The HRE Group

Dartford Borough Council: Planning
(by email: planning.admin@dartford.gov.uk)

17 April 2024

Dear Sir/Madam

Ref 24/00363/FUL: Infilling of Station Road bridge, Southfleet

We are writing with regards to the above planning application to infill the disused railway bridge on Station Road, Southfleet.

In principle, The HRE Group does not object to the proposed development as the bridge and its approaches appear to have been substantially infilled previously, making future repurposing unlikely. The structure dates from the fourth phase of railway construction, somewhat diminishing its heritage value.

However, the following issues should be considered.

Ecology

We note that Southfleet Parish Council has objected to the development on the basis of "significant harm to the coherence of the ecological network in the area".

Many dismantled railways serve as corridors for wildlife dispersal and foraging, and several scientific papers describe the importance of 'set-aside railway infrastructure', highlighting the improved connectivity offered by these linear features. A recent European study (appended) made clear that lineside land and points of connection have a key function in connecting green areas (see Braschler etal., 2020). The potential fragmentation of a natural habitat system by the infilling of railway infrastructure was identified as having likely significance and all mitigation should be explored. The importance of green bridges and other forms of wildlife passage have been documented repeatedly over the past 30 years (see Canters etal., 1997; van der Grift 1997; Clevenger, 2005).

We note that the developer's Ecology Study makes reference to camera traps detecting four mammal species outside a potential badger sett beneath the bridge. We therefore share the concern of the Parish Council about possible ecological impacts and believe further

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investigations should be undertaken to understand the extent of transient use of the structure by wildlife, before any permission is granted.

We note that the photograph of the concrete bridge extension (Planning Statement (PS), page 7, Fig 1.4) appears to show that, behind two of the trees, access holes have been created into the space beneath the span. If these have been dug by wildlife, they could indicate that the bridge forms part of a migration route.

Green belt

It is noted that the development site is within the Green Belt. §13.152 of the National Planning Policy Framework (NPPF) states that inappropriate development within the Green Belt should not be approved except in "very special circumstances".

In §5.6 of its PS, the developer claims that there is "no viable alternative" to infilling. This statement is blatantly false. The proposal for major works to this bridge was considered by National Highways' Stakeholder Advisory Forum in July 2022. The 'lens review' submitted for consideration by Forum members (appended) sets out nine options for the structure, four of which were 'viable' engineering solutions.

The Council is invited to consider whether "very special circumstances" exist that would justify the approval of this development within the Green Belt.

Heritage

§2.8.c of the NPPF sets out the overarching environmental objective "to protect and enhance our…historic environment".

The Council is invited to consider whether the burial of this heritage asset in lightweight fill and foamed concrete would protect or enhance it, noting that there are alternative strategies for managing the associated risks. It should be recognised that any deterioration of the structure after infilling (caused, for example, by contact with the foamed concrete or corrosion resulting from trapped water) would be undetectable as it will no longer be possible to inspect hidden critical elements. It therefore cannot be demonstrated that infilling would "protect" the bridge and it is difficult to understand any context in which the structure's burial would "enhance" it.

§16.209 of the NPPF requires the effect of a proposed development on the significance of a non-designated heritage asset to be taken into account during determination. The Council is invited to consider whether the harm/loss in this case could be avoided through a different approach to asset management and is outweighed by the stated benefits.

Risk of settlement

Evidence from previous schemes suggest settlement of the infill material may occur, leaving a small gap which would prevent the lightweight fill/concrete from supporting the bridge as the transfer of load into the material requires firm contact with the superstructure. Settlement is most likely under those parts of the bridge subject to pre-existing uncompacted infilling.

If such a gap develops in the first 12 months, it would be subject to grouting as part of a subsequent phase of works. However, if a gap opens thereafter, it would be undetectable and remain forever.

The Council is invited to consider whether infilling will permanently deliver the stated benefit of ensuring unrestricted vehicular access across the bridge.

Council policies

The Borough Council's development policies CS13, DP12, DP22 and DP25 appear to be applicable with respect to the proposed development.

