



The London Tunnels

Scoping Study

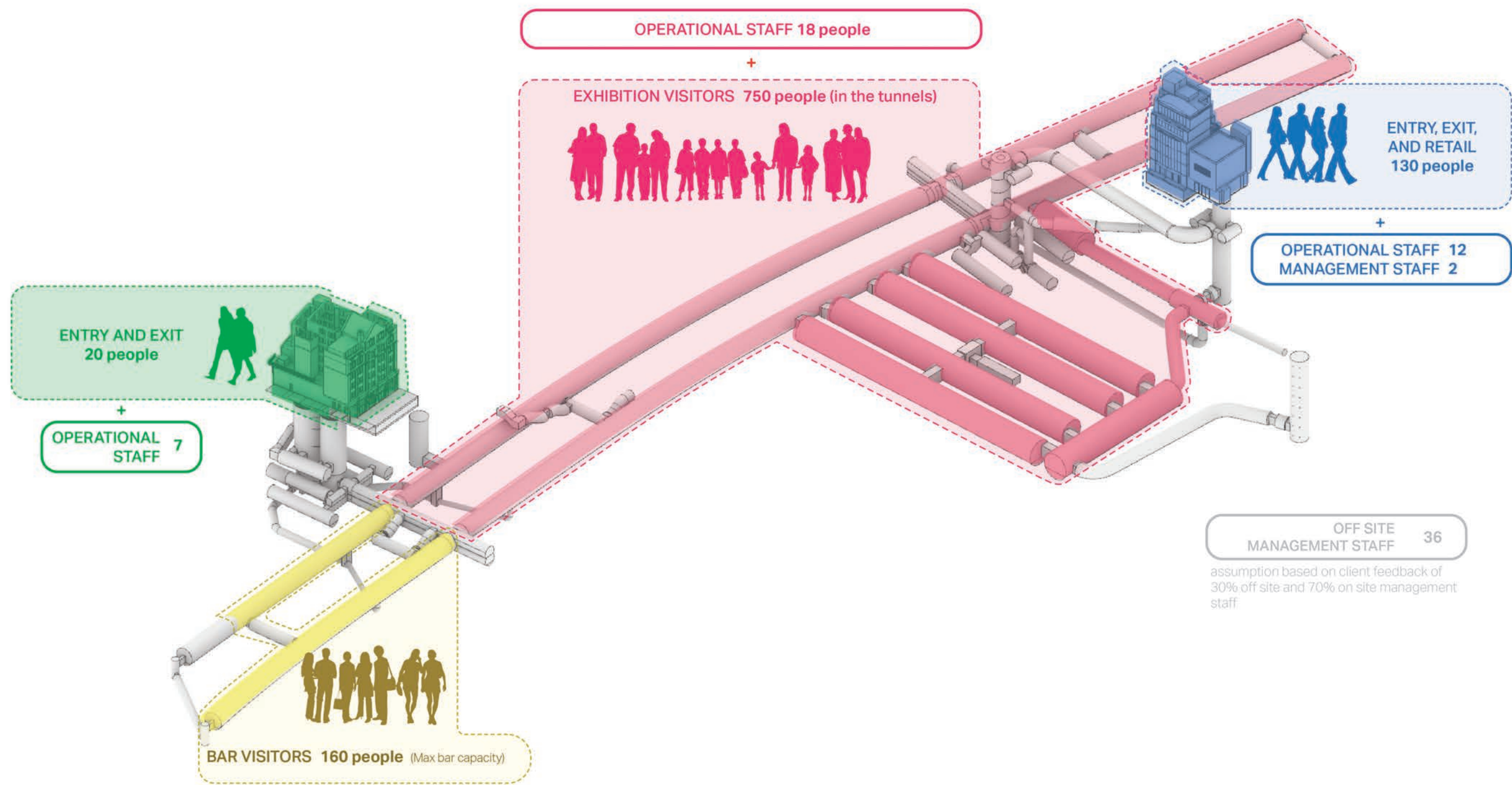
Final Report

25th March 2026

Introduction - Stage 2 Brief

What we designed for...

Simultaneous Maximum Occupancy



Introduction - The Tunnels

What are they made of (and needed altering to run ducts and services)



Study Brief

- Maintaining total capacity
- Safeguarding planning approval
- Maintaining the tunnels originality
- Minimise demolition underground
- Optimise and simplify MEP
- Phasing and growing potential

Scoping opportunities

Following the brief, the design team has collaboratively identified opportunity areas for simplification and cost saving.

The design proposal presented for RIBA stage 2 was aimed at achieving planning approval, and has defined the upper range of what could be achieved in the tunnel.

A new approach is needed to establish the minimum extent of works needed to open the tunnels to the public and provide the capacity established in the business model.

The areas of intervention identified are:

1-Relaxing internal environmental conditions

2-Simplifying the ducts layout, limiting simultaneous capacity in single tunnels

3-Limiting demolition inside the tunnels, particularly to run ducts

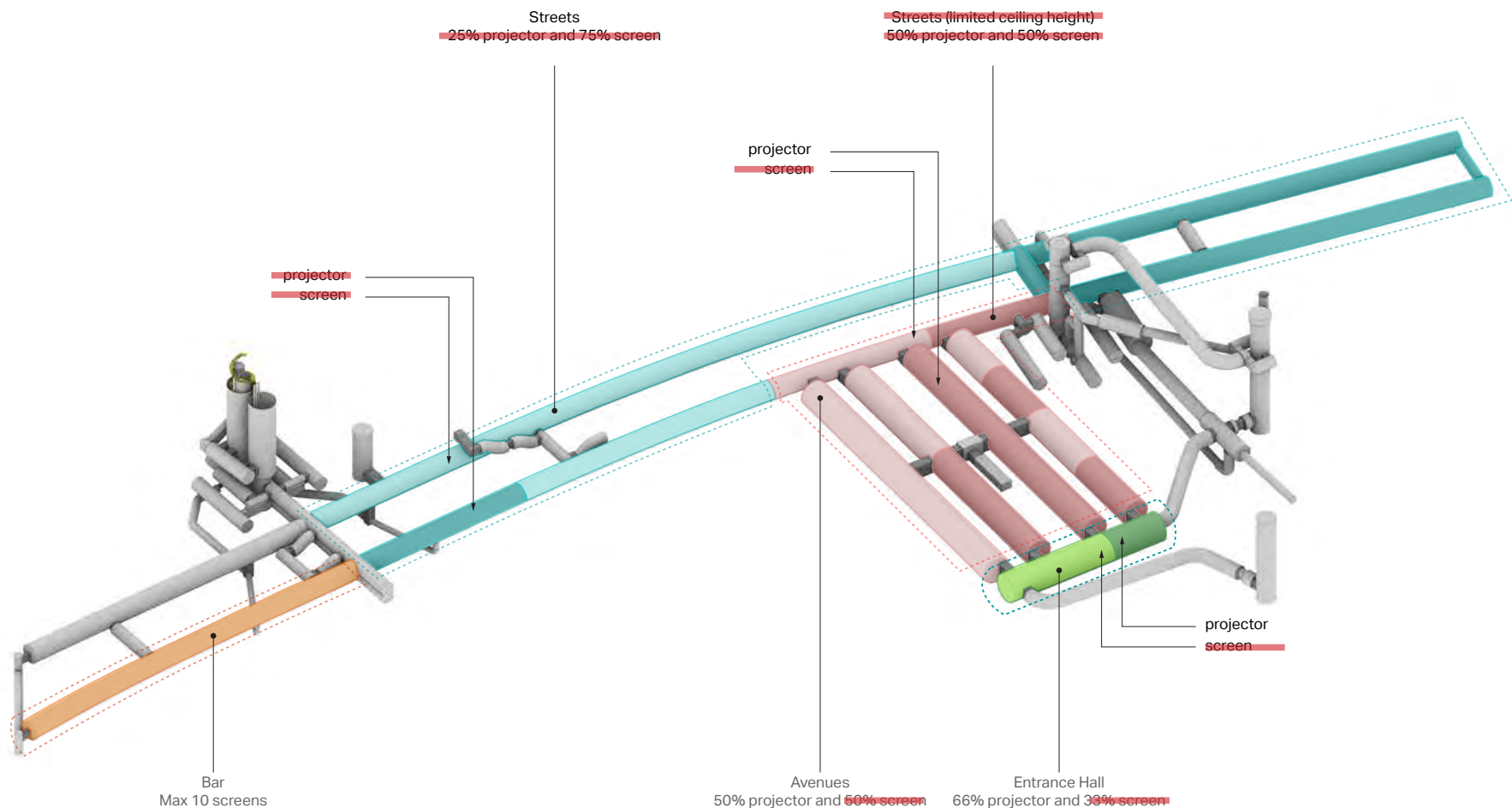
4-Relocating some equipment inside the tunnels

5-Using some of the tunnels tails as temporary “dump site” to avoid extracting material

6-Phasing of refurbishment

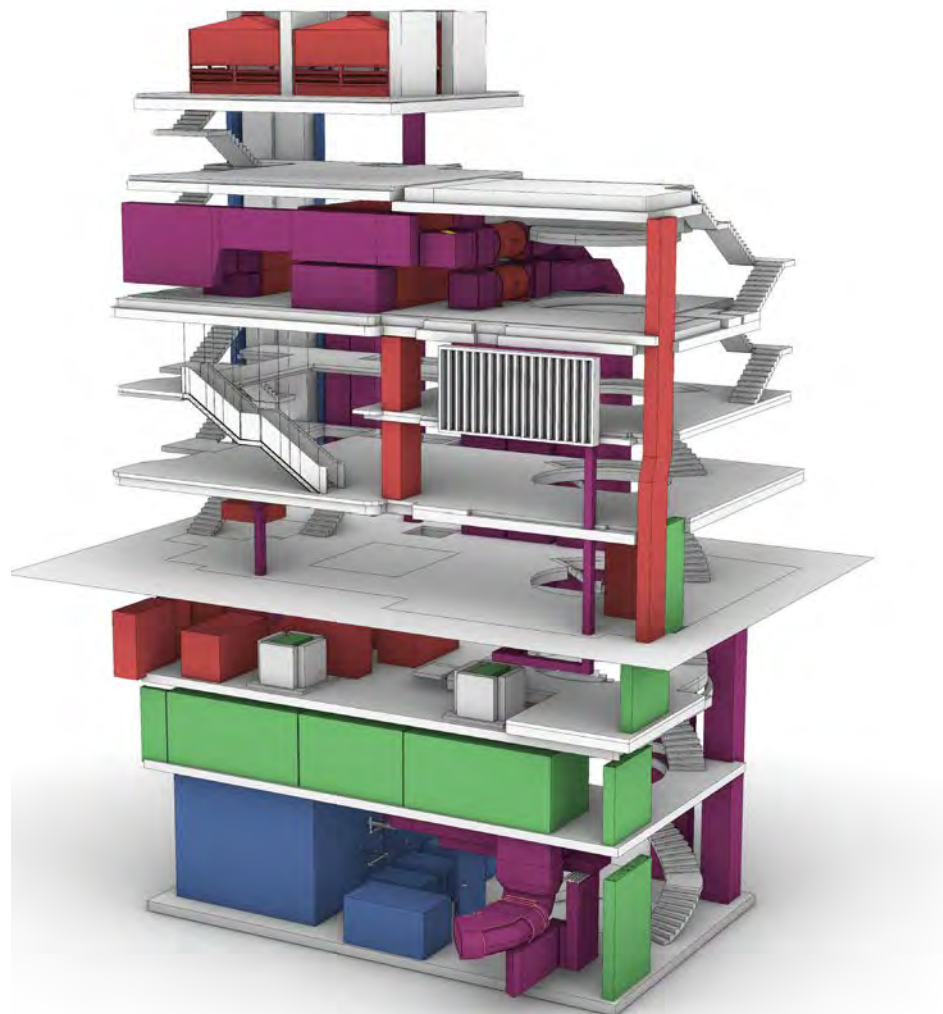
This can be achieved by removing the LED screens and reducing the heating and cooling capacities.
What we changed:

- Removed the requirement for fully conditioned spaces that meet LED high cooling demand; retained conditioned air only where external air can meet comfort for most of the year – without LEDs, we achieve comfort year round.
- Deleted all active heating and cooling systems in tunnels; tunnels now operate at natural ambient temperature. The ~90% cooling reduction (from LED removal) allowed deletion of chillers, cooling towers, chilled panels and most downflow units.
- Because cooling loads reduce, we downsized ductwork, fans, electrical supplies, risers, plantrooms and mechanical rooms—removing a large proportion of the original electrical infrastructure.

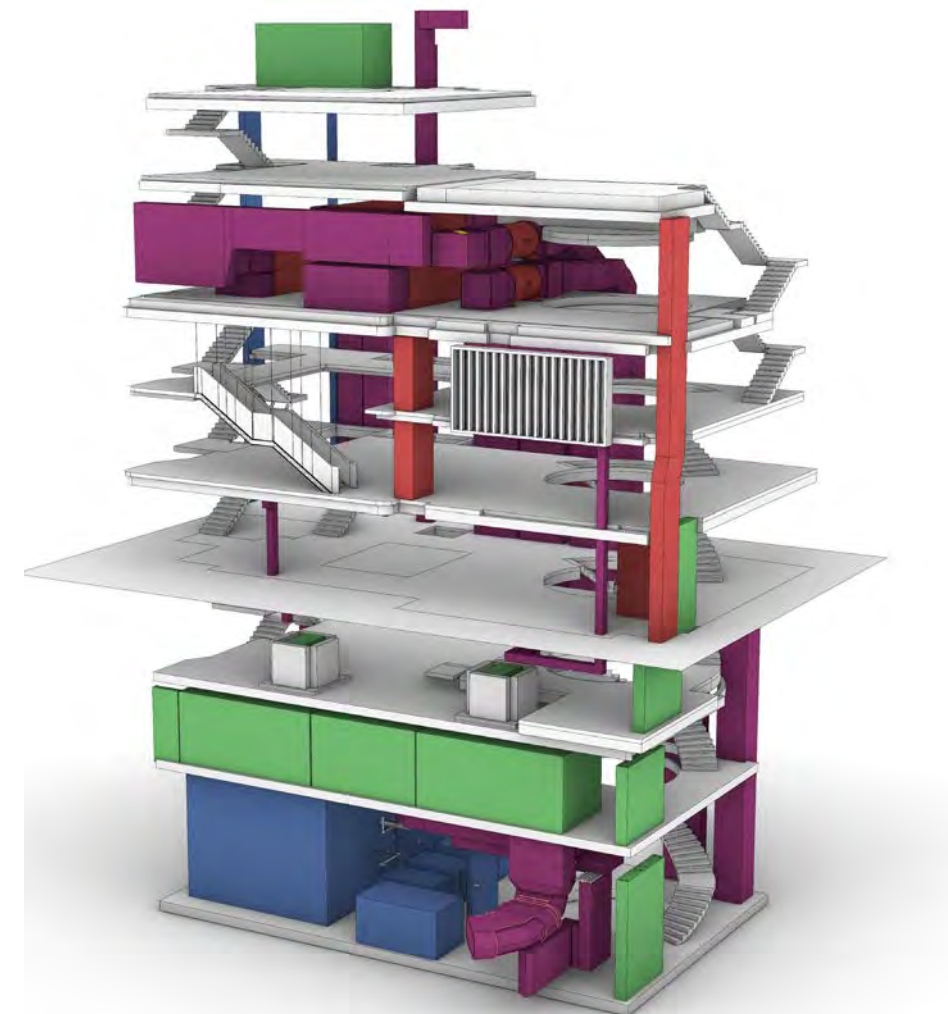


The savings:

- Cooling and heating plant accounted for the majority of mechanical capex.
- Removing active conditioning eliminated:
 - Chillers,
 - Cooling towers,
 - Condenser, chilled water and low temperature hot water systems,
 - Associated power infrastructure.

