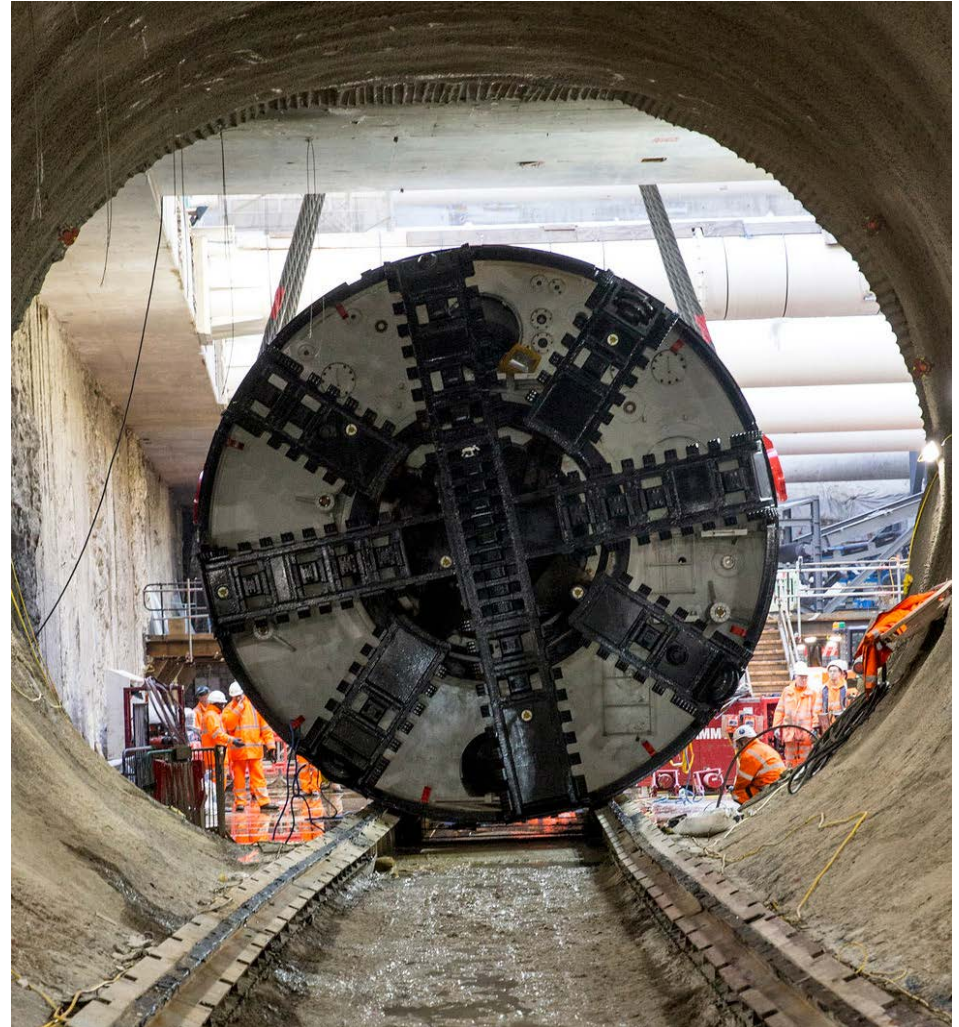


03 OCTOBER 2019

# Bakerloo Line Extension

Update on optioneering for TBM launch and line wide construction



*Helen the Northern line extension southbound tunnelling machine (so called after Astronaut Helen Sharman)*



# Introduction

- In our last session we introduced the details of our requirements for undertaking the main tunnelling works from the New Cross Gate station site proposal plus additional land.
- We explained what factors we had focused on in identifying, considering and assessing the alternative scenarios and site requirements within those for tunnelling.
- We explained why we had not considered Goodwood Road for tunnelling works and explained that Wearside Road is in scope for tunnelling, acting as a reception site.
- We explained that we are also now proposing a secondary tunnelling site at the Tesco superstore site - where Old Kent Road station 1 is proposed.
- We introduced the alternative sites we had considered at Hither Green and Catford town centre and some of their short comings relative to New Cross Gate.
- Provided to us in follow up were a series of questions. We have been through those and this further briefing provides answers where we can provide them.