Yours faithfully

[redacted]

Graeme Bickerdike
on behalf of The HRE Group

The HRE Group is an alliance of walking, cycling and heritage campaigners, engineers and greenway developers who regard the Historical Railways Estate's 3,000+ structures to be strategically valuable in the context of future rail and active travel provision.

resilience by enlarging or amalgamating sites and, where necessary, allowing the movement of species in response to future climate change.

7.2.2 Land-use and management within the transport sector

In the context of land-use planning and management, the transport sector has a significant impact on landscape ecology within the EU. Roads and railways lead to conspicuous and mostly permanent habitats losses and fragmentation, alter habitat conditions (e.g. hydrological regimes), disrupt patterns of wildlife movement and can be major causes of disturbance and mortality; all of which have connectivity impacts (Canters 1997; Forman & Alexander 1998; Forman et al. 2003; Spellerberg 2002; Trombulak & Frissell 2000). For many species, and particularly invertebrates, roads and railways are insurmountable barriers to movement. Consequently, the transport sector has a major role to play in avoiding further fragmentation of landscapes.

To some extent fragmentation of landscapes due to transport infrastructure can be avoided or mitigated by environmentally sensitive planning, at national, regional and local scales and by implementing specific measures that reduce the barrier effects of roads and railways etc. (Clevenger & Wierzchowski 2006). In the former case, Member States can introduce legal or policy measures that specifically guide the development of transport networks away from areas that are important in the context of biodiversity and nature conservation, e.g. Natura 2000 areas. In particular, transport regulations or guidelines can be used to avoid fragmentation by preventing the development of roads and railways within large areas of contiguous ecologically valuable habitat. Strategic Environmental Assessments (SEAs) provide a particularly good tool for addressing these issues (see Section 7.2.3 below).

As regards the specific measures, artificial pathways (e.g. wildlife bridges and tunnels) and other measures to reduce collision risks can be used to improve 'the permeability' of transport networks. Such measures can reduce mortality rates and enable some species to cross roads and railways that would not otherwise be able to. However, artificial passages need to be well-designed, located in appropriate positions (according to scientific studies of connectivity needs) and appropriately managed and monitored if they are to effectively support the movement of species within fragmented landscapes.

To some degree roads and railways can provide connectivity functions themselves, particularly where roadside verges contain appropriately managed semi-natural habitats (Noss & Daly 2006). However these benefits are likely to be limited and many roadside habitats may be populations sinks (Trombulak & Frissell 2000). In addition, it should be noted that encouraging movement of species along transport corridors can have a negative impacts for nature conservation if they facilitate the spread of alien species.

The review of Member States' measures carried out for this report revealed a number of attempts to mitigate the negative effects of transport infrastructure as a part of activities carried out by the transport sector (e.g. in Belgium, Finland and the Netherlands). These initiatives included, for example, providing specific guidelines on nature-friendly development of transport networks, constructing artificial passages to enable the movement of species within national transport networks, using nature-oriented management of transport networks, including for example roadside and waterside verges.

Artificial passages and wildlife crossings (e.g. bridges and tunnels) are used in a number of the Member States. For example, artificial passages form an important element of the Dutch ecological network (see Annex 3 for Dutch wildlife passages). Studies from Finland show that the artificial passages are actively used by animals (e.g. elks) (e.g. Vare et al. 2003). Nature-oriented management of roadsides had been applied, for example, in Belgium (Flanders) and Finland (see Annex 3 for roadside verges in Belgium and Finland). In both cases nature-friendly management of roadside verges has been shown to contribute to the conservation of flora and fauna (e.g. insects) in the area (e.g. Jantunen et al. 2004, Saarinen et al. 2006). In Flanders the road side management is also controlled through a Decree (Wegbechermenbesluit), such that nature-friendly management practises are legally required.

Despite some of the observations mentioned above, and other evidence that wildlife bridges and tunnels are actively used by many of the species they were designed for, their efficacy in providing necessary functional connectivity and supporting broader ecosystem processes (e.g. in maintaining metapopulations or migrations) remain unclear (Clevenger & Wierzchowski 2006). Therefore, further studies are needed to clarify and improve the effectiveness of artificial passages in mitigating fragmentation impacts from roads and railways. The findings also indicate that artificial pathways, engineering designs, verge management and other similar mitigation measures should been seen as a second-best option to impact avoidance measures such as sensitive routing or project alternatives.