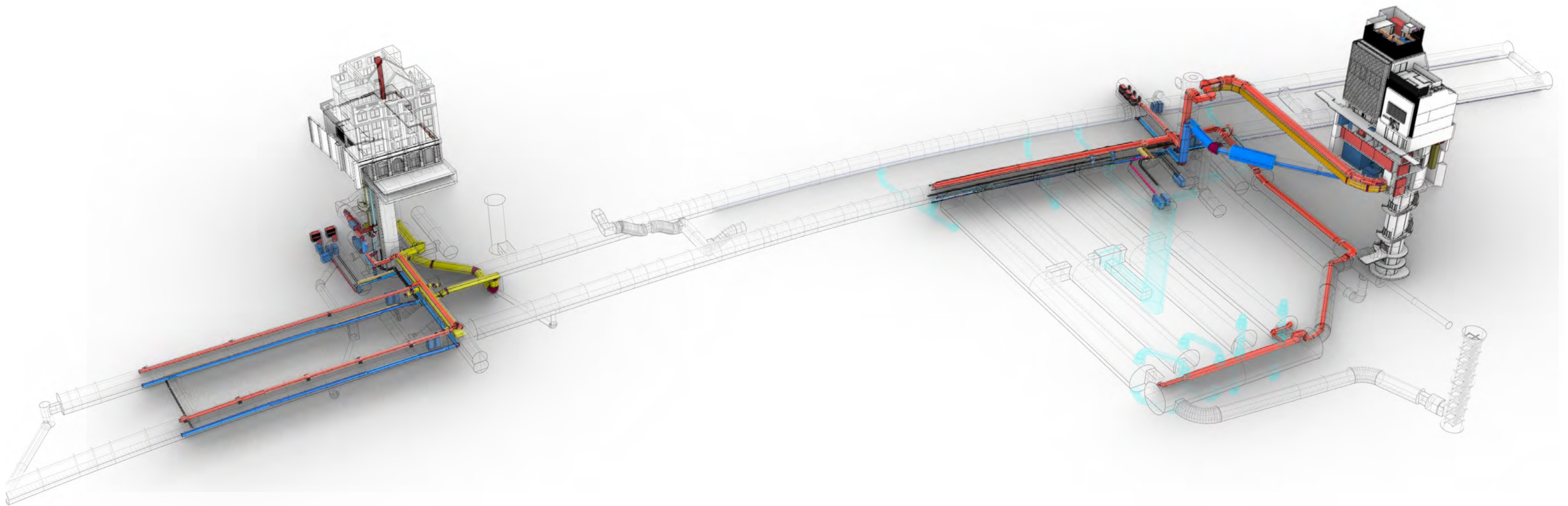


Plannig Design



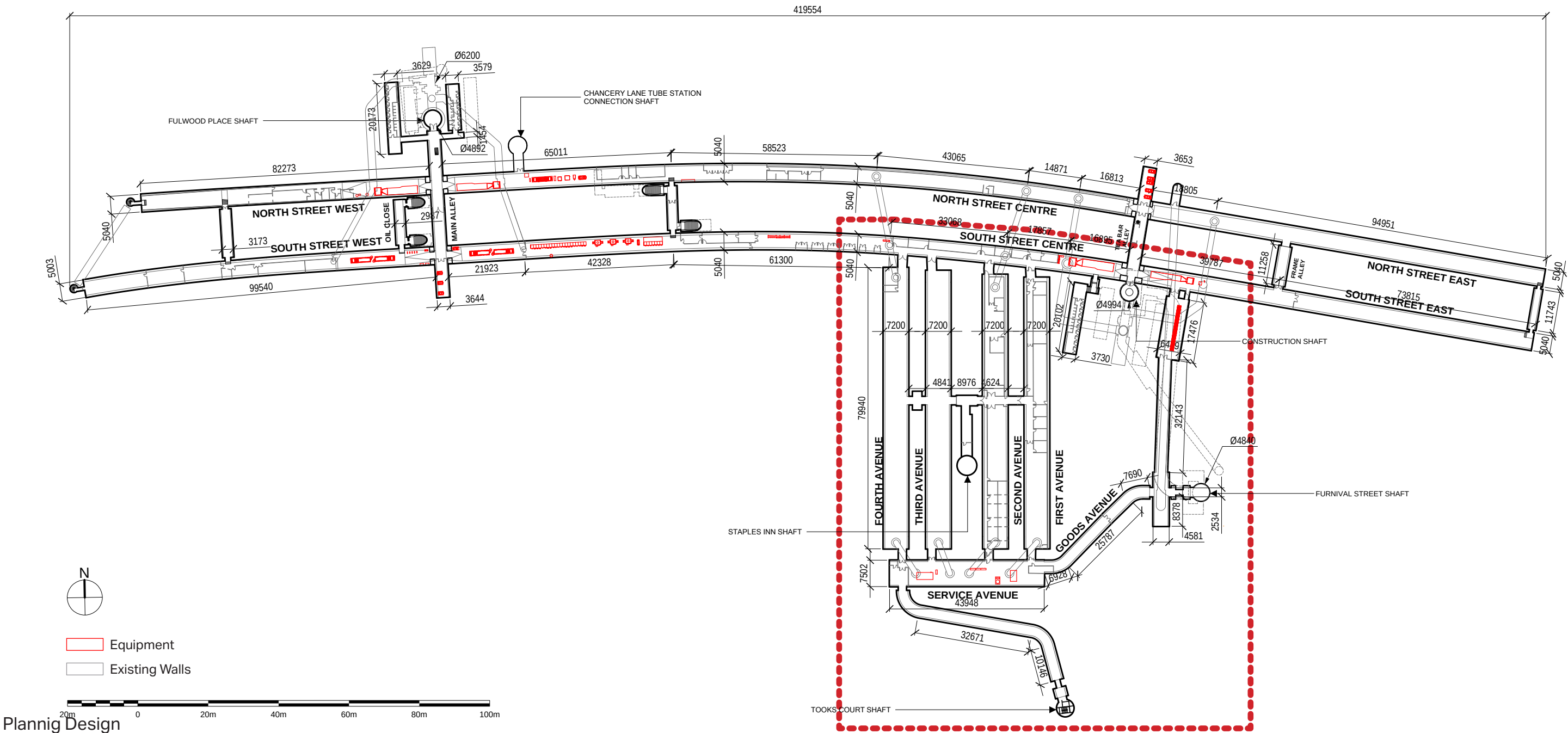
MArch 2026

- Fire rated ductwork is one of the most expensive MEP components due to fabrication, fire wrapping, penetrations, supports and access.
- Removing intermediate Avenue ducting and all Street ducting cuts:
 - fire rated duct lengths,
 - ceiling penetrations and fire stopping,
 - high duty extract fans and controls,
 - electrical supply and containment for large fan systems.

