



CHESTERFIELD CANAL BOAT LIFT

FINAL SOLUTION

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INTRODUCTION AND SCOPE

EXISTING SITE

HERITAGE

- Coal mine and iron ore quarry dating back to 1600's
- Staveley Coal & Iron Co. registered in 1863
- Production ramped up to 2.5million tons by 1905



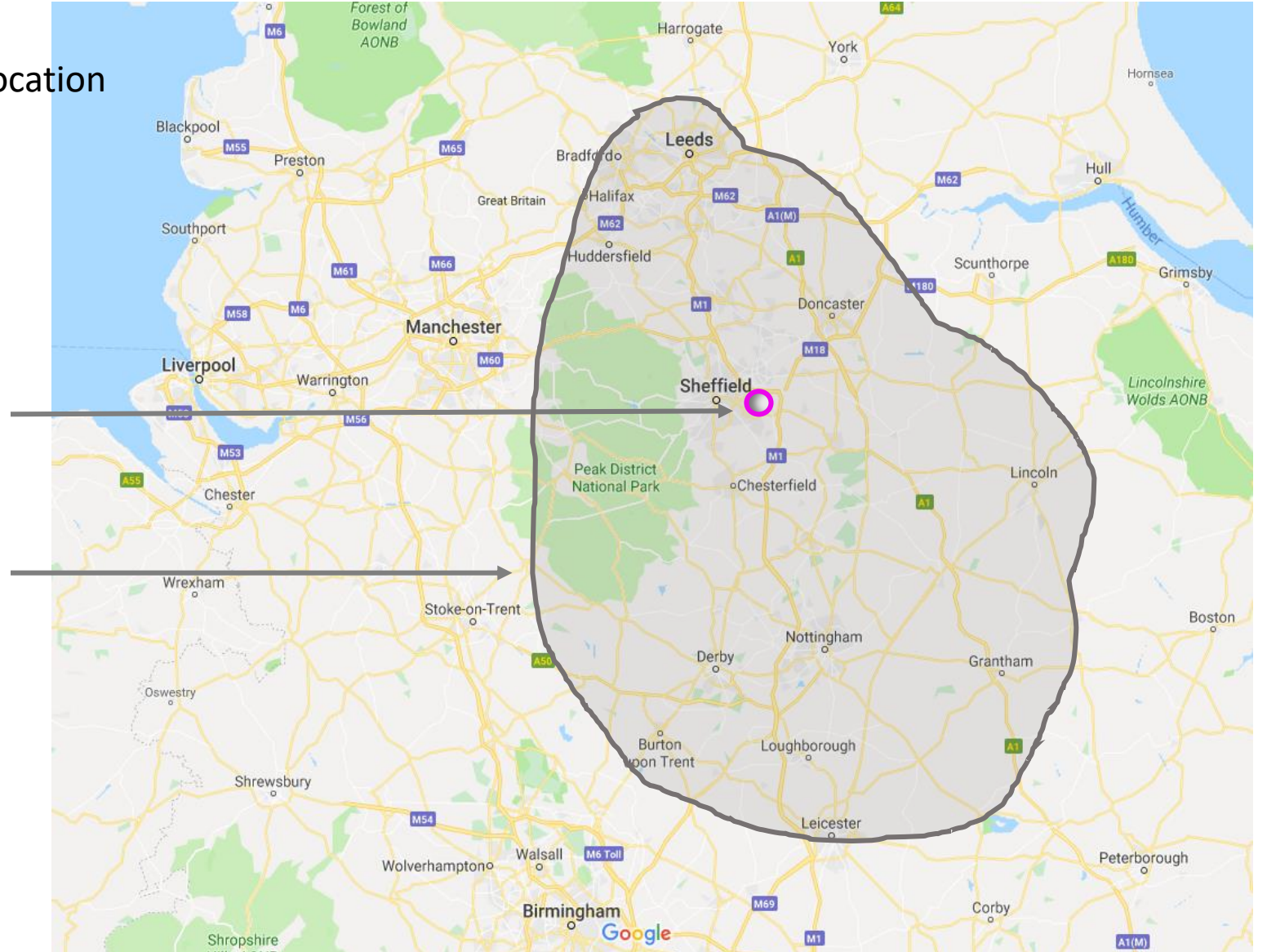
1 HOUR DRIVE MAP

LOCATION

- Accessible Midlands / South Yorkshire location
- Large cities in close proximity
- High volume of through traffic