Recommendations

1. Develop and/or support the take-up and implementation of sector specific instruments (regulations, recommendations and guidelines) that aim to enhance the integration of nature conservation aspects into the development and management of national transport planning and management. In particular, ensure that the transport sector actively contributes to both preventing fragmentation and, where appropriate, improving landscape connectivity.

2. Introduce legal or policy measures that specifically guide the development of transport networks away from areas that are important in the context of biodiversity and nature conservation, e.g. Natura 2000 areas.

3. Adopt transport regulations or guidelines that avoid fragmentation by preventing the development of roads and railways within remaining large areas of contiguous habitat of conservation importance.

4. Introduce specific measures, such as environmentally sensitive routing, that aim, in the first instance, to prevent or reduce fragmentation impacts from transport networks and, in the second instance, to enhance the permeability of transport networks and infrastructure (e.g. artificial wildlife passages, nature-friendly management of transport network land). In the case of artificial passage, their design and location should be based on appropriate scientific studies and their effectiveness in maintaining functional connectivity should be appropriately monitored.

5. When ecologically justified and otherwise feasible (e.g. cost-effective), convert the abandoned elements of transport network, including road- and railway lines and

channels, back into their natural state and/or alternatively develop innovative ways to reuse the abandoned infrastructure in a nature-friendly way.

6. Control and mitigate the possible negative effects of facilitating the movement of species via transport corridors, in particular the spread of alien species.

7. Minimise disruptions to surrounding habitats, such as from disturbance or hydrological changes, which can reduce habitat quality. This is particularly important from a connectivity point-of-view where roads and railways etc pass alongside habitats and connectivity structures that are important for functional connectivity. For example, many roads and railways follow rivers, mountain passes and coasts; habitats in such areas can be of major importance for migrating and dispersing wildlife.

7.2.3 Strategic Environmental Assessments and Environmental Impact Assessments

Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) are intended to be preventative mechanisms that avoid or pre-empt adverse environmental effects that might be associated with proposed programmes, developments or new activities. EIAs aim to identify, quantify and assess the potential impacts of individual projects (such as road, rail, port and large-scale industrial and residential construction or extraction projects). There have been long established EIA procedures in most EU countries, but these have been standardised to some extent with the EU Environmental Impact Assessment Directive (85/337/EEC, as amended by Directive 97/11/EC).

Comprehensive project EIAs typically involve the following key steps (Glasson et al. 1999):

1. Project screening
2. Scoping
3. Consideration of alternatives
4. Description of the project and environmental baseline
5. Identification and prediction of main impacts
6. Evaluation and assessment of impact significance
7. Recommendations for mitigation
8. Public consultation and participation
9. Production and review of an Environmental Impact Statement
10. Decision making
11. Post-decision monitoring, auditing and follow-up

Although this implies a linear process, EIA in practice is iterative, with feedback and interaction amongst the various stages. EIA is also more effective if it includes frequent public consultations and participation with key stakeholders throughout (not just at the end).

SEA is becoming increasingly important as a mechanism for ensuring that environmental concerns are integrated with the development planning process and also provides a mechanism for reducing uncertainty earlier in the planning process. This has been given added impetus through the EU SEA Directive (Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment), which became effective

HRE major work review template

Proforma for SAF consideration

Purpose – to document the results of the lens review undertaken for the identified structure and, based on this, offer recommendations for the proposed engineering solution for the structure.

The Structure

This section outlines the background to the structure and the issues identified with it.

Structure name	Asset ID	NH Priority Rank
Station Road Bridge, Southfleet, Kent	END/709	P2

Structure Type	Grid Reference	Date of last assessment	Date of construction	Date of decommission
Bridge	TQ614720	2007 (BD/21 fail)	c1880	1976

Brief description of structure

Two span bridge comprising 6No. longitudinal girders. Brick jack-arches span between the beams, with the exception being between the Southern 2 girders, which have precast concrete units instead of brick arches.

The bridge carries the B262 Station Rd over the former Gravesend West Branch at mileage 25m 01ch, TQ 614 720.

