



Neutral Citation Number: [2020] EWHC 1442 (Admin)

Case No: CO/4020/2019

IN THE HIGH COURT OF JUSTICE
QUEEN'S BENCH DIVISION
ADMINISTRATIVE COURT

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 05/06/2020

Before:

MR JUSTICE JAY

Between:

THE QUEEN (oao HERO GRANGER-TAYLOR)

Claimant

- and -

(1) HIGH SPEED TWO (HS2) LIMITED
(2) SECRETARY OF STATE FOR
TRANSPORT

Defendants

Christopher Jacobs (instructed by **Hodge Jones & Allen Solicitors**) for the **Claimant**
Timothy Mould QC and Jacqueline Lean (instructed by **Government Legal Department**)
for the **Defendants**

Hearing dates: 13th and 14th May 2020

Approved Judgment

Covid-19 Protocol: This judgment was handed down by the judge remotely by circulation to the parties' representatives by email and release to Bailii. The date and time for hand-down is deemed to be Friday 5th June 2020 at 10.30pm.

MR JUSTICE JAY:

Introduction

1. Ms Hero Granger-Taylor (“the Claimant”) has lived for over 60 years in a late Georgian villa, a Grade 2* listed building, in Park Village East, London NW1 to the north-east of Regents Park. This is part of the Crown Estate and the property is held on a long lease. The villa was constructed by John Nash in the 1820s and bears the hallmarks of his elegant style. In 1833 or thereabouts construction began on the London – Birmingham railway to the east of the property, and the first section of the line was opened in 1837. In 1901, as part of the project to widen Camden cutting, a large retaining wall was built dividing Park Village East from the western perimeter of the railway. It rests approximately 17 metres from the front of the property and the drop from the level of the road to the railway below is approximately 10 metres. Unsurprisingly, given that the substrate is London clay, the wall has suffered periodic movement and shows signs of cracking. The Claimant’s expert says that it is “metastable”.
2. HS2 Limited (“the First Defendant”) is the nominated undertaker appointed by Secretary of State (“the Second Defendant”) under section 45 of the High Speed Rail (London – West Midlands) Act 2017 (“the HS2 Act”). This is the first section of an ambitious project which will not be completed until 2040 and is known as HS2 Phase One. Pursuant to statutory powers, the First Defendant has entered into a development agreement with the Second Defendant which requires it to deliver the railway in compliance with various environmental conditions and stipulations, including standards addressing the risk of ground settlement.
3. HS2 Phase One has posed acute design and engineering challenges in the Euston Approaches. The original engineering solution, known as AP3, entailed amongst other things the demolition of the retaining wall and the construction of a new barrette wall approximately 8 metres to the west of it. The three railway lines for the high-speed train would have run up to approximately 10 metres below ground between the barrette wall and the existing line. In March 2017 AP3 was abandoned and replaced by the Three Tunnels design. Two features of this design have caused particular concern to the Claimant. The first and foremost of these is that the apex or crown of the outbound or downline tunnel will pass a mere 1.5 metres from the foundation of the retaining wall. The second is that the complex interrelations between the three tunnels will, it is said, create a heightened risk of ground movement.
4. This judicial review challenge is directed to the safety of the Three Tunnels design in the specific context of the outbound tunnel travelling so close to the base of the retaining wall. It is contended on the back of expert engineering evidence that this aspect of the design has engendered an engineering challenge which is insurmountable: in the result, the design is inherently dangerous. The risk is of catastrophic collapse of the retaining wall, either during the tunnelling works or subsequently, which would if it arose cause at the very least serious damage to the Claimant’s property. Consequently, the Claimant asserts a breach of section 6 of the Human Rights Act 1998 because her rights under Article 8 and A1P1 of the Convention have been violated.

5. Limited permission was granted in his case, confined to the human rights grounds, by Lang J on 16th January 2020 and expedition was ordered. Lang J held that it was arguable on the basis of the Claimant's expert engineering evidence that there was a "threatened breach" of her rights under Article 8 and A1P1, on account of the "significant prospect of tunnel collapse and collapse of the retaining wall". It was also arguable that the Claimant's health has deteriorated in consequence of the action of the Defendants. Lang J referred the Defendants to their duty of candour and the obligation to disclose relevant material about the risk to the property from their proposed scheme.
6. The Claimant was represented before me by Mr Christopher Jacobs and the Defendants by Mr Timothy Mould QC and Ms Jacqueline Lean. I am grateful to Counsel for their effective submissions delivered via Skype in difficult circumstances.

The Legal Framework

7. This is not substantially in dispute following Lang J's refusal of permission on the Claimant's first and second grounds. Lang J has set out the legal framework on two occasions: first, in *R (oao London Borough of Hillingdon) v Secretary of State for Transport and another* [2019] EWHC 3574 (Admin); secondly, in her judgment granting limited permission in January 2020 [2020] EWHC 333 (Admin). I can therefore be brief.
8. Section 1 of the HS2 Act authorises the First Defendant to construct and maintain the works specified in Schedule 1 – the "scheduled works" – being works for the construction of Phase One and works consequential on and incidental to such works. The scheduled works authorised at the Euston Approaches are principally those listed in Schedule 1 as Works 1/1, 1/2, 1/15, 1/16 and 1/17.
9. Section 2(1) authorises the First Defendant to carry out other works within the scope of the Act for the purposes of or in connection with the scheduled works. These are known as "non-scheduled works".
10. The effect of section 20 is to grant deemed planning permission under Part 3 of the Town and Country Planning Act 1990 for the carrying out of development authorised by the HS2 Act. I draw attention to three specific points. First, this deeming process does not apply to non-scheduled works if three conditions are fulfilled. At least one of these conditions is not met in this case because the development is covered by the environmental statements to which I will soon be referring. It follows that there is deemed planning permission for non-scheduled works. Secondly, when Parliament was considering the HS2 Bill the reference scheme was AP3 which is no longer under contemplation. Given that the Three Tunnels design falls within the deviation limits provided by the environmental statements, it also has the benefit of deemed planning permission. Thirdly, by section 20(2) such deemed planning permission is subject to the conditions contained in schedule 17. This provides a scheme under which the First Defendant is required to apply to the local planning authorities for approval of certain works. However, para 30 of schedule 17 excludes tunnels or railway track beds from this requirement. It follows that judicial review is appropriate in this case because the Claimant has no alternative remedy.

11. The combined effect of sections 64(5), 68(4) and 68(5) is that for the purposes of the HS2 Act development is covered by an environmental statement if specified conditions are fulfilled, in particular that they be deposited. The deposited statements comprise the environmental statement deposited in November 2013, five supplementary environmental statements and five additional provision environmental statements deposited during the passage of the Bill through the House of Commons (collectively, “the Phase One ES”). Of particular relevance is the High Speed Rail (London – West Midlands) supplementary environmental statement 2 and the AP3 environmental statement. These contain the assessment of likely environmental effects in the Euston Approaches, including in the vicinity of the Claimant’s property.
12. The First Defendant is under a contractual duty under the Phase One Development Agreement to comply with the Environmental Minimum Requirements (“EMRs”) for the construction of this project (“the Phase One EMRs”). At para 21 of her judgment in *Hillingdon*, Lang J explained that the stated objective of the Phase One EMRs is to ensure that the project is delivered in accordance with the Phase One ES. The Phase One EMRs include the Code of Construction Practice and the Undertakings and Assurances given by the Promoter during the passage of the Bill, all of which are recorded on the HS2 Phase One Register of Undertakings and Assurances.
13. In this way, the Phase One ES and the Phase One EMRs set what is called the “environmental envelope” for the construction of HS2 Phase One. The Defendants say that the contents of this envelope must be read alongside the HS2 Act when the exercise of powers conferred by the Act are being considered, and I agree.
14. The Register of Undertakings and Assurances also includes commitments given by the Promoter during the passage of the Bill which were set out in a series of information papers. These include Information Paper C3, Ground Settlement (“the Ground Settlement policy”) which contains the Second Defendant’s policy in respect of assessing and managing the impacts of settlement. This is in addition to rights of support at common law. The position is helpfully summarised in the first witness statement of Mr Imraan Mirza, MEng & ACGI CEng MICE, Senior Project Manager and Euston Approaches Lead for HS2. Essentially:
 - (1) There is a phased approach to the assessment of settlement risk, as well as monitoring requirements.
 - (2) Listed buildings enjoy the highest level of protection.
 - (3) Qualifying owners may call for a settlement deed, being in the nature of a direct contractual arrangement between the owner and the First Defendant, which provides for, amongst other things, the agreement and carrying out of protective works within the building when required, and compensation for damage.
 - (4) An obligation on the part of the First Defendant to carry out or reimburse property owners for the cost of repairs caused by settlement.
15. I will be returning to the issue of ground settlement at §§63-71 below.