Boat Lift Location

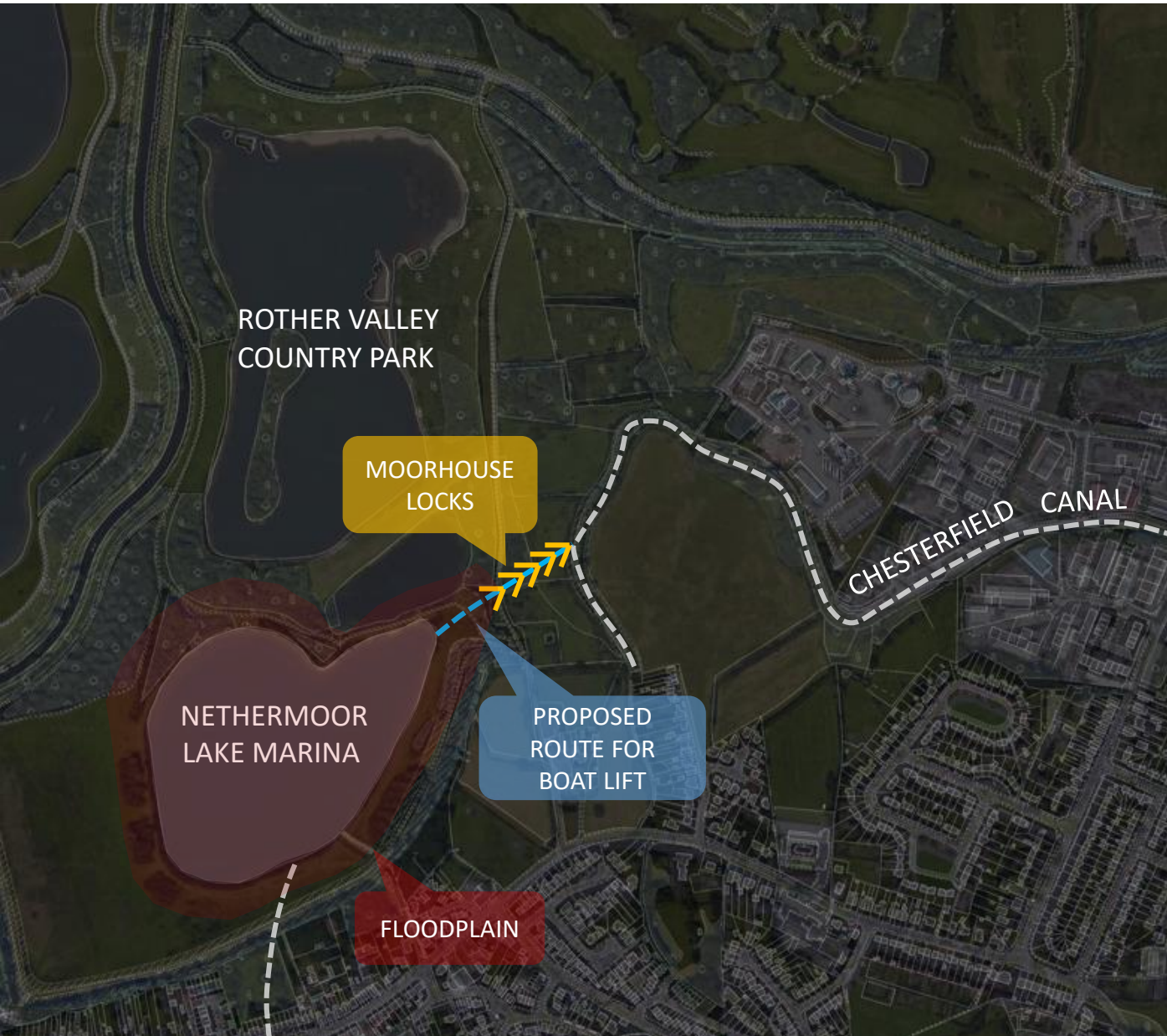
1 Hour Catchment



GEOLOGY



CLIENT SPECIFICATION



PROPOSALS

- Boatlift at the site of the new Moorhouse flight of locks
- New visitor centre with café, museum, and car park
- Generate tourism around Chesterfield Canal network

BOATLIFT CRITERIA

- Raise boats 21.3m
- Water consumption should be negligible
- Powered by a renewable energy source
- Accommodate access/egress at varying heights in the event of a flood

OPTIONEERING PHASE

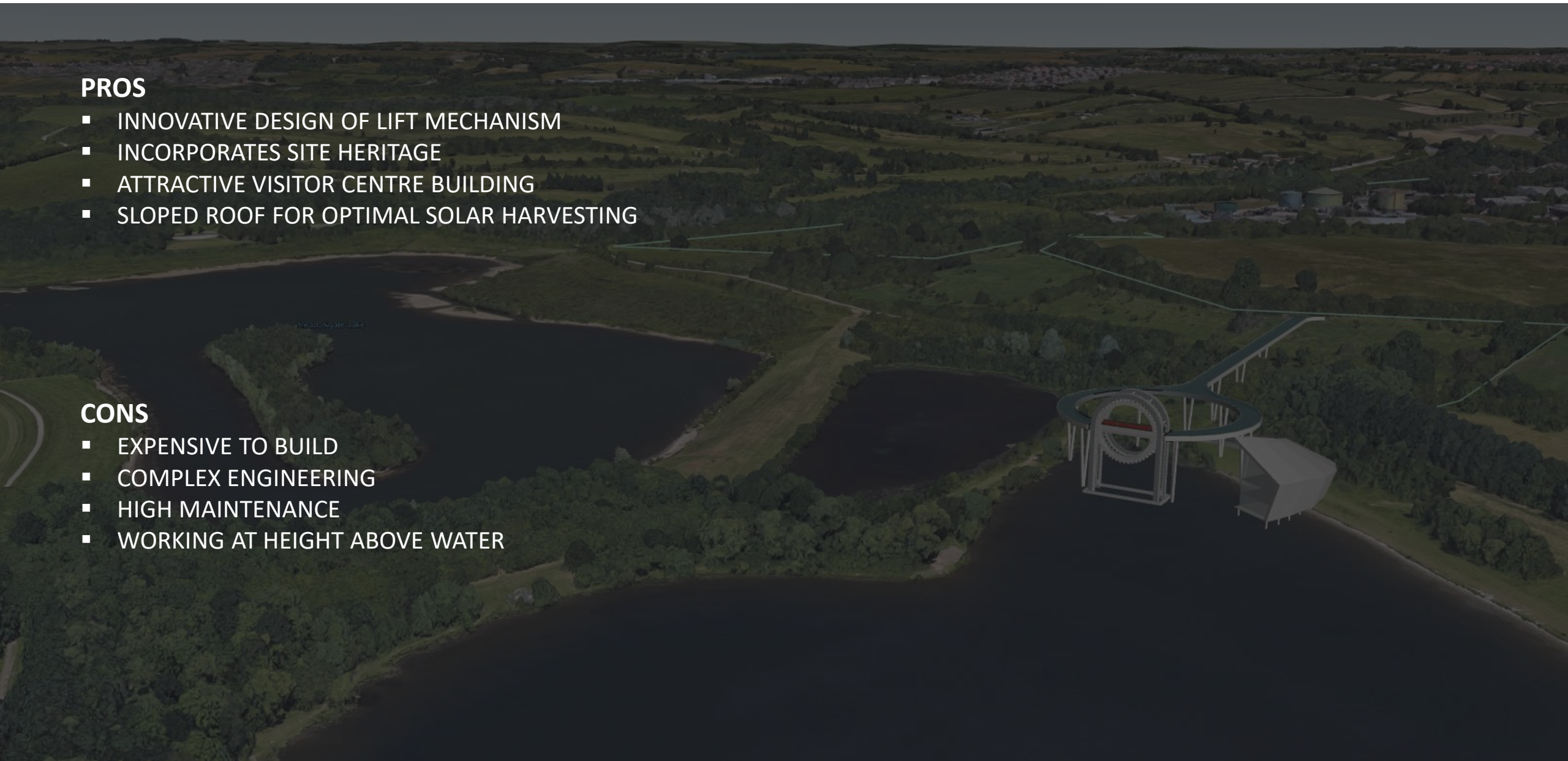
OPTION 1 · THE WHEEL

PROS

- INNOVATIVE DESIGN OF LIFT MECHANISM
- INCORPORATES SITE HERITAGE
- ATTRACTIVE VISITOR CENTRE BUILDING
- SLOPED ROOF FOR OPTIMAL SOLAR HARVESTING

CONS

- EXPENSIVE TO BUILD
- COMPLEX ENGINEERING
- HIGH MAINTENANCE
- WORKING AT HEIGHT ABOVE WATER



OPTION 2 · THE INCLINED PLANE

PROS

- RELATIVELY LOW COST TO BUILD
- LOW MAINTAINANCE
- SIMPLE WINCH MECHANISM
- EXISITING ENGINEERING PRINCIPLES
- ELEVATED TRACK