The former track bed on either side of the bridge has been raised to around deck level, and heavily developed on either side in the immediate location of the structure. Housing, offices, parking and a tennis court are sited in the immediate vicinity of the structure along the former track-bed, with the boundary of an operation railway sited circa 25m to the immediate South of the structure (see aerial image).

The original line was built in the 1880s to capture river traffic from Southend and Clacton via Gravesend Pier and thence by train to/from London via Farningham and Swanley. By 1910 the Southend/Clacton – Gravesend river steamers had ceased as the railways on the north side of the Thames had extended to these towns and provided shorter, cheaper London journey times. The branch stayed open for local traffic to/from Farningham until 1953, when passenger services were withdrawn between Southfleet and Gravesend West. Freight hung on as there was a flow of coal to power the Northfleet Cement Works but this ceased in 1976 and the route between Southfleet and Gravesend West was closed.

Identified issues with structure

The road is subject to full loading (up to 40/44t) whilst the bridge has an assessed capacity of only 7.5t as a result of the deteriorated north edge girder. There has been dialogue between HRE and Kent County Council (KCC) in the past relating to installation of Trief (anti-mount) kerbs or barriers to prevent loading on the weak girder, but KCC have been unwilling to agree to these, or to permit a weight restriction.

In addition, the condition of the northern girder bottom flanges is such that it may soon present a further problem relating to the support provided for the jack-arches.

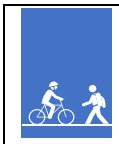
The main girders have a capacity of 18t. There is potential scope for improvement based on reassessment of those girders, but whilst KCC have stated that they would look into reassessment on a number of occasions, they have not done so, and are now not looking at this as a way forward.

Lens Review

This section documents the results of the lens review undertaken for the identified structure

 **New operational rail**	Are there any identified linkages with English, Welsh or Scottish government new rail restoration programmes? There are no known RYR plans that might see anyone wanting to re-use this part of the old Gravesend West branch alignment for a railway.

 **Heritage Rail**	Are there any identified linkages with heritage rail restoration programmes? Given that the route is now severed about ½ mile north east of the former Southfleet station by the dualled A2 and the High Speed 1 railway line, which forms a barrier, circumventing this would be extremely unlikely and costly.

 **Active Travel**	Does the structure have potential to be repurposed for active travel use? Sustrans report recommendation – "*Does not appear to have any value for active travel purposes."* Structure has known possible future use within a 20 year time span - Yes ☐ No ☒

 **Environment and Ecology**	Does the structure hold significant value in ecological terms? Part of Site of Special Scientific Interest – Yes ☐ No ☒ Within a conservation area - Yes ☐ No ☒ Within or near to a locally designated wildlife site - Yes ☐ No ☒ Within or near to a local network recovery site - Yes ☐ No ☒ Any priority habitats in the vicinity - Yes ☐ No ☒ Any European Protected Species present - Yes ☐ No ☒ Ecological survey outcomes – • The structure was assessed as having high potential to support roosting bats in the active season and potential for roosting bats during hibernation season however no bats confirmed roosting in the structure. Precautionary bat exclusion screen installed under ECoW supervision before hibernation period. • There is potential for reptiles to be on site. Vegetation clearance and the dismantling of any reptile hibernacula (including wood piles) conducted under ECoW supervision. All hibernacula were dismantled by the end of October before the amphibian overwintering and reptile hibernation period. • The vegetation surrounding the structure was identified as suitable to support breeding birds. All vegetation that was suitable to support breeding birds was cleared under ECoW supervision. A site visit prior to the start of works to check any vegetation that has grown back may be required. • Ebbsfleet Marches wildlife site located 0.8km north of site.

 **Heritage**	Does the structure hold significant value in heritage terms? Structure has significant Engineering / Architectural / historic merit - Yes ☐ No ☒ Listed – Yes ☐ No ☒ Locally listed - Yes ☐ No ☒ Has the Historic Environment Record been consulted - Yes ☒ No ☐ Rapid Heritage Assessment conducted - Yes ☒ No ☐ Rapid Heritage Assessment outcomes –

	• Low/Negligible value. • The bridge is not recorded by the Kent HER as a non-designated heritage asset. • The setting of the bridge allows for a limited appreciation of its historical and functional interest as a former railway structure and is considered to make a small positive contribution to its value. • There are no designated heritage assets within the vicinity of the bridge. • The Romano-British town of Vagniacae at Springhead is located c.400m to the north and is a Scheduled Monument. Isolated findspots are also found to the south of the bridge on the HER.

