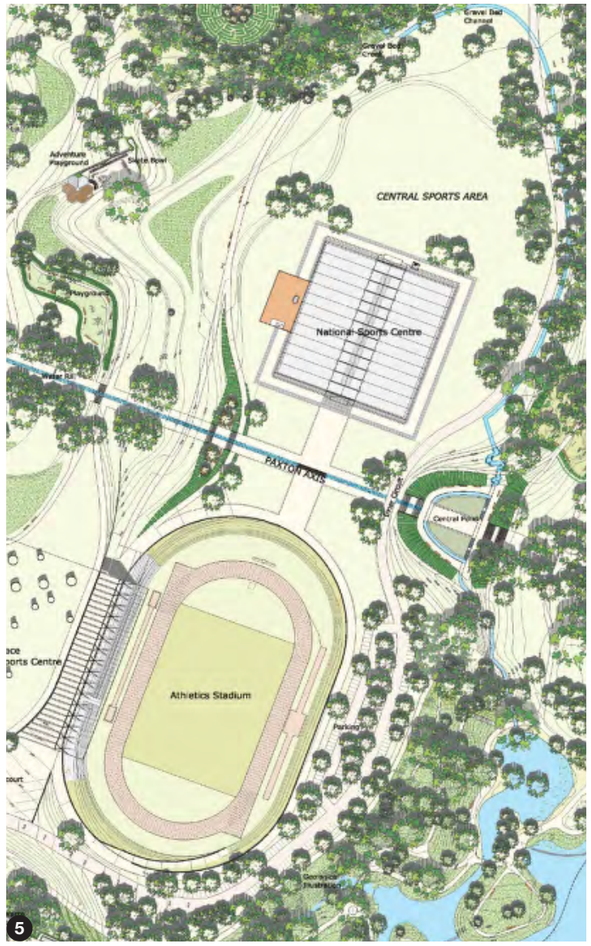


5

Images:
1. Plan of the Josepth Paxton design for Crystal Palace Park, c. 1850
2. Plan of Crystal Palace Park with grand fountain basins removed and replaced with ffotball and cycling arenas.
3. Photograph of the NSC soon after completion, c. 1964, before the space below the walkway was infilled.
4. 2015 CSM feasibility study for the NSC recommended the removal of the raised walkway
5. 2007 Park Masterplan recommended the removal of the raised walkway

6 Design studies
6.7 Raised walkway
6.7.2 Study with walkway demolished

Study with walkway demolished

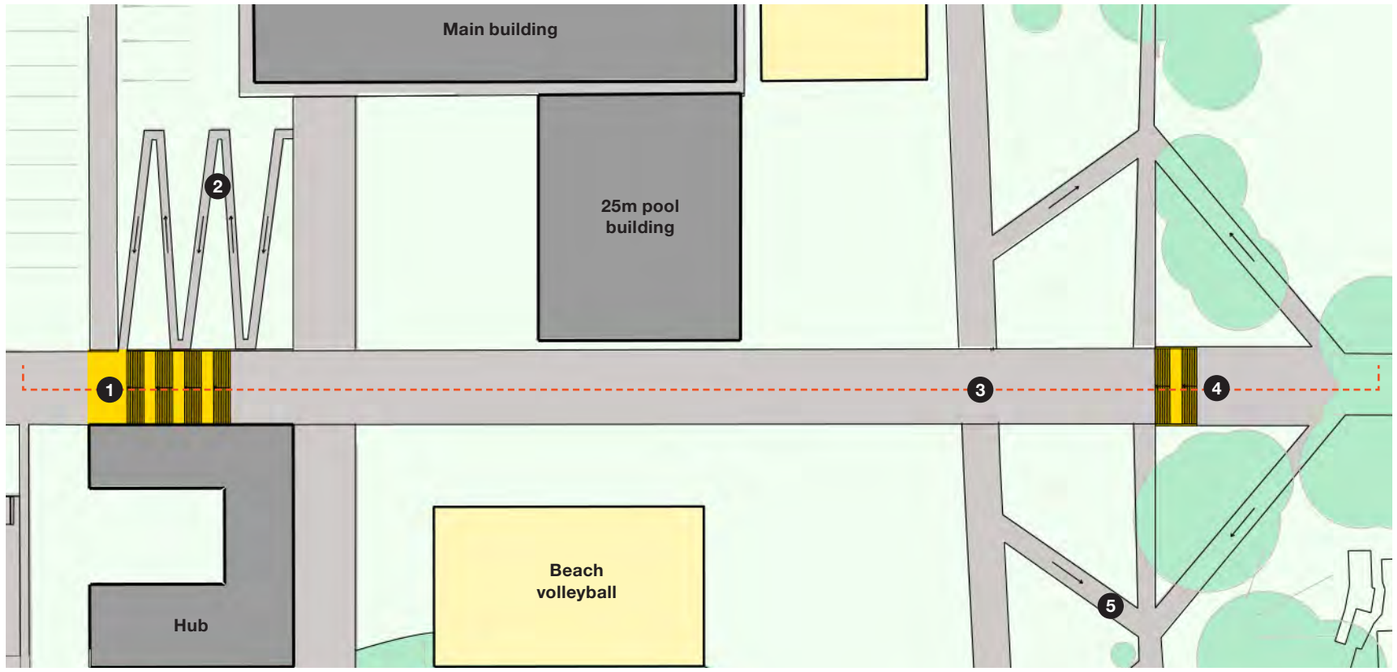
This study explores how the raised walkway could be demolished and the ground-level Paxton Axis promenade reinstated. This would also involve relocating the main entrance of the sports hall from 2nd floor to ground floor level.

Advantages

- Access into the main sports hall from the Penge approach is improved, as level access is provided.
- Views up the Paxton Axis from East to West are improved as the walkway structure is no longer an obstruction.
- May be considered a heritage benefit for the listed park where route and view of the Paxton axis is reinstated.

Disadvantages

- The demolition of the raised walkway results in a level difference of approx. 5m between the West side of the park where the access route from the station and the majority of parking is located, and the NSC ground-level entrance, whereas currently there is level-access into the 2nd-floor entrance. New steps (1) are required and accessible ramps (2) built into the slope.
- A fundamental aspect of the design and intended experience of the NSC was to be able to enter at both upper and lower levels via the raised walkway. The entrance at upper level allowed visitors to experience the large volume of the main hall with its unique architectural features upon entering. This will be diminished with the move of the entrance to the ground floor. This is explored further in 6.7.5.
- The Paxton Axis at ground level crosses the existing Jubilee Stand Road (3), which is proposed to be retained as a service access road and an active surface for sports and play activities. Park users would have to interface with cyclists, wheeled sports, runners and occasional service vehicles. The current raised walkway would allow these modes to be separated - a quiet, pedestrian route at high level, and a more active route at ground level.
- The ridge at the eastern end of the walkway (Penge approach) will require additional steps (4) and existing pathways will require re-grading to provide level access (5).
- The Hub building is an existing structure that is currently linked into the raised walkway as the roof level is an ‘arm’ of the raised walkway. This relationship will be lost with the demolition of the raised walkway, and the Hub will appear as more of a stand-alone structure in the landscape.
- The 25m pool was constructed later than the main sports hall, and is not listed. Currently, its negative visual impact on the main building is mitigated by the raised walkway, as most views of the main building are from the walkway, which is at the same height as the roof of the 25m pool. Without the raised walkway, the 25m pool building may appear as more of an obstruction to views of the listed building.
- Zones below the raised walkway that have been identified as potential climbing, soft play and workspace zones are no longer available without introducing new built form into the park.
- May be considered harmful to the heritage significance of the listed building and so presumed against in legislative and policy terms. Knock on effects such as alterations required to the structure and experience internally should not be discounted but could be seen to further increase that degree / magnitude of heritage harm.



Plan

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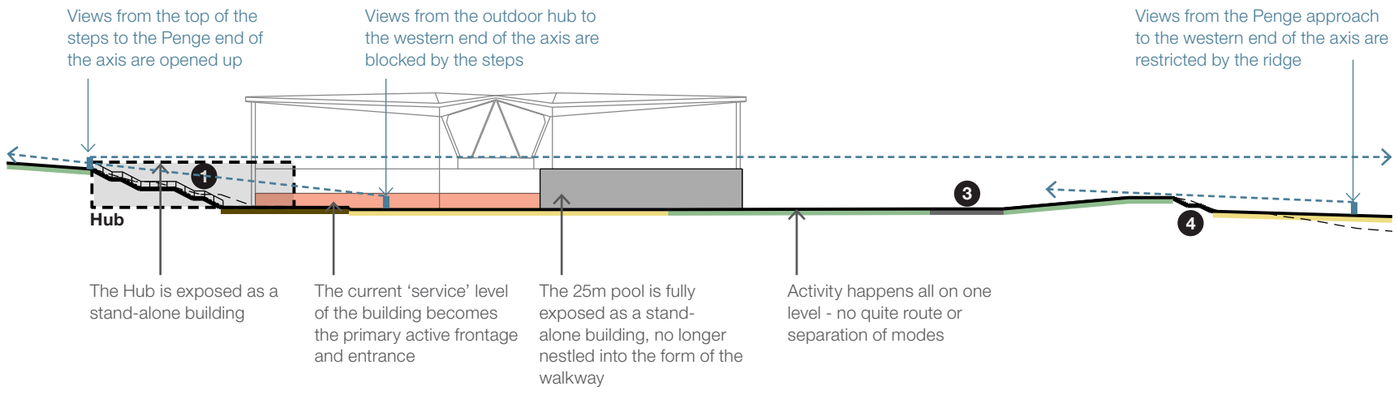


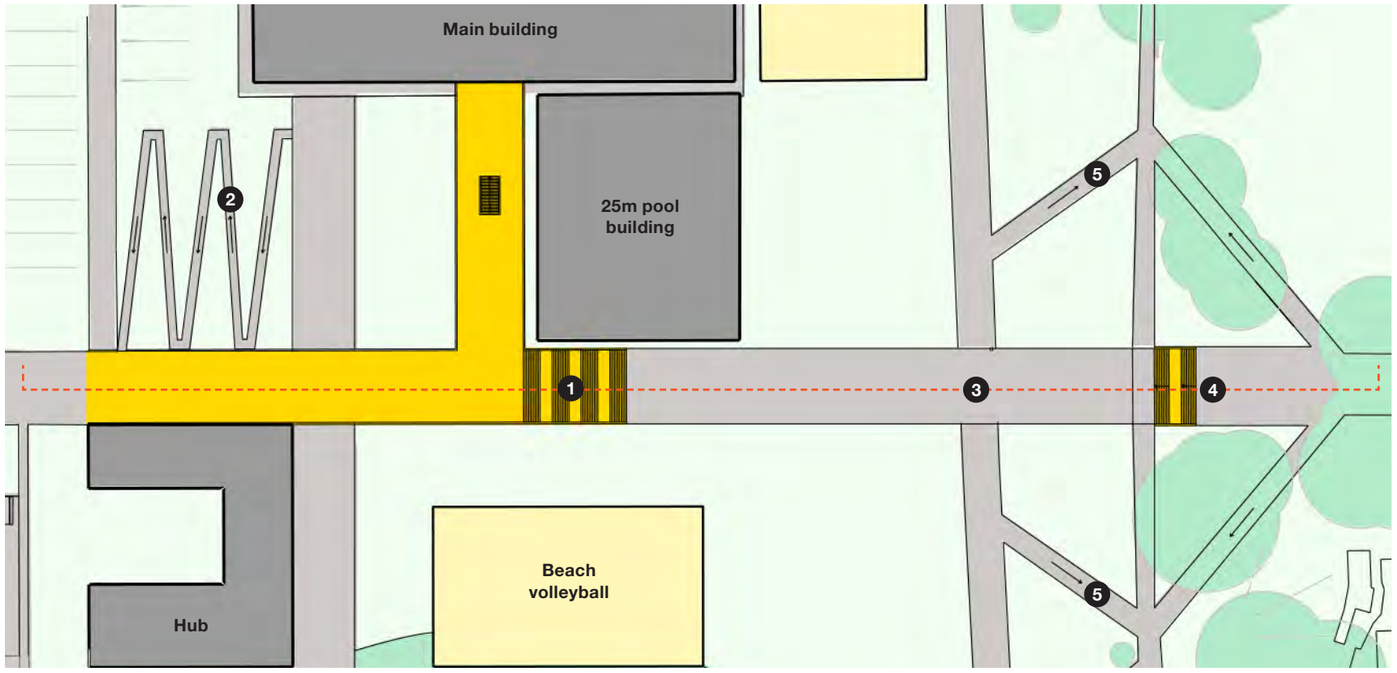
Section

6 Design studies
6.7 Raised walkway
6.7.3 Study with walkway part-retained

Study with walkway part-retained
This study explores how the western end of the raised walkway could be retained and the eastern end demolished in order to address issues of visual obstructions in the park.

Advantages
- Level access into the main sports hall from the station and car-park approach is retained.
- New accessible ramps provide access from the raised walkway level down to ground level (2).
- Views up the Paxton Axis from East to West are improved as the walkway is cut back.
- The relationship between the built form of the Hub and the raised walkway is retained.
- The zone below the west end of the raised walkway that has been identified as a potential site for soft play / workspace is still available.
- May be considered a heritage benefit for the listed park where the route and view of the Paxton axis is partially reinstated.
- Entrance to main building remains at 2nd floor level, which reduces alterations required to the listed structure.

Disadvantages
- The Paxton Axis at ground level crosses the existing Jubilee Stand Road (3), which is proposed to be retained as a service access road and an active surface for sports and play activities. Park users would have to interface with cyclists, wheeled sports, runners and occasional service vehicles. The current raised walkway would allow these modes to be separated - a quiet, pedestrian route at high level, and a more active route at ground level.
- The 25m pool was constructed later than the main sports hall, and is not listed. Currently, its negative visual impact on the main building is mitigated by the raised walkway, as most views of the main building are from the walkway, which is at the same height as the roof of the 25m pool. Without the raised walkway on both sides, the 25m pool building may appear as more of an obstruction to views of the listed building.
- Access from the Penge approach into the main building is not significantly improved, as access by steps (1) is still required to address the approx. 6m level difference between the Jubilee Stand road and the main entrance to the sports hall.
- The ridge at the eastern end (Penge approach) of the walkway will require additional steps (4) and existing pathways will require re-grading to provide level access (5).
- The zone below the raised walkway adjacent to the 25m pool building that has been identified as a potential site for a bouldering centre is no longer available.
- Cutting the walkway back drastically affects the visual relationship and balance between the walkway and the listed building, which may be considered harmful to the setting of the listed building and so presumed against in legislative and policy terms.