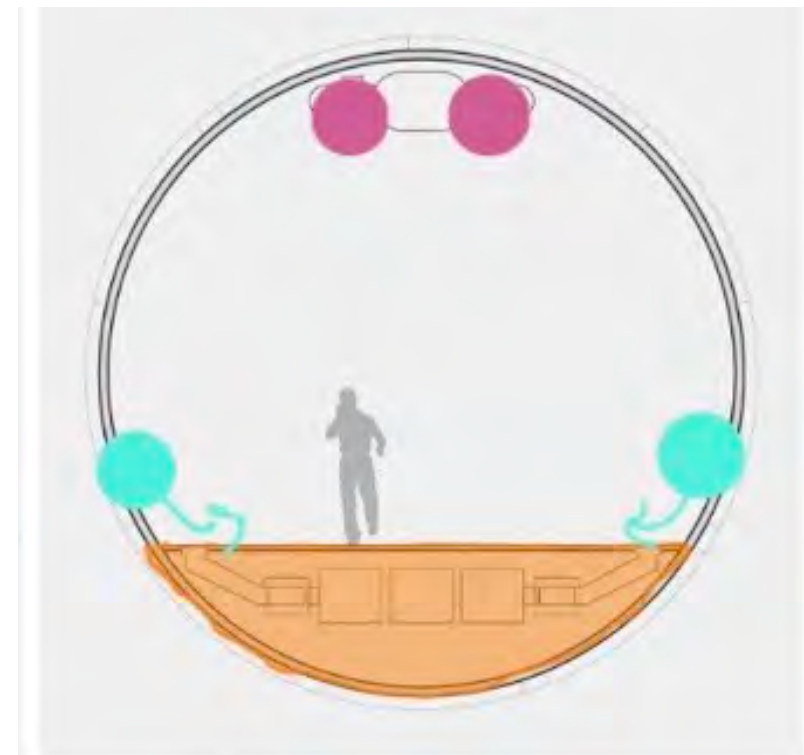
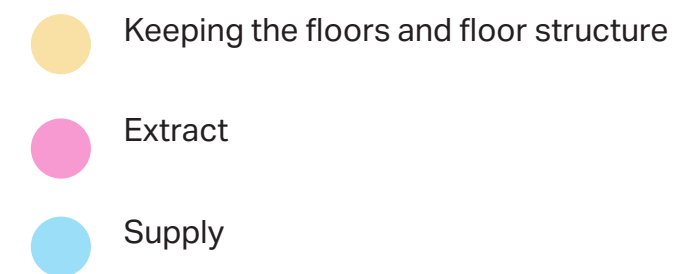
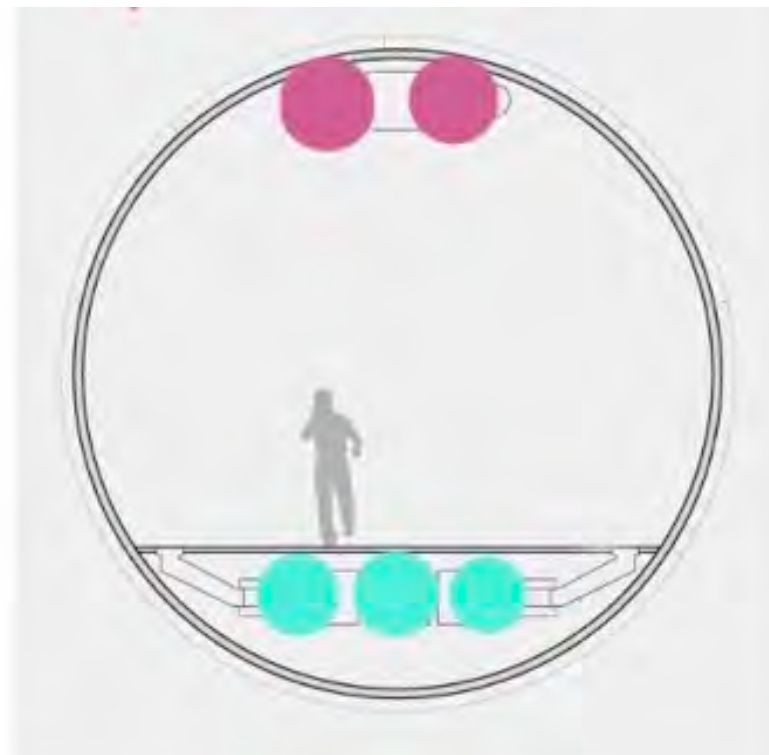
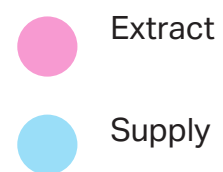


What we changed:

- Stopped forming new service trenches/duct routes in floors—keeping all floors intact and avoiding heavy structural breakout.
- Minimized drilling between tunnels; reduced new cross links and service penetrations.
- Avoided removing historic partitions unless essential for safety or circulation.
- Retained existing equipment and fittings where possible, avoiding unnecessary dismantling.



- Structural breakout and heritage sensitive demolition are highly labour intensive.
- Avoiding floor removal eliminates reinstatement, levelling, finishes and vapour barrier reinstatement.
- Reducing penetrations reduces fire stopping quantities, risk allowances and programme duration.