Essential Factual Background

16. The Claimant has lived at the property all her life. By profession she is a specialist in the study of early textiles. She has opposed HS2 from the outset, and originally opposed AP3 on various grounds. She believes that the risks posed to her property by the Three Tunnels design are likely to reduce its value, particularly now that she is in possession of expert engineering evidence which testifies to the highly significant risks consequent on tunnelling under the retaining wall.
17. There have also been adverse health impacts:

“All of the above is causing me stress, anxiety and distress. I have been diagnosed with ADHD and believe that my mental health has suffered. My dentist ... confirmed that I had a lower left second molar tooth fracture caused by grinding my teeth at night ... I have wanted to know whether I would be able to sell my property but I do not consider this is now a viable option due to the Defendant’s Euston Approaches Scheme. I have lost complete trust in the Defendant and this is largely down to their failure to afford me or my solicitor any meaningful response to my concerns or requests, which I consider amounts to bad faith.”
18. The brick retaining wall was built in 1901 as part of the scheme to widen the railway cutting. Its dimensions are approximately 12 metres high (it rises about two metres above the level of the road) and 3 metres thick. According to the Claimant’s expert, the concentrated deadweight of the wall is 130 tonnes per linear metre, or 1,300 kN/m, translating to an average vertical load in the region of 280kN/m². The wall was reinforced in 1920 and there is evidence of sudden and serious settlement damage in 1920, 1940 and 1960 due to ground movement. All of this was recognised by the Crown Estate in 1967, and it was further noted in a memorandum I have been shown that there would be continuing slight settlement with a risk of serious structural defects in the future.
19. In April 2013 the First Defendant wrote to the Claimant stating that it would be necessary to replace a section of the retaining wall to construct HS2 Phase One. This was because the cutting would require widening to accommodate the new line, and:

“Our engineers are aware that the retaining wall between the railway and Park Village East has suffered over time from movement and damage, which we understand has been a cause of concern for residents. The replacement of the wall using modern construction techniques to minimise ground settlement should address these historic subsidence issues, and so overall would be beneficial for local residents.”
20. It is unnecessary to dwell on the fine detail of AP3. The concept involved the construction of a “dive-under” (a short tunnel, underpass or trough) through the cutting, known locally as “the birdcage”. Mr Jacobs’ skeleton argument helpfully describes this as a buried multi-cell box structure, and I was taken to a simplified diagram which shows this. The barrette wall would be constructed using advanced techniques and was to be well embedded in the ground. What is clear from the

admittedly limited documentation I have been shown is that the design work for AP3 was further advanced by March 2017 than it currently is for the Three Tunnels design.

21. The parties disagree as to the true reason for the abandonment of AP3. The Claimant points to an expected costs saving of £136M. Para 20 of Mr Mirza's second witness statement avers that the Claimant's understanding of the economics is incomplete and that this factor in any event did not bear on the decision-making process. His evidence is that the true reasons for the abandonment of AP3 included significant concerns about environmental damage during the lengthy period of construction, the major and lengthy upheaval to the lives of residents (described as "very heavy and noisy engineering works", including night working), and concerns as to the proximity of AP3 to the existing main lines and tunnels.
22. Para 19 of Mr Mirza's second witness statement identifies the main differences between AP3 and what he calls the "Three Tunnels concept". In particular, there will be no need for the barrette walls; the "dive-under" will now be contained within the Euston Approach tunnels; there would be no loss of railway lines (one permanent, the other for three years); and, there would be no need to demolish and reconstruct three railway bridges.
23. It is part of the Claimant's case that the Defendants should revert to AP3, whose safety credentials have been validated. In my judgment, to require the Defendants to act in this way is well beyond the proper scope of judicial review proceedings. It is one thing to hold that the Three Tunnels design is inherently unsafe; it is quite another, and in my view impermissible, to order the Defendants to construct something they have no wish to and consider would no longer be in the public interest. Furthermore, the reasons Mr Mirza has put forward to justify the supersession of AP3 cannot be characterised as perverse.
24. From about June 2016 the First Defendant was already in the process of considering a number of possible options. On 8th August 2016 Professor Lord Mair wrote to the First Defendant "to give a view on the key geo-technical issues of the Option P-5 scheme for the Euston area". My understanding is that the Option P-5 scheme was similar but not identical to what was to become the Three Tunnels design; for example, the tunnel sizes have been reduced. There are no plans or diagrams accompanying Professor Mair's report although he clearly was well aware that the downline tunnel would have "very low cover". He recommended that the downline tunnel be constructed using the sprayed concrete line ("SCL") technique, deploying additional support measures to ensure face and crown stability. Further:

"The need to probe ahead of the SCL face to verify the ground conditions and check for any variability is critical.

The Park Village East 1890s (sic) gravity retaining wall has shown evidence of historic movement and there have been various measures taken in the past to mitigate the causes of the movement ... There are also houses on Park Village East which have shown signs of movement.

The proposed sequence of installation of ground anchors, removal of the sheet piles [in front of the wall], and

construction of berms prior to tunnel construction looks sensible and practical. It may be beneficial to consider two rows of anchors. There may be some cracking of the masonry retaining which can be easily repaired; it is probable that this will not endanger the stability of the wall.”

25. Professor Mair’s role was to address the feasibility of this concept in tunnel engineering terms. His letter of advice is not quantitative: for example, “very low cover” is not spelt out, and there are no explicit calculations. However, he must have been aware of the distances and dimensions involved, and the absence of formal calculations in his advice does not mean that he did not perform these to the extent necessary to offer his counsel in the terms in which he did. It is correct that he did not claim in categorical terms that the downline tunnel could be constructed safely. No doubt his expectation was that the proposal would need to be subjected to detailed analysis and design, and appropriate modelling conducted. However, his report lends considerably more support to the Defendants’ case than it does to the Claimant’s because it constitutes evidence from a highly-respected and authoritative source that there was no clear reason in principle why the downline tunnel could not be built safely using the SCL technique with reinforcements, despite the “very low cover”.
26. The Claimant says that the First Defendant was far from being upfront with the new proposal as it was being conceived and developed. It required an “informally captured photo” taken at an engagement meeting in March 2017 to alert the Claimant to the First Defendant’s revised thinking. It is accepted, however, that further information was provided at a meeting held by the design and build contractor in October 2018. The slides shown at that meeting enabled the Claimant’s expert to extrapolate scaled drawings.
27. Mr Mirza explains the nature and extent of expert input into the Three Tunnels design. It was developed by the First Defendant and Arup, the latter advised by specialist consultants. The First Defendant also engaged ILF Consulting Engineers, described as “renowned specialists in the design of tunnels and caverns using [SCL]” to undertake an independent review of the technical feasibility, and they, as well as other specialists, will be engaged as independent checkers until delivery of the scheme.
28. In July 2017 Skanska, Costain, Strabag joint venture (“SCS JV”) was awarded the design and build contract of this section of the works, namely Stage 1. SCS JV, with the approval of the First Defendant, appointed their design house for the works which comprises a separate joint venture. The design house has appointed their own independent third-party checker.
29. According to Mr Mirza, the preliminary design has been signed off by the SCS JV and sent to the First Defendant, which has carried out its own assurances on the preliminary design. In particular, the First Defendant has conducted subject matter expert reviews and employed the services of specialist consultants to review the viability of the Three Tunnels design.
30. At the time Messrs Mirza and Woods were finalising their latest witness statements, the project had not moved beyond the preliminary design stage and the next step was to be Stage 2. Mr Edward Woods, BSc (Hons) Civil Engineering, Dip Construction

Management, CEng, FICE, Head of Tunnelling and Underground Structures at the First Defendant, has explained what this entails. In essence:

“Further detailed work will need to be undertaken to develop the Three Tunnels Design for detailed design and as fit for construction (including completion of the site investigations, preparation of the detailed design and assessment reports and drawings, detailed construction reports, and construction methods and procedures).”