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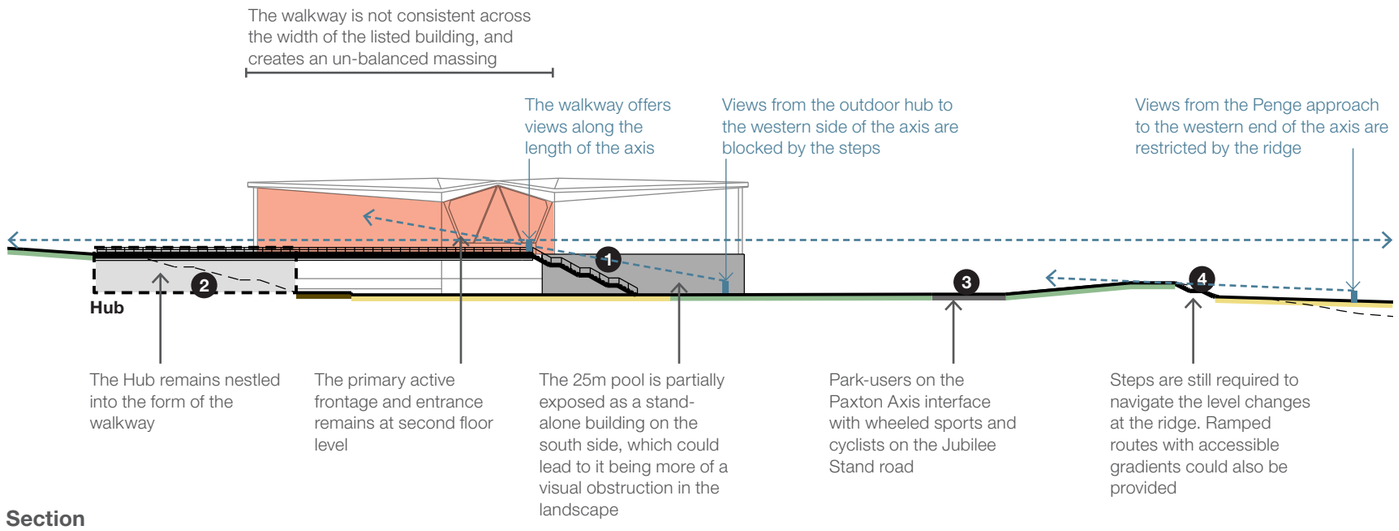


Section

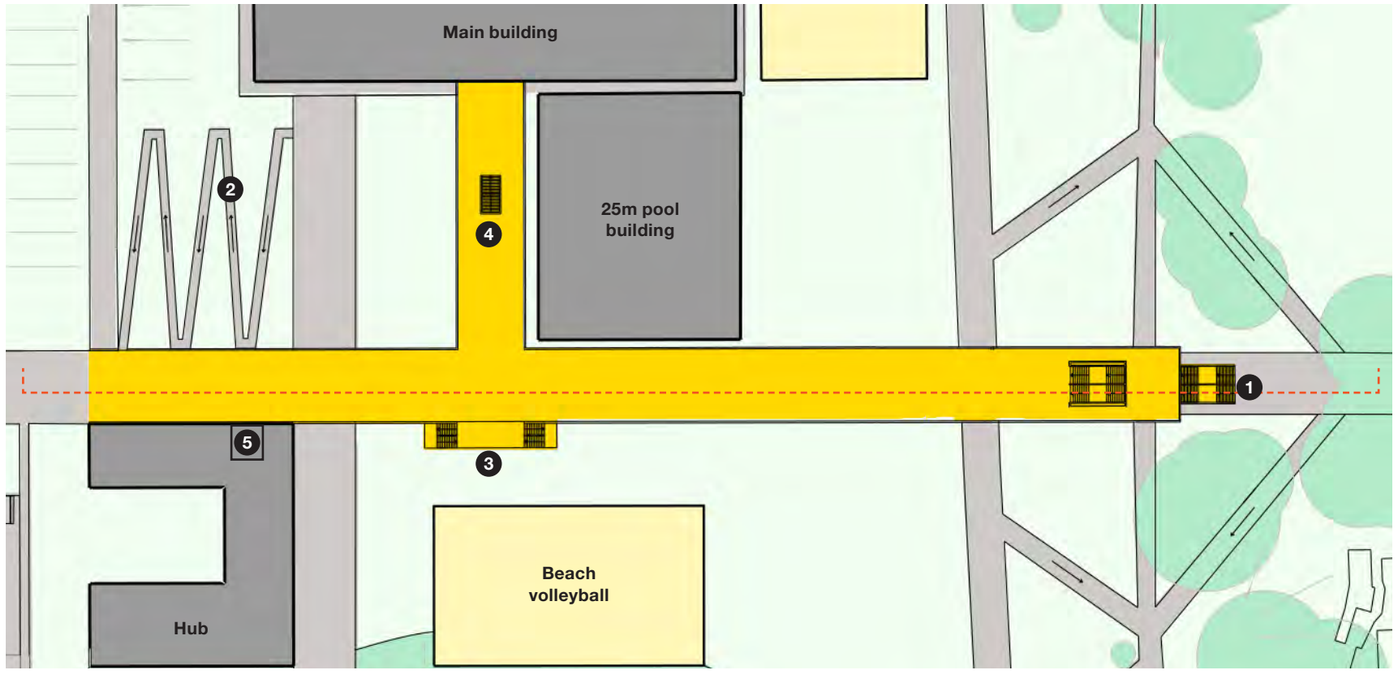
6 Design studies
6.7 Raised walkway
6.7.4 Study with walkway retained and reconfigured (preferred)

Study with walkway retained and reconfigured
This study explores how the raised walkway could be retained, but improved by addressing the connections into the park at each end, and making it more permeable by introducing additional access points between the walkway and ground level.

Advantages
- Level access into the main sports hall from the station and car-park approach is retained.
- New accessible ramps provide access from the raised walkway level down to ground level (2).
- New lift provided in the Hub building to provide access between walkway and ground level (5).
- East end of walkway remodelled, removing mid-level 'wings' to reduce visual obstructions and provide a clear and direct route along the Paxton Axis.
- Could be considered advantageous to the heritage setting of the listed building.
- The relationship between the built form of the Hub and the raised walkway is retained.
- The relationship between the built form of the 25m pool, the main building and the raised walkway is retained.
- The zone below the raised walkway that has been identified as a potential site for a bouldering centre and soft play / workspace is still available. This allows for more floorspace demands to be met within the existing massing of the NSC, minimising impacts of new built form in the listed park.
- The raised walkway carries pedestrians using the Paxton Axis over the Jubilee Stand Road, avoiding an interface with service traffic and wheeled sports.
- New staircases (3, 4) provided to increase permeability and connections between the raised walkway and the space below, enhancing the north-south axis between the sports hall and the athletics track.
- Entrance to main building remains at 2nd floor level, which reduces alterations required to the listed structure.
- The raised walkway provides a vantage point for panoramic views along the extent of the walkway and across the park. The position at tree-canopy level at the eastern end has the potential to bring visitors closer to nature, and offers a unique experience within the park.

Disadvantages
- Access from the Penge approach into the main building is not significantly improved, as access by steps (1) is still required to address the approx. 6m level difference between the Jubilee Stand Road and the main entrance to the sports hall.
- Views up the Paxton Axis from East to West are improved by the removal of the mid-level 'wings' but the walkway still obstructs views of the upper terraces.
- Could be considered to provide insufficient heritage benefit for the listed park due to obstructions to the Paxton Axis' original Victorian form.

This study is included in Scenarios B, B1, C, C1.



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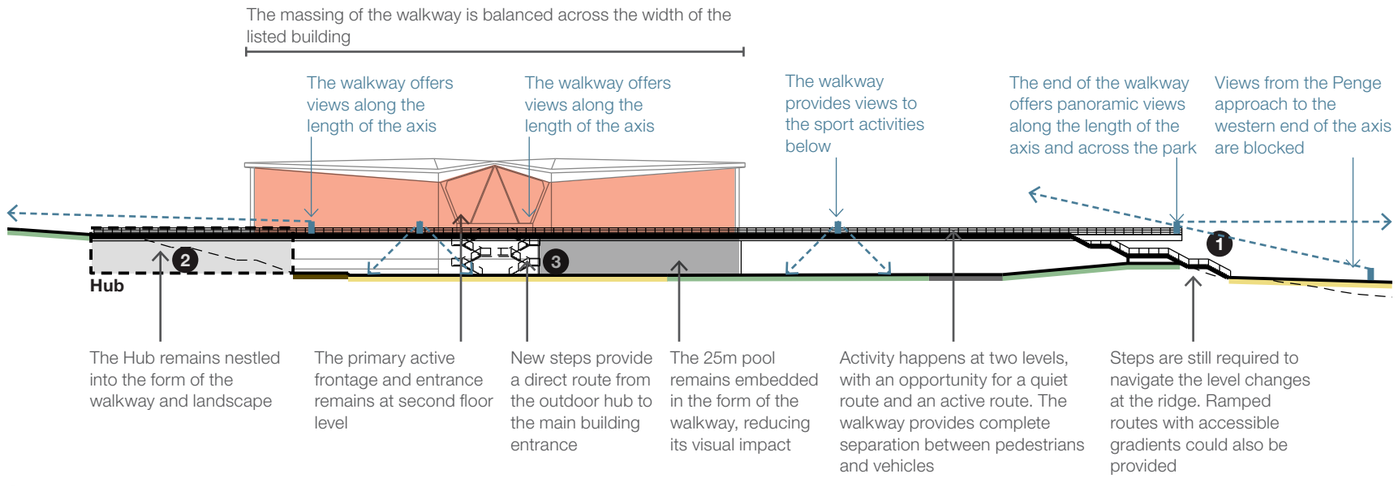
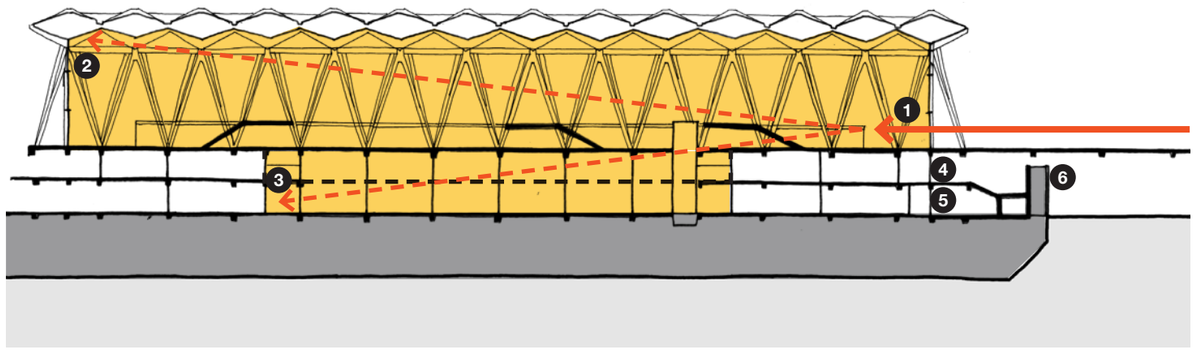


Section

6 Design studies
6.7 Raised walkway
6.7.5 Retention vs. removal - impact on the listed building

Impact on the main building
The sections below illustrate the impacts on the structure and experience of the main building of removing the raised walkway.

Section - with raised walkway



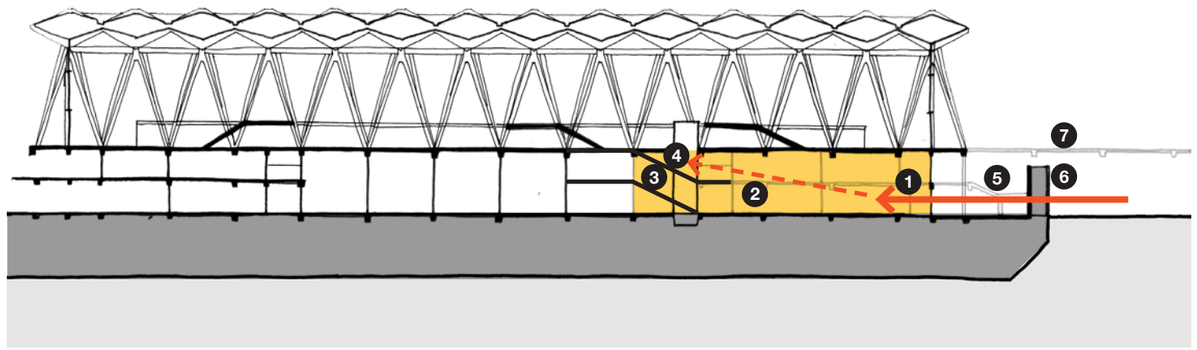
Zone of building visible on entrance

Entrance

View line

1. Entrance at 2nd floor level above ground via raised walkway
2. Long views across the full length of the building, including the feature soffit and expressive concrete structure
3. View down to main hall and pools on either side of concourse
4. Historic athletes entrance, to main hall level
5. Historic service entrance
6. Ventilation shaft structure

Section - without raised walkway



1. Entrance at ground floor level
2. 1st floor slab and partitions on ground and 1st floor demolished to create entrance lobby space
3. New central staircase
4. Views on entrance limited to entrance lobby
5. External staircase demolished
6. Vent shaft obstructs route, demolition and re-routing may be required
7. Raised walkway structure demolished

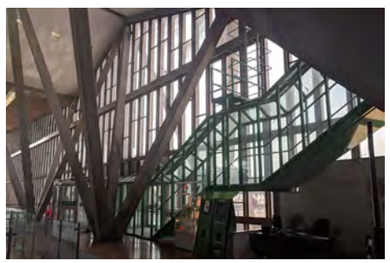
The main building was designed to be accessed from walkway level, and this is crucial to the visitor experience on entering the buidling. On entering the building from the raised walkway, the visitor immediately finds themself in a vast triple-height space, flooded with natural light and with long views across the whole building. The unique architectural features of the building, including the expressive concrete structure and timber soffit, are on full display. The visitor is able to see mulitple activities happening at once: swimming and diving in the pools, indoor sports in the main hall and gymnastics on the North Balcony. This experience is integral to the NSC's long-standing unique vision of being a truly multi-sport destination; it creates an inspiring atmosphere that encourages participation in sports and physical activity.