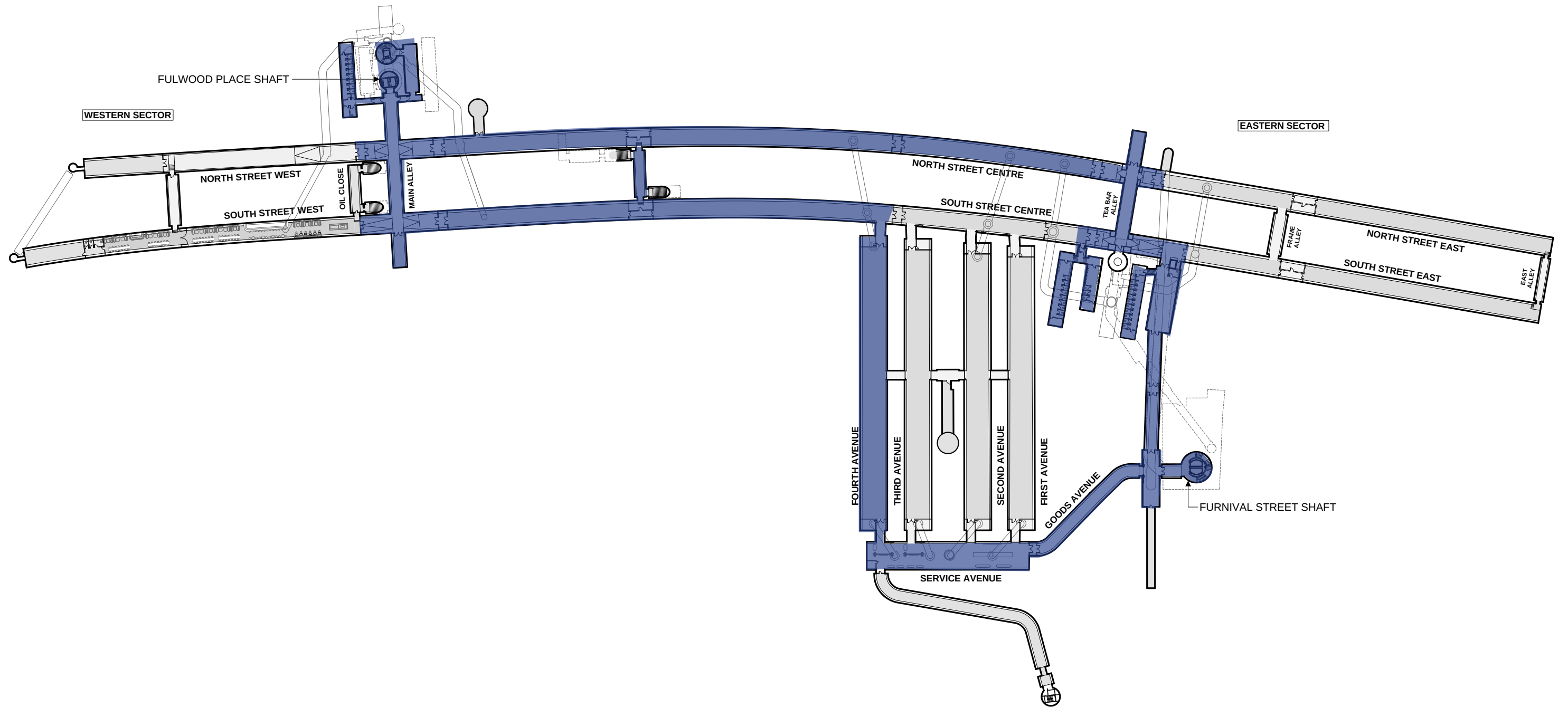


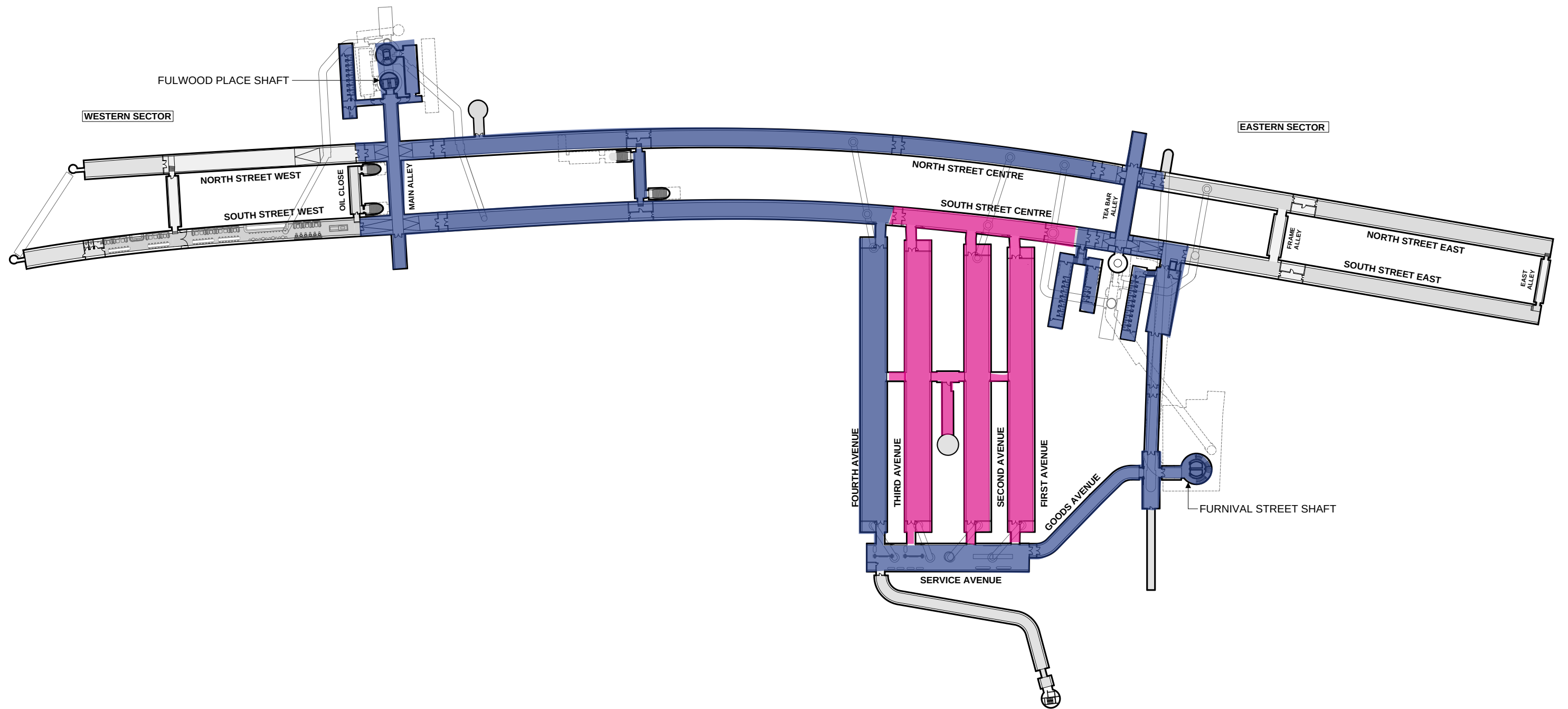
- Moved distributed electrical and water supply plant elements into tunnel voids or under floor cavities to reduce the size and construction cost of the Furnival Street basement.
- Consolidated small plant items (electrical distribution, pumps, telecoms, minor PH services) into tunnel spaces, freeing surface level footprint.