CONS

- RELATIVELY BASIC AESTHETIC
- LENGTHY CAISSON TRAVEL DISTANCE
- BRUTAL ON LANDSCAPE



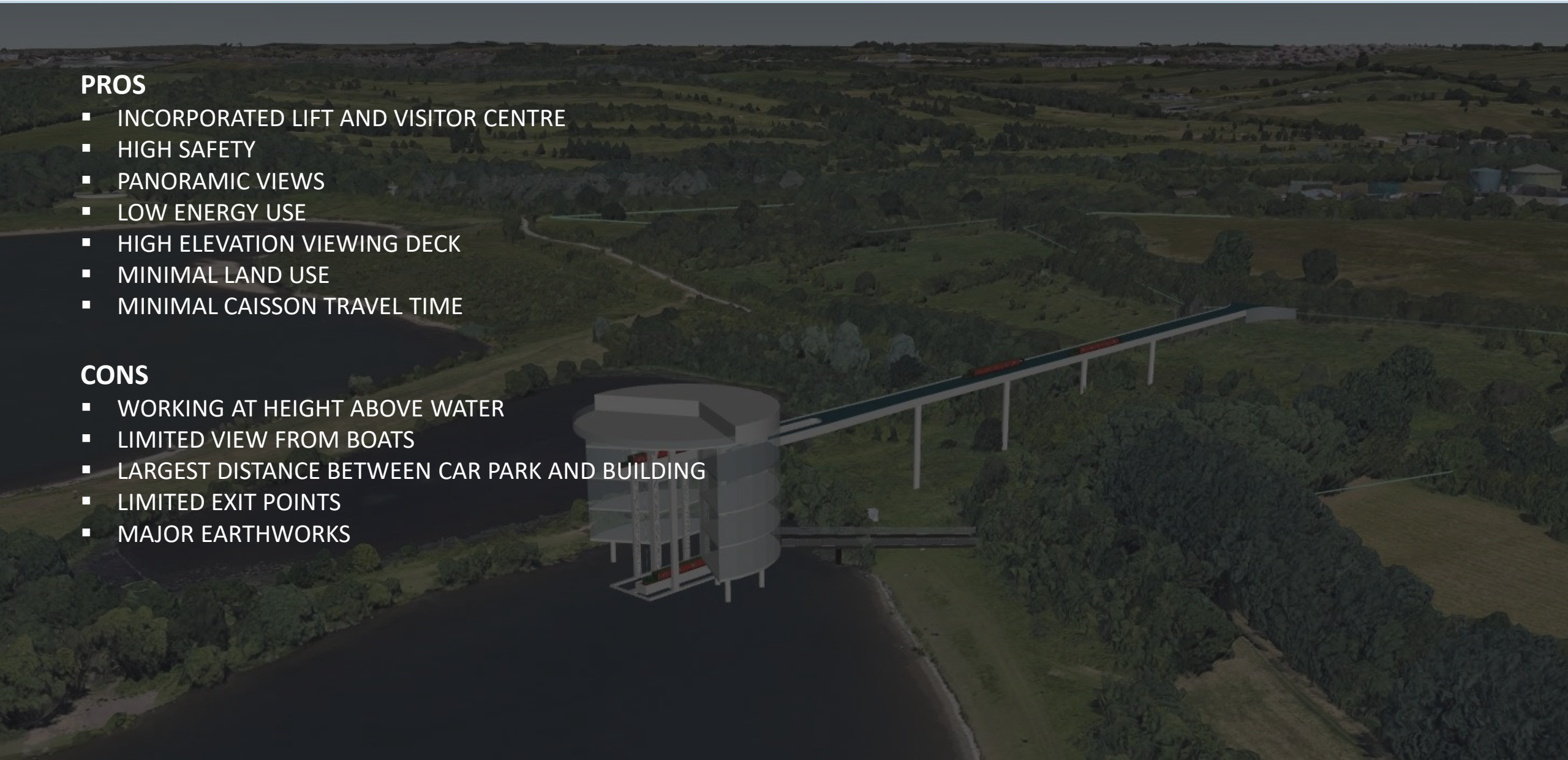
OPTION 3 · THE TOWER

PROS

- INCORPORATED LIFT AND VISITOR CENTRE
- HIGH SAFETY
- PANORAMIC VIEWS
- LOW ENERGY USE
- HIGH ELEVATION VIEWING DECK
- MINIMAL LAND USE
- MINIMAL CAISSON TRAVEL TIME

CONS

- WORKING AT HEIGHT ABOVE WATER
- LIMITED VIEW FROM BOATS
- LARGEST DISTANCE BETWEEN CAR PARK AND BUILDING
- LIMITED EXIT POINTS
- MAJOR EARTHWORKS