31. Stage 2 will be undertaken by the SCS JV, along with their design house, and be subject to internal and external reviews as well as independent third-party checks, all as explained by Mr Mirza. Thereafter, it will be subject to review and approvals by the First Defendant and its consultants; and, finally, to review by a further independent engineering consultancy as a condition of obtaining insurance.
32. In August 2019 the Second Defendant announced the Oakervee Review “to look at whether and how HS2 should proceed”. Mr Oakervee CBE, FREng reported in December 2019. Chapter 5 of his report contains a review of HS2’s objectives and on my reading evaluates the advantages and disadvantages of the project entirely even-handedly. Chapter 6 suggests that if the project is to proceed it should do so on “the more prudent assumption” of 14 trains per hour rather than 18. At Chapter 9 the report said this:

“9.17 The plans for HS2 tunnels running from Old Oak Common to Euston have provided major challenges due to the potential conflict with the existing railway entering Euston. ... ***The existing planned construction of the approach has taken the form of a tunnelled dive-under which is likewise expensive and exposes major risks to the existing railway and services during construction.***

...

9.20 An in-depth study needs to be undertaken to improve the efficiency of the future Euston station as a whole. This should seek to avoid the complicated HS2 approach to Euston station and minimise risk, and also look at the construction and movement of passengers. ...” [emphasis supplied]

33. I do not read the Oakervee Review as being directed to the specific issue which forms the centrepiece of this litigation; the concerns are more general. However, it is obvious that the Second Defendant’s response to this review has the potential to derail the Three Tunnels design altogether. According to Ms Kate Cohen, the Second Defendant’s project director at Euston station, a study is being undertaken “examining the issues raised by the Oakervee Review”. The study is expected to report in June 2020, and the Government will take account of its conclusions in making decisions about the design of HS2 in the Euston Approaches.
34. In the meantime, on 11th February 2020 the Prime Minister announced that the HS2 project would go ahead. On 15th April the First Defendant issued “notice to proceed”

to four companies undertaking construction of key elements of HS2 Phase One. On my understanding, these notices to proceed amount to the initiation of Stage 2, and the SCS JV is one of the four companies involved. My interpretation of para 8 of Ms Cohen's second witness statement is that detailed design component of Stage 2 will need to have regard to whatever the Government says in due course in its Response to the Oakervee Review.

35. It is clear from the recent history that whether the Three Tunnels design will proceed in its current form or at all is an open question. On 12th May 2020 Mr Jacobs relied on this uncertainty in support of an application to adjourn the substantive hearing due to start the following day. Given the way in which Mr Jacobs was seeking to advance his client's case at para 3 of his skeleton argument, and that the Government's Response to the Oakervee review may not be known for a number of months, I refused the application. The point of principle that Mr Jacobs was advancing could be fairly determined in the current circumstances.
36. The critical factor which emerges from this consideration of the Defendants' evidence is that the Three Tunnels design has a long way to go. Detailed design work is required before any tunnelling work might begin. As yet, there are no computer modelling, risk assessments and safety appraisals in the context of this specific issue. The Claimant relies on the absence of such documentation in support of her case that the project will proceed without the risks having been properly assessed. The Defendants on the other hand rely on the absence of such documentation in support of their case that the risks remain to be assessed, and the project will not proceed without the viability and safety of the Three Projects design having been vouchsafed in accordance with the tiers of internal, external and independent review that I have outlined.

The Expert Evidence

37. It is convenient to address the expert evidence in this case in chronological order.
38. The Claimant's engineering expert is Mr Colin Elliff, BSc CEng MICE whose particular expertise is retaining walls. His first report, which was based on very limited information, was originally dated 30th August 2017. Despite the concerns he expressed at paras 3.8 and 3.9, I do not consider that much reliance may be placed on it. Mr Elliff's second report dated 24th April 2019, based on several plans and drawings as well as the October 2018 slides, is more compelling. In his opinion:

“... [I]t is clear that the Outbound tunnel will be so close to the underside of the retaining wall that normal mitigations of compensation grouting will not be applicable. Moreover, the parallel alignment of retaining wall and tunnel raises the very obvious risk that the concentrated deadweight of the retaining wall – estimated at around 130 tonnes per metre – immediately above will cause the tunnel below simply to collapse, with catastrophic consequences.

It should also be noted that the other mitigations in consideration by HS2, i.e. ground anchors and berms, will be utterly ineffective at mitigating a potential collapse of the PVE

retaining wall footing. Indeed, this loss of ground support will have the effect of making the ground anchors go slack, therefore permitting outward movement also.”

39. Mr Elliff also opined that it is surprising that such limited information had been disclosed by the First Defendant to the Claimant and others about the Three Tunnels design. There were no dimensioned drawings, “contours” of predicted settlement, geotechnical baseline reports or details of the retaining wall, including current and historical movement. This was in stark contrast to the detailed information which had been provided at a comparable stage, if not earlier, in relation to AP3.
40. Mr Elliff’s second report also addressed the issue of ground settlement in the following terms:

“The change from AP3 to the 2017 Three Tunnels design has greatly increased the difficulty and the risk inherent in the grade separated junction, now located completely underground. Where tunnels cross it appears that they will have minimal physical separation from structures above, leading to a greatly increased risk of settlement and collapse.

...

While it is understood that no significant outward movement of the PVE retaining wall is currently in progress, in view of its historical and continuing movement the wall can be considered to be no better than “metastable”, i.e. whilst calculations show that destabilising load effects from earth retained behind the wall exceed the stabilising load effects of the wall’s self-weight, the wall remains in place because the destabilising effects are presently not acting. This is analogous to a chronic human illness being in temporary remission.

Any disturbance, for instance by tunnelling work immediately below the PVE retaining wall, is likely to remobilise earth forces, and cause the wall will become unstable once more. This risk can only be compounded by the proposal for two separate tunnels to be bored below the retaining wall. Any movement of the wall will propagate across Park Village East to result in settlement to the Grade 2* listed buildings in the west side of the street.”

I should correct a slight error. The outbound tunnel will pass underneath the retaining wall; one of the inbound tunnels will run underneath the road.

41. Finally, Mr Elliff’s report addressed the “likely disaster scenarios” in the event of catastrophic collapse. On my reading of para 4.10, he does not state in terms what the impact would be on the Claimant’s property, but I am prepared to accept that substantial damage could result. Mr Elliff’s worst case scenario “could put the personal safety of hundreds of rail travellers and residents at risk”. Clearly, the

consequences would be far more serious than those which resulted from the two previous tunnel collapses elsewhere that Mr Elliff has mentioned.

42. Mr Elliff's second report has been addressed (the Claimant would say, not answered) by Mr Woods' witness statement dated 24th February 2020. It is clear that Mr Woods has vast experience in the use of tunnelling techniques in a range of national and international environments. The proposal is to use a pilot tunnel (with an internal diameter of approximately 4.5 - 6 metres) in what would become the crown of the full tunnel and which, upon completion, would be gradually mined out to create the full tunnel (with an internal diameter of 7.5 metres).
43. In line with Professor Mair's recommendation, the First Defendant proposes to use the SCL technique which is tried and tested in the sense that it has been deployed in not-dissimilar environments worldwide. This technique entails spraying wet concrete onto the internal face of the freshly excavated tunnel and deploying accelerants to achieve the required early strength to support the ground above. The approximate thickness of the concrete lining of the pilot tunnel will be 250 mm. Further, the concrete lining will, to the extent necessary, be reinforced by using steel lattice, steel rods and other similar techniques. Additional longitudinal reinforcement of the crown of the pilot tunnel will be conferred by the insertion of a reinforced concrete "crown beam" before the enlargement of the tunnel to full running size. Finally, a reinforced concrete ground beam will be inserted underneath the retaining wall before the work starts to confer, along with a berm and ground anchors, enhanced longitudinal stability.
44. The pilot tunnel will be excavated in sections or increments of one metre, but these may be reduced if necessary. This slow progress will enable the ground ahead of the tunnel face and below the retaining wall to be probed and explored, with any obstructions removed. It will also enable the response of the wall to the excavation to be compared with the predicted wall movements, which (I infer) will have been modelled in advance, presumably as part and parcel of Stage 2. In the event of excessive movement, further steel reinforcements could be added. This is all in the context of baseline measurements of the retaining wall carried out in 2016 which have shown it to be "generally stable". I have also noted the measurements set out at para 56(2) of Mr Woods' witness statement and his opinion at para 74.
45. Although I have not seen any formal modelling of the likely forces in the vicinity of the retaining wall and deduce that none has been carried out, relevant calculations have been performed. According to paras 44-45 of Mr Woods' witness statement:

"The calculations which have been undertaken by Arup, in respect of the scope design demonstrate that the tunnels could be constructed safely in relation to proximity of the tunnels to the PVE retaining wall, to each other and to the cavern and other Network Rail infrastructure.