The images below demonstrate the grand and celebratory architecture of the current entrance.

The section above shows how the main building could be altered to relocate the entrance to the ground floor, if the raised walkway was removed. The current ground floor operates almost as a basement level - with the exception of the dry diving and gym facilities, the spaces are small and narrow, with low ceilings. The entrance on ground floor level is used as a service entrance. There is little glazing or active frontage on the ground floor.

Significant structural work would be required to create an appropriate primary visitor entrance on the ground floor. Openings would be cut into the existing first floor slab, internal walls removed and a new staircase installed to create a double-height space large enough to accommodate a reception and space for crowd-control. Even with these major interventions, the experience upon entering the building would be much less significant than the current condition - views would be limited to a much smaller space, and the main architectural features of the building would not be appreciated.

Left
Approaching the main entrance via the raised walkway

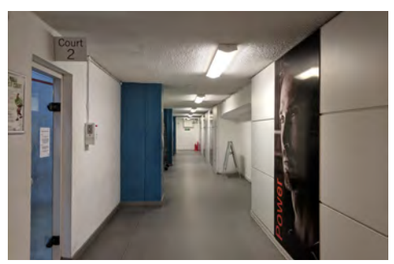


Middle
The entrance is a triple-height space with floor-to-ceiling glazing

Right
Photo of the NSC on opening in 1964, showing the long views across the building

Left
First floor 'athletes entrance' and ground floor 'service entrance'.

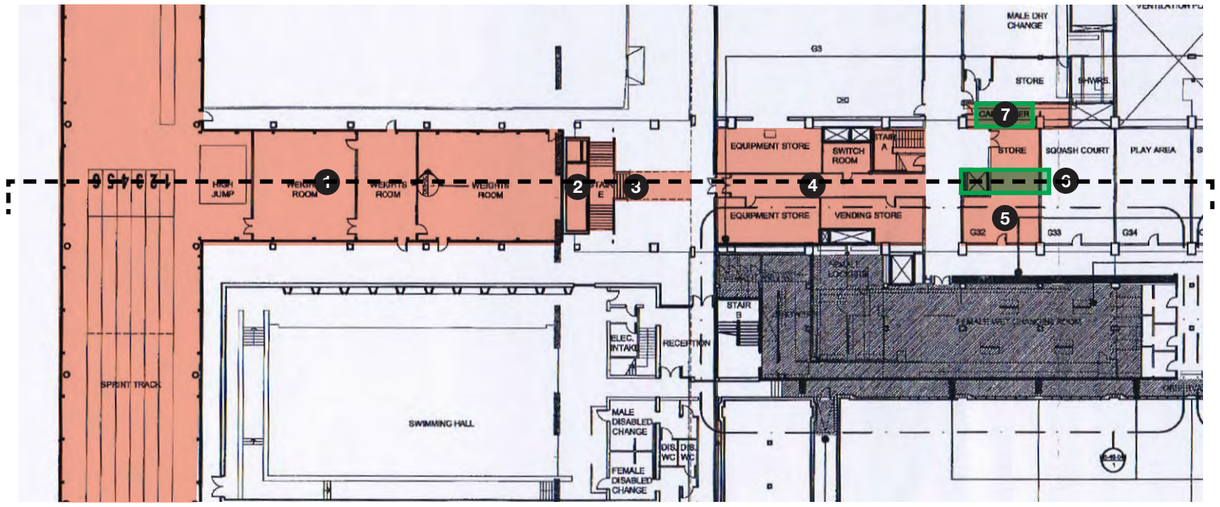
Middle
The ground level frontage is of lower quality than the rest of the building, with minimal glazing and small escape doors.



Right
The internal spaces at the ground floor entrance are narrow and low.

6 Design studies
6.7 Raised walkway
6.7.5 Retention vs. removal - impact on the listed building

Plan - without raised walkway - demolition & new structures



Structure would require demolition

New structure

1. Raised walkway and structures below demolished
2. Vent shaft structure demolished and vent re-routed
3. Staircase demolished
4. 1st floor slab and partitions on ground and 1st floor demolished to create entrance lobby space
5. Store demolished
6. New central staircase
7. New lifts

Demolition

Retaining the raised walkway requires no demolition within the main listed building; only demolition of the indoor athletics track and weightlifting enclosure beneath the walkway is recommended, and these are not original features of the 1964 design.

Removing the raised walkway and reconfiguring the building to provide an entrance on the ground floor involves significant demolition and structural works, as shown in the attached plan.

Rooms on the ground and first floor would need to be demolished, an area of the first floor slab would be removed to create a double-height space, a new staircase would be installed and one of the feature staircases leading to the upper concourses would need to be demolished.

The large air intake vent at the front of the building would be removed and the intake re-routed.

6 Design studies
6.7 Raised walkway
6.7.6 Conclusion

Conclusion
The emerging preferred option is that the walkway is retained, but improved as shown in 6.7.4. A key factor is the significant negative impact the loss of the walkway would have on the visitor experience of the main building, as shown in section 6.7.5.

In its original state, the walkway was a more successful intervention, and had a better relationship with the park. Before the space below was enclosed to create the indoor athletics and weightlifting facilities, the walkway appeared as a relatively lightweight structure floating above the landscape, allowing views through, rather than a barrier cutting across the site. Its form and position was a carefully considered element of the original design for the NSC, and was intended to form part of the plane-lined avenue extended as a bridge. The bottom left images show how this was considered. The walkway provides a dramatic route across the park, creating the experience of walking directly into the tree canopies.

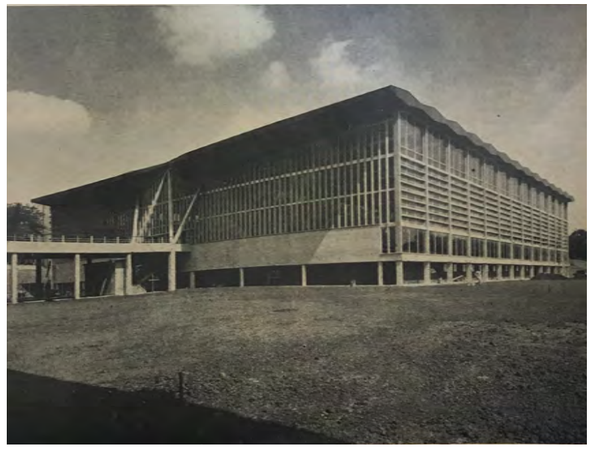
The walkway is an essential element of the modernist vision of the NSC design, in particular the carefully curated journey and procession to the building and the concept of activity at multiple levels, offering views down to activities happening below. The simplicity and clarity of the vision has been eroded by the ad-hoc additions and alterations over time. This should be rectified, and the original intention restored.

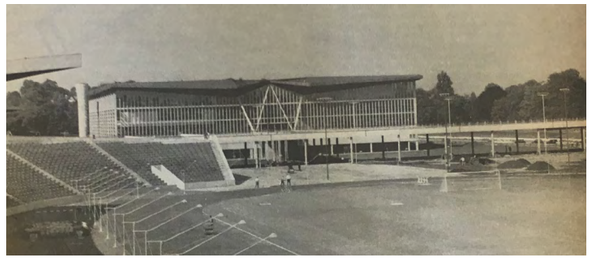
Although heritage benefit could be ascribed to loss of enough of the walkway to make reinstatement of the Paxton axis convincing, overall when the wider planning benefits are balanced against the heritage harm to the significance of the grade II* listed NSC it is challenging to see how that justification could be powerful enough to support a listed building consent and planning application. However, we propose that the two features can exist in harmony if the raised walkway is treated as a feature of the Paxton Axis. Although views from the Penge approach up to the upper terraces may be obstructed, at the same time the walkway offers a unique vantage point for panoramic views of the park and surroundings.

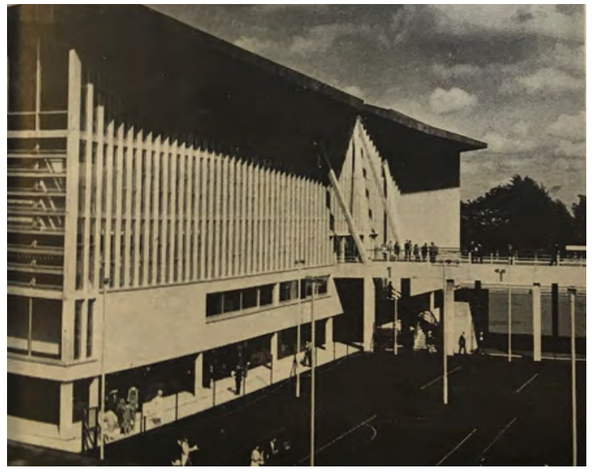
The NSC site is constrained there is demand for increased floorspace for many sports and complementary community uses. The raised walkway provides opportunity to infill sections below to provide necessary facilities, without increasing built form in the park.

Importantly, the raised walkway also provides an accessible route from the station approach and car-park to the main sports hall entrance. This would not be possible if it was removed. If the walkway was removed, parking may need to be relocated to the west of the main building so that level access to the entrance can be provided, however this involves routing vehicles along the Jubilee Stand Road and further into the heart of the park, which is not appropriate in the listed park context.

The preferred option to retain the walkway is in contrast with the recommendations of the 2007 park masterplan, which proposes to remove the walkway entirely. If the walkway is to be retained, a strong planning case will need to be constructed that sets out the wider benefits including visitor experience, accessibility and impact on the listed building. The recommendations made here are not final proposals, and will require further testing at the next stage, through more detailed consultation with stakeholders including LB Bromley, Crystal Palace Park Trust and Historic England.







Left top
Photo of the building prior to the construction of the 25m pool

Left bottom
Photographs showing the intention of the walkway as an extension to the Paxton axis.

Right top
Prior to the construction of the indoor athletics enclosure, the walkway was a lightweight structure that allowed for views and movement across the site below

Right bottom
The walkway was intended to provide separate entrances for spectators and athletes, and offered views down to sport activities below

Key plan

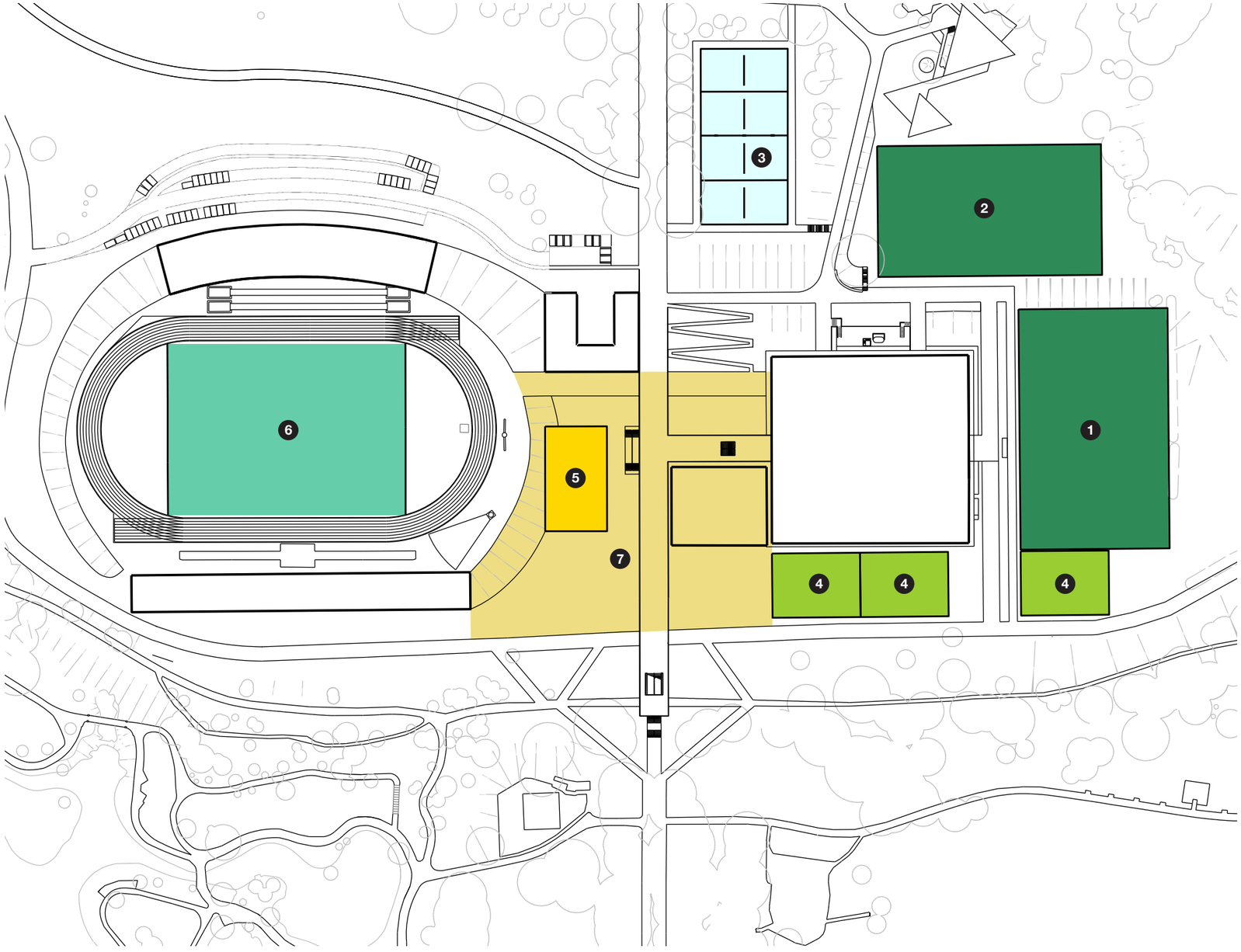
Larger pitches (hockey and football) should be relocated to the edges of the site to open up space at the centre of the site for the outdoor hub.

This study assumes that the existing inflatable football dome structure is removed, which would significantly improve integration of the NSC into the park by reducing built form and improving views across the historic fountain basin axis. The inflatable dome is considered a temporary structure in planning terms, and its planning consent expired in January 2016.

The hockey pitch is proposed to be relocated to the back of the building, in place of the current football pitch and dome. This is based on the assumption, informed by consultation with Crystal Palace Football Academy, that the Academy will be relocating their professional training facilities to a nearby location currently under development. The club remains interested in continuing to provide Football Foundation community programmes at the NSC, which can be accommodated on small-sided pitches. Refer to Section 12 for further detail.

