



## Department for Transport

HS1 Asset Management and Station Periodic Review

Familiarisation Report



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# Executive summary

Gutteridge Haskins and Davey Ltd (GHD) supported by Gleeds Cost Management Limited, Steer Davies & Gleave Ltd and Initiate Consulting Limited has been engaged by the Department for Transport (DfT) to undertake a review of the High Speed One (HS1) Control Period Three (CP3) submission for stations assets, incorporating three phases: Familiarisation, Review and CP3 Submission.

The Familiarisation Phase comprised document review and interviews with High Speed One to review progress made throughout Control Period 2 against the obligations, comments and recommendations made in the 2014 Periodic Review.

The key output from this phase is the identification of areas for further investigation and development of proposals for the review phase. These areas are in addition to the main activity, which is to assess compliance against the stations asset management obligations contained in the HS1 Lease.

The Review team has found that no systematic approach to the close out of partially completed obligations, recommendations and comments made throughout the CP2 Periodic Review has been employed. Progress against items identified has been made, however has been typically as a result of other initiatives embarked on by High Speed One.

HS1 are adopting an approach to asset management which is to be consistent with the international standard ISO55000, which is good practice. This has however, amended the suite of documentation planned to be produced by HS1, which will potentially create inconsistencies with requirements stated in the clauses of the HS1 Lease.

Lessons from the CP2 Periodic Review have not been formally reviewed and changes systematically implemented, to inform the development of the CP3 submission.

The level at which HS1 is managing station assets is in the process of being elevated to system level, from element level. This will have wide reaching impacts on the strategy, plans, lifecycle models and accounting methods employed by HS1 through CP3.

A benchmarking exercise has not yet commenced for station renewals, to test the efficiency of delivery by HS1, though this is planned following benchmarking of the route works. This, along with evidence of benchmarked rates in the CP3 life cycle models will be a focus throughout the review phase.

A cost efficiency plan has not been developed for stations, nor an approach to sharing cost efficiencies between the TOCs and HS1 employed throughout CP2. How efficiencies are planned and demonstrated continues to be an area for development in CP3.

Key asset management terms remain undefined, as does the end state at which handback occurs. The uncertainty this creates, particularly regarding the final hand back position, will increasingly be of importance as decisions are made in CP3 based on untested assumptions regarding the asset condition needing to be achieved.

The planning, implementation and/or close out of the above items are proposed to form a key activity in Phase 2 of the CP3 Stations Periodic Review, alongside the progressive assurance and assessment of HS1 meeting their Lease obligations, in advance of HS1 formally submitting proposals in June 2019.

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# 1. Introduction

## 1.1 Purpose of this report

Gutteridge Haskins and Davey Ltd (GHD) supported by Gleeds Cost Management Limited (Gleeds), Steer Davies & Gleave Ltd (SDG) and Initiate Consulting Ltd (Initiate) has been engaged by the Department for Transport (DfT) to undertake a review of the High Speed One (HS1) Control Period Three (CP3) submission, advising the Department whether the submission documentation meets the requirements of the HS1 Lease Agreement.

This desktop review, forms the first of three reports to be produced:

This Familiarisation Report outlines GHD, Gleeds, SDG and Initiate's (the 'Reviewer') initial findings following an assessment of HS1's development throughout Control Period 2 of their Asset Management System and Project Management approach to the delivery of stations renewals works, including progress against the recommendations and actions from the last Control Period Review.

This report summarises findings and provides a number of recommendations where further investigation is recommended throughout the 'Review Phase' in advance of the formal submission by HS1 in June 2019.

The second report, Draft LCR Review will undertake a full review of the Draft CP3 documentation produced, including the SAS and LCRs, review the treatment of works beyond the 50 year life cycle, impact of moving to a 40 year rolling programme and consideration of emerging future railway considerations. The report will also consider the approach to change and management of emerging railway conditions.

The third report will focus on compliance with the HS1 Lease, consider the robustness of the financial models supporting the renewals programme and capture lessons learned, developing recommendations for CP3 in line with the HS1 Lease and industry good practice.

## 1.2 Scope and limitations

The scope of this report covers the findings from the initial document review of the CP2 submission documentation, assessment of progress against recommendations gathered from interviews with HS1 and update documents provided throughout CP2 such as the review of Annual Asset Management Statements.

Throughout the Familiarisation Phase, draft documentation for CP3 has been provided for review including the Life Cycle Cost models and Station Specific Asset Strategies. These documents are currently working drafts, with further development required and comments should be read, being cognisant of their current state of maturity.

Several key documents collectively outline the requirements on HS1 with regard to their control period submission, these are:

- HS1 Lease – Schedule 10 Provisions relating to Station Repair and Renewal
- HS1 Lease – Schedule 10 – Annex 1 (Asset Management Strategy)
- Concession Agreement

## 1.3 Assumptions

Information provided by HS1 regarding progress against CP2 recommendations is assumed to be factually accurate.

Information provided by DfT and HS1 for consideration is assumed to be the latest draft or approved version.

Documentation planned to have been developed during CP2 but not known by the HS1 team interviewed, is assumed not to exist.

## 2. Control Period Two (CP2) Progress

### 2.1 Delivery

#### 2.1.1 Overview of governance

HS1 operates in both regulated and unregulated revenue environments. The regulated environment is governed by both the Office of Rail and Road (ORR) and the Department for Transport. The Office of Rail and Road (ORR) regulates the track and infrastructure on the route. The Government's Representative, from the Department for Transport (DfT), regulates the stations and approves the necessary charges based upon an Asset Management Strategy (AMS) and Life Cycle Reports (LCRs) submitted by HS1 Ltd.

#### 2.1.2 Baseline | Variance Analysis | Log of Changes

HS1 established a baseline for the renewals programme through the control period submission in June and then updated in August 2014 for Control Period 2. This baseline was embedded in the CP2 Lifecycle Cost Model, and is the basis from which the annuity for CP2 renewals was derived.

The Reviewer notes that in the Life Cycle Report (LCR) submissions, due to changes in allocation of works from renewals to operations (and monies from Life Cycle Cost Model (LCC) to Qualifying Expenditure (Qx)) a comparison to baseline and variance analysis was stated as not being available as the baseline essentially had been changed. Proposals included setting a firm foundation for CP2 from which to report against, however in discussions with HS1 to date regarding the CP3 submission it is noted that further reallocation of works to Qx has continued to occur through CP2. The Reviewer has not had visibility of the allocation process of scope of Qx so cannot comment on the validity of the allocation or its effect on Life Cycle Costs. This will be an area for investigation throughout the CP3 Review.

The LCR included the proposal to develop a Delivery Plan for CP2 that provided specific detail on the approach to planned CP2 works. In discussion with HS1 regarding progress against CP2 findings, it was identified that a Delivery Plan has not been developed, however project governance has developed, with an assurance process that includes project gates and annual authority requests to DfT having been established.