This is also demonstrated by the independent calculations undertaken by ILF which confirm the feasibility of constructing the works safely."

These calculations have not been disclosed.

46. Para 54 of Mr Woods' statement makes the following clear:

“Further work would need to be undertaken to develop the Three Tunnels design for detailed design and as fit for construction (including completion of the site investigations, preparation of the detailed design and assessment reports and drawing, detailed construction reports, and construction methods and procedures).”

47. When addressing Mr Elliff's April 2019 report, Mr Woods makes the following two points.

48. First, although the figure for the concentrated deadweight of 130 tonnes/metre appears to be accepted, or at least not contradicted (see para 71), Mr Woods does not believe that this is a significant design issue. It is said, as part of the “protective measures” included within the scope design, that the lining will be reinforced to ensure that the forces acting on the tunnel “remained within the axial load/bending moment capacity envelope”. Although wrapped up in technical language, this must be the safety margin derived from Arup's calculations.

49. Secondly, Mr Woods addresses the issue of the forces operating on the pilot tunnel as it burrows in small incremental stages through the compacted earth underneath the retaining wall. These are not identified explicitly in para 73 of his report, but there is no doubt but that these are the “patch” or “point” forces explained in greater detail in Mr Elliff's third report. In Mr Woods opinion:

“The advantage of using an SCL tunnel is that it will have greater longitudinal stiffness compared to a segmental tunnel. In practice the retaining wall is only bridging between the unexcavated ground in front of the tunnel face onto the completed pilot tunnel and running tunnel behind where the lining has achieved the required strength.”

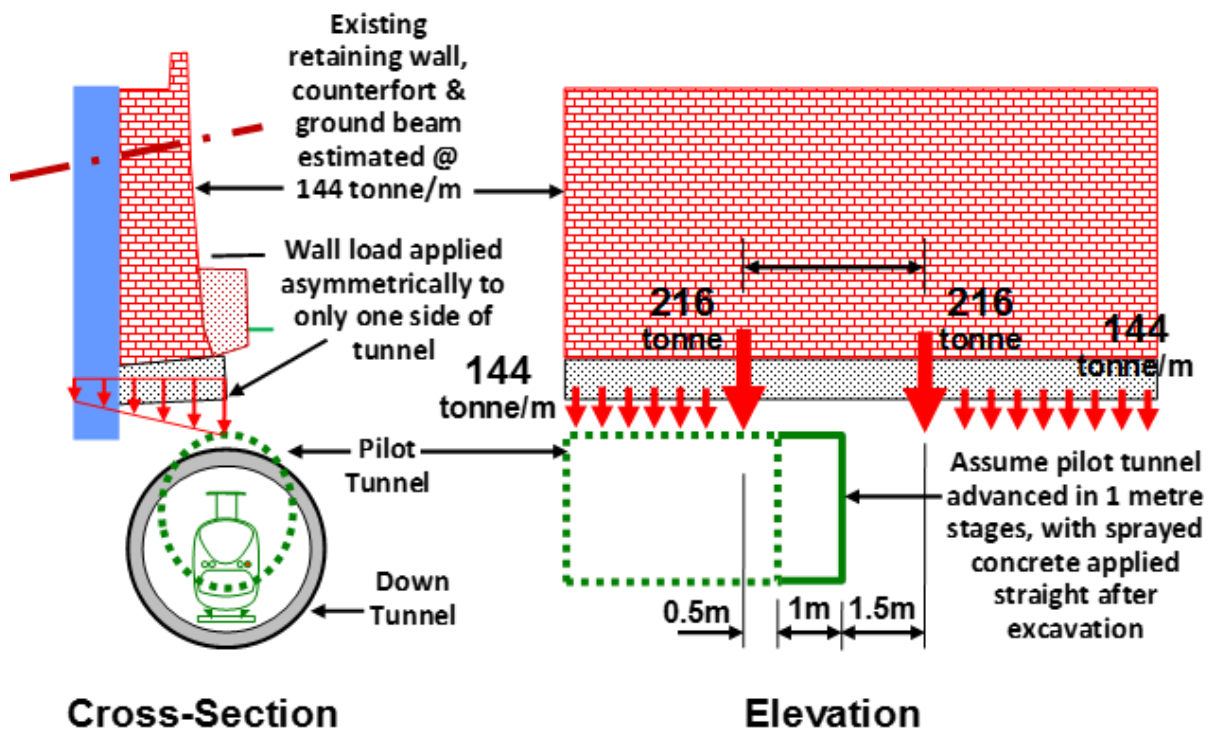
This opinion may be better understood with reference to Mr Elliff's helpful diagram (see §53 below). Mr Woods' contention is that the patch or point forces (the temporary forces operating on the crown of the advancing tunnel face) can be managed safely because of the longitudinal stiffness of an SCL tunnel and the extent of the “bridging” that he describes.

50. That said, para 73 is not as clear or as user-friendly as it might be although it was not subjected to specific criticism by Mr Jacobs. I have noted Mr Woods' use of the adverb “only” – suggesting that the space being bridged or spanned is relatively small – but arguably there is a lack of precision. Possibly, Mr Woods is assuming too much engineering knowledge on the part of his readers.

51. Mr Jacobs submitted strongly that Mr Woods has failed to adduce evidence of any tunnelling operation remotely comparable to the proposed downline tunnel under this retaining wall. There was some force in that submission. The examples given by Mr Woods at para 12 of his witness statement seem to me to be rather different. At para 13 Mr Woods drew attention to the construction of pedestrian access tunnels at Kings Cross beneath the existing station and the Great Northern Hotel. These were

constructed using a primary sprayed concrete lining with a cast iron permanent lining. Although there is no evidence as to the vertical loads involved, it emerged during the hearing in answer to my question that these above-ground structures were six metres above the crowns of the pedestrian tunnels. I think that para 13 of Mr Woods' witness statement should have made that clear.

52. In early April 2020 the Claimant's solicitors filed and served Mr Elliff's third report dated 20th March pursuant to Lang J's order made on 16th January. Although the Defendants took no point on this, this evidence was filed late: see para 7 of Lang J's order.
53. Mr Elliff's third report contains a detailed rebuttal of the Defendants' evidence, including Mr Woods' statement. In order to understand Mr Elliff's line of argument, it is necessary to refer to his helpful diagram:



(The 0.5m and 1.5m figures are not explained in the report. However, in unsolicited emails received after the hearing Messrs Elliff and Woods appear to be in agreement that the earth ahead of the advancing tunnel will be disturbed or "relaxed" by the excavations and cannot support the weight of the retaining wall. I do not understand Mr Woods to agree the dimension.)

54. The figures are an indication of the vertical loading imposed on the outbound tunnel. Mr Elliff has revised his 130 tonnes/metre to 144 tonnes/metre to reflect the insertion of the ground beam. This is a continuous or permanent load. The 216 tonnes is the patch or point load which I have touched on at §49 above. Essentially, this is the vertical load that imposes on a narrow area or space: here, the vertical load of the retaining wall bearing on the face of the advancing tunnel. Mr Elliff has calculated this load over a three-metre length of wall, being the distance between his two large arrows, to take account of the incremental progression of the tunnel. More specifically, according to para 6.5 of his third report, the patch or point load is:

“... equivalent to a 3-metre length of wall bridging between the constructed tunnel and the still to be excavated earth, across the advancing face of the tunnel excavation.”

This explanation of the concept of “bridging” is similar to para 73 of Mr Woods’ witness statement, but beyond that I would not wish to infer that there is any agreement between the experts. It is apparent that because the distance is three linear metres and not one, the vertical load is greater than 144 tonnes/metre – albeit not three times greater. After the hearing I sought clarification from the parties that 144 tonnes/metre over three metres translates arithmetically to 216 tonnes of vertical load. Mr Elliff confirmed that it did; Mr Woods gave a rather different answer which I will come to at §62 below.