- Simplified vertical riser design because fewer systems require routing up into the Furnival basement.

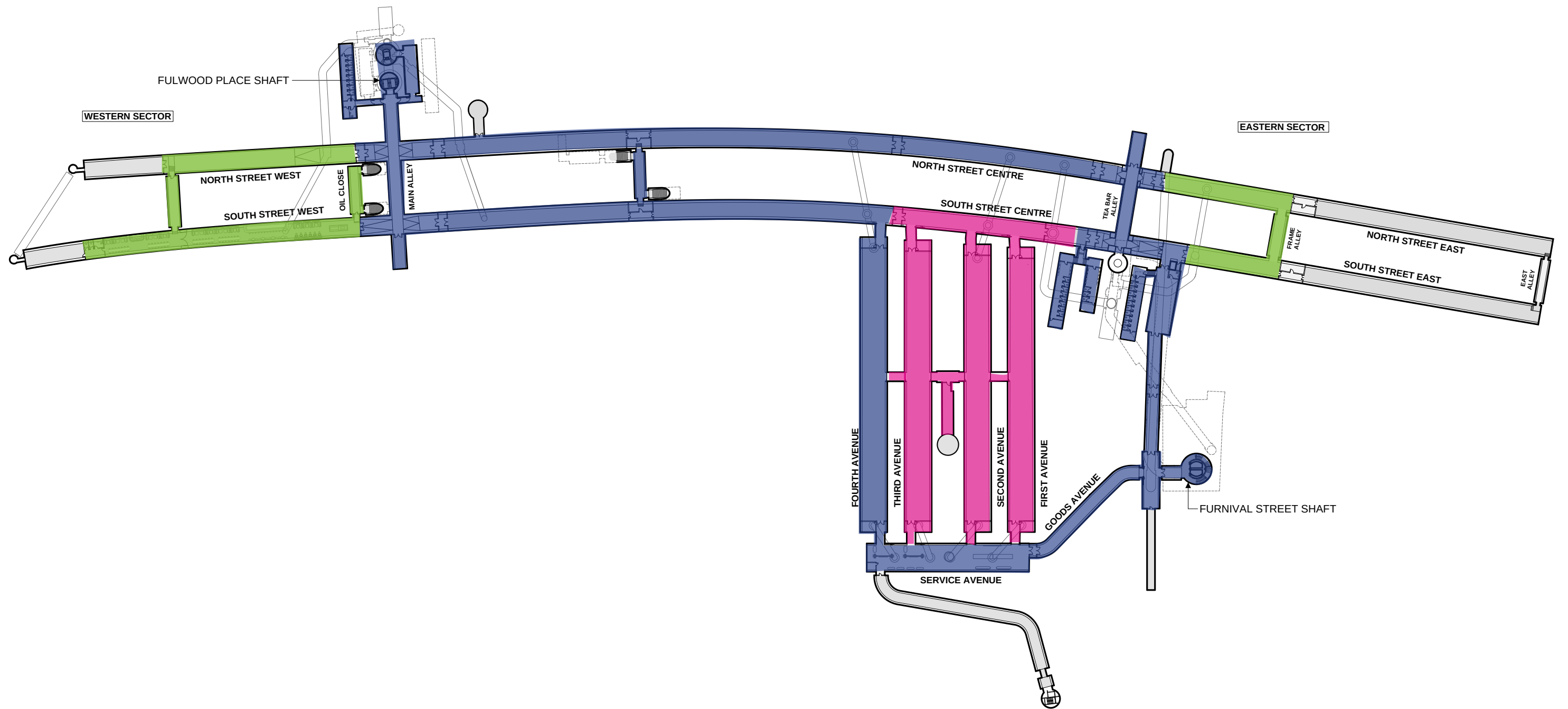
Note: The sprinkler tank should remain at Furnival Street due to its very large footprint requirement (~50 m of Street), but relocating the minor systems still achieved savings.