OPTION REVIEW

OPTION 1 – THE WHEEL

PROJECT SCORE

Constructability: **3**

Sustainability: **6**

Ease of maintenance: **4**

Cost: **5**

Tourism: **9**

TOTAL : 27/50

OPTION 2 – THE INCLINE PLANE

PROJECT SCORE

Constructability: **8**

Sustainability: **7**

Ease of maintenance: **6**

Cost: **7**

Tourism: **5**

TOTAL : 33/50

OPTION 3 – THE TOWER

PROJECT SCORE

Constructability: **7**

Sustainability: **8**

Ease of maintenance: **5**

Cost: **6**

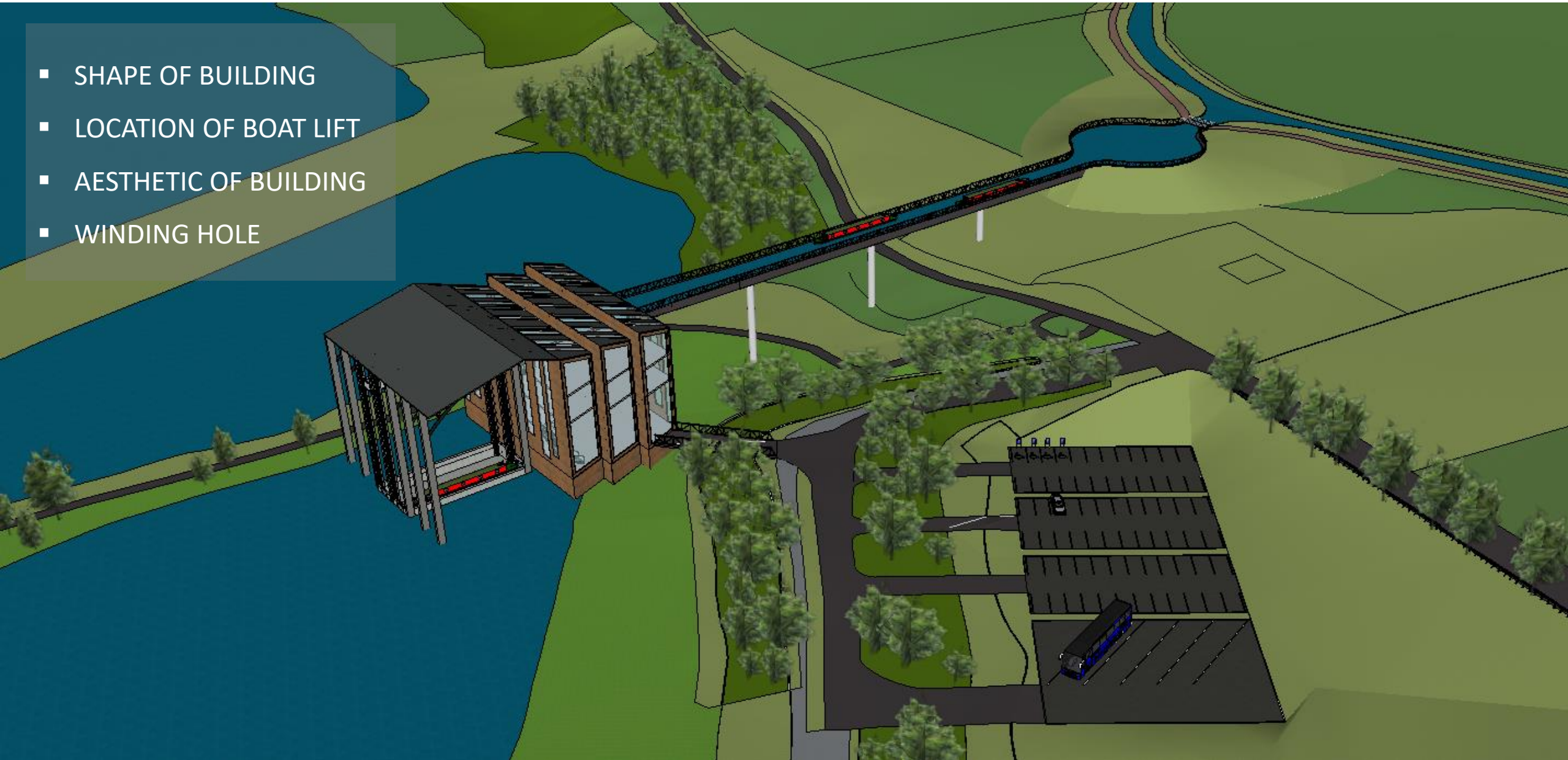