Other factors and considerations

This section documents any additional factors or considerations that have been taken into account as part of the review for the identified structure

Are there any other factors that affect the structure or the proposals for it?
No

Have transfer opportunities been considered? If yes, with who and why discounted
Transfer of structure discussed with Kent County Council in 2015, but they did not wish to take ownership of the structure. Has the structure been offered to the local authority? Yes ☒ No ☐ Is there another suitable owner for the structure? Yes ☐ No ☒

Is the structure protected under any Local Planning policies?
No

Any significant Stakeholder comments	
Local Planning Authority	Content with works being undertaken by permitted development – asked that we contact the Parish Council, which we did (see below).
Local Highways Authority	Initially discussed a joint infill scheme with the Highways Authority in 2015, they were in agreement in principle but needed to check available funds. Subsequent discussions with the Highways Authority have seen HRE/NH suggest the use of trief kerbs or barriers (to mitigate the weak edge beam issue), or weight restrictions – KCC were unwilling to opt for those options
Sub-national Transport Body	Not contacted
Community	Parish Council contacted – asked that we take account of the temporary effects of the HGV access to Prep World during the Traffic Management planning
Other interested parties e.g. MP, Bat Group, local active travel groups, heritage groups etc	Sustrans report recommendation – "*Does not appear to have any value for active travel purposes."*

Engineering Proposals

Based on the review work conducted, this section documents proposals for engineering solutions for the structure and highlights the recommended solution by HRE Engineers

Sustainable management considerations	
Structure forms a current transport link – as a road	Yes ☒ No ☐
Structural deterioration issues	Yes ☒ No ☐
Health, safety and/or environmental concerns	Yes ☒ No ☐

Engineering options	**Pro's**	**Con's**	**Estimated cost of remedy**
Do Nothing	No cost	The weak edge beam, combined with KCC failing to impose weight restrictions, leaves a risk to the travelling public. The structure passed BE4 in 2004, but with ongoing deterioration the issue will only get worse. LHA may argue that the low BD21 capacity is as a result of girder deterioration, so DfT liability potentially not limited to the BE4 result.	£0
Reassessment	Inexpensive	Failed BD/21 assessment in 2007, and condition has continued to deteriorate since then. The condition/use of the structure is such that, at best, this would only allow for a delay before significant works were required	<£50k*
Weight restrictions	Weight restrictions could be used to impose a mandatory limit below that of the current capacity, meaning that the structure would need minimal works. Inexpensive and relatively quick	KCC unwilling to install weight restrictions. HRE do not have legal powers to install weight restrictions Weight limits frequently get ignored/abused, and there is little appetite within the police to enforce. The condition/use of the structure is such that weight restrictions would effectively only allow for a delay before significant works were required	<£50k*
High kerbs / barriers to prevent loading on the weak edge girder	Inexpensive and relatively quick to install	Does not address weak main beam issue. Installation difficulties due to numerous utilities within verges. KCC unwilling to install or allow barriers/kerbs. HRE do not have the legal powers to modify or install carriageway features	<£50k*
Infill structure	Removes capacity issue Less expensive than strengthening Negligible future or whole life cost issues	Removes future access beneath	£165k