As part of this process, quarterly updates to DfT along with funding requests for projects pre-Gate 4 (understood to be development to concept design) and post-Gate 4 (detailed design and construction) made to the DfT Commercial Manager for signoff. The Reviewer has seen assessment of financial impacts being considered in renewals spreadsheets supporting applications to DfT however this does not appear to include a non-financial impact assessment associated with proposed changes. Whilst the overall approach is understood to be working well for both HS1 and DfT, further investigation into the analysis undertaken regarding the impact of implementing changes is recommended, particularly if submissions include changes from renewals projects to Qx and comparison against the CP2 baseline is being impacted. The approach is collaborative and the regular engagement with DfT is one which provides an opportunity for the ultimate asset owner to query changes to planned renewals works and understand impacts.

The project delivery teams are further seeking to introduce a 'project charter' which is the subject of upcoming briefing sessions and suggested for further investigation.

HS1 prepares and submits Annual Asset Management Statements (AMAS) for each financial year. The Asset Management Annual Statements provided for review include the statement that reporting obligations for station renewals are not described in the concession agreement.

Definition of the requirement and agreement with HS1 would be a positive step forward in CP3 to mitigate ambiguity in future submissions.

Currently the format of the AMAS documents provide a high level description of changes for each year as well as proposed stations renewals works in the coming year. The text description does not provide what would be described as a 'log of changes', rather a summary, though text provided identifies the inclusion of new projects, both accelerated and previously unidentified projects. There is no mention in the documents of deferred projects, and little detail regarding the impact of the changes on the assets, or future costs as a result.

### **2.1.3 Baseline Stocktake**

The baseline of projects to be delivered in CP2 have been taken from the CP2 Stations Portfolio spreadsheet and reproduced in Appendix A.

This tracking spreadsheet provides spend per year by each renewal project and forecast expenditure as well as high level commentary where works have been deferred into CP3, new renewals included into the programme that were not foreseen in the development of the portfolio and renewals that have since been re-categorised as Qx.

The spreadsheet provides periodic breakdown of financial spend and forecast expenditure in future periods and comparison of budgeted figures against actuals and forecast. The Reviewer notes that the SCSR project comprises a significant percentage of expenditure across the portfolio, with budgets currently being exceeded by total forecast expenditure for each station. It is difficult to assess from the information available, progress against the entire portfolio, other than on a spend basis. How this is to be tracked and monitored in CP3 will be an area for further consideration.

As with earlier findings, it is not evidenced how change impacts are assessed at project level, programme level, or how asset availability, reliability and services may be impacted by the change.

The forward pipeline of projects for CP3 are yet to be developed, awaiting further development of the LCC and guiding asset management documentation to determine renewals expenditure.

### **2.1.4 Deliverability**

HS1 has commissioned a deliverability study for route assets by Bechtel, with an aspiration for a stations deliverability study to follow. The route study was underway at the commencement of the CP3 familiarisation phase, with the focus of the study being on access to the track and increasing the productivity of works undertaken during engineering hours. With access not generally being a limitation on stations works (except at platform edge or on assets in close proximity to the track) the findings from this study are expected to be of limited value, however findings should still be reviewed and applied where relevant to stations renewals.

A fixed timeframe and scope for the station deliverability study are yet to be developed and should be monitored through the review period and into CP3 if not completed prior to June 2019.

## **2.2 Lessons learned**

In reviewing the Industry Stakeholder Workshop Planning for CP3 Presentation (June 2017), it can be seen that lessons were identified however it is not apparent how these have informed the plan or approach to CP3.

During review meetings with HS1, it was stated that no formal review of lessons from the CP2 submission process had taken place to inform the approach to the CP3 submission. In the presentation slides, the reviewer notes that Optionality (providing performance vs. cost options

to operators) was an area for improvement. It is understood from engagement meetings that this has recently also been an area of direction provided to the HS1 team by management, suggesting lessons are being re-learned through the process.

In the absence of a formal and systematic approach to lessons learned, the Reviewer looked at the progress HS1 has made during CP2 against the recommendations made by EC Harris in their review of HS1's CP2 proposals issued in August 2014.

The EC Harris review resulted in two reports:

1. The Primary Report: Technical Advice to the HS1 Government's Representative, Review of the International Stations' CP2 Proposals, August 2014.
2. The Addendum Report: Technical Advice to the HS1 Government's Representative, Addendum, Review of the International Stations' CP2 Proposals, August 2014. This report considers the response by HS1 to the initial EC Harris report.

These reports contain three categories of findings relevant to the Familiarisation stage of this CP3 review:

1. Compliance with concession obligations
2. Comments and recommendations
3. Key recommendations

The sections below summarise our findings on HS1's progress against each of these categories.

### **2.2.1 CP2 assessment of compliance with obligations**

The Primary report provides a compliance matrix in Appendix B ('Compliance to Obligations set out in Schedule 10 – Clause 5 and Annex 1' table). There were no changes made to this compliance matrix as a result of HS1's response to the Primary report.

The compliance matrix summarises EC Harris's assessment of HS1's CP2 proposals against each concession clause and annex requirement as either 'Fully', 'Partially' or 'Not at all' compliant.

- There were no 'Not at all' compliant clauses or annex requirements identified in relation to HS1's CP2 proposals.
- None of the clause or annex requirements were identified by EC Harris as impacting approval of HS1's CP2 proposals.

The Reviewer discussed with HS1 their progress against each row identified as 'Partially' compliant, with progress as reported by HS1 against each of the partially compliant clauses and annex requirements summarised in Appendix A of this Report. The Reviewer has found that only one of the recommendations has been acted on throughout CP2, and is a work in progress.

There is no evidence that HS1 has systematically addressed the actions required to achieve full compliance for the clause and annex requirements identified as partially compliant in the EC Harris report. Rather, where progress has been made in relation to a partial compliance this is more by chance and has been triggered by HS1 business as usual activities. As HS1 moves towards an ISO 55001 management system, this should, in a mature state, support the ongoing improvement of the system.

While compliance against the obligations will continue to be the subject of the CP3 review, the Reviewer recommends ongoing review and assessment of progress against recommendations both through the CP3 submission process and ongoing into the CP3 delivery period. Where

recommendations are accepted by both HS1 and the DfT, it is proposed that a tracking document and progress reporting against target dates be established and included in regular reporting to support continuous improvement.

### **2.2.2 CP2 comments and recommendations**

The Addendum report provides a table of comments and recommendations (Appendix F – Comments & Recommendations). This table originates from the Primary report and includes an update that considers HS1's response to the Primary report.

The comments and recommendations within the table are identified as either 'Closed', 'Deferred' or 'Outstanding', with progress against the 'Deferred' and 'Outstanding' items being the subject of discussion with HS1.