55. Mr Elliff’s first concern is that, because of the very short headroom involved and the fact that concrete is stiffer than the surrounding ground, the vast majority of the load could fall onto the crown of the tunnel. The load would then pass round the ring of the tunnel, causing major bending movements and shear forces.
56. Secondly, the crown beam would likely be overwhelmed by these loads, and in any event could not avail the walls of the pilot tunnel.
57. Thirdly, given the scale of the patch or point loads, the pilot tunnel would need to be one metre thick to resist the bending movements and shear forces that would result. As has been pointed out, the actual thickness is in the region of 250 mm, which on Mr Elliff’s analysis cannot be sufficient. In any case, were the lining to be of requisite thickness, it would be impossible to jackhammer out the concrete in order to fashion the full tunnel.
58. Fourthly, it may be seen that the pilot tunnel will not pass directly under the retaining wall; it is slightly offset, and the operative forces are asymmetric. In Mr Elliff’s opinion:

“The loading scenario is possibly even more onerous if the load of the PVE retaining wall is considered as a distributed load, applied to one side of the tunnel only. The imbalance between the intense load of the retaining wall on one side, and the much lower load from the railway trackbeds on the other side, will give rise to huge distortional forces in the ring of the tunnel, which again will require huge wall thickness, of the order of one metre.”

This fourth conclusion is expressed more tentatively given the adverb “possibly”.

59. Thus, if Mr Elliff is correct, tunnel walls of one metre thickness – applied by SCL – would be required to address both species of load: the temporary patch or point loads arising during the construction of the pilot tunnel, and the continuous load imposed by the dead weight of the retaining wall. If not, there would be an unacceptable risk of catastrophic collapse.
60. The specified thickness of the full tunnel will be in the region of 350 mm. On Mr Elliff’s logic, that could not be sufficient in the long term. However, his main

argument is that the structure would likely have collapsed before the pilot tunnel came to be broken out and the full tunnel excavated.

61. The Defendants have not sought the permission of the court to answer Mr Elliff's evidence, and Mr Mould did not make a formal application for an adjournment. He indicated that he would make such an application if I were troubled by Mr Elliff's third report. On the second day of the hearing I was unable to give him an indication one way or the other.
62. As I have said, after the hearing Mr Woods responded to my question as to the arithmetical reason for the difference between the 144 and 216 figures by answering a different question: he counselled me against considering three linear metres. His reason had nothing to do with the patch or point load issue, but rather that the First Defendant's calculations have shown that the continuous or "uniformly distributed" load on the tunnel crown is not 130 or 144 tonnes/metre but 32.2 tonnes/metre. Mr Elliff does not, of course, accept this. In the circumstances, I cannot see how I can fairly take into account this further information. It did not come as an answer to the narrow question I posed (although I accept that Mr Woods may have misunderstood it); the Defendants do not have permission to adduce further evidence; and, in any case, I struggle to reconcile 32.2 tonnes/metre with para 71 of Mr Woods' statement. On the other hand, I am prepared to infer, albeit for different reasons, that the three linear metre span as the basis of the patch or point load calculation is not agreed.

Ground Settlement

63. In or about May 2014 the Crown Estates Commission was informed by one of the First Defendant's engineers that the maximum expected ground settlement attributable to the construction of the barrette wall would be 45mm at the front of the houses and 25mm at the back. My understanding of the relevant document is that the engineer believed that this degree of settlement was not insignificant; and, moreover, it was differential.
64. Mr Mirza states that a Phase 2 assessment of ground settlement at the Claimant's property was made as part of the scheme for AP3. He gives a figure of up to 49mm at the front of the property. Mr Mirza has explained that this is regarded as "very slight" damage as defined on Burland's standard damage assessment scale. I am somewhat surprised by that categorisation but am of course no expert on ground settlement.
65. According to para 38 of Mr Mirza's second witness statement, the First Defendant carried out ground and other site investigations in the vicinity of the retaining wall in 2016. It is said in somewhat anodyne terms that these investigations have provided further technical information that has "informed the designer (Arup) as well as the First Defendant and third-party specialists involved in the reviews of the emerging concept". Nothing more concrete is offered. The same observation might be made about the ground modelling simulations and evaluations undertaken to refine the estimate of ground movement effects as referred to at para 36 of Mr Mirza's same witness statement.
66. Further ground investigations and site investigations are either being carried out or will be in the near future. In the upshot:

“40. ... In due course, and prior to any works that could cause ground settlement, building surveys and structural assessments of properties along Park Village East will also be conducted as necessitated by the design, subject to being granted permission by the occupiers. This iterative loop would continue as detail design gets underway once the Stage 2 contract is awarded.

41. ... I confirm that works in the Euston Approaches that could cause settlement would not start before the assessment process set out in Information Paper C3 has been completed. HS2 will not permit works that have the potential to cause settlement to commence until the Phase 3 assessments are completed as required and until we are satisfied that the design and construction proposals are safe for our staff and all our stakeholders, including local residents.”

67. I make four comments.
68. First, as matters stand there is no available evidence bearing on the likely amount of ground settlement consequent on the construction of the Three Tunnel design. Putting to one side the issue of catastrophic collapse or anything close to it, there is no analogue to the 45mm or 49mm potential figure for AP3. However, common sense would suggest that if the Three Tunnels design could be built safely (*pace* Mr Elliff), the potential for ground settlement should be lower than for AP3. The retaining wall will not be removed and a barrette wall will not be built 8 metres closer to the Claimant’s property.
69. Secondly, compliance with the Ground Settlement policy forms no part of the Defendants’ decision whether or not to approve the Three Tunnels design. It is concerned with the adjectival issues of remediation and compensation.
70. Thirdly, the Ground Settlement policy did not contemplate the risk of catastrophic collapse, not least because the Defendants do not accept that there is any such risk. Yet, in the event of any of Mr Elliff’s “disaster scenarios” I have no doubt but that the consequences, even if an extreme form of ground settlement, would be caught by the terms of the policy, particularly in the event that Claimant had executed a settlement deed (the current position is that the Claimant is able to pre-register for the deed). Furthermore, the Claimant and others affected would not be short of common law remedies in such circumstances.
71. Fourthly, I accept Mr Mirza’s evidence that the First Defendant will not start work until the Phase 3 assessments stipulated in the Ground Settlement policy have been undertaken. I cannot accept Mr Jacobs’ submission that Information Paper C3 has fallen into abeyance following the abandonment of AP3 and that it is inapplicable in circumstances where the Defendants have not accepted Mr Elliff’s opinion. In my judgment, the policy is of general application to HS2 Phase One and does not possess limited or contingent efficacy. The policy may be relied on in public law proceedings (particularly in the light of the Register of Undertakings and Assurances), and any settlement deed executed by the Claimant would be enforceable in private law.

Other Controls and Entitlements

72. In support of its justification and proportionality arguments for the purposes of Article 8(2) and A1P1 of the Convention, the Defendants draw attention to a range of common law remedies (nuisance, negligence and right of support), statutory and non-statutory rights that are said to afford the Claimant adequate protection in the face of all the foreseeable consequences attributable to the construction of the Three Tunnels design.
73. First, by virtue of sections 4(3)-(5) and 5(7) of, and Schedules 6, 9 and 14 to, the HS2 Act the Second Defendant is authorised compulsorily to acquire a right in the Claimant's property for the purpose of the installation of ground anchors. In such circumstances, the Claimant's entitlement to compensation would include not merely the value of the rights acquired from her but also any diminution in the value of her property resulting from the authorised works. In the event that the Second Defendant does not proceed on this basis, any interference with the Claimant's leasehold interest would attract an entitlement to compensation under section 10 of the Compulsory Purchase Act 1965.
74. Secondly, the Claimant's property is blighted land for the purposes of section 149 of the 1990 Act and paragraph 21 of Schedule 13. She could therefore consider serving a blight notice under section 150. The Defendants accept that this is unlikely to be of any value to her in her present circumstances, but it would be relevant if she formed an intention to sell.
75. Thirdly, in addition to statutory land compensation rights, the Second Defendant has also established a package of non-statutory property schemes to assist eligible landowners whose land is not required for the purposes of the HS2 Phase One project. This package includes the Phase One Need to Sell Scheme which enables the landowner to apply to the Second Defendant to purchase her property at its unblighted open market value. As with the blight notice, this scheme is only of theoretical interest to the Claimant because she has no current intention to sell her property.