Tourism: **8**

TOTAL : 34/50

FINAL SOLUTION

DEVIATION FROM OPTIONEERING PHASE

- SHAPE OF BUILDING
- LOCATION OF BOAT LIFT
- AESTHETIC OF BUILDING
- WINDING HOLE



LAYOUT

KEY

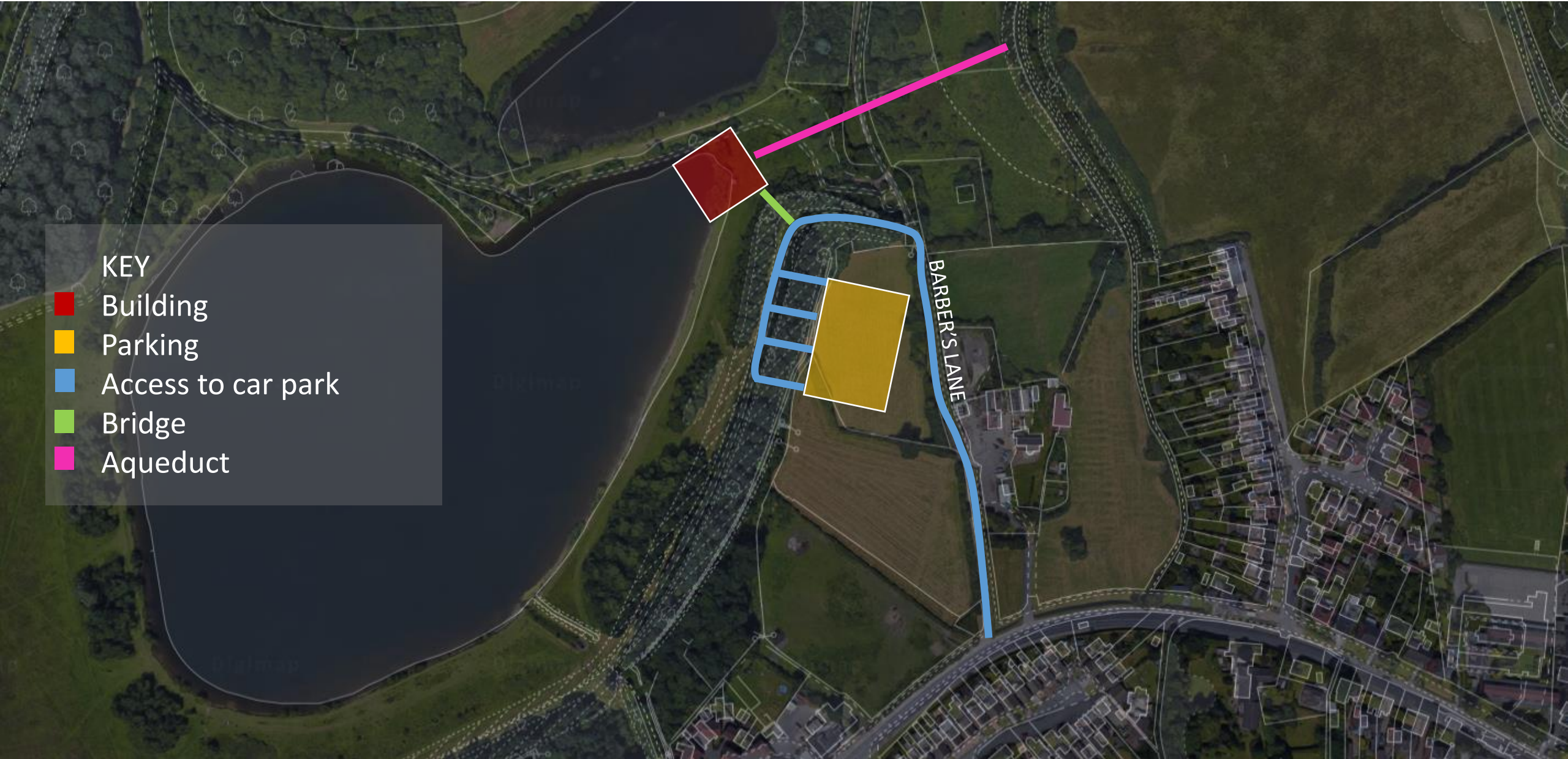
Building

Parking

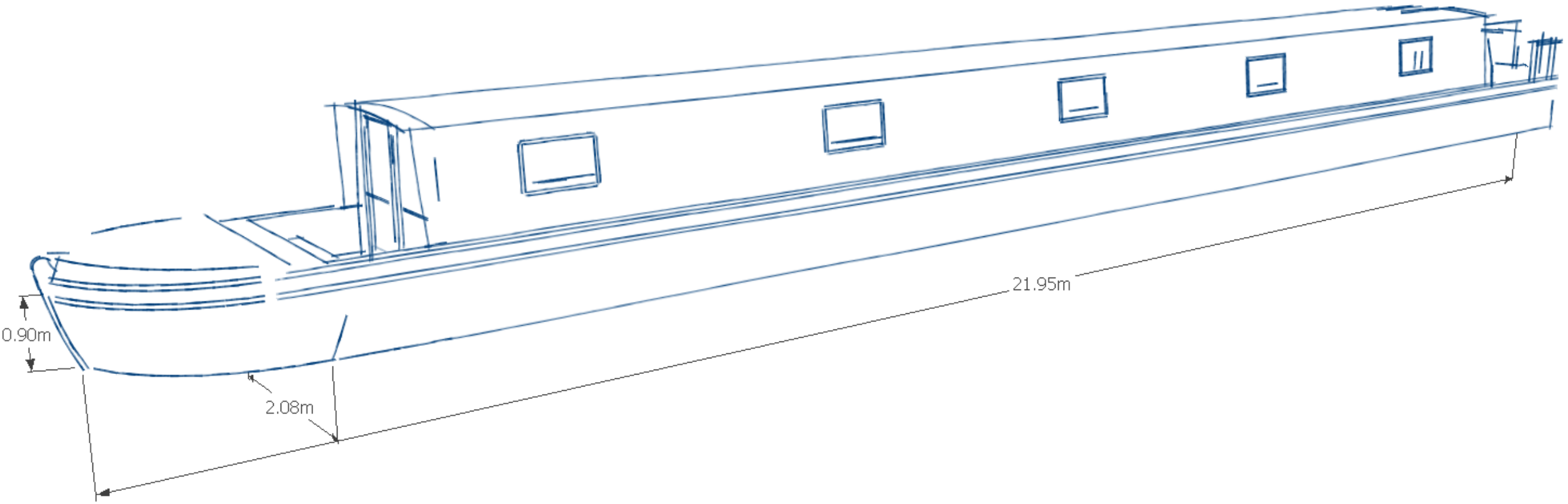
Access to car park

Bridge

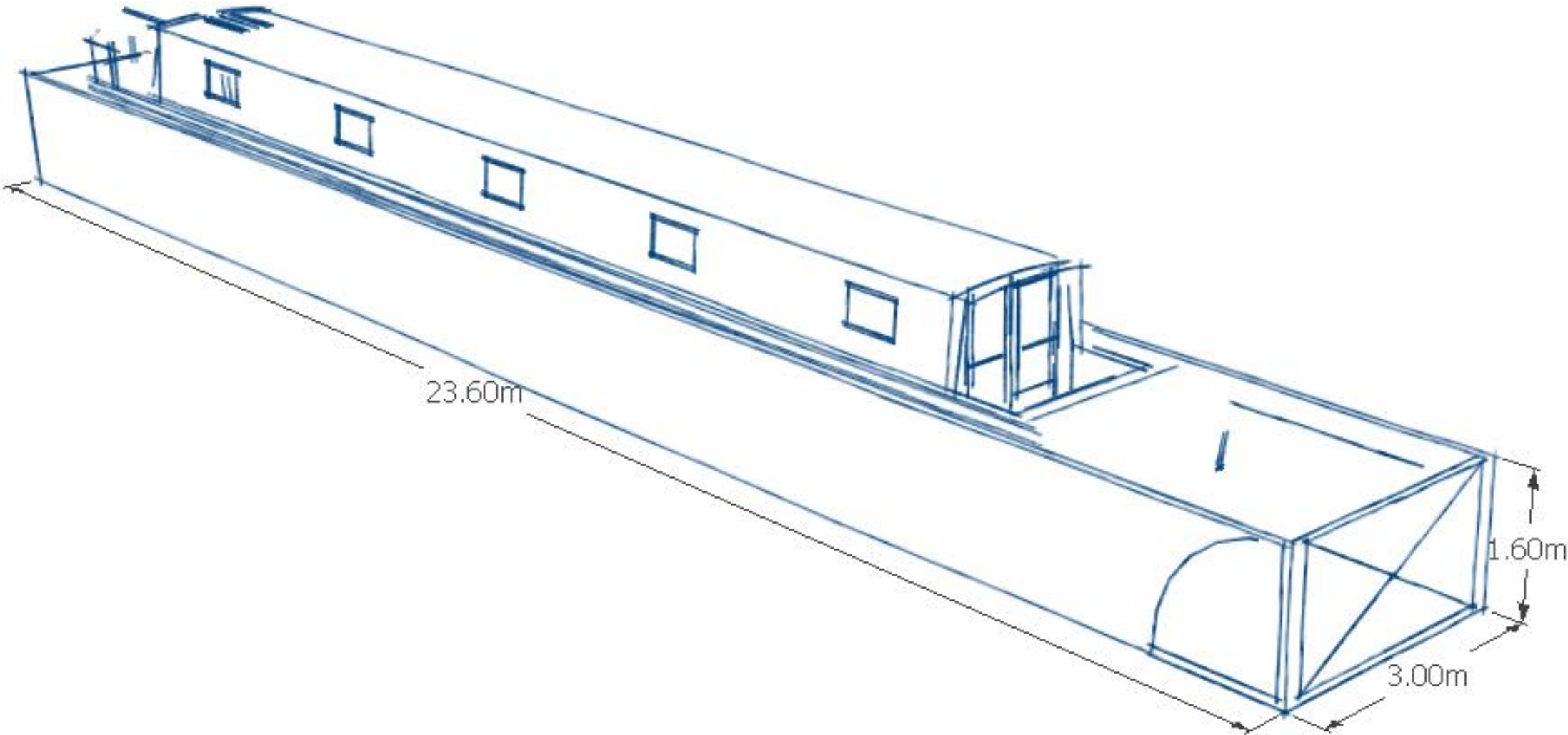
Aqueduct



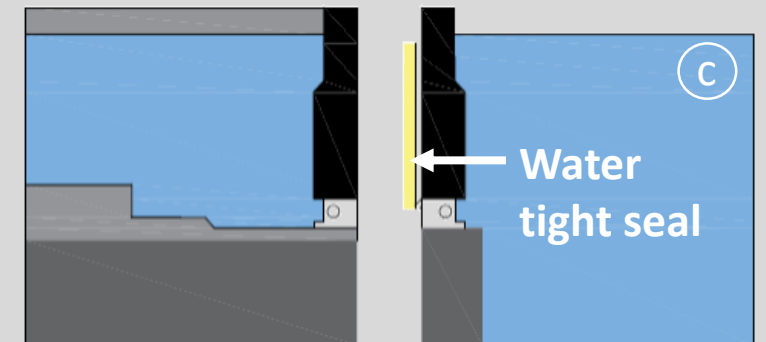
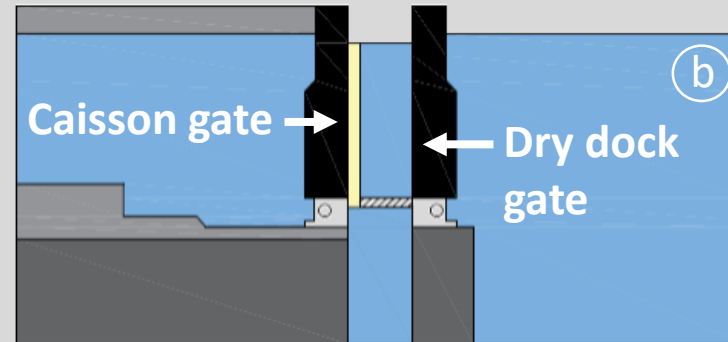
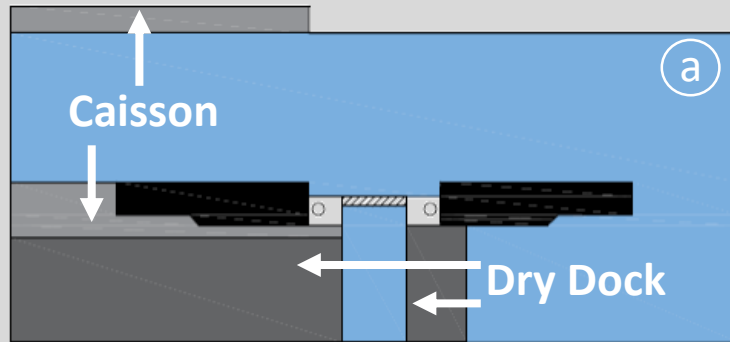
BOAT SPECIFICATION