The plan shows an optional second hockey pitch (no. 2). England Hockey have highlighted to the project team the importance of this site for the development of the sport and for the London Wayfarers club. The minimum requirement for expansion has been identified as two full size pitches. A potential location for the additional pitch has been identified adjacent to the Lodge. This requires further review at the next stage of the project in terms of its planning, heritage and landscape implications.

This study is included in Scenarios B, B1, C, C1.



N

Scale 1:2000 @ A3

1. Hockey pitch
2. Optional additional hockey pitch
3. Tennis courts as existing
4. 5-a-side football pitches
5. 3no. beach volleyball courts
6. Infield grass pitch
7. Outdoor hub zone

N

Scale 1:2000 @ A3

Following strong feedback from the local community, consideration has been given to the provision of a larger, dedicated climbing/bouldering facility at Crystal Palace.

This study shows three possible locations for a new enhanced climbing/bouldering centre, all of which provide at least double the floor area of the existing climbing facility. Options have been reviewed for the provision of a taller climbing facility, but the space is not available in any of the existing structures, and construction of a new tall building on the site would be unlikely to be acceptable in terms of planning and heritage. Therefore, bouldering rather than full scale climbing would be provided.

The space available for climbing is dependant on whether the 25m pool is retained, the amount of flexible space required for workspace, education and retail, and whether there is a demand for a dedicated soft play facility or lodging accommodation on the site.

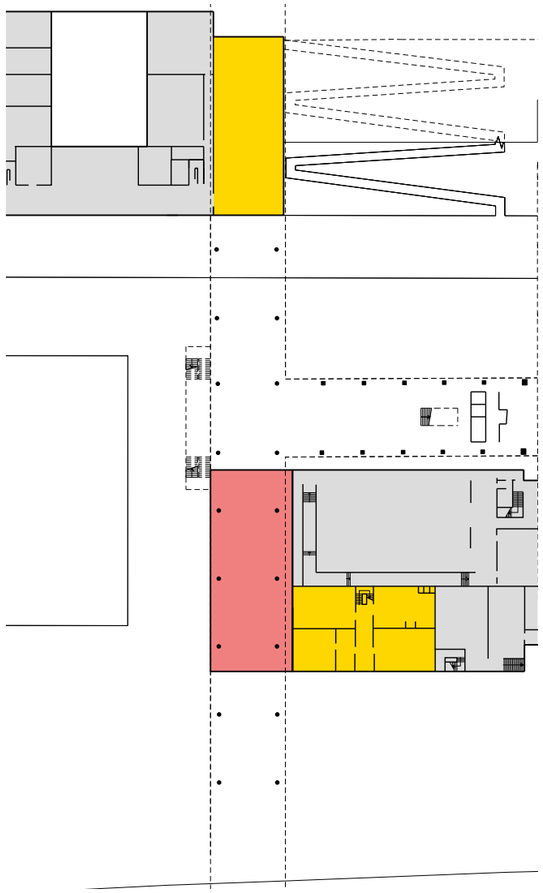
Option A
This option involves construction of a new enclosure below the raised walkway, adjacent to the 25m pool, for bouldering.
Pros: The enclosure adjacent to the hub remains available for other flexible uses. If the 25m pool is retained, the new enclosure has minimal impact on the openness of the outdoor hub and connectivity across this space. The facility would create an active frontage onto the outdoor hub, activiting the external spaces throughout the day and providing natural surveillance.
Cons: If the 25m pool is removed, the new enclosure would block the north-south connection across the outdoor hub space. The new enclosure has cost and planning implications.

Option B
This option is similar to Option A but with a larger bouldering facility.
Pros: Increased floorspace for bouldering.
Cons: Increased capital cost. The new enclosure blocks physical and visual connectivity north-south below the walkway which goes against project objectives.

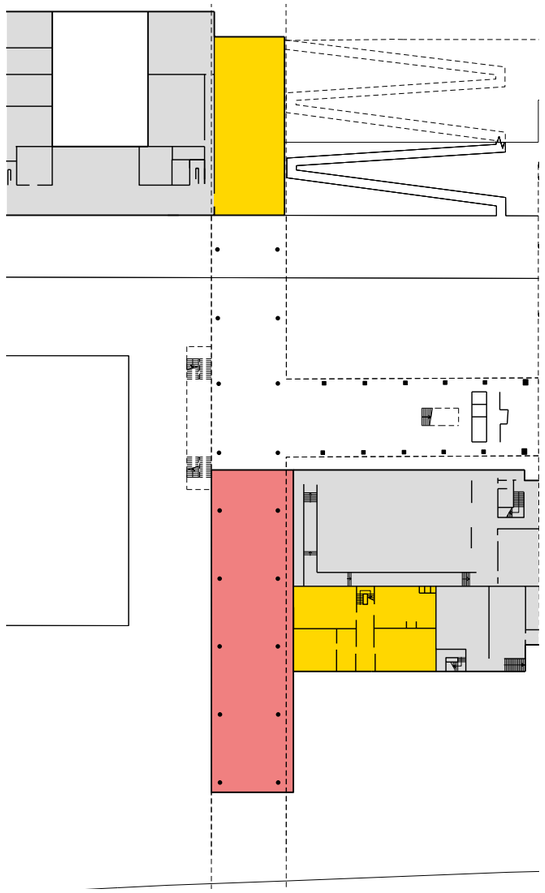
Option C
This option involves fitting out the flexible space below the west end of the walkway identified in the hub studies as a new bouldering facility.
Pros: Allows for maximum physical and visual connectivity across the outdoor hub, and allows for more external and freely accessible space to be used for play and casual activity.
Cons: Reduces the quantum of flexible space available, which could impact on opportunities to relocate education, lodging, healthcare and enterprise facilities from the Lodge and Jubilee Stand into the hub. It provides limited active frontage to the bouldering facility as it is bedded into the hillside.

Conclusion
Option A has been taken forward as the preferred option for the purposes of this study, although this will require further review at the next stage, with a deeper understanding of operator requirements and market demand for climbing.

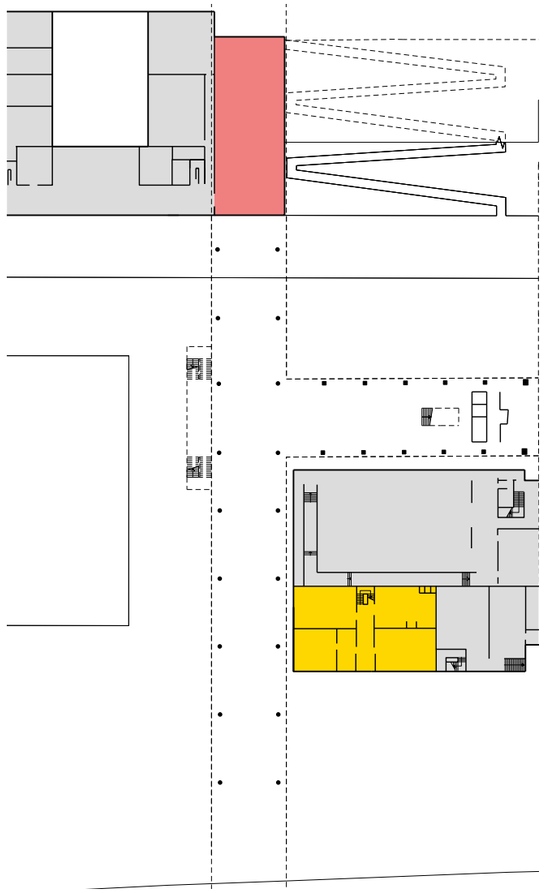
Option A is included in Scenarios B, B1, C, C1.



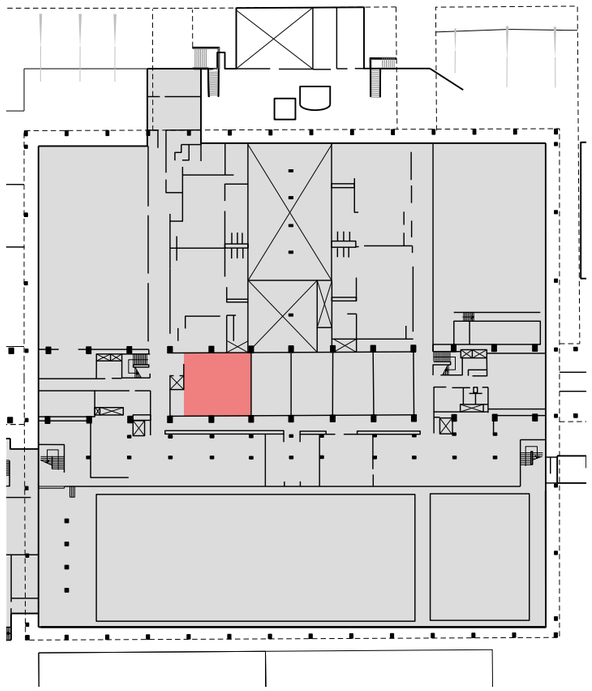
Option A



Option B



Option C



Existing

N Scale 1:1000 @ A3

Climbing / bouldering

Flexible space

6 Design studies
6.10 Access & connections
6.10.1 Pedestrian access

This study explores pedestrian access across the site as a whole.

There is an overarching principle of primary access points from public transport, parking and neighbourhoods at the perimeter of the park.

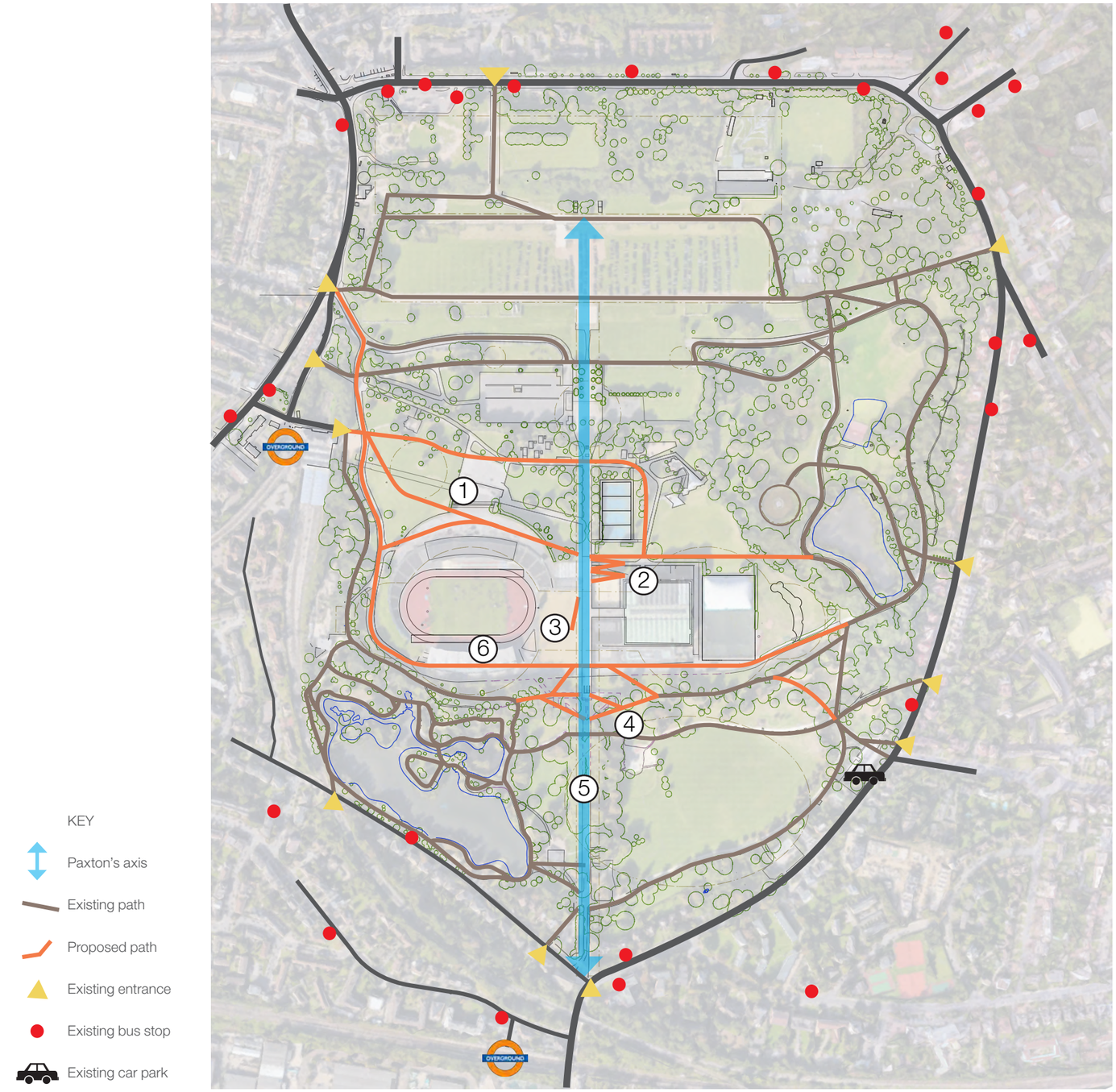
More people on routes from the park perimeter to the NSC, along with lighting and management of vegetation (to ensure open views), will increase safety within the park.

Access to the NSC from Penge and Crystal Palace stations is key. Listed below and illustrated on this diagram are the necessary interventions to improve the connection between the two stations through the NSC.

1. New path from Crystal Palace Station to the NSC hub around the restored rosary landform. This coincides with a key desire line.
2. Accessible compliant steps and ramp from western end of the raised walkway down to the external hub space.
3. Further steps in and around the raised walkway and external hub space.
4. New steps to the end of raised walkway providing a direct link to Penge gate, with new accessible compliant paths giving access to external hub space from the central axis (detailed further overleaf).
5. Link from Penge station to NSC along the Paxton Axis with non-compliant gradients. Due to existing trees and natural slope of site it would not be possible to reduce these gradients.
6. Activated pedestrian priority route along current service road.

Other links shown in orange ensure that the NSC ties into existing path network

This study is included in Scenarios A1, B, B1, C, C1.