The progress made, as reported by HS1 against 'Deferred' and 'Outstanding' recommendations is summarised in Appendix B.

As with findings against the obligations from the lease agreement, progress against the Comments and Recommendations, the Reviewer has noted that the items that remain open, have not been tracked by HS1 or systematically closed out.

HS1 report the close out of two observations, with 11 remaining to be addressed and two requiring further information.

### **2.2.3 Key recommendations**

The Primary report contains a list of key recommendations (Table 14 - Key Recommendations at the end of the Verification Review). No changes were made to the recommendations as a result of HS1's response to the Primary report.

Progress reported by HS1 against the key recommendations is summarised in Appendix C.

In summary, 11 of the recommendations have been acted on, closed out, or are a work in progress. A further seven recommendations have not been closed out over CP2.

### **2.2.4 Minor observations and suggested amendments**

The Reviewer has not assessed progress against "Appendix D – Minor Observations & Suggested Amendments" as these are at the level of typographical errors and alternative wording suggestions that in the Reviewer's opinion have no material effect on compliance with requirements or stations asset renewal management.

## **2.3 Criticality and Benchmarking**

### **2.3.1 Criticality**

HS1 established a framework for asset criticality through work commissioned from EC Harris in 2015, which included application to the asset systems at each of the HS1 stations.

An early draft of the CP3 HS1 SAMP (draft version 0.4, dated 10/08/2018) seen by the Reviewer shows that asset criticality will be considered as an integral part of the evolving asset management system. There are also indications that changes in the approach to asset criticality since the original framework are to be adopted, for example with a view of asset criticality forming at an 'asset group' level and the introduction of the likelihood of asset failure and relative importance to criticality ranking.

How HS1's understanding of asset criticality has evolved, how the definition of asset criticality is being maintained to reflect any changes in asset management policy and objectives, and in

particular, how asset criticality is being used to inform renewal decision making in respect of CP3 will need investigation in the Review Phase.

### **2.3.2 Benchmarking**

The Reviewer has seen no evidence of systematic cost benchmarking having been undertaken for station assets.

Rebel have been engaged to undertake cost benchmarking of railway infrastructure assets, which is seeking to benchmark the cost of NRHS renewals costs against other high speed lines. Station benchmarking is not currently understood to be part of the existing scope, however it has been suggested as forming the scope of a further commission once route assets have been completed. Station asset benchmarking will be an area of further investigation throughout the review.

Further comment on the benchmarking of on-costs is provided in Section 3.5.2.

## 3. Transition into Control Period 3

### 3.1 HS1's approach

#### 3.1.1 Stakeholder engagement

In June 2017, HS1 proposed undertaking quarterly stakeholder engagement sessions following an 'issues based' approach to CP3 consultation. The approach is to engage with industry through six quarterly events from September 2017 through to December 2018 ahead of a full draft submission for CP3 planned for February 2019. Bilateral meetings with stakeholders are to support this engagement. These sessions are not specific to stations, incorporating route elements as well.

The Reviewer has attended one of these engagement sessions and notes that the DfT is also invited to attend, confirming these are taking place as planned, but has not yet seen a plan or minutes from the proposed bilateral engagement that is to support these initial briefings.

While the approach is reasonable, it is not clear how feedback from consultation is to be systematically considered and responded to. Good practice consultation typically includes the development of a tracking document that captures consultation and provides a response by HS1 including what change has been made, or not, and reasons why. The approach notes that feedback will be fed into final submissions however it is not currently clear on how this is to occur.

As noted in Section 2.2 of this Report, the approach also does not reflect on lessons from CP2 to inform the approach and avoid pitfalls from the last review, which should have been done and incorporated prior to June 2017.

The approach as described, is high level and does not provide sufficient detail from which to assess the development of plans for CP3, however the Reviewer recommends that in development of CP3, HS1 considers:

- Performance achieved in CP2
- Achievement of the asset management objectives as defined for CP2;
- Resources required to establish the asset management system;
- Analysis is undertaken that supports the achievement of defined CP3 objectives, including consideration of resources and capability to deliver

Through the review phase, the Reviewer recommends HS1 is challenged to clearly demonstrate that the planned renewals works, supporting the aims and objectives of the business, are deliverable and will achieve targets.

#### 3.1.2 Control Period 3 Review

HS1 has adopted a progressive assurance approach to developing the CP3 submission documentation, reducing the likelihood of surprises and delays in achieving signoff of the final submission. As part of this process, HS1 is to provide draft documents to the Reviewer for comment, with the aim to gain early sight of any potential gaps in meeting the obligations of the lease, enabling additional time to address necessary changes. At the time of writing, the Reviewer has had early visibility of the draft Station Specific Asset Strategies, Stations Asset Management Plan and Life Cycle Cost Models. The Life Cycle Report is the next document expected to be provided to the Reviewer, awaiting final updates before issue.

The current meetings that have been established are outlined in Appendix E, along with coverage, which appears to be appropriate for the purposes of briefing and gathering feedback on key documentation.

The Reviewer notes that the recommendation provided regarding 'signposting' where obligations are considered by HS1 to have been met in their draft submission documentation, has been implemented, enabling a more constructive conversation to take place regarding the obligations. This applies to the current development of the CP3 documentation and how these meet the *obligations* of the HS1 Lease, but are understood to not yet signpost to where *recommendations* from the CP2 review have been incorporated.

### **3.1.3 Governance for renewal escrow account drawn down**

During the early part of the CP2 period, governance of project delivery, including station renewals programme was considered weak and inefficient by HS1 and this realisation led to the introduction of improved tracking and first line assurance measures being established.

HS1 has introduced the CP2 Portfolio spreadsheet to track expenditure and drawdown against the escrow account, prepared annual funding papers and quarterly updates to DfT incorporating requests for drawdown of funding against schemes for development (pre-Gate 4) and design and construction (post-Gate 4), supported by a stage gate governance process.

In principle, we see these changes as positive governance improvements that will contribute to appropriate controls over draw down from the escrow account and management of projects at each stage of development.

The integration of stage gates and decisions to proceed, defer works or amend scope, as new information becomes available through project development is an area suggested for further investigation throughout the review, including the audit trail and log of changes that supports the decision.

### **3.1.4 Adoption of the principles of the ISO 55000 series**

HS1 has chosen to adopt the principles defined in the International Organisation for Standardisation ISO 55000 series Asset Management in relation to the management of the assets for which they are responsible.

The intent is to adopt a consistent approach across all assets, with the noted exception of where the HS1 concession directs divergence for Stations from Route and other assets in the asset management system documentation suite; this is due to the need to consider separate renewal plans from the qualifying expenditure (used to fund operation and maintenance work) plans.

The HS1 asset management system, which is at the heart of the ISO 55000 series, is in the process of being established for station asset management and is expected to come into operation as a system in CP3.