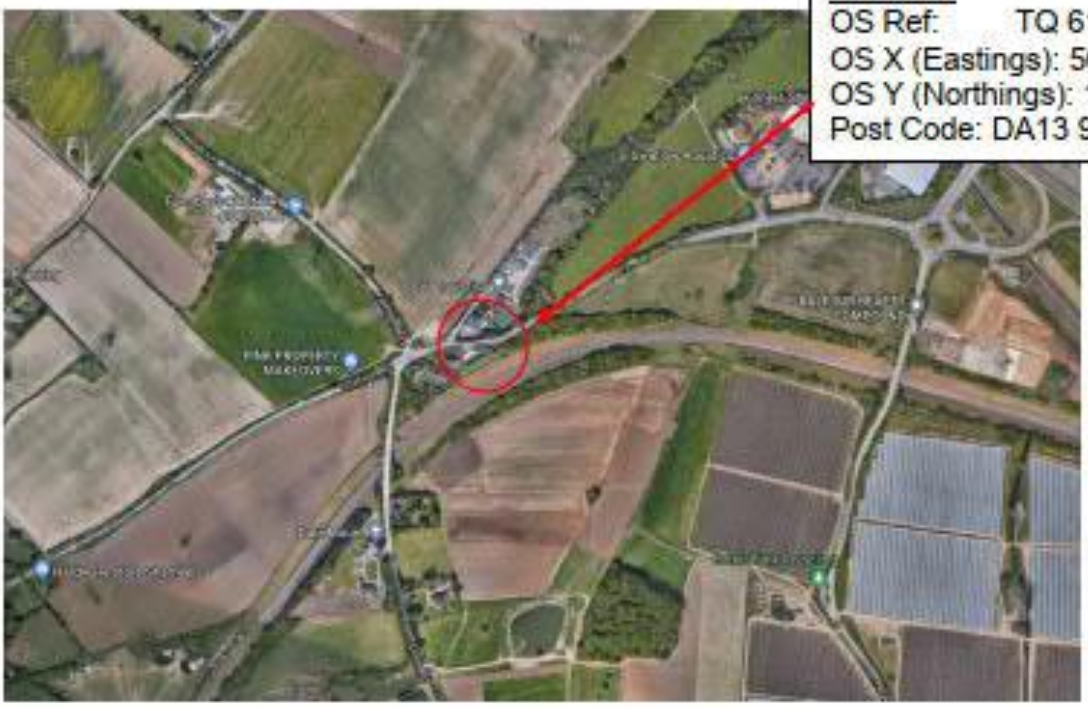
Strengthening (traditional replating), blast-cleaning and repainting girders plus brickwork repairs	Re-plating the bottom flanges would potentially be an alternate approach to improving low span capacity.	The jack arches between the girders leave the top surface inaccessible for rivet removal and new bolt installation without substantial dismantling. The structure would need to be propped throughout the works and the road likely closed to allow for temporary reduced capacity associated with works. Large capital costs, plus ongoing management/maintenance costs	£250k*
Strengthening (plate bonding) blast-cleaning and repainting girders plus brickwork repairs	Re-plating the bottom flanges would potentially be alternate approach to improving low span capacity.	The very poor condition of the bottom flanges and presence of so many rivets makes plate bonding broadly unsuitable. Plate bonding, historically, has a very patchy success rate due to issues associate with adequate preparation of, and uniform adhesion to, the substrate. This option does not address issues associated with loss of section to rivets/heads. Large capital costs, plus ongoing management/maintenance costs	£200k*
Additional permanent piers/props, blast-cleaning and repainting girders plus brickwork repairs	By reducing the span length, shear and bending effects will be reduced.	The introduction of props within the span will cause 'hogging' effects within the girders which may require strengthening of the tops of the girders locally. The props/piers would require modification of the existing girders locally to allow fitting of bearing stiffeners. The structure would need to be propped throughout the works and the road closed to allow for temporary reduced capacity associated with works. Access for installation of the foundations and piers would require larger access opening up at the sides and would require a substantial amount of earth to be cleared out. Large capital costs, plus ongoing management/maintenance costs	£250k*
Replacement structure	New structure capable of meeting modern loading requirements with a minimum design life of 120 years	The cost of the design, fabrication and installation of the new structure, plus temporary interruption/diversion of utilities, would be greater than any of the other options, by a substantial amount. The road closure duration would likely be the longest.	£450k*

**Prices are intended as rough estimates only*

Proposed remedy	Rationale
TBC after SAF discussion	

Responsible NH Engineer	[redacted], CEng MICE
Date of proforma completion	12/07/22

Map and photos of site:



END/709
OS Ref: TQ 614 719
OS X (Eastings): 561401
OS Y (Northings): 171972
Post Code: DA13 9LH


13. 9. 2015


13. 9. 2015


8. 3. 2019