# General understanding of logic

- A large number of the queries provided by Mount Anvil concern the logic of the construction and tunnelling programme and how this has lead us to our latest proposals. We have set out the logic of the two constituent parts – site assessment and tunnelling scenario assessment.
- Main tunnelling work sites – to be clear, these are sites where TBMs can be assembled, launched and serviced.
- Some queries we received concerned Goodwood Road, Wearside, and Stepney Green and referred to launch.
- Please note that in respect of Stepney Green, the site was a reception site for TBMs launched elsewhere. It was also a SCL site for the construction of a cross-over cavern for future train operations. Given this, its footprint is not relevant for launch and servicing of TBMs.
- Concerning Wearside Road, the site was considered for TBM launch. We concluded its size is not suitable to launch and service TBMs, and could not accommodate rail sidings of the preferred length.
- Wearside would be a reception site where TBMs complete a drive and are removed from the ground. We are bringing the tunnels up to a shallow box structure there and so we expect recovery to be quicker and easier.
- Tunnelling works have a higher site size requirement than station –only works. On this basis, given we do not prefer Goodwood Road for the station works, by default it is not preferred for tunnelling works.





# TBM assembly at Battersea





# TBM launch from Battersea terminus box



# General understanding of logic – site characteristics

- In identifying and assessing sites we considered the following factors:
  - Size – a site must have capacity to undertake a range of functions. We have forecast a requirement of a desirable minimum of 30,000 sqm to accommodate the necessary logistics, plant, welfare , supplies, spoil. The actual land take required subject to the specifics of the site and its operation.
  - Rail access – we are aiming to provide sufficient siding capacity to transport the output of at least two simultaneous tunnel drives. Preferred sidings length is 300 metres to minimise train paths required.
  - Operation as a worksite – considering how direct access from the main road network is and how the site can function day to day to support both tunnelling and station works.
  - Environment – assessment of construction impacts at site.
- We found no other suitable sites than those we assessed.



# General understanding of logic – tunnelling

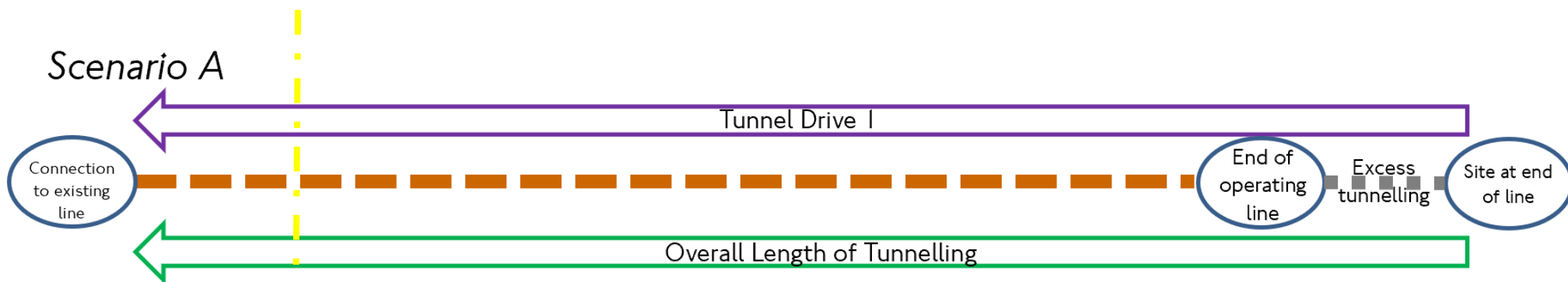
- In assessing tunnelling strategies we considered the following factors:
  - The assumed worksites in use, ranging from assuming a single Primary site to assuming a combination of Primary and Secondary sites.
  - The number of TBMs used.
  - The type of TBMs used (e.g. Variable density, Slurry, Earth Pressure Balance).
  - The direction of drives and the implications on programme of both the drive itself and its outcome in terms of the works to infrastructure on the section of route.
    - E.g. Elephant and Castle station upgrade works
- The logic behind our findings is shown on the next slide.