As the principles of the ISO 55000 series represents current best practice for asset management, adoption of these principles by HS1 in relation to station assets including their renewal is considered by the Reviewer to be a positive move forward.

Successful establishment and operation of the asset management system by HS1 for station assets would be a significant improvement that can be expected to lead to a coordinated and systematic approach to station asset management.

### **3.1.5 Adoption of asset system level lifecycle accounting**

#### ***System Approach***

HS1 is moving away from the lower level elemental (for example individual hinges on the doors of toilet cubical) approach to cost accounting that was applied during CP1 and CP2, towards a higher level 'asset system' (for example the toilet cubical) approach in CP3. This is achieved by introducing new system level asset records and linking the elemental components.

This linkage between the asset system and the elements of the system is to be maintained going forward with maintenance contractors being required to continue to maintain the inventory records at the elemental level. This approach is expected to maintain the overall integrity of the asset inventory at the same level of asset registration used during CP1 and CP2, but with lifecycle analysis being performed at the asset system, rather than the elemental level.

An example of this would be escalators, where the truss has a 100 year life whereas steps and other equipment have 10-15 year asset lives.

Qx funds operations, maintenance and repair. Renewals are funded by the Long Term Charge (LTC).

The Reviewer understands that station enhancement works are subject to agreement in principle that the beneficiary pays. HS1 have advised that this agreement is to be reached by 31 October 2018 with a pilot project arriving in the form of upcoming Eurostar works.

The Reviewer notes that enhancement works are currently dealt with on a case by case, not a process that is followed and applied consistently, which is in keeping with a management system approach.

Further, elaborated on in Section 3.4, definitions for maintenance, renewal, repair and enhancements are not documented and agreed, complicating how works are to be consistently accounted for.

In principle, and from a practical standpoint, the shift to a system level life cycle accounting practice is, in the Reviewer's opinion, reasonable, however further assessment throughout the review phase is recommended, to test that no individual elemental items warrant exclusion from this approach; e.g. where an elemental asset has a distinct life cycle from the system level that would have a significant impact on decision making.

### **3.2 Draft Station Specific Asset Strategies**

The CP2 Station Specific Asset Strategy formed part of CP2 Asset Management Strategy and was found through the CP2 review, to provide the minimum information to satisfy the CP2 review requirements.

As noted in Section 3.1.4, HS1 is currently in the process of establishing an Asset Management System that adopts the principles of the ISO 55000 series and as part of this journey, the structure of the documentation that articulates the asset strategy is changing.

For CP3 the Station Specific Asset Strategies are separate from the Asset Management Strategy document. There are seven (7) separate SAS documents within the Draft CP3 SAS provided for initial view, although this is understood to reduce to six (6) SAS documents, with the consolidation of one of the SAS, to reflect the Station Element groupings defined in the Draft CP3 Station Asset Management Plan (SAMP).

#### ***Initial observations on the Draft CP3 SAS***

- a. The Stations Specific Asset Strategies are recognised in the Draft CP3 SAMP and the AMS document suite, therefore the intended hierarchy of the document set is clear.

- b. HS1 has adopted the same document structure for each of the Stations Specific Asset Strategy (SAS) that should make navigation through all the documents straight forward for someone familiar with any one of the documents.
- c. The SASs are organised by groupings of Station Elements, rather than one per Station. The HS1 Lease, Clause 4.1 could be interpreted as requiring a self-contained strategy for each station, however it is noted that the accepted CP2 submission included a single statement of strategy that applied to all stations and specific statements relating to the strategy at each station. The draft SASs disaggregate the station elements from the stations to which they are part for general consideration, however the SAS identifies 'local specific asset strategies' that are to be developed for each station. It is unclear from the HS1 Document Hierarchy provided in the SASs where these local strategies fit into the asset management system and how these have been used to inform the Specific Renewals Activities. The Reviewer has not had visibility during the Familiarisation phase of the 'local specific asset strategies'. How these tie into the Asset Management System and connect to the SASs including any obligations in the Lease Agreement will be an area for investigation in the Review Phase.
- d. The approach to asset criticality considers each 'asset class' in the general context of railway stations, and goes on to recognise there can be differences in criticality of the same 'asset class' in the different HS1 stations. The SASs identify 'local specific asset strategies' that are to be developed for each station.
- e. There is no evidence in the Draft CP3 SAS that the HS1 Lease Schedule 10 (Annex 1) Station Elements of 'aa. site works' and 'dd. minor building work' are being addressed. How these are being accommodated should be confirmed in the Review Phase.
- f. The SASs include information about maintenance interventions that are explicitly required by the 'Scope' section of HS1 Lease Schedule 10 (Annex 1) to be excluded.
- g. The HS1 Lease Schedule 10 (Annex 1) section 'Life Cycle Works' requires that the Strategy describes 'in reasonable detail' the renewal and/or replacement works. The Draft CP3 SASs provide a very short summary of works and in some instances there appears to be a cross-reference to other information. An area for further investigation will be the additional detail that may be available that describes the renewal and/or replacement works.
- h. Neither the Draft CP3 SAMP nor the Draft CP3 SASs address the HS1 Lease Schedule 10 (Annex 1) section 'Performance Monitoring' requirement of 'The Strategy shall identify those elements of the Station for which the Tenant will monitor breakdown frequencies and gather performance data.'. Where this is addressed is to be an area of investigation for the Review Phase.
- i. Section '1.3 Alignment' in the Draft CP3 SAS identifies the asset management system as it applies to NRHS managed stations (St.Pancras, Stratford and Ebbsfleet), but there is no mention of how it applies to Mitie (Ashford). However, it is noted that the presentation given by HS1 on 21 September 2018 to the Reviewer provides a different variant of the Asset Management Document Suite than the diagram provided in the draft SASs that removes the NRHS specifics in relation to renewals. How the asset management system's documentation suite addresses any differences between NRHS and Mitie in relation to renewals is an area of investigation in the Review Phase.
- j. Neither the Draft CP3 SAMP nor the Draft CP3 SAS address the HS1 Lease Schedule 10 (Annex 1) requirements for 'Life Cycle Budget', 'Financial Model' or 'Long Term Charge'. Where these requirements are addressed is an area for investigation in the Review Phase.

### 3.3 Draft Cost Efficiency Plan

The Stakeholder Workshop Topics Plan presented in June 2017 included an item 5.1 'Results from efficiency analysis' to be presented in September 2018, however it is noted that this was to build on the benchmarking, which has been limited in scope to the route only.

The Cost Efficiency Plan as defined in Schedule 10 of the Concession Agreement similarly does not include Station Assets within scope.

Taken to mean lifecycle works savings, or delivery of the works for less than the corresponding amount in the Life Cycle Works or Asset Management Strategy, to date, it is understood that HS1 have not applied for any share or split of the savings.