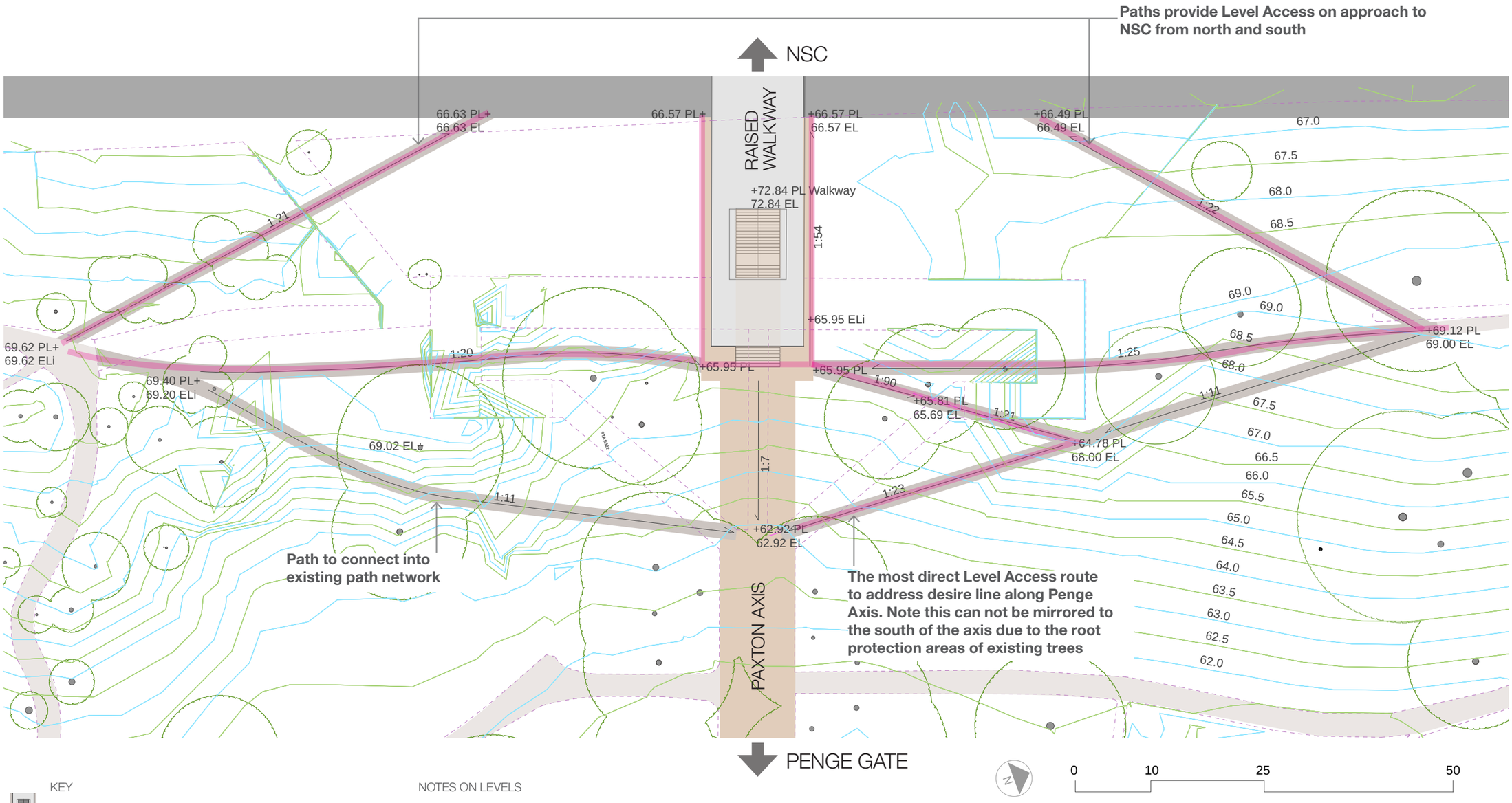


6 Design studies

6.10 Access & connections

6.10.2 Pedestrian cccess - Eastern end of Walkway

Right
Proposed paths at Penge end of the Walkway which are set out to maximise number of easily accessible gradients and retain existing trees



KEY

- Existing raised walkway with new accessible compliant steps
- Existing path
- Removed path / structure
- Proposed path
- DDA complaint gradients

NOTES ON LEVELS

EL = Existing Level
ELi = Interpolated Existing Level
PL = Proposed Level
Contours are existing. Regrading will be necessary

There is currently no compliant accessible route from the Penge approach to the NSC site. Along with the reconfiguration of the steps at the end of the walkway, options were reviewed to construct ramps from ground level to walkway level. However, due to the 6m level difference and the shallow gradients required for accessibility the resulting ramps would be unfeasibly long, and would create barriers across the site.

This study shows how the routes around the base of the walkway can be reconfigured to provide a compliant accessible route over the ridge, from which point visitors can access the outdoor hub and lift in the hub building to provide access to the sports hall entrance. Due to the number of existing mature trees in the area and the intention to protect these, there is limited scope for regrading the site levels. Consequently the routes are required to navigate the existing contours, and cannot necessarily follow desire lines directly.

6 Design studies
6.10 Access & connections
6.10.3 Proposed road infrastructure and parking location options

A coordinated approach to parking which addresses needs of both NSC and park users is required. This should be part of a wider assessment of the park and NSC's transport needs that accepts the need for the majority of people to walk to the NSC from surrounding neighbourhoods and public transport links.

It is clear from the consultation process that parking is a concern for many users of the NSC, and there is a demand for sufficient parking to make the centre accessible for families with young children and visitors with bulky and heavy equipment. However parking should be controlled and managed to reduce its impact on the park. The initial transport study in section 10 recommends an approximate capacity of 150 spaces, although this requires further investigation with detailed parking surveys.

These diagrams review the potential locations for the main car park. The pros and cons of each location are listed below based on the following criteria:

1. Keeping parking and road infrastructure as far as possible away from the centre of the park.
2. Encouraging a better spatial relationship between the park and the NSC, particularly along eastern edge which is currently vehicle dominated.
3. Where possible keep pedestrian and vehicle routes separate.
4. Ensure parking and road infrastructure is minimised and where necessary is as un-obtrusive as possible. This is particularly important in relation to important historic landscape character types and views.
5. Allowing easy access to the main entrance of the NSC.

Based on the analysis of the different locations below, in relation to the above criteria option 4 is the current preferred location.

Location 1
Approx distance to the main entrance: 235m*
Maximum capacity: approx. 85 spaces
Pros
– Relatively close.
Cons
– Brings vehicles into the centre of the park.
– Retains vehicular route along eastern edge of NSC which is detrimental to positive relationship along this boundary.
– Requires the most road of the 4 options.
– Takes space that is identified as a location for 5-aside.
– Makes vehicles visually prominent within hub space.
– Mixes vehicles and pedestrians.

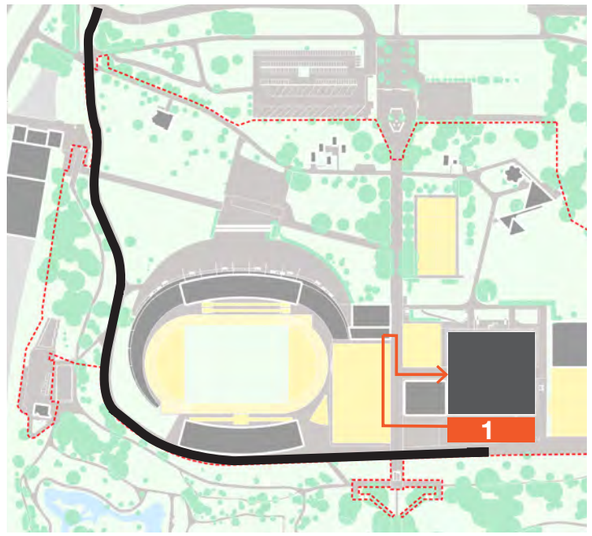
Location 2
Approx distance to the main entrance: 300m
Maximum capacity: approx. 60 spaces
Pros
– Relatively discreet location.
Cons
– Retains vehicular route along eastern edge of NSC which is detrimental to positive relationship along this boundary.
– Takes space that is identified as a location for play track, part of the play into sport approach that includes the proposed play track, the proposed indoor track, and the existing outdoor track.

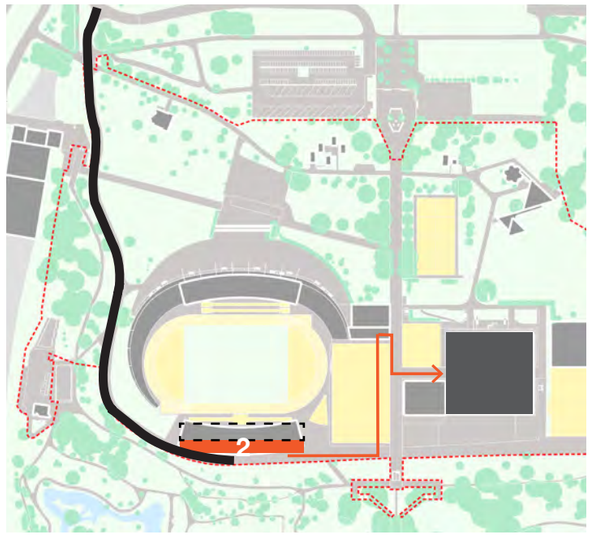
Location 3
Approx distance to the main entrance: 430m*
Maximum capacity: approx. 50 spaces
Pros
– Relatively discreet location .
– Removal of cars from eastern edge allows development of positive relationship between the park and the NSC.
– Limited road required.
Cons
– The furthest option from the main entrance.
– May interrupt historic view north across basins.

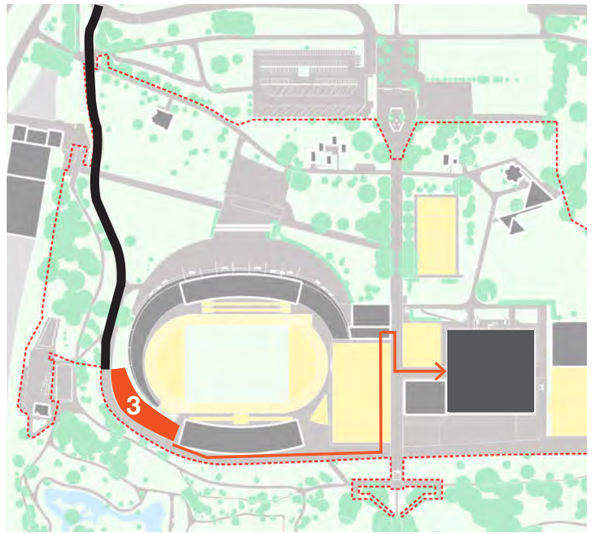
Location 4
Approx distance to the main entrance: 220m
Maximum capacity: approx. 140 spaces
Pros
– Closest option.
– Removal of cars from eastern edge allows development of positive relationship between the park and the NSC.
– Limited road required.
– Uses existing hardstanding.
– Located at upper level so ramp / step / lift access not needed to access main building entrance.
Cons
– Sits on historic view from Rosary and is visible from transitional landscape (although this may be mitigated.

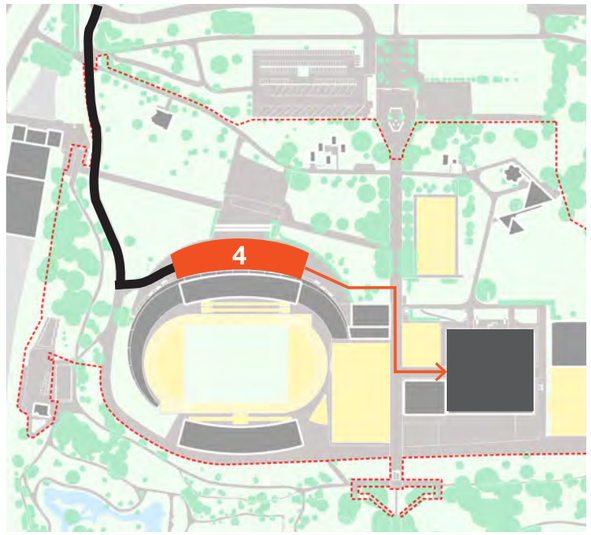
*Locations 1, 2 and 3 involve access via steps, ramps or lift. Measurement is via lift.

Refer to section 10 for further detail on transport and parking.



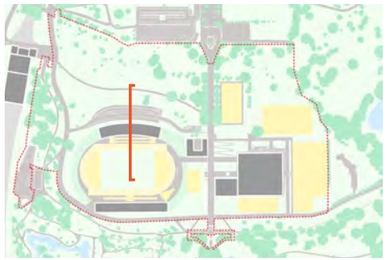






Location 4 is included in Scenarios A1, B, B1, C, C1.

6 Design studies
6.10 Access & connections
6.10.3 Proposed road infrastructure and parking location options



Key plan

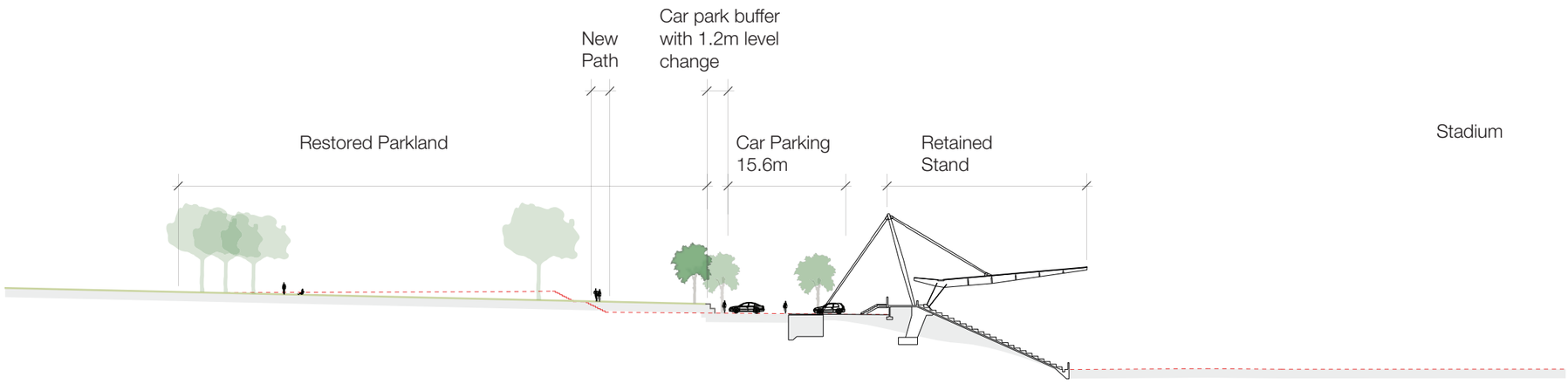
This study shows how the preferred parking location identified on the previous page contributes to the integration of the NSC into the parkland. It does this by using an area of existing hard-standing located in an existing dip in the topography, which lessens the visual obstruction of views across the park.