The Claimant's Case

76. Mr Jacobs advanced separate submissions in writing on Article 8 and A1P1. At this stage I will take them together: they very substantially overlap in terms of their scope, although there are some material differences.
77. Unsurprisingly, Mr Jacobs placed heavy reliance on Mr Elliff's expert engineering evidence, in particular his March 2020 report. It is said that this is compelling evidence that has not been contradicted. Mr Jacobs' primary submission was that the Three Tunnels design is inherently unsafe, that there is no feasible engineering solution capable of addressing the clear and specific risks that have been identified, and that the Defendants' ongoing decision to proceed with HS2 in this way amounts to a fully crystallised, justiciable breach of the Claimant's Convention rights under both Article 8 and A1P1. On my understanding of his submissions, Mr Jacobs invited me to draw an adverse inference against the Defendants in the light of their failure to provide sufficient information to demonstrate that the outbound tunnel could be constructed in a safe manner under the retaining wall. Para 57 of Mr Jacobs' skeleton argument contended that the Defendants were in breach of their duty of candour, and although he somewhat resiled from that at one stage my overall sense of his oral

argument was that this submission was maintained. In these circumstances, it is submitted that the Claimant is entitled to declaratory relief.

78. Mr Jacobs submitted that the right and fair conclusion to be reached on all the available evidence, including the inferences to be drawn from it, is that as matters stand there is a “real and immediate risk to life” for the purposes of A1P1 and Article 8: see, for example, *Oneryildiz v Turkey* [2004] 39 EHRR 25. In addition, the evidence adduced by the Claimant showed a present risk to her mental health (see, for example, *Bensaid v UK*, App. No 44599/98 and *Jankovic v Croatia*, App. No 38478/05), and her rights under A1P1 had been violated by her inability to sell her property or to raise funds against it on account of Mr Elliff’s reports which she would be required to disclose (see, for example, *Marckx v Belgium* [1979] 2 EHHR 330 in an Article 8 context, and *Sporrong and Lonroth v Sweden* [1982] EHRR 35 in the context of A1P1).
79. On the back of all these considerations, whether taken individually or cumulatively, Mr Jacobs submitted that the risk of catastrophic collapse of the retaining wall amounted to a breach of Article 8 as well as of A1P1 which could not be justified as being in the wider public interest, the legitimate ends sought to be attained, and/or proportionate. Mr Jacobs relied on the fact that the Defendants are refusing to accept that there is any such risk, from which it may be deduced that any balancing exercise they may have carried was or would have been on a fundamentally flawed basis.
80. Mr Jacobs submitted in the alternative that the evidence demonstrated a risk of substantial ground settlement short of catastrophic collapse: indeed, these risks should be envisaged as falling along a spectrum. Taking into account that risk, and the other factors operating in the Claimant’s case (viz. mental health issues and inability to sell), Mr Jacobs contended that the substantial interference with the Claimant’s Convention rights was not proportionate.

The Defendant’s Case

81. Mr Mould emphasised that the Claimant’s rights under the Convention are not absolute, and that the issue for the court is whether a fair balance has been struck, according the decision maker a wide margin of appreciation (see, for example, *Lough v First Secretary of State* [2004] 1 WLR 2557).
82. Mr Mould submitted that I am poorly placed to adjudicate between the competing expert opinions of Messrs Elliff and Woods in these judicial review proceedings. Mr Woods’ witness statement has properly addressed Mr Elliff’s second report and there is nothing in the latter’s third report which serves to undermine Mr Woods’ evidence. Indeed, a close examination of Mr Woods’ statement reveals that he has effectively anticipated what Mr Elliff has said in evidence in reply.
83. Mr Mould invited me to make the following factual findings:
 - (1) The Defendants are not in breach of their duty of candour: they have disclosed all relevant material within this judicial review, including documentation pursuant to Lang J’s specific disclosure order of 28th April 2020 (on which the Claimant places no reliance, presumably because it is not relevant).

- (2) The First Defendant and those for whom it is responsible have already carried out extensive review and assessment of the safety of the Three Tunnels design and has satisfied itself that it is capable of safe construction.
 - (3) In any event, there is a considerable amount of further work to be done in the context of Stage 2, being the detailed design stage (see §§30-36; and 46 above). The Defendants believe that this design can be delivered safely, but in the event that further assessments, modelling and analysis should demonstrate that there is an unacceptable risk that it cannot be, then they would not proceed.
84. After summarising relevant authority, para 38 of Mr Mould’s skeleton argument set out four hurdles for the Claimant to surmount:
- (1) That the Three Tunnel Design is not capable of being constructed without a “substantial” intrusion on the respect for her home as protected by A8 and/or interference with the peaceful enjoyment of her property under A1P1;
 - (2) That any such interference is not legitimate or justified in the public interest – namely, the public interest in building a new high-speed railway;
 - (3) That the interference is not proportionate, when the “competing interests of the [Claimant], other individuals, and the community as a whole” are balanced (for the purposes of A8); and
 - (4) That the Three Tunnels Design would impose a “disproportionate and excessive burden” on the Claimant (for the purposes of A1P1).

Discussion and Conclusions

85. Despite the weight of documentation and submission that was brought to bear in this case, I have concluded that its resolution – at least on the Claimant’s main argument - must turn on the answer to one composite question.
86. The composite question is this: has the Claimant demonstrated that she is directly and seriously affected by the implementation of the Three Tunnels design, given the risk of catastrophic collapse identified by Mr Elliff? In my view, that question sub-divides into the following:
- (1) should I conclude on all the evidence that the Three Tunnels design is so inherently flawed in the vicinity of the retaining wall that no engineering solution could be found to construct it safely? and
 - (2) have the Defendants already committed themselves to implement the Three Tunnels design regardless of any further work to be undertaken under Stage 2?
87. The Claimant must secure affirmative answers to both these questions in order to succeed on her primary submission. As I indicated in oral argument, I consider that in such circumstances the Claimant would have established a violation of her rights under Article 8 and A1P1 of the Convention. This is because these rights would, *ex hypothesi*, be engaged at a very high level of seriousness, and the Defendants could not seek to justify as proportionate the implementation of a design that carried with it an unacceptable risk: viz., the risk of catastrophic collapse. All of the Defendants’

Article 8(2) and A1P1 proportionality arguments are predicated on the risk of catastrophic collapse being manageable and the degree of engagement with the Claimant's Convention rights being at a far lower degree of seriousness.

88. Whether the Three Tunnels design is inherently flawed in the vicinity of the retaining wall raises an issue of mixed fact and engineering judgment for the court to attempt to resolve on all the available evidence, but within the confines of a judicial review hearing. This does not mean that my point of departure should be to prefer Mr Woods over Mr Elliff, unless effectively compelled to do otherwise. Nor does it mean that I should be according Mr Woods some margin of appreciation, given that he is speaking for the Defendants: at this stage of the inquiry, I am not considering the issue of proportionality. But it does mean that I must be cautious. The constraints inherent in this procedure are both important and obvious. The expert evidence in this case is complex and it has not been orally examined or tested in cross-examination. Finally, I have decided not to refer to any of the authorities germane to the issue of fact-finding in judicial review proceedings. Given that the parties did not mention any, this gap is better left unfilled.
89. In evaluating the expert evidence in this case, I bear in mind the following. First, Mr Elliff is not a tunnel engineer. I disagree with Mr Jacobs that this case is about retaining walls, not tunnels. To my mind, this case is about the capability of a SCL tunnel constructed using the best available techniques to withstand the vertical loads imparted by this retaining wall. Secondly, Mr Woods is very senior and experienced, but he is just one of many tunnel experts advising the First Defendant either directly or through a matrix of contractual relationships. Thirdly, the burden of persuasion, if not of proof, lies on the Claimant at this stage of the analysis (at the proportionality stage, the burden is on the Defendants). Fourthly, the risk that Mr Elliff has identified is plain and obvious. It was for that very reason that Professor Mair was asked to advise on this specific issue in 2016 because if no safe engineering solution was capable of being devised the Defendants would be obliged to reconsider.
90. It cannot be denied that Mr Elliff has made a number of apparently compelling points. An interstice of 1.5 metres amounts to "very low cover" and the vertical loads imparted by the retaining wall appear, on his analysis, to be enormous. Mr Jacobs submitted that Mr Woods' statement is general and unparticularised, and I shared that impression on a first reading.
91. Despite these concerns, in my view Mr Woods' statement improves on re-reading, particularly when notionally placed against the helpful diagram Mr Elliff has recently provided. It should be remembered that Mr Woods' statement was addressing Mr Elliff's second report and not his third, and that was not particularly quantitative either. The April 2019 report does reference the 130 tonnes/metre figure, and as I have said my reading of para 71 of Mr Woods' evidence is that the raw calculation, as opposed to the engineering consequences, is not disputed. I have examined the detailed calculations in Mr Elliff's third report and can deduce that the weight of the wall can be estimated using standard values for brick and concrete. However, the applied mathematics, or what I am calling the engineering consequences, is of a different order of complexity.
92. Having carefully reflected on this, I consider that the Defendants should not be criticised for not seeking the permission of the court to counter Mr Elliff's third report

by filing a second witness statement from Mr Woods. Any such application would have been opposed by the Claimant and would (perforce) have been made shortly before the hearing. Furthermore, I accept Mr Mould's submission that Mr Woods anticipated Mr Elliff's key arguments in terms of the engineering principles in issue. He did not advance a figure for the patch or point load at para 73 of his witness statement, but the fact remains that one had not been put forward in April 2019.