It is further understood that an efficiency factor was previously applied to the CP2 delivery programme, which is not expected to be included in the CP3 programme. Development of a plan to continue to drive improvements through delivery would be an item worth considering in CP3 development.

The current task in front of HS1 is how to appropriately attribute efficiency savings to well managed and efficiently delivered projects, and not be labelled an overestimation of the cost of the works by TOC partners. This is an area for further investigation throughout the review, and will require a departure from the current practice of returning any underspend to the escrow account for other works or directly back to TOC partners.

### 3.4 Definitions and assumptions

The Reviewer has considered the key definitions and assumptions in the HS1 Lease, Concession Agreement, Financial Models, Life Cycle Reports and Asset Management Strategy with a view to providing comment on the appropriateness of these in relation to managing station assets.

It is apparent from review that there is an absence of definition regarding the terms expected to be defined in existing documentation. This provides an opportunity to come to an agreement and appropriately define these terms in the new CP3 documents.

The following section provides further comment:

**Renewal** – There is currently no overall definition of what constitutes a station asset renewal provided in the HS1 Lease – Schedule 10. At present decisions about what constitutes a renewal are made on a case-by-case basis.

The Reviewer notes that there is a definition of 'Renewal and Replacement' in 'Schedule 10 Asset Stewardship and Periodic Review' of the 'Supplemental agreement amending and restating the Concession Agreement', 18 December 2017 however the preceding clauses in the main body of the agreement exclude Stations from the scope of this definition.

It is recommended that to make sure there is consistency in decision making over time it is recommended that HS1 agree with the DfT and document the principles that constitute a station asset renewal.

**Replacement** – See 'Renewal' above.

**Enhancement** – See 'Renewal' above. It is noted that Annex 1 of Schedule 10 to the Lease Agreement does not include Enhancement works within the scope of the Asset Management Strategy.

**Repair** – See 'Renewal' above. It is noted that Annex 1 of Schedule 10 to the Lease Agreement does not include Repair works within the scope of the Asset Management Strategy.

**Maintenance** – See ‘Renewal’ above. It is noted that Annex 1 of Schedule 10 to the Lease Agreement does not include Maintenance works within the scope of the Asset Management Strategy.

**Qualifying Expenditure** – Appendix D to the AMS 2014 notes that qualifying expenditure is defined in Paragraph 1.1 in Annex 2 of the Station Access Charges , as “all costs and expenses reasonably payable or incurred by the International Station facility owner in providing or procuring the provision of the common International Station amenities or the common International Station services to users, or which can be properly attributed to the operation of the International Station for or in connection with the provision by users of services for the carriage of passengers by railway or services for the carriage of goods by railway”

Qx is not defined in the HS1 Lease, but understood to generally incorporate payments for operations, maintenance, repair and minor renewals of station assets. Qx balances the Long Term Charge covering renewals, however as stated above, definitions for repair, maintenance and renewal are not included.

**Good and substantial repair and condition** – the high-level statement in the concession agreement that ‘...each Station shall be in good and substantial repair and condition...’ is open to interpretation.

The Reviewer notes that the concession wording does not take into consideration the asset’s service need, whereby, for example, a station is legitimately managed to a point of closure over time. Or, more probably, a facility at a station. I.e. any specific agreement on what ‘good and substantial repair and condition’ means would need to consider what it specific asset systems it applies to and may need review and revision over time. Unless explicitly agreed otherwise with the DfT, HS1 would therefore be obliged to handback such assets in ‘good and substantial repair and condition’ even if those assets were serving a diminishing purpose.

The DfT CP2 “HS1 Control Period 2 - Stations Review, Final Decision” contains a section entitled “Asset baseline condition workstream”, (clauses 3.17 through 3.19) that states that the DfT is working with HS1 to agree metrics and asset condition at handover “to facilitate a ‘no surprises’ approach”. Progress against this item should continue to be monitored as part of the review.

The Reviewer also notes that when considering ‘condition’ there can be multiple dimensions. A roof light may be in good *structural* condition (not leaking, no deterioration of the frame or seals, etc.), but may not be in good *service* condition – e.g. it has lost transparency over time due to abrasion or dirt build up. Another example being a sewer that is in good *structural* condition, but has an amount of debris in it that reduces its ability to remove waste – thereby not having a good *service* condition.

Life cycle cost modelling assumptions have, on initial review, appeared reasonable, however it is noted that updated models for CP3 will need to be reviewed. In particular, risk percentages and the benchmarking and testing of on costs are noted in the following section as requiring further demonstration as to why they are valid figures for CP3.

### **3.5 Life Cycle Cost Models**

The Reviewer has undertaken an initial familiarisation review of the following models:

- LCC model – Ashford CP3 v2 02 Oct 2018
- LCC model – Ebbsfleet CP3 v2 02 Oct 2018
- LCC model – St Pancras CP3 v2 02 Oct 2018
- LCC model – Stratford CP3 v2 02 Oct 2018

Initial findings are outlined in Sections 3.5.1 to 3.5.4 of the report:

### **3.5.1 Notes Tab**

Each model contains a "Notes" tab comprising the following:

- Notes/Exclusions
- Note Regarding Life Cycle Prediction
- Notes Regarding Base Cost Data Input
  - Basis of Costing
  - Exclusions
  - Assumptions

Section 2 of the Notes/Exclusions is set up to provide information regarding "The life cycle cost models are based upon the following information." – the entries vary in quality and content from "incomplete" (eg. Ebbsfleet) to "wrong" (eg. Ashford).

Regarding the section "Note Regarding Life Cycle Prediction" – all four models contain the following statement:

*"Our models are intended to identify a suitable overall life cycle fund, along with an indication of when individual works are likely to be required."*

Within the "Basis of Costing" section all four models contain the statement:

*"Where there is no specification or other data costs are essentially allowances, and have therefore either adopted F&G allowances or adjusted them as we think appropriate."*

It is not clear to the Reviewer in what year the "F&G allowances" were first created.

The first comment in the "Exclusions" section contains the statement:

*"It has been assumed that all stripping out of general builders work and services installation shall be carried out by others, and the cost allowance will be included as adjustments in the 'Assumptions tab'"*

However, none of the four models inspected contain an 'Assumptions tab' so it is unclear where this information is held.

### **3.5.2 On Costs tab**

The "On Costs" tab provides guidance over on cost percentages for management fees, preliminaries, design costs etc. For the CP3 model risk/contingency is stated as 30% but a comment next to this entry states:

*"set up to be 30% for CP3 but revert to 0% if model switched to show CP2 AS"*

We take this comment to suggest that the CP2 models contained a 0% addition for risk/contingency whereas for CP3 a 30% addition is being applied. We are unclear as to why a 30% addition for CP3 is being sought when there was a zero risk/contingency for CP2.