The car park sits within extent of retained form of stand. Grouping hard elements reduces the visual impact in the park.

The section below demonstrates how level changes and tree planting can reduce the impact of car parking on views.

Proposed car park sits within extent of built form of retained stand

View from historic rosary mound



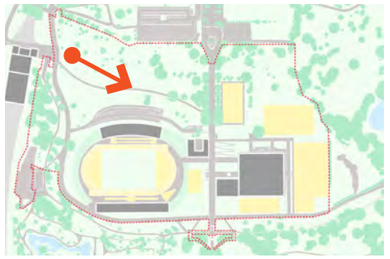
Section

6 Design studies
6.11 Key views
6.11.1 View from station footpath

Key move: Access, legibility and connectivity
This view explores the approach to the sports centre from Crystal Palace station. It shows how the route can be made clearer, safer and more direct, and how views can be opened up to reveal the main building.

Moves
- New direct pedestrian route.
- Reinstate historic Rosary mound to provide panoramic views across Crystal Palace.
- Remove Leylandii trees to open up view of centre from station.
- Move parking to behind West Stand.
- New trees planted.
- Install new lighting.

Outcomes
- Improved connectivity between the Centre and its surroundings.
- Better integration of the Centre into the wider park.
- Safer, accessible route from Crystal Palace station to the Centre.
- Separate pedestrian and vehicle routes for safer access.



Key plan

Top right
Photograph of existing view
Below
Illustration of proposed view.

6 Design studies
6.11 Key views
6.11.2 View from end of walkway with new stair configuration

Key move: Access, legibility and connectivity
This view shows the route to the sports centre from Penge, as you approach the raised walkway along the Paxton Axis. It shows how the existing structure can be retained, but reconfigured to improve connectivity to the sports centre and integrate better with the Paxton Axis.

Moves
- New stair to ground level at end of raised walkway
- Remove mid-level landing and side stairs of raised walkway
- New accessible pedestrian paths from Penge axis to Jubilee Stand Road

Outcomes
- Improved connectivity between the Centre and its surroundings by removing barriers
- Better integration of the Centre into the wider park
- Safer, clearer route from Penge entrance to the Centre

Key plan

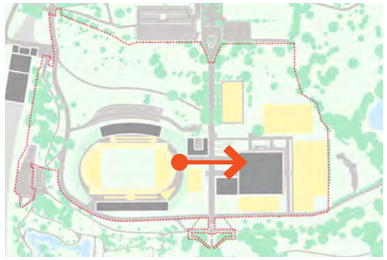
Top right
Photograph of existing view
Below
Illustration of proposed view.

6 Design studies
6.11 Key views
6.11.3 View of hub and walkway

Key move: Consolidate activity around one central space 'The Hub'
Here, the bar is refurbished and enhanced to provide the central Hub with café-bar, club rooms and community facilities. The central external space is cleared and opened up to create an open space that allows visitors to orientate themselves within the site. The 'outdoor hub' is occupied by various features and activities that encourage informal physical activity and play - increasing levels of physical activity in the community.

Moves
- Move hockey pitch to back of main building
- Relocate indoor athletics and strength & conditioning to new building next to outdoor track, and open up underside of raised walkway
- Provide new 'Hub' in existing bar building
- Construct new stairs down from raised walkway
- Create outdoor hub - a space for informal play and sport that encourages physical activity
- Relocate beach volleyball to south of walkway
- Construct new bouldering facility below part of raised walkway

Outcomes
- Better integration of the Centre into the wider park
- Central hub gives the centre a new identity
- Improves permeability across the site
- Improves wayfinding
- Encourages wider family use
- Encourages informal and leisure users to enter the facility
- Encourages existing users to use the facility in different ways



Key plan

Top right
Photograph of existing view
Below
Illustration of proposed view.

6 Design studies
6.11 Key views
6.11.4 View under walkway

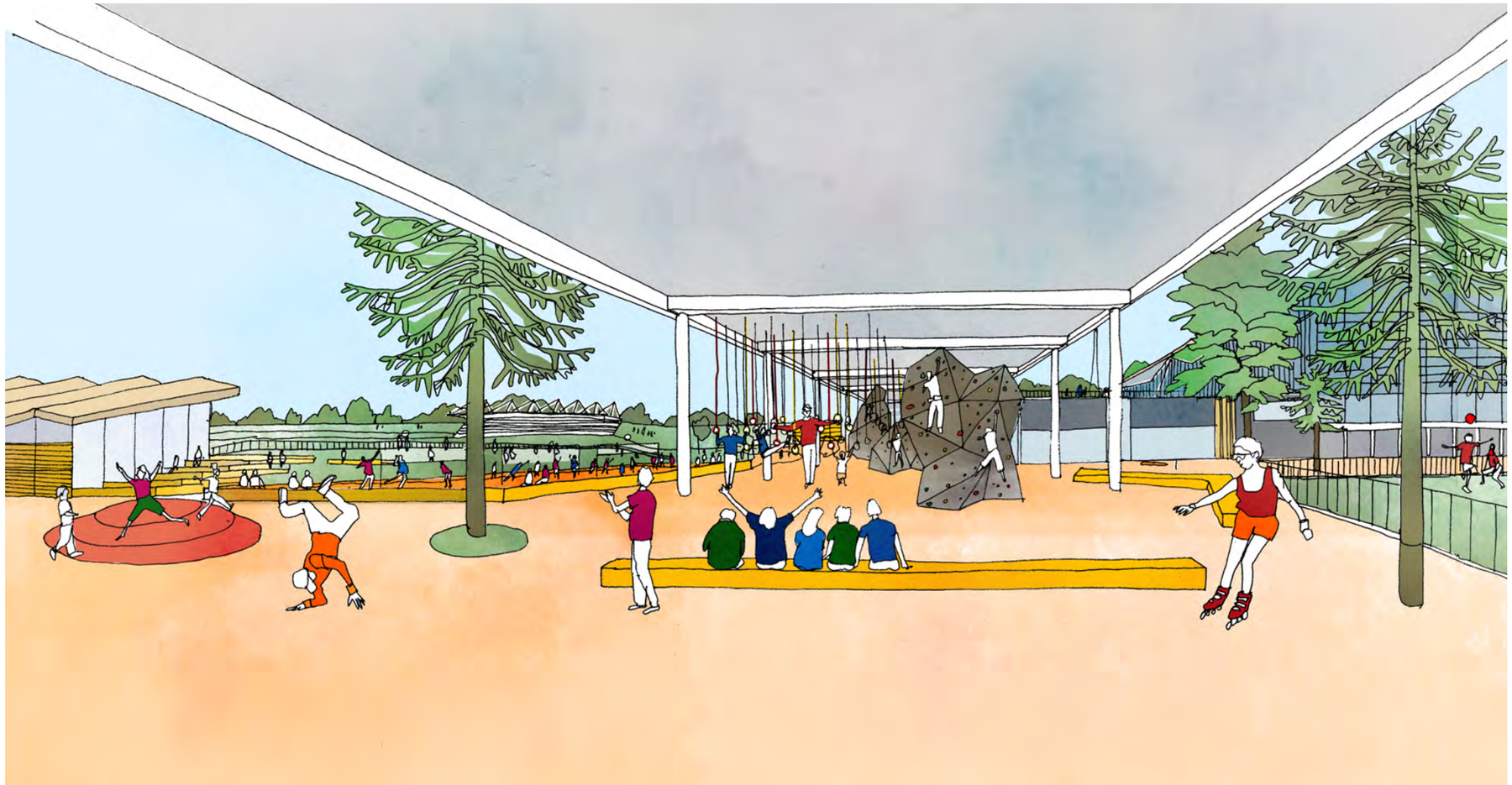
Key move: Consolidate activity around one central space 'The Hub'
This sketch shows the approach to the centre from the west at ground level (as opposed to on the walkway). Currently, visitors are confronted with multiple barriers - fencing, the indoor athletics facility, and the 25m pool - and the route to the main building or any of the facilities is not clear. Relocating the indoor athletics facility to a new building adjacent to the stadium allows the space under the walkway to be opened up. Fencing is removed, and the boundary between the NSC and the wider park is softened.

Moves
- Move hockey pitch to back of main building
- Relocate indoor athletics and strength & conditioning to new building next to outdoor track, and open up underside of raised walkway
- Create outdoor hub - a space for informal play and sport that encourages physical activity
- Relocate beach volleyball to south of walkway
- Construct new bouldering facility below part of raised walkway
- Re-surface Jubilee Stand road track for wheeled sports
- Replace Jubilee Stand with new indoor athletics and strength and conditioning building
- Retain West Stand and integrate remainder of stands into the landscape with grass banks suitable for temporary seating

Outcomes
- Better integration of the Centre into the wider park
- Improves permeability across the site
- Improves connectivity between the Centre and its surroundings
- Encourages wider family use
- Encourages informal and leisure users to enter the facility
- Encourages existing users to use the facility in different ways and stay longer
- Improves accessibility of stadium to more users

Key plan

Top right
Photograph of existing view
Below
Illustration of proposed view.



6 Design studies
6.11 Key views
6.11.5 View along Jubilee Stand road

Key move: Provide a sustainable and accessible stadium facility
One of the moves recommended in these studies is to replace the Jubilee Stand with a new indoor athletics facility. A lower, lightweight structure in place of the existing building would improve views, and reduce the 'canyon' effect created behind the Jubilee Stand, creating a safer environment. The Jubilee Stand road could be re-surfaced to encourage wheeled sports, linking to the existing skate park behind the main building. A play track next to the indoor track encourages play in proximity to sport with the intention of developing sports skills in young members of the community. The retaining wall is removed to soften the boundary with the park.

Moves
- Replace Jubilee Stand with new indoor athletics and strength & conditioning building
- Move parking to behind West Stand (blue-badge parking could be provided here)
- Remove retaining wall and re-grade as grass slope with seating
- Re-surface track for wheeled sports
- Clear tree understory
- Provide play track and other equipment to encourage un-programmed physical activity

Outcomes
- Better integration of the Centre into the wider park
- Encourages wider family use
- Encourages informal and leisure users to enter the facility
- Encourages existing users to use the facility in different ways and stay longer
- Play in proximity to sport encourages activity

Key plan

Top right
Photograph of existing view
Below
Illustration of proposed view.

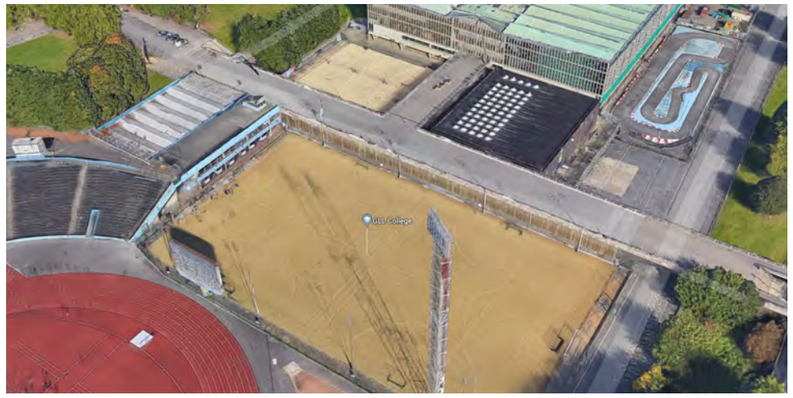
6 Design studies
6.11 Key views
6.11.6 The outdoor hub - overview

Overview
This shows how many of the ideas explored in the studies presented in this report could come together to create a new vision for the NSC. It shows how sporting output could be retained whilst opening up the centre to a wider audience to create a vibrant hub of physical activity and community use.

Similar outcomes are achieved whether the 25m pool is retained or removed. The following page shows the same view, with the 25m pool removed.

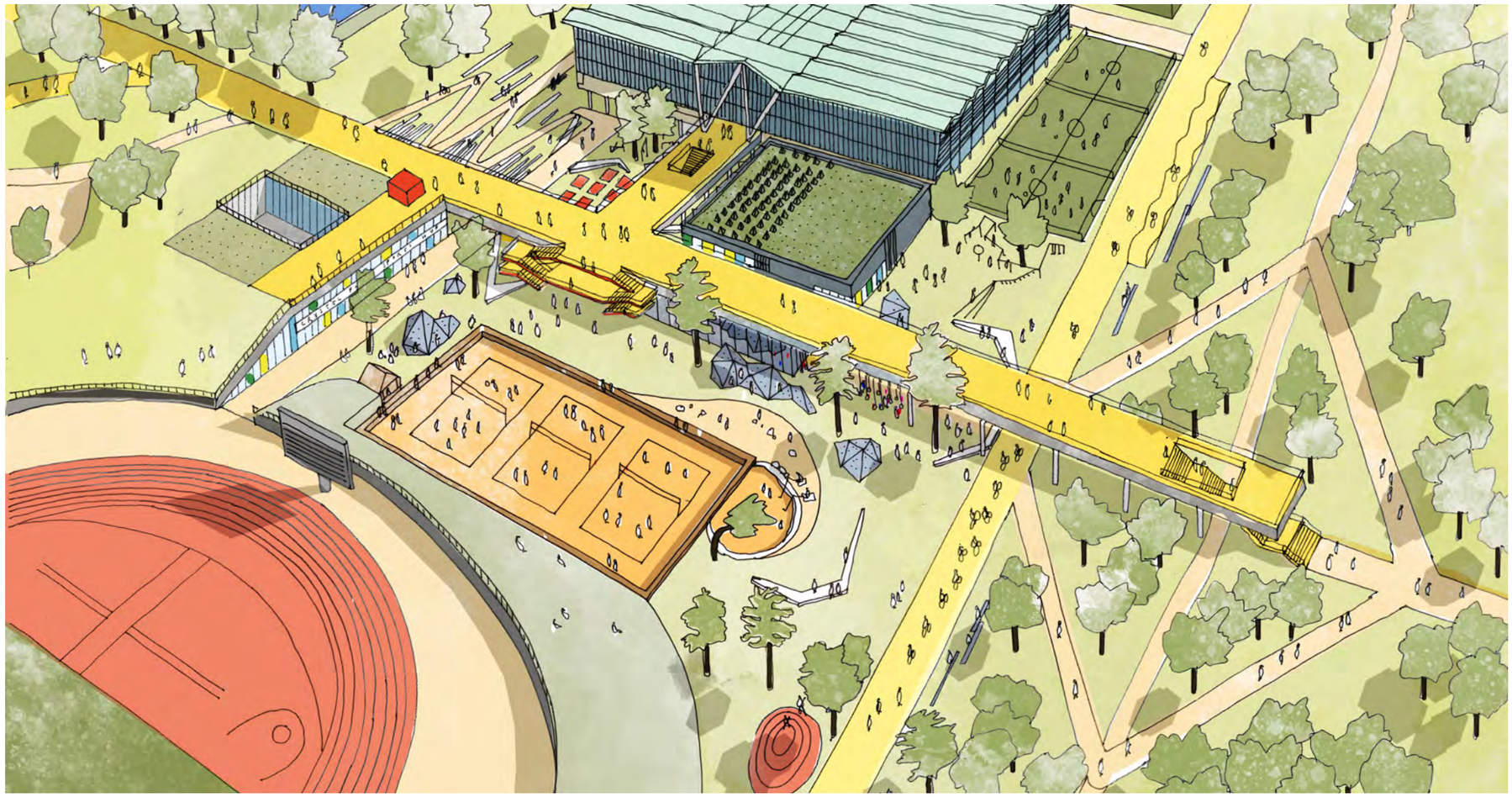
Moves
- Move hockey pitch to back of main building
- Relocate indoor athletics and strength and conditioning to new building next to outdoor track, and open up underside of raised walkway
- Create outdoor hub - a space for informal play and sport that encourages physical activity
- Relocate beach volleyball to south of walkway
- Re-surface Jubilee Stand road track for wheeled sports
- Retain West Stand and integrate remainder of stands into the landscape with grass banks suitable for temporary seating
- Provide new 'Hub' in existing bar building
- Reconfigure east end of walkway
- Construct accessible ramps down at west end of walkway
- Construct new stairs down from raised walkway
- Provide lift to/from walkway
- Relocate small-sided football to east of main building