93. I cannot accept that the Defendants are in breach of their duty of candour. The various risk assessments and other documents referred to at para 57 of Mr Jacobs' skeleton argument do not yet exist, at least as regards the 1.5 metre interstice. Again, that is a consideration that cuts both ways, but the duty of candour cannot apply to documents which, on the Claimant's case, should exist but do not. The Arup and ILF calculations did not form part of the specific disclosure application determined by Lang J on 28th April 2020. Mr Jacobs did not submit that the Defendants were remiss in failing to disclose these calculations, and any in-house calculations of their own, and I therefore say no more about them.
94. In the final analysis, the engineering issue reduces to just one question: is a pilot tunnel of 250 mm thickness capable of withstanding the relevant vertical loads? Such a tunnel would be one-quarter the thickness demanded by Mr Elliff in his third report.
95. The one metre thickness metric did not feature in Mr Elliff's second report and Mr Woods did not have the opportunity to consider it at the appropriate time. Conversely, Mr Elliff has had every opportunity to consider all of Mr Woods' arguments, yet nowhere does he address the reinforcing, mitigating and monitoring measures explained in some detail by his counterpart (see, in particular, Appendix A to his third report, where he comments on Mr Woods' statement but omits any reference to these significant matters). These measures appear to be an important part of the tunneller's repertory when using the SCL technique. Assuming that Mr Elliff's calculations and methodology are correct, I am in no position to say whether a 250 mm thick SCL tunnel with steel reinforcements etc. may be regarded as of similar strength to the "standard" SCL tunnel of one metre thickness which I must take to have been within Mr Elliff's contemplation. Moreover, for these purposes one also needs to take into account the ground beam as well as the other factors I have listed at §43 above.
96. This brings me to the patch or point forces in respect of which Mr Elliff's concern is the most acute – his opinion is more guarded in relation to the continuous load. The difficulty for the Claimant is that Mr Woods has given specific consideration to the patch or point load issue at para 73 of his statement: see §49 above. My reading of the critical sentence – “[i]n practice the retaining wall is only bridging between the unexcavated ground in front of the tunnel face onto the completed pilot tunnel and running tunnel behind where the lining has achieved the required strength.” – is that in Mr Woods' view these patch or point forces can be withstood. This reading survives the concerns I have set out. I repeat that Mr Woods' premise is different from Mr Elliff's: a 250 mm thick reinforced SCL tunnel (together with the other measures Mr Woods' report specifies) versus a one metre thick unreinforced SCL tunnel. Further, as I have said, I do not draw the inference that the 3-metre bridging distance is accepted by Mr Woods. On all the evidence before me, I cannot properly gainsay this important plank of Mr Woods' opinion.

97. Standing back from all the engineering evidence, I have the following additional observations. First, this evidence remains complex and there are obvious dangers of the court overreaching itself by delving into issues which are way beyond its competence. Secondly, I have to take Mr Woods' evidence at its face value and accept that calculations have been performed by Arup and others showing that the tunnel can be constructed safely despite the engineering challenges. Finally, it would be wrong to ignore the elephant in the room. It has been obvious from the start that tunnelling under this retaining wall would be problematic: hence, the early recourse to Professor Mair. He gave a reasonably positive opinion but in no sense was it an imprimatur. Since then, a considerable amount of design work has been done. It is impossible to accept that the First Defendant is so reckless and so wilful that it is dogmatically persevering with a concept that it does not believe can be delivered safely.
98. Within the constraints inherent in judicial review, the Claimant has failed to persuade me on the basis of Mr Elliff's reports that the Three Tunnel's design is unattainable. It follows, in answering my first question, that I cannot conclude on all the evidence that the Three Tunnels design is so inherently flawed in the vicinity of the retaining wall that no engineering solution could be found to construct it safely.
99. In view of this conclusion, the Claimant's primary case fails at first base before my second question is considered, but it is right that I should address it. Are the Claimants in truth already committed to implement the Three Tunnels design regardless of Stage 2? Mr Jacobs has the jury point that the Defendants are already heavily invested in the Three Tunnels design, time is pressing, and they may be running out of options. However, I accept Mr Mirza's evidence that important further design work will be carried out in Stage 2 with numerous levels of checking and review. As para 30 of the Defendants' skeleton argument makes clear, and as I have already explained (see §§30-36; and 46 above), further work, assessment, review and appraisals will be undertaken in respect on those features of the project of greatest concern to the Claimant. Mr Mould accepted in terms that if at any stage during this process it should become apparent that the outbound tunnel under the retaining wall cannot be constructed safely, then the Three Tunnels design would require modification or abandonment. Although that would be embarrassing, I have no difficulty in accepting Mr Mould's frank submission because, as I have said, the Defendants would not choose to act irresponsibly. That they somehow would, or even might, is essentially what Mr Jacobs' submissions and Mr Elliff's expert opinion reduce to.
100. It follows that I must reject Mr Jacobs' headline submission that the Defendants have made an "ongoing decision" to implement the Three Tunnels' design. The correct analysis is that they have made a decision in principle to do so conditional on the fulfilment of all the checks and safeguards mandated by Stage 2.
101. A similar point was made by Maurice Kay J (as he then was) on admittedly starker facts in para 40 of his judgment in *R (Medway Council and others) v Secretary of State for Transport* [2002] EWHC 2516 (Admin):

“There are numerous examples of industrial land use interfering with the right of respect for a person's private life or home. Reliance is placed on authorities such as *Sporrong and Lonroth v. Sweden* (1982) EHRR 35, *Lopez Ostra v. Spain* (1995) 20

EHR 277, Powell and Rayner v. United Kingdom (1990) 12 EHRR 355, Hatton v. United Kingdom [2002] 34 EHRR 1 and Marcic v. Thames Water Utilities [2002] 2 WLR 932. None of these authorities is concerned with an inchoate proposal of the kind included in the Consultation Document. ***They are all concerned with decisions, activities or omissions which were already having their effect at the date of complaint.*** Lopez Ostra was concerned with a polluting factory, Powell and Rayner and Hatton with aircraft noise generated by flights at Heathrow and in Marcic the claimant's house had been damaged by flooding from sewers. Guerra v. Italy (1998) 26 EHRR 357 (toxic emissions) and S v. France (1990) 65 DR 250 (nuisance from a nuclear power station) are to like effect. Sporrang is rather different, being concerned with the effect on property values of decisions of central and local government permitting expropriation and preventing development with consent. It was not concerned with direct physical effects but it related to the effects of actual measures and not merely proposals.” [emphasis supplied]

102. At this juncture it is convenient to address Mr Jacobs’ submissions on *Oneriyildiz v Turkey*, a case which featured heavily in his oral argument. In that case the ECtHR found a breach of Article 2 of the Convention because the authorities failed to address the risk of a methane explosion from decomposing refuse. There was a real and immediate risk to life which the authorities had a positive obligation to reduce to a safe level by taking appropriate preventative measures. In the light of my conclusions on both the questions I have posed, I cannot see how *Oneriyildiz* has any application at all to the present situation. The whole point of that case was that the risk arose from an *existing* state of affairs and was therefore immediate.
103. Mr Jacobs might have made more of the following passages in the ECtHR’s judgment in *Oneriyildiz*:

“84. The Court reiterates that, in the *Guerra* case, it held that the State had infringed Art.8 of the Convention for failing to communicate to the applicants essential information “that would have enabled them to assess the risks they and their families might run if they continued to live at Manfredonia, a town particularly exposed to danger in the event of an accident at the factory.