How risk is apportioned in CP3 will be an area of further investigation throughout the review phase.

The Reviewer will also seek to compare the costs incurred in CP2 with the nominal percentage figures applied to the CP3 model for the various annual renewals planned to understand how this has informed the costs going forward.

### **3.5.3 Elemental Inputs tab**

The Elemental Inputs tab contains the core calculation data for the cost of the individual asset renewals and follows a simple "quantity x rate = cost" methodology.

The model contains a “Pells Validation” (Pell Frischmann) set of columns regarding what we understand to be a validated rate, total cost, assumptions and comments and sources of the validated rates. The sources identify the provenance for some of the rates although there are a number of abbreviations given (e.g. KMS, EGW) which are not revealed.

It is unclear to us from initial inspection of this model what validation has been undertaken over the quantities of asset renewal that are planned.

#### **3.5.4 Elemental Analysis tab**

The Elemental Analysis tab takes the individual asset renewal costs from the Elemental inputs tab, adds a range of on costs and then plots each “asset renewal total costs” on a 50 year cash flow forecast being the “life cycle cost” model.

### **3.6 Life Cycle Report**

Paragraph 5.1 of Schedule 10 in the *HS1 Lease* requires that a Lifecycle Report be submitted to the Government’s Representative for each station, nine (9) months prior to the end of each Review Period.

The Reviewer has noted that the approach being taken by HS1 is to develop a single Lifecycle Report for all stations, and a determination is required from the Department for Transport regarding whether a single LCR satisfies the requirement, or if multiple LCRs are required to be developed.

The Reviewer has, through update meetings with HS1, had presented to the review team, a draft Life Cycle Report for Control Period 3, and is awaiting submission of the draft, to enable progressive assurance to commence, ahead of the final LCRs being submitted on or before 30 June 2019.

The approach being taken by HS1, is to map the LCR back to the requirements in Schedule 10, which in the Reviewer’s opinion, should enable more effective review of whether the report meets the requirement.

Once the draft report is submitted during the Review Phase, further comment on the content of this report can be made.

## 4. Focus areas for review phase

The following section outlines the areas that are to be more closely examined for address through development of the CP3 submission documentation. These items are those that have been highlighted in this Report for consideration beyond the main task of assessing compliance with the obligations as defined in the HS1 Lease Agreement.

### Reporting requirements

Reporting obligations for stations have not been defined other than the general requirements in the Lease agreement. HS1 and DfT may wish to consider through the CP3 process, what is appropriate in terms of reporting and establish the requirement.

### Baseline | Variance reporting | Log of Changes

With some minor renewals moving to Qx, and being stated as a key reason for not being able to assess changes against baseline in previous submissions, clarification from HS1 regarding how this is to be managed in CP3 should be reviewed and method developed in advance, given ongoing adjustments to Qx and LTC.

A log of changes has not been developed to the level at which it is clearly defines what changes have occurred, why they have occurred and the impact of the change including impact on service, operations, the asset base, maintenance and programme delivery. How this is to be addressed by HS1 is to be reviewed through CP3.

### Approach to CP3

We recommend that HS1 take stock of what worked well, what was improved and what still needs attention from experience through CP2 and document this in an appropriate manner that provides an enduring and usable source of learning.

Actions that can be implemented immediately for CP3 be taken to improve the overall submission process (e.g. optionality)

### Asset Criticality

How HS1's understanding of asset criticality has evolved, how the definition of asset criticality is being maintained to reflect any changes in asset management policy and objectives, and in particular, how asset criticality is been used to inform renewal decision making in respect of CP3 will need investigation in the Review Phase.

### Deliverability

Planned renewals and supporting improvement schemes are demonstrated to be deliverable by the portfolio team.

A scope and timeframe for completion of the deliverability study for stations should be developed as part of CP3

### Asset System Life Cycle Accounting

Asset system level life cycle accounting is to be reviewed throughout development to test that this system level of accounting is appropriate through CP3.

### Station Specific Asset Strategies

Ongoing review of CP3 SAS to verify and confirm that all station elements are being considered e.g. minor building work

Assessment of the level of detail in the SAS for renewal and replacement works which is to be 'in reasonable detail'.

Review development of performance monitoring and breakdown analysis to address the requirement for performance monitoring, along with how this supports decision making.

Review that both Mitie and NRHS are appropriately reflected in documentation and that any differences in how the organisations support the asset management system are addressed.

Life Cycle Budget, Financial Model and Long Term Charge requirements are currently absent from documentation and ongoing review to test compliance with obligations is required.

### **Draft Cost Efficiency Plan**

A plan for how efficiencies are to be incorporated into the forward programme has not been developed and will be an area of further investigation.

### **Definitions and Assumptions**

Key definitions are absent from guiding contractual documentation, with associated decision making taking place on an ad-hoc basis. Progress against the development of definitions should be considered within the next phase of the review.

Hand back condition is a key long term consideration for both DfT and HS1, the CP2 report noted that DfT and HS1 were working to agree metrics and asset condition at handover, taking a 'no surprises approach'. Progress has not been apparent and while not necessarily required to be closed out as part of CP3, should be monitored and progress assessed, including holistic considerations of asset condition.

### **Life Cycle Cost Models**

Risk has been adjusted from 0% to 30% in the latest models. Where risk is held, how risk is apportioned and further, how it is drawn down, controlled and tracked in CP3 will be an area of further investigation throughout the review phase.

The Review will be seeking to understand how models have been validated and quantities checked against planned works to ensure accuracy.

### **Shadow 100 year model**

During the review, a "Shadow 100 year model" was noted as being developed that considered longer life assets such as the St Pancras Roof, which has been specifically excluded from the 40 year model and LTC. The Reviewer would seek to understand the interrelationship between the models, visibility of the DfT to the model and decision processes around it. This currently is understood to provide a longer term view of asset renewals for HS1 station assets and would articulate the potential delta to be funded, considering long term needs.

### **Project Charter**

A Project Charter is to be developed in CP3 that may amend the approach to management of projects that needs to be further understood along with impacts for delivery in CP3.

### **Change Impact**

Change impact assessments are a common element that has been identified as needing to be reported on, along with variance analysis and the tracking of change through a log of changes. How change is to be systematically managed and reported in CP3 requires further review as this has historically, not been undertaken in sufficient detail. This should consider change at any point through the process including any scope changes or decisions made at stage gates such as to defer, accelerate and/or change scope of a renewal project.

### **Feedback from CP3 Consultation**

The Reviewer noted that while consultation is stated as having been undertaken, evidence of response to comments and having completed 1:1 meetings was not able to be considered in detail during familiarisation and should be considered early in the review phase as this will streamline approvals and endorsement later in the process.