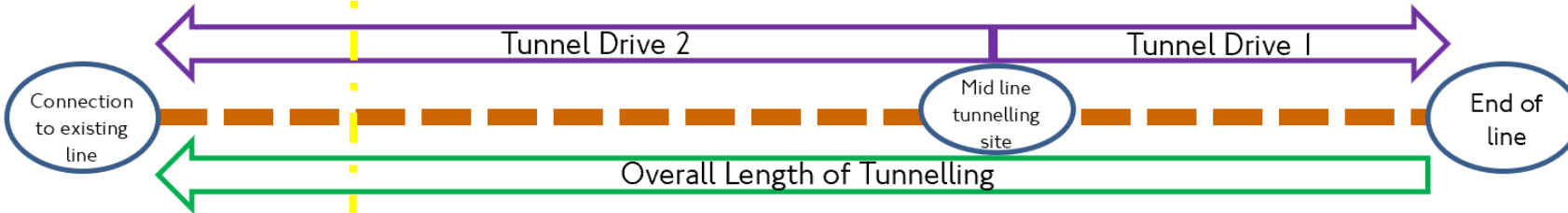
# Tunnelling Logic Diagram

E&C station

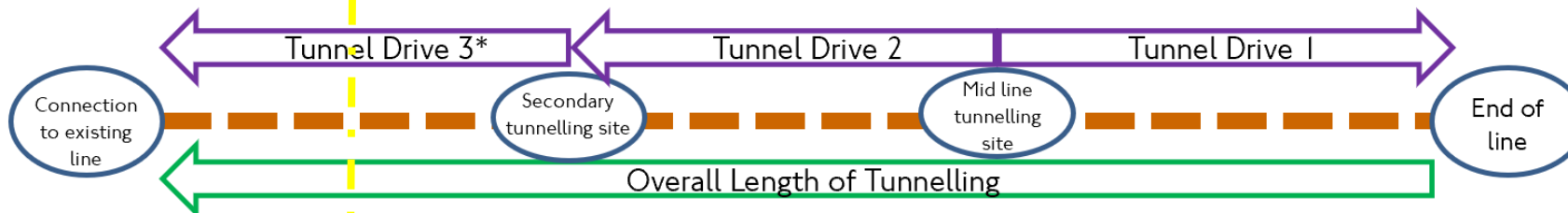
Scenario A



Scenario B



Scenario C



\* This tunnel drive can occur at the same time as Tunnel Drive I  
The number of TBMs used is a variable across these scenarios





## Remaining queries (I)

- Concerning Network Rail engagement, as stated at the last briefing, we have engaged Network Rail on our proposals along the whole route and will develop them with their input. Our experience tells that entering any agreement with Network Rail is unlikely until shortly before or potentially once we have applied for the Transport and Works Act order. We have not assumed Howbury Freight Terminal is delivered.
- The Buses that stand on the site are accommodated in our plans – specifically in the area below. This is because the space, lying to the south of the Brighton Grove terraces that dissect the south western corner of the site, is not critical to station and tunnelling works but can comfortably accommodate bus standing within the site boundary. Welfare is shown but may be subsumed into the welfare for the BLE works.



## Remaining queries (2)

- Vehicle trips generation comparisons rely on a baseline of the current land use.
- We are awaiting evidence of the current land use trip generation through the pre-application process. Once we are in possession of that we will be able to undertake some comparison using benchmarking. Based on the current land uses, its scale of car parking, we currently anticipate that vehicle trips during construction will be unlikely to exceed the current land use.
- “Reliable logistics routes” – these are routes we are confident will be available on consistent basis for the duration they are required.
- Launch of TBMs in both directions from OKR1 or OKR2 to facilitate Elephant and Castle works – launching TBMs in both directions from OKR sites is not relevant to the Elephant and Castle works as these are dependent on delivery of the tunnels on northbound drives to the existing line. The OKR1 site is not the main tunnelling work site as it does not meet all the criteria necessary (see slide 5). New Cross Gate, along with OKR1, sits around the mid point of the extension and allows tunnelling south to line end and north to OKR1.
- What is the scale of benefit of starting fit out and cross-passage works sooner? – These are critical path activities. Testing cannot take place until they are completed.



## Remaining queries (3)

- Clarification of “both (OKRI and NCG) sites are beneficial in supporting the whole line construction that requires greater activity than station construction alone”. This is correct to “both sites are beneficial in supporting the whole line construction and that requires greater activity than station construction alone at each site”
- What are the socio-economic impacts we have assessed concerning assumed loss of Tesco and Sainsbury’s supermarkets? When we undertook our assessment that we briefed Sainsbury’s and Mount Anvil on in July 2018, we considered all permutations of closure scenarios including loss of Sainsbury’s *and* Tesco (OKRI station site).
- We have concluded, so far, that the impacts of these works on grocery customers warrants the outcome of the extension’s delivery. This is because there are a range of alternative grocery providers in the vicinity of each store that can:
  - Provide access to a comprehensive range of grocery goods;
  - At a price point that is on average no higher than the existing Tesco and Sainsbury’s offer.
  - Within travel times that are on average not significantly different.
  - The additional services provided of Pharmacy and Petrol Filling Stations are also catered for at alternative sites.
- The loss of employment to the economy, if it arises, may be offset by employment generated by the extension works. There is forecast potential for employment losses to be mitigated by diverted sales in the local grocery sector.





## Next Steps

- Our plan is to consult further on the BLE later in 2019 and include the sites identified for line-wide construction as part of this consultation.
- We have briefed Southwark and Lewisham Councils who have endorsed us engaging further on the scheme through public consultation.
- All three options considered for the main tunnelling work site will be presented alongside the pro's and cons of each.
- We are engaging further with all other affected landowners including Network Rail and those in Catford.