Outcomes
- Enhances connectivity
- improves accessibility and wayfinding
- integrates the centre into the park
- provides spaces and activities for all ages and abilities
- protects and improves the landmark building.



Key plan

Top right
Photograph of existing view
Below
Illustration of proposed view.



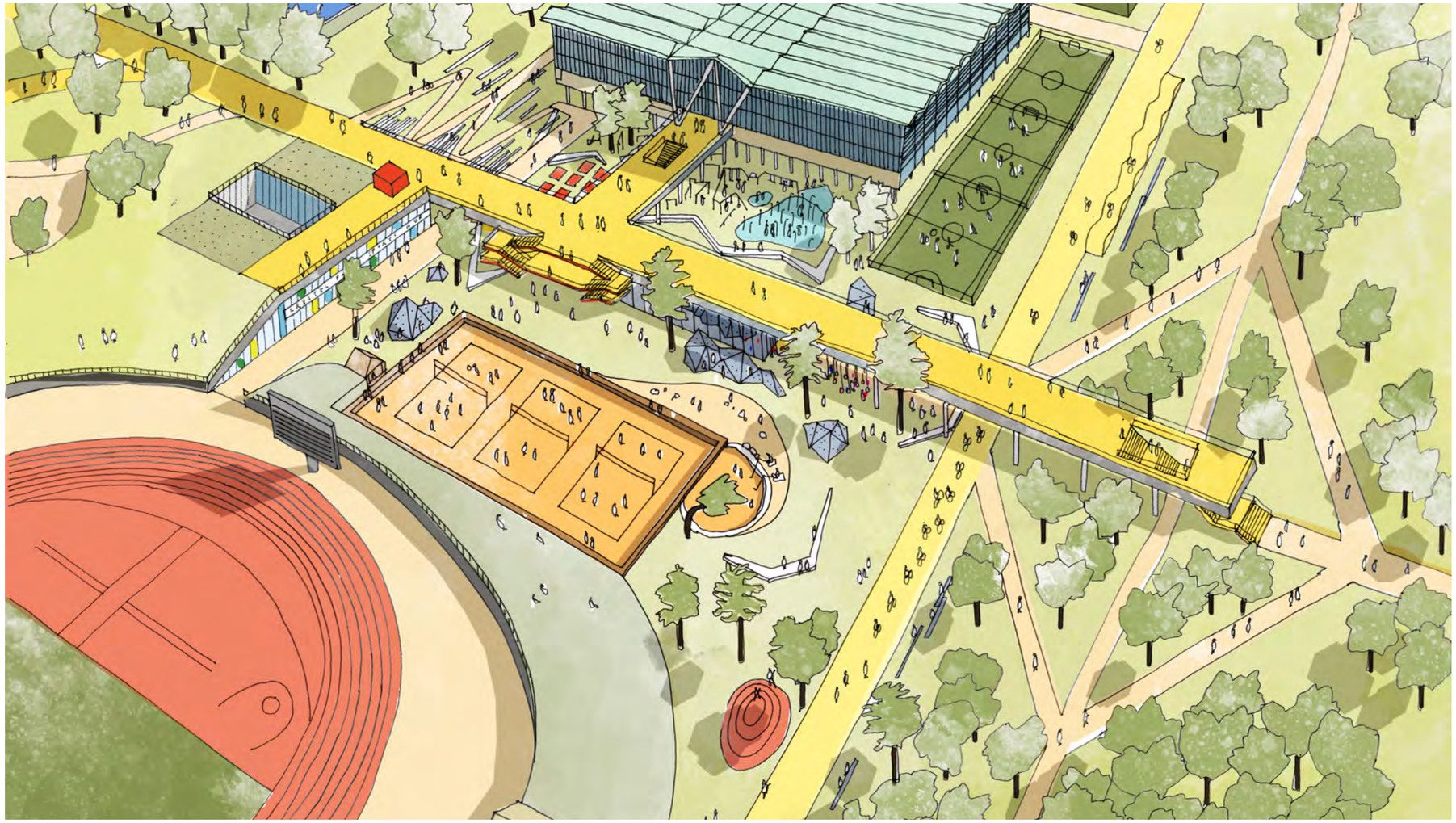
6 Design studies
6.11 Key views
6.11.6 The outdoor hub - overview

25m Pool
This sketch shows the same view as the previous page, with the 25m pool removed as explored in design study 6.3.6 - 6.3.8.

The reconfiguration of the pool space at the NSC could have positive impacts on the outdoor spaces around the site, allowing more space for informal activity. Removing the pool allows for additional external space to be developed as part of the 'outdoor hub' zone, as demonstrated in this image. Options could be explored to introduce external water activites, referencing the lost school - this include water play, fountains, ice-skating or a small lido.

Removal of the 25m pool would open up views across the site and to the elevation of the listed building, and would improve connectivity across the site.

The viability of retention or removal of the 25m pool is explored further in section 15.



7 Built heritage & planning review

Turley
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Introduction

This final review of both built heritage and planning considerations has been prepared by Turley in relation to proposals for the future use of the Crystal Palace National Sports Centre (NSC) (the "Site"), within Crystal Palace Park and the London Borough of Bromley (LBB). This is intended as an input to the Final Report prepared by Hawkins \ Brown architects for this project; in tandem with the work of the wider multi-disciplinary team. For ease of use this report and our advice is set out here through commentary on the preferred Scenario C1 and Design Studies (Section 6) prepared by the architects.

Our analysis and advice is informed by the baseline of earlier assessment of the built heritage context, and (legislative and) planning policy context, for the Site and its use / development. This baseline work is appended in full here as:

Appendix 2
(a) Appendix A: Initial Built Heritage Appraisal
(b) Appendix B: Planning Policy Context

Design Studies (Section 6)

6.3 The Main Building and Pools

The Main Hall and Pools form part of the listed building NSC, which has been identified to be of 'more than special interest' through designation at Grade II*. The list entry identifies that the later added small pool does not form part of special interest, although it may be considered potentially to hold some heritage significance as part of a wider phased complex and its setting.

Physical subdivision of the pool and hall areas within the NSC is a complex technical exercise, and would result in a significant change to the original look and experience of a key part of the listed building and its distinctive 1960s structure / architecture internally. This could be considered to be harmful to heritage significance, and therefore presumed against in legislative and policy terms. Justification would therefore need to be provided that such change could be handled sensitivity in detailed design / materials terms, and also that such subdivision to control the environment of these different functions would be in the interests of the long term conservation and reuse of this designated heritage asset as a whole. Consideration should also be given to the potential for such subdivision to be designed to be a reversible intervention, and also how materials could be specified to allow long views through and across the space.

These works would not require planning permission but would require listed building consent, would then be viewed in the wider context as part of a comprehensive list of public benefits.

Proposed reconfiguring sports into clusters internally could be achieved without compromising the particular significance of the listed building, subject to detailed design and use of materials. Although physical change would occur; such as the intervention of a new mezzanine floor within the hall area, this could be designed to be sympathetic to the distinctive architectural character internally and also to defer to the important and powerful spatial proportions and experience of this building. This change should also be considered in the context of past alteration within this area of the hall.

Reconfiguration of original pool layout would change a key characteristic of the listed building internally. This could be considered to cause a degree of harm to the significance of the listed building. Such proposals would, therefore, need to be justified (subject to detailed design and technical constraints) on basis that this would be a required adaptation in the interests of the long term conservation of the building and its historic use for swimming / diving. The sensitivity of the small pool to change in terms of heritage significance is far less by comparison, in light of its later date and secondary nature.

It should be noted in addition that any possible proposed removal of the existing diving boards would very likely be considered to be harmful to heritage significance through loss of a distinctive original feature of this part of the building.

These works could be argued to require planning permission as well as listed building consent due to the scale and nature of proposed works triggering 'development'. A case could be made in planning policy terms that that the adaptation of the building is needed to secure its long term future and will deliver significant public benefits.

6.4 and 6.5 The Hub and The Lodge

In built heritage terms, that building now referred to as The Hub forms part of the original sports complex development of the NSC; albeit an outlying part, which has been later altered, and now makes a more limited contribution to the significance of the listed building. As with the wider complex, it sits within the designated heritage assets of Crystal Palace Park Conservation Area and registered park and garden.

Retention and adaptive reuse of this building could be promoted as a heritage benefit in securing the future use of this part of the complex. Part infill below the adjoining walkway could also be achieved without compromising the particular significance of the listed building, subject to detailed design.

The Lodge is a locally listed building and non-designated heritage asset, which also forms part of the wider sports complex historically (i.e. a positive element of the setting of the listed building NSC). Retention and adaptive reuse of this building could be promoted as a heritage benefit in securing its future use. However care would need to be taken through detail design and use of materials to ensure that proposed adaptations would not harm the distinctive character and local architectural or historic significance of this building, or its contribution as part of a wider complex.

In planning policy terms the retention and adaptive reuse of the Hub building securing its future use will be considered a positive planning benefit. The retention of the Lodge building for education, conference, community and lodging accommodation will also be viewed as a compatible use that is supported by planning policy at both local and regional level.

The proposed demolition of the Lodge would result in loss of the significance of this non-designated heritage asset, and could also be considered to cause a degree of harm to the significance of the designated heritage assets of the listed building at the centre of the NSC / conservation area, through change to a part of its setting / area. Such harm (or loss) is presumed against in policy terms (and also legislation with regard to the listed building / conservation area).

A counter argument could be considered that the proposed demolition of the Lodge could be considered a heritage benefit in specific relation to the registered park and garden (and also to a degree the surrounding conservation area); by in some way better revealing the earlier character of the 19th century park landscape design, subject to detail of design / planting. This other effect would have to be considered; and appropriate weight given, as part of the wider heritage and planning balance.

Through our study, and also review of the past 2007 Masterplan for the park, a degree of tension has been identified between the heritage values of the post war Modernist and earlier 19th century landscape design by Paxton. The past and much larger scheme for the future use and development of the park from 2007 sought to justify substantial change by setting out that that loss of part of the post war architecture and history of park was outweighed by the benefits of better revealing the important 19th century landscape design. This justification stood, however, on the basis of a wider planning case, viable future in use, quality of new design etc. of the park as a whole. This planning history does not, however, overtake the importance of making such an argument again rigorously and supported by evidence, in light of the prevailing and even competing legislation and policy in heritage terms, anew.

In planning policy terms the retention and adaptive reuse of the Hub building securing its future use will be considered a positive planning benefit.

7 Built heritage & planning review

With respect to the Lodge building (which is currently used as hostel accommodation) the Council's UDP policy does not reference hostels. The emerging Local Plan however does make provision for the supply of suitable non self-contained accommodation, which hostels could be argued to fall under. The emerging Plan also has a specific policy that resists the loss of specialist accommodation (the draft document seems to envisage this as older people's accommodation and doesn't mention other specialist housing). Hostel accommodation could be argued to fall within this category. The Council would likely object to the principle of demolition of the Lodge therefore, a convincing case would be required to justify the demolition of the Lodge in light of the wider planning merits and public benefits of the scheme, including future viability of uses of the wider complex, enhancement to the wider landscape and new open space with Metropolitan Open Land.

6.6 Athletics

The Athletics Stadium (both West Stand and Jubilee Stand) is a locally listed building and non-designated heritage asset, which also forms part of the wider sports complex historically (i.e. a positive element of the setting of the listed building NSC). Retention and adaptive reuse of the older West Stand could be promoted in securing its future use, although proposed demolition of the later Jubilee Stand (and other terracing) as part of this option could be considered to result in harm to the significance of this non-designated heritage asset, and also a degree of harm to the significance of the designated heritage assets of the associated listed building NSC and surrounding conservation area.

Such harm is presumed against in policy terms. Therefore justification would need to be provided that such change (new indoor facilities and wider landscape design) could be handled sensitivity in design terms, and also that this would be in the interests of the long term viable use of the larger sports complex, as part of the wider planning case and balance.

In planning policy terms the Council would likely object to the principle of demolition of the Jubilee Stand given its local listing status. It is considered that a convincing case can be made to justify the demolition of the stand on the basis of the longer term viability of the NSC complex and in light of the wider planning and public benefits. It could also be argued that the removal of built form would enhance the openness of the Metropolitan Open Land which would also be weighed into the balance.