## **5. Review Phase**

The Review Phase of the CP3 Periodic Review will comprise progressive assurance of the key CP3 documents developed by HS1 that will support the formal submission in June 2019.

This phase will consist of the receipt, review and initial comment back to HS1 on the draft CP3 documentation, providing focused comment on whether the documentation in its current form, appears to meet the obligations of the lease agreement, as well as comment on whether the documents are addressing the recommendations and good practice items identified in this report.

The HS1 programme currently identifies draft documentation and stakeholder engagement through to February 2019. It is expected, that subject to receipt of draft documentation to timeframes, the Reviewer will report findings within 4 weeks to the DfT for comment.

# Appendices

## Appendix A – Progress against CP2 compliance to concession obligations

### Technical Advice to the HS1 Government's Representative

Review of the International Stations' CP2 Proposals

August 2014

EC Harris

Extract from: Appendix B - Compliance to Obligations set out in Schedule 10 - Clause 5 and Annex 1

Clause	Section Title	Detail	Compliant? (Aug 2014)	Action required to achieve full compliance	Progress made by HS1 in CP2 (as of October 2018)	Have HS1 addressed the EC Harris recommendation?
<i>Clauses as they appear in Schedule 10</i>	<i>Titles as they appear in Schedule 10</i>	<i>Clause text as it appears in Schedule 10</i>	<i>Compliance level</i>			
5.2	Life Cycle Reports	Each Life Cycle Report shall, in respect of each Station, include: <b>Works undertaken and costs incurred</b>				
5.2.1	Life Cycle Reports	a summary of the following in respect of the <b>current Review Period</b> :				
5.2.1 - g	Life Cycle Reports	an analysis of breakdown frequencies and the performance of the Elements of the Station which were identified in the Asset Management Strategy as being monitored by the Tenant;	Partially	Complete full trend analysis of breakdown frequencies and performance of identified elements.	Refer to comments on progress made for Table 14 Key Recommendations, row No. 11.	Work in progress
5.2.2	Life Cycle Reports	in respect of the <b>current Review Period</b> a progress report, comparison and reconciliation by reference to the Life Cycle Report approved for the current Review Period of:				
5.2.2 - a	Life Cycle Reports	the Life Cycle Works actually completed to date against those anticipated giving the reasons for any differences;	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
5.2.2 - b	Life Cycle Reports	the Life Cycle Works Cost incurred to date against those anticipated giving the reasons for any differences;	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
5.2.4	Life Cycle Reports	<b>Forecast Life Cycle Works</b> in respect of the <b>next Review Period</b> :				
5.2.4 - a	Life Cycle Reports	the Tenant's detailed proposals for the carrying out of the Forecast Life Cycle Works including any notices consents and approvals required in order to carry out and complete them;	Partially	Produce CP2 delivery plan which should include detailed proposals for carrying out the Forecast Life Cycle Works	HS1 have not specifically reviewed and addressed the EC Harris action.	No
5.2.4 - b	Life Cycle Reports	the Forecast Life Cycle Works Cost;	Partially	Enhance life cycle works descriptions as per separate note.	HS1 have not specifically reviewed and addressed the EC Harris action. A record of the 'separate note' referred to by EC Harris had not been provided by HS1 at the time of the review.	No

5.2.6	Life Cycle Reports	<b>Deferrals</b> the Tenant's proposals (if any) for:				
5.2.6 - a	Life Cycle Reports	the deferral to any <b>later Review Period or Overhang Period</b> or the permanent omission of any Life Cycle Works that are identified in the Asset Management Strategy as being required in the Review Periods and/or Overhang Periods following the Review Period in which the Life Cycle Report is produced; and/or	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
5.2.6 - b	Life Cycle Reports	the distribution of any Deferred Life Cycle Works Saving pursuant to paragraph 7.1; which shall include:	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis. A measure for efficiency is still to be defined, that will make it difficult for HS1 to demonstrate they have made savings.	No
5.2.6 - c	Life Cycle Reports	in respect of a proposal in relation to a proposed deferral or permanent omission:				
5.2.6 - c (ii)	Life Cycle Reports	a report setting out the likely effect on performance arising out of or in connection with the proposed deferral or permanent omission;	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
5.2.6 - d	Life Cycle Reports	the forecast Deferred Life Cycle Works Saving arising from paragraph 5.2.6(a); and/or	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
Annex 1 - 3	Life Cycle Works	The Strategy shall describe, in reasonable detail:				
Annex 1 - 3a	Life Cycle Works	the renewal and/or replacements works which will need to be undertaken in relation to each of the elements of the Station in order for the Tenant to comply with its obligations under clauses 4.3.1 and 4.14 and the <b>Life Cycle Purpose</b> to be achieved; and	Partially	Enhance life cycle works descriptions as per separate note	HS1 have not specifically reviewed and addressed the EC Harris action. A record of the 'separate note' referred to by EC Harris had not been provided by HS1 at the time of the review.	No
Annex 1 - 6	Financial Model	The Strategy shall include a financial model and supporting explanatory documentation which enables the parties to determine in relation to the Station:				
Annex 1 - 6b	Financial Model	the financial effect of any acceleration, deferral or permanent omission of any renewals and/or replacements at the Station;	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
Annex 1 - 6c	Financial Model	the financial effect any new renewals and/or replacements at the Station not previously included in the Asset Management Strategy;	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
Annex 1 - 6d	Financial Model	the extent of any savings arising where the actual costs of undertaking certain renewals and/or replacements at the Station is less than the estimated cost of such renewals and replacement; and	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No

Annex 1 - 6e	Financial Model	the financial effect of applying any savings to fund the costs of any renewals and/or replacements at the Station which are in excess of the cost estimate for such works.	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
Annex 1 - 7	Long Term Charge	The Strategy shall include a financial model and supporting explanatory documentation which enables the parties to:				
Annex 1 - 7b	Long Term Charge	determine the level of any changes to the LTC for a Station to reflect:	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
Annex 1 - 7bi	Long Term Charge	any changes in the estimated costs of the proposed renewals and/or replacements at the Station;	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
Annex 1 - 7bii	Long Term Charge	any acceleration, deferral or permanent omission of any renewals and/or replacements at the Station;	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
Annex 1 - 7biii	Long Term Charge	any new renewals and/or replacements at the Station; not previously included in the Asset Management Strategy;	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No
Annex 1 - 7biv	Long Term Charge	the application of any costs savings or changes in the expected levels of Income.	Partially	Develop variance analysis methodology and enhance associated model functionality	HS1 have not developed a methodology for variance analysis.	No