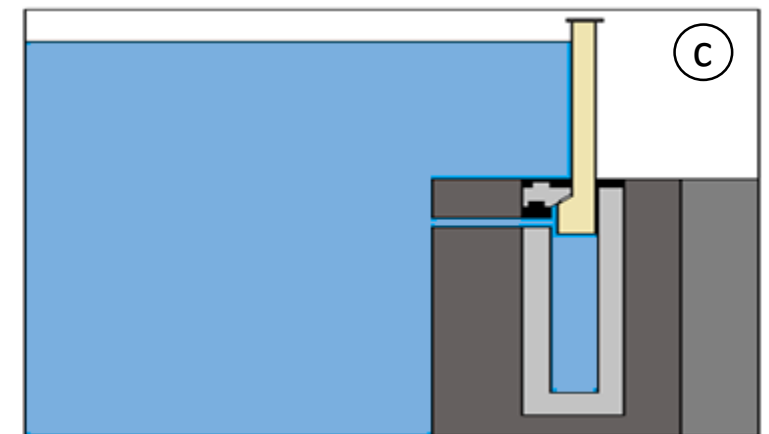
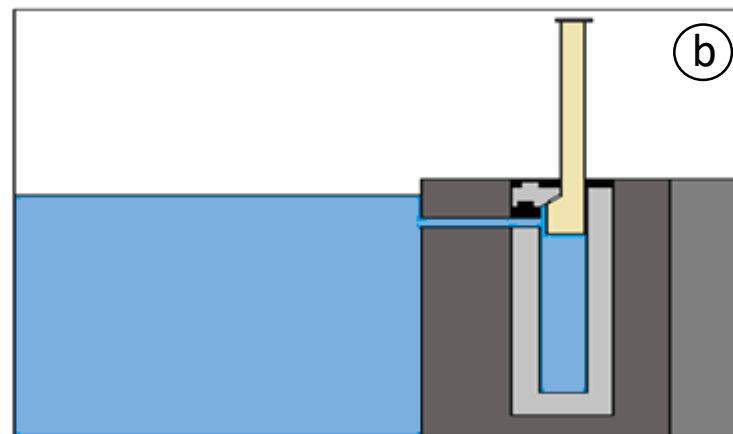
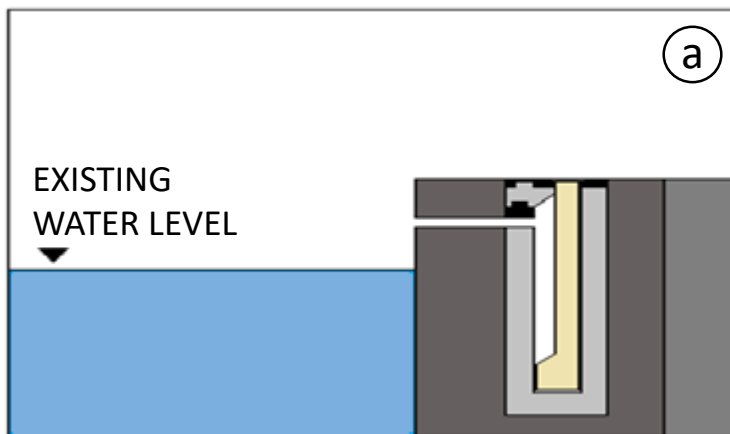
CAISSON DETAIL



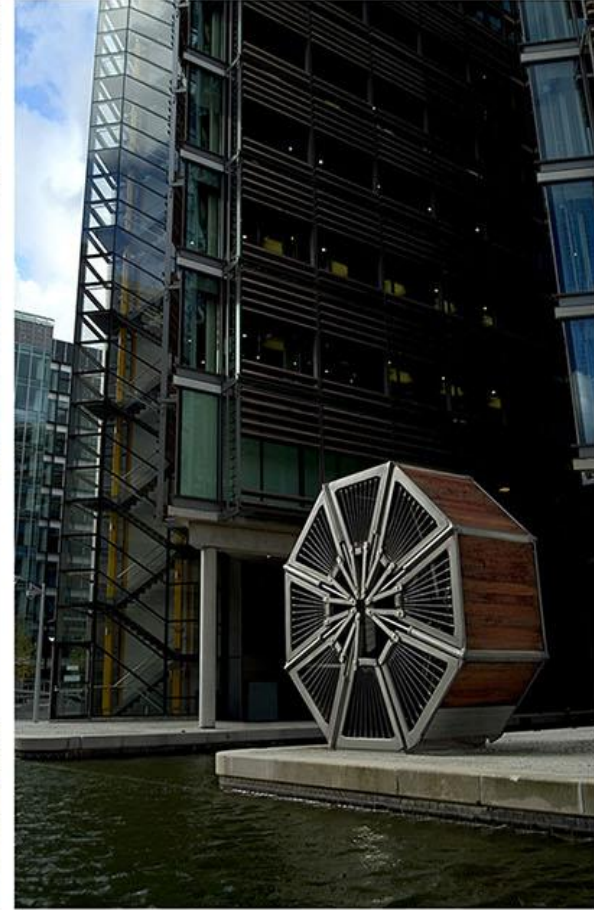
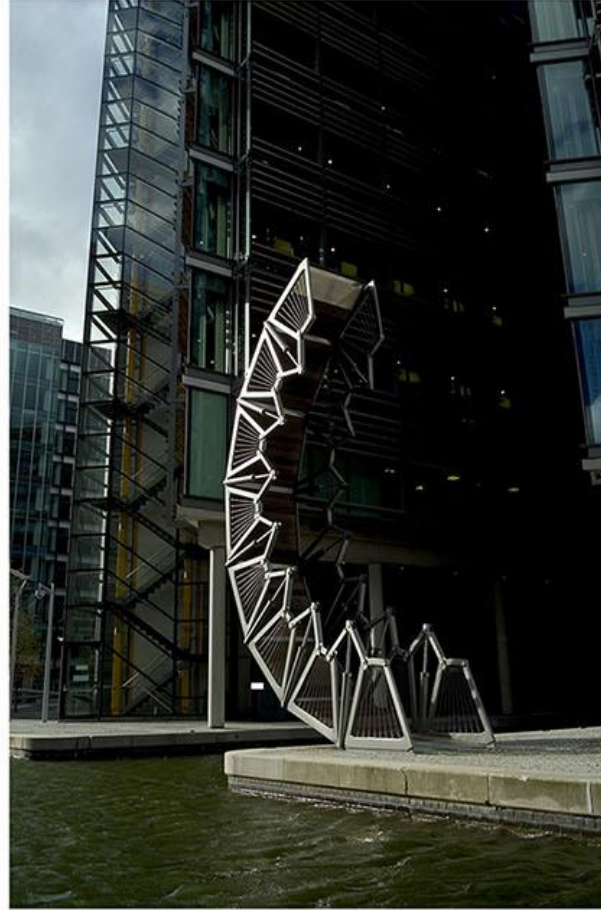
DRY-DOCK GATE DETAIL