6.7 Raised Walkway and Accessibility

The external raised walkway could be considered to form an integral part of the listed building by virtue of curtilage and or attachment, and is also part of the historic setting and originally designed approach for both competitors and spectators to the sports centre. The proposed demolition (or part demolition) of this walkway would likely be considered to cause a degree of harm to the significance of the designated heritage asset of the listed building at the centre of the NSC. Although the removal or part removal may result is some enhancement of the Metropolitan Open Land, it is considered that this would be insufficient to overcome the harm which is presumed against in policy terms (and also legislation with regard to listed buildings).

Allied to this proposed change, a significant amount of structural work and internal reconfiguration would be required to create an entrance at ground floor that is spacious enough to allow for crowd-control and to create a sense of arrival. Rooms on the ground and first floor would need to be demolished, an area of the first floor slab would be removed to create a double-height space, a new staircase would be installed and one of the feature staircases leading to the upper concourses would need to be demolished. This could be seen to further increase that degree / magnitude of heritage harm.

The preferred option to retain and reconfigure the walkway would greatly reduce or minimise this degree of risk in heritage terms. Changes such as adaptation of the adjoining walkway could be achieved without compromising the particular significance of this part of the listed building and its setting, subject to detailed design and use of materials that responds to its distinctive architectural character. Proposals to open up the later infilled area below this raised level could actually be considered to be a heritage benefit in improving access to, views to, and also the experience of the immediate setting of the listed building (also 6.11 Key Views).

Again, a counter argument could be considered that the proposed demolition of the walkway could be considered a heritage benefit in specific relation to the registered park and garden (and also to a degree the surrounding conservation area); by in some way better revealing the earlier character of the 19th century park landscape design, and in particulr the alignment and views along the celebrated Paxton Axis.

This both harmful and beneficial effect would have to be fully justified and considered; and then appropriate weight given, as part of the wider heritage and planning balance. However, in light of the grade II* listed status of the NSC, and on the basis of the current more pragmatic proposals, it is very challenging to see how justification could be powerful enough to support a listed building consent and planning application for demolition.

In general terms, improvements to the accessibility of the sports complex could be promoted as heritage benefits as a means to better connect to, use and therefore appreciate the significance of the heritage assets centred on the NSC. The physical implications of associated adaptations to the listed building (or its outlying parts / setting) would need to be further considered as part of the detailed design.

Related proposals to improve the quality of hard and soft landscape of areas around the sports complex (and also link to the station) could be promoted as heritage benefits; in particular in better revealing or enhancing the character of the earlier 19th century landscape design (registered park and garden and conservation area). The proposed introduction of a viewing mound between the station and the NSC builds positively on historic evidence of other built or landscape features within this area of the park prior to 1936.

Again, proposals to further adapt the original walkway to improve accessibility (such as introducing or adapting new stairs, and removing lower ramps) would have a direct impact on the fabric and character of this outlying part of the listed building. To avoid or minimise harm to heritage significance this would require careful consideration of the detailed design and materials in sympathy with the character of this structure, and also be justified in the wider context of helping to deliver accessibility improvements.

In planning policy terms the proposed enhancements to the accessibility of the wider site will be viewed as a public benefit.

6.8 Outdoor Pitches

Proposals for the outdoor pitches would be a change to the landscape occurring within the immediate setting of the NSC listed building, and also within the designated area of the registered park and garden and conservation area. Reorganisation and / or reuse of outdoor pitches could be promoted as part of securing the future use of the sports complex, subject to the appropriateness of landscape design, materials, lighting etc., which would allow the NSC to retain its visual primacy within this part of the park. In addition, the new outdoor hub (passing below the retained original walkway, and removing the existing later infill to the running track) could be promoted to some degree as a heritage benefit in better revealing the original greater openness here as part of the setting of the NSC.

It has been noted previously that the list entry for the NSC identifies that the later added small pool does not form part of its special interest. The heritage sensitivity of the small pool to change; or indeed its future loss (proposed as part of one option), is therefore very low in light of its later date and secondary nature. There is also some potential for the demolition of the small pool to be advanced as a heritage benefit; by in some way better revealing the original more open setting of the listed building NSC and its walkway.

Although the proposal for the outdoor pitches would have an effect on the openness of the Metropolitan Open Land, it is considered a case can be promoted in planning policy terms the the changes to the outdoor pitches would be viewed as part of the wider public benefits securing the wider use of the NSC.

6.9 Climbing & Bouldering

Further options to create space for climbing and bouldering below the raised walkway could be accomodated within this part of the listed building and its setting. Proposed changes could be achieved without compromising the particular significance of this part of the listed building, subject to detailed design and use of materials that responds to its distinctive architectural character.

7 Built heritage & planning review

Overall Summary (and Preferred Option)

The proposed options demonstrate an opportunity to maximise the opportunities of the NSC site. At the heart of the proposed options is the retention of the original function of the sports complex. A number of options do propose removal of existing buildings and structures which are identified as being of heritage importance. It is considered that a case could be made that the proposed options secure the long term future of the NSC which in turn could secure much wider heritage and public benefits which outweigh the less than substantial harm caused to certain heritage assets.

For the preferred option; Scenario C1, planning risk remains in relation to the proposed demolition of the Lodge. Its loss as a non-designated heritage asset (locally listed building) could also be considered to cause harm to the significance of the main listed building and conservation area. However, counter to this removal could be considered a modest heritage benefit in relation to otherwise allowing the landscape character / features of the registered 19th Century park to be improved. Loss of hostel, if considered 'specialist accommodation' under emerging London Plan, could also be resisted by the local planning authority; requiring a convincing planning case to be presented referencing the wider public benefits and future viability. Similarly, proposed removal of the associated locally-listed post-war housing would be a planning and heritage risk.

Other physical and also setting / views impacts on the heritage significance of the historic complex of buildings and landscapes would be required to be further considered through design as this option is refined further. And so would also be requried to be justified in planing and heritage terms.

The preferred option does, however, have the potential to deliver significant wider public benefits (both in planning and heritage terms); should it be clearly and convincingly demonstrated that such as sceme would be in the interests of securing the viability and long term future of the NSC, its important historic and current uses, and core historic buildings / structures and landscapes. It is this 'bigger picture' upon which the case could be built to support this option through the planning process.

Heritage Stakeholder Engagement

Historic England

A meeting was held at the architects' studio with representatives from Historic England (Case Work and also At Risk sections) on 20th December 2018, to discuss the findings of the previously shared Mid Point Review Report. Subsequently more form Pre-application Advice was issued in letter form, dated 9th January 2019.

This letter acknowledged the positive process of engagement and meeting with both H\B and Turley, and set out in summary that the proposals "*… appear to come from a good understanding of the issues affecting the NSC and the Crystal Palace Park and the heritage significance of those heritage assets. We support the preferred options within the Report and see that these are likely to enhance the physical fabric of the heritage assets, whilst making them more fit for purpose and appealing to the wider public. We understand that the proposals are still at an early stage of development and very much welcome further discussions as the proposals are progressed, particularly where these affect the fabric of the NSC or the surrounding parkland.*"

It was also recommended that consideration should also be given to seeking further advice from the local planning authority and / or the relevant amenity societies on the proposals, as they relate to heritage matters, as a next step.

Historic England's Pre-application Advice letter is appended in full here as:
(c) Appendix 1.C: Historic England Pre-application Advice

Twentieth Century Society

An earlier meeting was also held with the case worker from the Twentieth Century Society at the architects' studio on 31st October 2018. This was to discuss the then emerging design proposals; in particular the future use and adaptation of the postwar elements of the site. Again design information was shared in advance. The Society was keen to remain involved in the engagement process as the design evolved.

General advice accepted that adaptations would have to be made to the listed building NSC to ensure its continued historic use; as part of any properly balanced decision for its future.

The importance of maintaining a full visual appreciation of the proportions of the main internal space was emphasised, including recommendation of future detailed design and technical work on any proposed glazed partition between wet and dry uses. Other internal spaces were considered to be more flexible to further change.

The 1970s small pool addition to the complex was considered to be at best a neutral contributor to the heritage value of the listed building. The external walkway was, however, considered to have heritage value as part of the historic setting and approach to the sports complex. The importance of balancing this with wider issues of improving access across the site were also acknowledged. Other elements of the wider post war complex were also identifed and considered to contribute to the heritage value and group value of the listed building, including the former hostel, porter's lodge and housing. Albeit acknowleding the current constraints these secondary elements presented to the use of the wider site.

Heritage value was attributed to the West Stand and 1977 Jubilee Stand as part of the wider sports complex. Much greater importance was, however, placed on the earlier West Stand relative to the Jubilee Stand. The potential improvements to the setting of the listed building and other historic buildings was also acknowledged as part of proposed rationalisation of car parking on site.

8 Structural engineering commentary

Mott MacDonald
Structural engineering services

8 Structural engineering commentary

Introduction

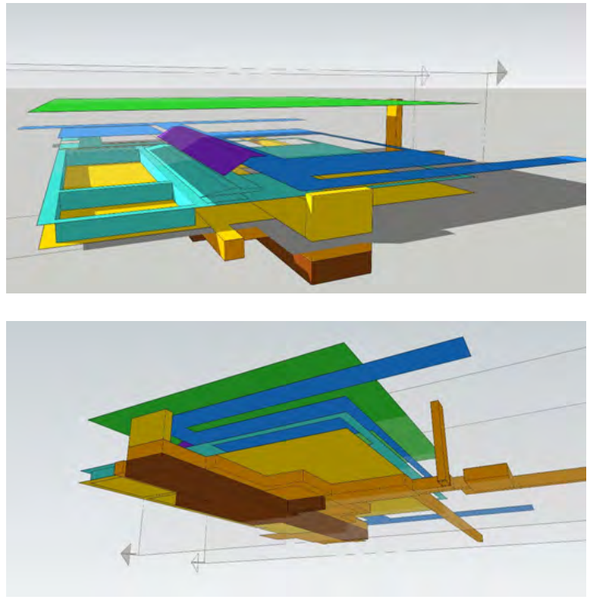
This is a structural commentary on the study recommendations presented in this report. The numbering in this section correlates with the numbering in Section 6 of the report.

This commentary is based on the information about the building which is listed in the Appendix. The information is limited, and further studies and surveys will be required in the next stage of design. Structural aspects of this information have been broadly reviewed, comments made on the existing condition of the buildings/assets that can be determined from this and ideas proposed for how the existing building/assets could be adapted. Key constraints, opportunities and risks have been identified.

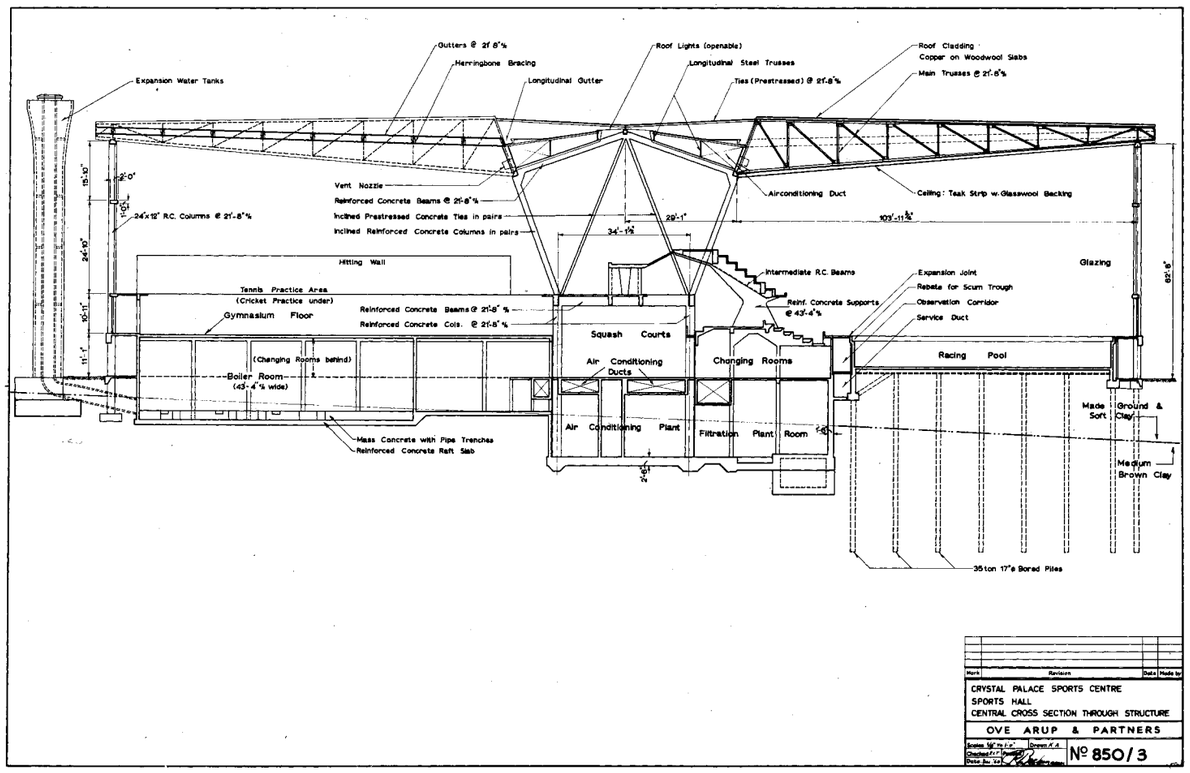
No additional structural surveys have been carried out. The site has been visited once to view the buildings from where access was available at the time.

From existing building plans and sections, a simple 3D computer model of the sports centre was built to better understand building levels and adjacencies and opportunities for intervention.

Throughout the study period, a number of different proposals have been investigated and structural comments provided. This report generally only includes comments on those which comprise the final recommendations.



Above
Images of the 3D computer model created



Right
Original structural section drawing of the NSC main building

8 Structural engineering commentary

Structural condition and quality

The following diagrams broadly summarise the structural condition and quality of the various buildings/assets which have been gleaned from the information provided. For full details of condition, please refer to the Client's survey reports.

In order to properly be able to evaluate their usefulness and the cost of extending their life, additional surveys will be required. There is very limited information available for some assets, and none in the case of many of the structures. At this stage condition and quality remains a risk item.

Of particular note is the external roof and wall fabric of the sports centre building, which appears to require extensive remedial work or replacement and otherwise will need on-going maintenance. The surveys don't appear to raise specific major structural concerns, although there is no specific commentary on the roof structure. The concrete mullions to the façade have spalling etc due to reinforcement corrosion, although the extent of this is unclear.