85. The Court does not see any aspect in the circumstances of the present case distinguishing it from the circumstances of *Guerra*, taking into account that the reasoning in that judgment is applicable a fortiori in respect of Art.2 and, moreover, fully applies to the present case.”

In my view, this reasoning cannot yet be made applicable to the instant case because any risk or danger does not presently exist. However, it should at least be borne in mind for the future as the Stage 2 works progress. Effective communication remains important in this case regardless of any legal requirement.

104. Mr Jacobs further submitted that his client is entitled to declaratory relief because the evidence demonstrates that she is already suffering loss and damage: in the form of mental illness and a diminution in value to her property. It seems to me that this submission was advanced on two different bases. The first basis was that there is a present risk of catastrophic collapse. I have rejected that submission, but had I accepted it there would have been no need for the Claimant to prove anything further: her Convention claims would have succeeded without more. The second basis was that, even absent such a risk, the Claimant's Convention rights were nonetheless engaged and the Three Tunnels design could not be justified as proportionate. This is the Claimant's alternative, subordinate case to which I now turn.
105. The essence of this case is that the Claimant's Article 8 and A1P1 rights are engaged owing to the risk of ground settlement, the damage to her mental health and the diminution in value her property has already suffered. It is not entirely clear how the Claimant's case on proportionality is being advanced if the risk of catastrophic collapse is removed from the equation, but I infer that what is being said is that the infringements are too severe to be justifiable, and the Defendants should revert to AP3.
106. The Claimant has not quantified the risk of ground settlement and I have already mentioned the generalised nature of Mr Elliff's second report on this topic. The Defendants have not quantified the risk either, but Mr Mirza's second statement makes clear that a process of assessment and monitoring is being implemented in line with the Ground Settlement policy, and that the works will not begin until this process has been completed. If a figure of up to 45 or 49 mm were appropriate for AP3, my starting point for the Three Tunnels design would be lower.
107. The evidence bearing on the Claimant's mental health is somewhat scant. There is no supporting medical report. However, I am quite prepared to accept that the Claimant is suffering from anxiety and distress which may have exacerbated her ADHD. But whether this range of symptomatology is attributable to this aspect of the Three Tunnels design or HS2 in general, including the Claimant's perception of how the Defendants have behaved, is less clear.
108. As for the claim in diminution in value of the property, its factual premise requires careful definition. I can accept the general, common sense proposition that the spectre of HS2 is having an impact on the value of this villa. Given my conclusions on the Claimant's primary case, it is no longer open to her to contend that she has suffered a diminution in value because she is in possession of Mr Elliff's reports speaking of the risk of catastrophic collapse. I do not understand the Claimant's witness statements as professing any current intention to sell her property although it is entirely natural that she should wish to know how she might fare in the market. There is no fetter on the Claimant's right to dispose of her property, should she wish to (c.f. *Marckx v Belgium*, para 63); and in such circumstances she could avail herself of the blight notice procedure and/or the non-statutory "right to sell" scheme.
109. The threshold for the engagement of the relevant Convention right is lower for A1P1 than it is for Article 8. As Carnwath LJ (as he then was) explained in *Thomas v Bridgend CBC* [2012] QB 512, at paras 38-47, to come within A1P1 it is unnecessary to show a direct and serious interference with the right to peaceful enjoyment of possessions: it is sufficient to establish a diminution in value that is significant. On the

facts of that case, the claim for statutory compensation was not predicated on any present intention to sell. Conversely, for the purposes of Article 8, the threshold is more stringent. In *Lough v First Secretary of State* at para 43:

“The degree of seriousness required to trigger lack of respect for the home will depend on the circumstances, but it must be substantial.”

And in *Hatton v United Kingdom* [2003] 37 EHHR 611, the Grand Chamber said, at para 96:

“There is no explicit right in the Convention to a clean and quiet environment, but where an individual is directly and seriously affected by noise or other pollution, an issue may arise under article 8.”

110. In my judgment, in the context of her alternative or subordinate case the Claimant’s evidence falls short of establishing that Article 8 is triggered in this case as matters presently stand. The A1P1 claim is at the margins of its reach. However, I would not wish to leave matters there, and I shall deal for completeness with the issue of proportionality on the premise that these conclusions understate the position and that both Convention rights are engaged.
111. It is clear that in the present context of a major infrastructure project raising a range of environmental, planning and expert engineering issues the court should accord a “wide margin of appreciation” (see further at §112 below) in the context of exercising its supervisory role in assessing whether a fair balance has been struck between private rights and the public interest: see, *Hatton v UK* (at para 123) and *Marcic v Thames Water Utilities Ltd* [2004] 2 AC 42 (at para 71).
112. The proportionality test is more stringent for A1P1 purposes than Article 8. In *Thomas v Bridgend CPC*, the formulation in the former case was “disproportionate and excessive burden” (at para 49). The *locus classicus* on Article 8 in a planning context, which in my view is sufficiently close to the instant case to be salient, is *Lough v First Secretary of State*, and para 43 of Pill LJ’s judgment has often been cited:

“It emerges from the authorities: (a) article 8 is concerned to prevent intrusions into a person’s private life and home and, in particular, arbitrary intrusions and that is the background against which alleged breaches are to be considered. (b) Respect for the home has an environmental dimension in that the law must offer protection to the environment of the home. (c) Not every loss of amenity involves a breach of article 8(1). The degree of seriousness required to trigger lack of respect for the home will depend on the circumstances, but it must be substantial. (d) The contents of article 8(2) throw light on the extent of the right in article 8(1) but infringement of article 8(1) does not necessarily arise upon a loss of amenity and the reasonableness and appropriateness of measures taken by the public authority are relevant in considering whether the respect

required by article 8(1) has been accorded. (e) It is also open to the public authority to justify an interference in accordance with article 8(2) but the principles to be applied are broadly similar in the context of the two parts of the article. (f) When balances are struck, the competing interests of the individual, other individuals, and the community as a whole must be considered. (g) The public authority concerned is granted a certain margin of appreciation in determining the steps to be taken to ensure compliance with article 8. (h) The margin of appreciation may be wide when the implementation of planning policies is to be considered.”

113. In *Marcic v Thames Water*, the House of Lords held that it was relevant to the Article 8 and A1P1 balancing exercise that the statutory sewerage operator was operating under the aegis of a detailed and highly regulated statutory scheme which conferred specific rights on the aggrieved landowner in various ways. Mr Mould submitted that the panoply of common law, statutory and non-statutory rights inhering to the benefit of the Claimant provided a clear analogy with *Marcic*. In my judgment, those rights, viewed collectively, are relevant to the balancing exercise I must carry out although they do not weigh as heavily as they did in *Marcic*. The ambit of the functions of a statutory water undertaker is narrower and more focused than the functions and responsibilities of the First Defendant.
114. I accept Mr Mould’s submission that the proportionality balance comes down heavily in the Defendants’ favour when all relevant factors are placed in the scales.
115. First, the Defendants are required under the HS2 Act to construct the HS2 Phase One project within the four corners of the “environmental envelope” I have described: see §13 above.
116. Secondly, there is a range of common law, statutory and non-statutory rights and protections which the Claimant may invoke should she wish or need to. First and foremost amongst these is the Ground Settlement policy and the Claimant’s ability to execute a settlement deed at the appropriate time.
117. Thirdly, I accept Mr Mirza’s evidence as to the shortcomings of AP3 and I have already pointed out that it is well beyond the supervisory jurisdiction of this court to compel the Defendants to re-embrace it as a suitable alternative.
118. Fourthly, despite the evident engineering challenges, the Three Tunnels design has a number of clear environmental and operational advantages. As Mr Mirza has explained, it would minimise physical interaction with the conventional rail network and thereby reduce disruption to existing rail services, it would obviate the need to remove railway bridges etc., and it would reduce construction impacts on local residents.
119. Reasonable people may naturally disagree about the validity, saliency and potency of these various considerations. It is not my role to express a view about the underlying merits: mine is a review function, according the decision-maker a fitting margin of appreciation – which in this case must be fairly broad.

120. In my judgment, for the purposes of A1P1 the Three Tunnels design would not impose a “disproportionate or excessive burden” on the Claimant; and, for the purposes of Article 8, it strikes a fair balance between her private interests and the wider public interest in implementing an important infrastructure project in line with primary legislation. It follows that the Claimant’s alternative case fails.

Disposal

121. This application for judicial review must be dismissed.