RETRACTABLE FLOOD BARRIER DETAIL



AQUEDUCT-ROLLING BRIDGE



BUILDING AND PARKING PROVISIONS

FLOOR SPACE REQUIRED

- Approx. 2000m²

AREA OF SOLAR PANELS

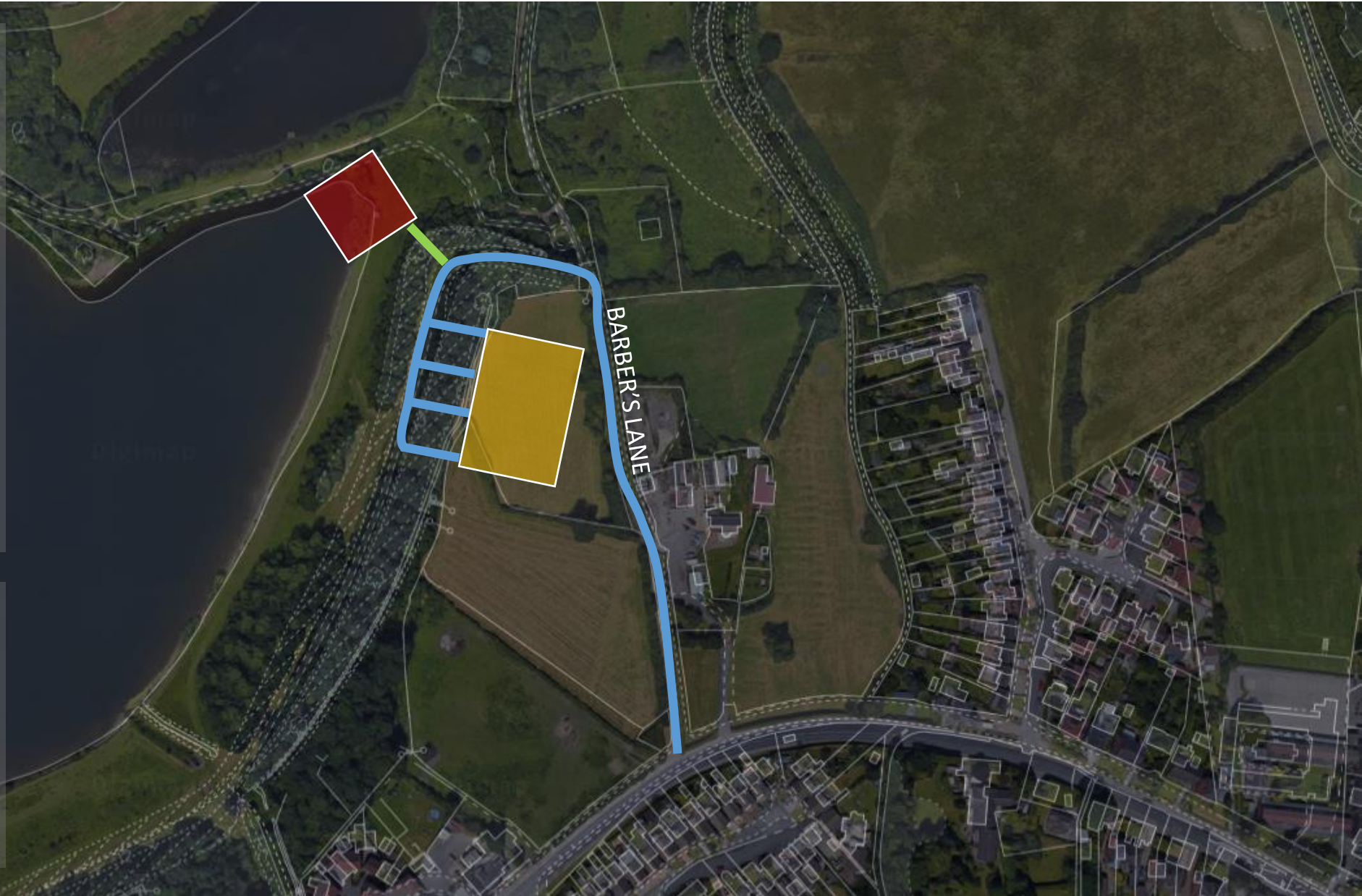
- Required = 41.25m²
- Provided = 930m²

PARKING SPACES

- 67 Car spaces
- 4 Disabled spaces
- 4 Coach spaces
- Bicycle racks

KEY

- Building
- Parking
- Access to car park
- Bridge



BUILDING AND PARKING PROVISIONS



BUILDING USAGE

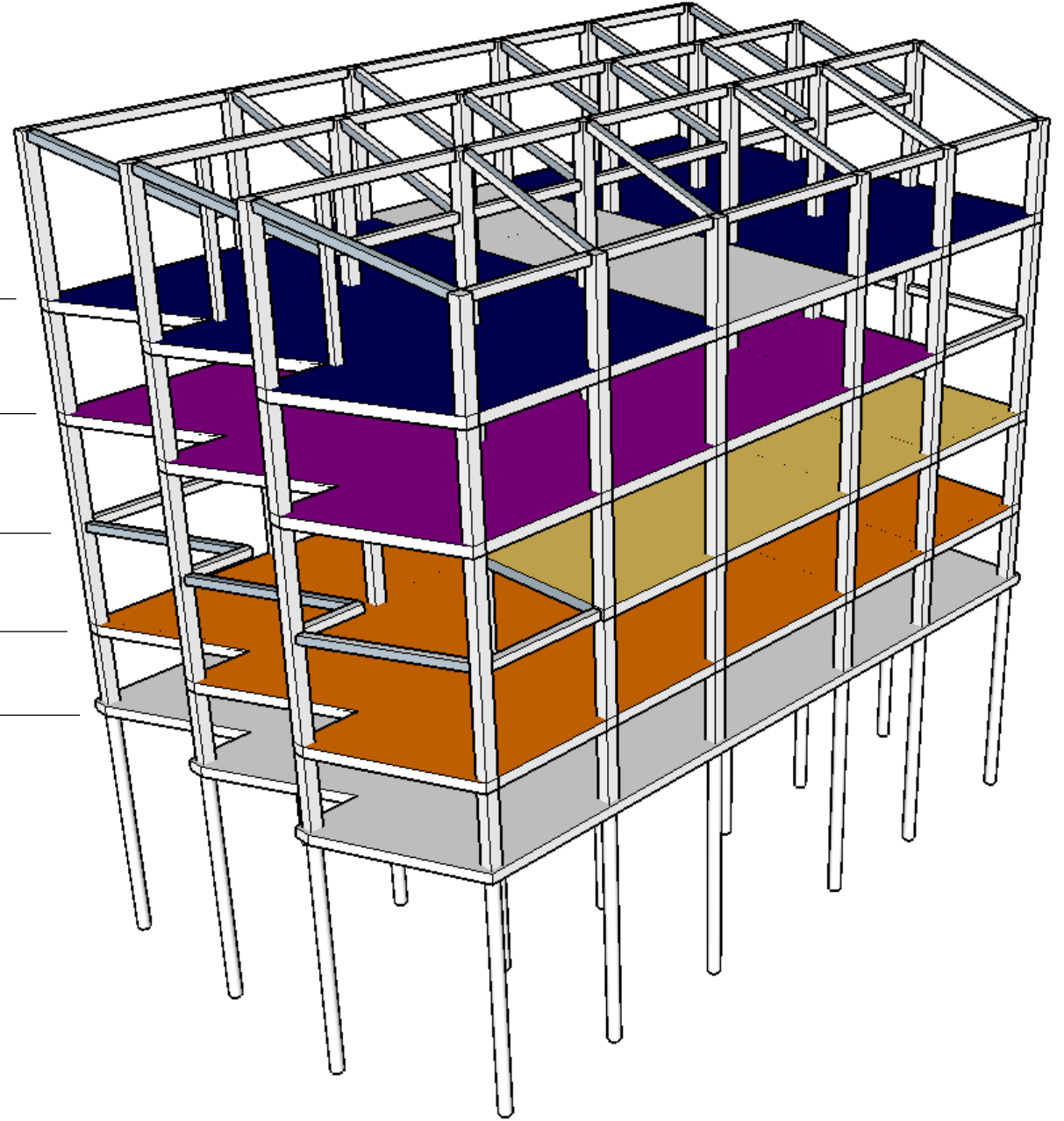
3rd FLOOR – SKY GARDEN

2nd FLOOR – MUSEUM

1st FLOOR – MUSEUM

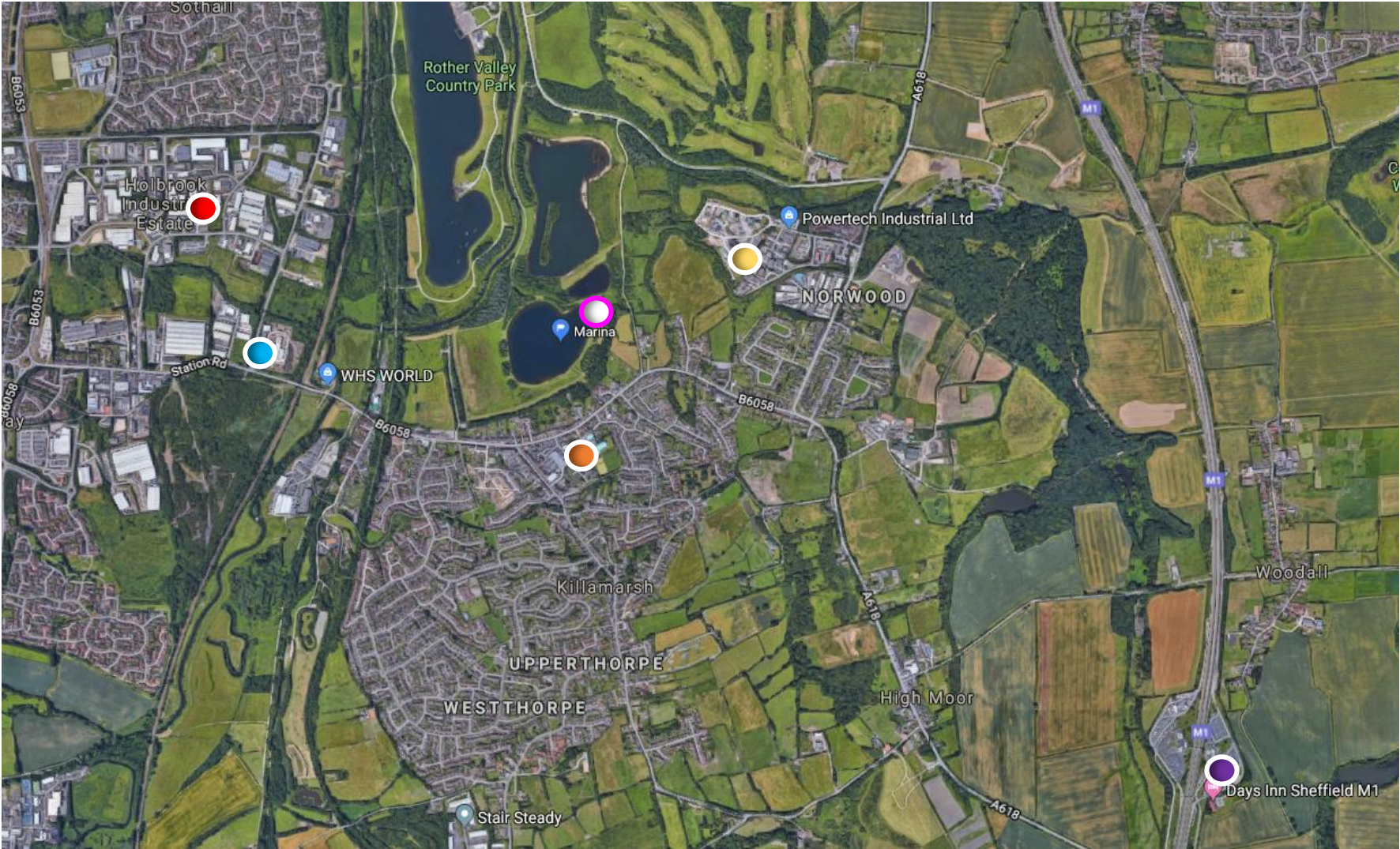
GROUND FLOOR – CAFÉ & GIFT SHOP

BASEMENT – SERVICES & STORAGE



CONSTRUCTION

MAP OF AMENITIES



	Boat Lift Location
	Scrapyard
	Supermarkets, sports centre, restaurants
	Toolstation, Biffa waste management
	Travis Perkins
	Days Inn Hotel

CONCLUSION

Does it meet client requirement? Is it feasible?

- Low maintenance requirements.
- Solar energy to power the boat lift and visitor centre
- Rejuvenates area and boosts tourism for the canal network
- Negligible water use
- Visitor centre criteria exceeded
- Construction sequence optimised for safety and efficiency
- Central UK location ensures tourism is sustained