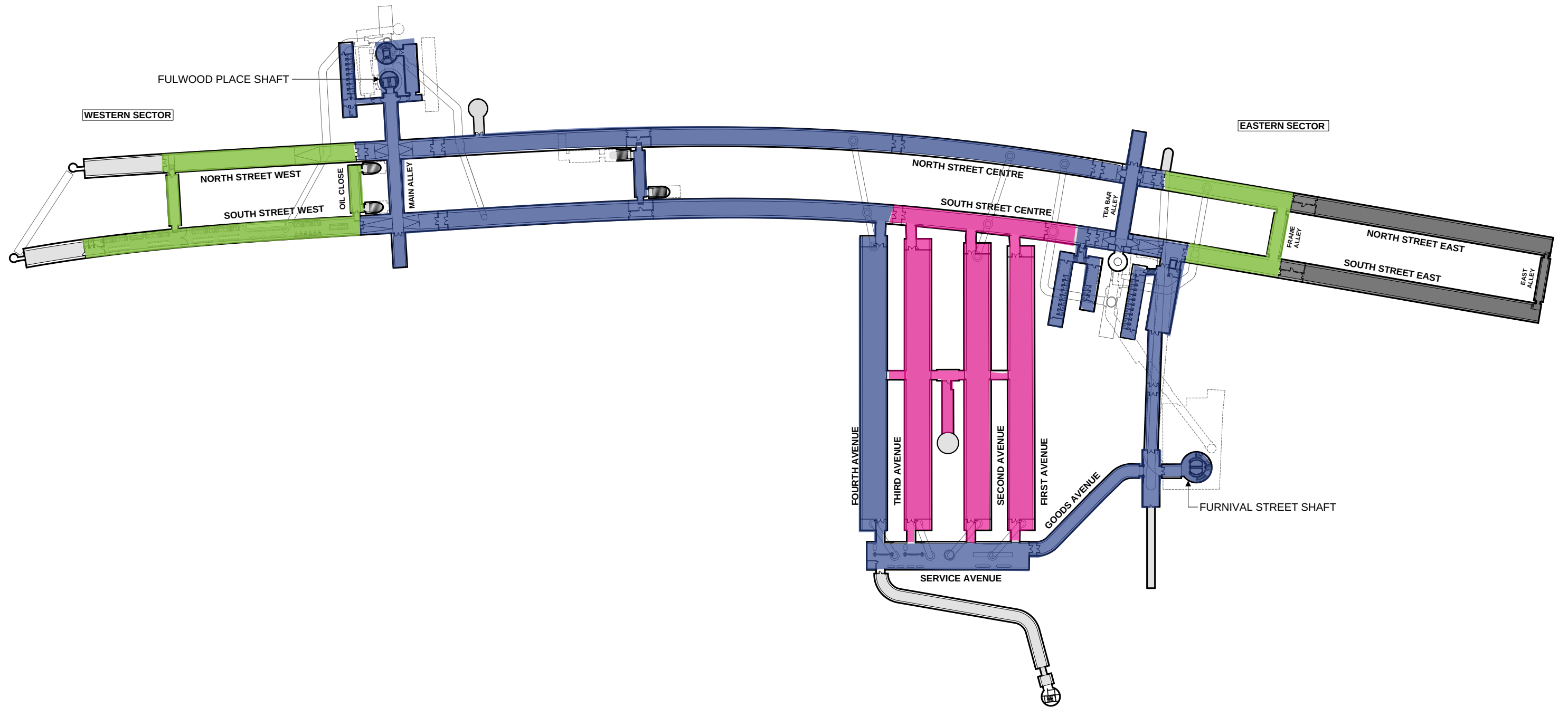
The Savings:

- Smaller surface level basement → cheaper excavation, lining, waterproofing and plantrooms.
- Direct, shorter distribution routes underground → fewer risers, ducts and shafts.









Stage 2+ Cost Plan - VE Options

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The construction costs of the development are then shown below after the effects of the moves proposed by Wilkinson Eyre and WSP - this also includes the effects of phasing.

Summary of Costs	Stage 2+ VE Scheme March '26	Stage 2+ VE including risk allowances	Stage 2 + Target Scheme Jan 25	Movement
Construction Cost				
Facilitating Works - temporary site set up, asbestos removal in tunnels and shafts, strip out of redundant services and materials, break out slabs etc.	£ 15,966,000	£ 15,966,000	£17,445,000	-£ 1,479,000
Furnival Street demolition	£ 1,113,000	£ 1,113,000	£1,018,000	£ 95,000
Furnival Street	£ 16,324,000	£ 16,324,000	£16,991,000	-£ 667,000
Lift from Furnival Street to tunnels	£ 2,434,000	£ 2,434,000	£2,120,000	£ 314,000
Mechanical and Electrical systems located in Furnival Street serving Tunnels	£ 3,399,000	£ 3,399,000	£6,329,000	-£ 2,930,000
Tunnel Fit out	£ 20,782,000	£ 20,782,000	£34,202,000	-£ 13,420,000
Fulwood Place	£ 3,432,000	£ 3,432,000	£3,808,000	-£ 376,000
Total Construction Cost Estimate Essential (Jan 2025 start on site)	£ 63,450,000	£ 63,450,000	£81,913,000	-£ 18,463,000
Risk Allowances		£34,592,000	0.0% Excluded	Excluded
Optional items including contingency	N/A	£14,087,000	NA	N/A