## Appendix B - Progress against CP2 comments and recommendations

### Technical Advice to the HS1 Government's Representative

ADDENDUM | Review of the International Stations' CP2 Proposals

August 2014

EC Harris

### Extract from: Appendix F - Comments and Recommendations

Doc. ID	Section (=§) / Paragraph (= ¶)	Comment No.	Observations and Comments	Recommendations	Status	Progress made by HS1 in CP2 (as of October 2018)	Have HS1 addressed the EC Harris recommendation?
See list in 'Documents tab'			Comments made on or before 17 June 2014 (relating to April document versions)		28 Aug 2014		
029	§1.3, ¶ 3 LCC Models, Parameters tab LTC Model, Assumptions tab	1	The switching system is now considered obsolete as it is envisaged that the models remain in Asset Stewardship state. May lead to incorrect results in the LTC model if all the LCC models are not all switched to the same 'mode' either Asset Stewardship or Baseline.	Remove switching capability.	Deferred	"Switching" is still in the models. HS1 stated that there is no need to use the 'switch'. HS1 plan to change to a different model at the end of CP3 into CP4. HS1 consider the risk to be low of setting the 'switch' to the wrong setting.	No
029	LCC Input tabs	4	Historic records of what Halcrow had used for uplift (i.e. BMIC) not relevant for current models/calculations	Group the historical calculations so they only appear on a need-to-know basis	Deferred	Nothing has been done in CP2 to address this recommendation, however HS1 are planning to produce a new model at the end of CP3 into CP4. Historic values have been overwritten with new values.	No
025, 026, 027, 028	Report tab	5	Smoothed LCC does not provide an accurate picture of the spend profile as it is unrealistic to expect high spend increase for particular years (e.g. year 37 for SPI) vs. and no spend for certain years (e.g. years 34 & 35 for SPI)	Reconsider the approach for smoothed LCC results	Deferred	Refer to comments on progress made for Table 14 Key Recommendations, row No. 6.	No (work in progress)
029 030	LCC Inputs tabs §2.1, ¶ 7	6	Where is the statement behind the use of the RPI index? LCC model, notes tab states use of BCIS BMI All in maintenance cost index.	Clearly state assumption(s)	Outstanding	HS1 were unable to provide a position statement on this item at the time of interview and had not provided a response at the time of report production.	Unknown
029	LTC Calculations tab (cell E5)	8	Switching between F&G calculations and CP2 calculations is not relevant anymore as CP2 budget is being agreed	Consider removing the switching capability in the future, i.e. work with 'clean' model versions	Deferred	"Switching" is still in the model. HS1 explained that this is a legacy feature of the model, it is not used, and only applies to CP1 figures.	No

024, 025, 026, 027, 028, 029	§7, p 84 Assumptions tab LTC Calculations tab	11	Length of analysis period, i.e. 45 years, currently would reduce by 5 years in CP3 based on Schedule 10 requirements.	Consider adopting a rolling analysis period of 40 years for future evaluations.	Deferred	Refer to comments on progress made for Table 14 Key Recommendations, row No. 18.	No
025, 026, 027, 028	Elemental Inputs tab	16	Same BCIS element can have different rates (e.g. "2HR1.01 Fire Resistant Doors Ironmongery" @ SPI has 4 different rates £600, £900, £7,200 and £100 - rows 17, 18, 19 and 20)	Clarify rates used and add further description for activities undertaken	Outstanding	The specific recommendation has not been explicitly addressed, rather the new 'system' level rollup of assets for rates is likely to reduce or remove instances of re-occurrence of the anomalies observed.	No
025, 026, 027, 028	Elemental Analysis tab	20	Hardwiring of threshold values	The threshold values for a number of on-costs (e.g. Safety / HSE, Procurement Management) are hardwired into the cells. Suggest put these into assumptions tab as inputs that can be amended	Deferred	HS1 confirmed that the on-costs are being reviewed for CP3, but there has been no change in the way that values are 'hardwired' into the cells.	No
025, 026, 027, 028	Elemental Analysis tab	21	Management fee threshold formula	The LCC & LTC assumptions documents states that the HS1 Management Fee threshold is £500k. However, the formula has not been updated and shows differing rates for <£20k, <£500k and >£500k. The output is correct but the formula could remove the £20k rate for clarity	Deferred	The formula have not been updated.	No
025, 026, 027, 028	Elemental Analysis tab	22	Design Fees	The LCC & LTC assumptions state that design fees are 10% on M&E and 5% on everything else. However, the model applies 10% to M&E and 5% to Roof and External Walls only. Which one is correct? Should the general design fees also be price dependent? i.e. for jobs under a certain threshold, unlikely that design work would be required	Outstanding	HS1 have not addressed this recommendation in CP2. HS1 intend to perform checks as part of the CP3 modelling.	No
025, 026, 027, 028	Elemental Analysis tab	24	There is no satisfactory variance approach to meet Schedule 10 obligation to allow for modelling of acceleration / deferrals / omissions. For instance, if a specific renewal was delayed by a year due to good management, but the general forecast of that life was not amended, then the LCC or LTC model could not accommodate this	For the CP2 submission the process for 'manually' calculating the variance should be described in the LCRs. However, the LCC/LTC models should be revised in the future so as to undertake modelling of acceleration / deferrals / omissions in a more automated fashion.	Deferred	Refer to comments on progress made for Table 14 Key Recommendations, row No. 9.	No
032	§2.4	34	The summary of activities for Ashford is better articulated as compared to the other stations in that it states the element where works were undertaken and briefly describes the work activity. For the other stations the elements are listed where work has been undertaken but there is limited description of the work activities.	Revise §2.4.1, §2.4.2, §2.4.3 such that they briefly describe both the element where works were undertaken and the work activity.	Outstanding	A stage gate process for renewals has been introduced by HS1 during CP2 that applies equally to NRHS and Mitie renewal activities. This process requires renewal work activities to be described and therefore should provide a more comprehensive record of renewal works undertaken from the point at which the new process was introduced in 2016.	Yes (but as a by-product of another initiative rather than a conscious activity of recommendation review and action)

034, 035, 036	Table 7 Appendix E	47	Breakdown of actuals during 2010/11 missing, i.e. only total provided	Provide break down of actual expenditure for 2010/11 as with the other two years or state why this is different. Add actuals for 13/14.	Outstanding	HS1 explained that HS1 was incorporated in 2010 to take on responsibilities from NRHS, however HS1 only took over the management of the renewals escrow account from NRHS in 2012. HS1 explained that NRHS was unable to account for the 2010/11 breakdown of actual expenditure that needed to be reported in the LCRs.	No (but a reason for missing 2010/11 actuals has been explained)
034, 036	Table 7 & Table 8	49	Actual stated for 2010/11 in the two tables is not the same	Revise or state why this is	Outstanding	HS1 was not aware as to whether this was addressed or not.	Unknown
034, 035, 036, 037	§ 4.2.3	50	What is the impact of change in demand, e.g. increase in footfall, beyond CP2? Also the reduced use of Ashford has not been reflected in the LCC model.	Add statements to this effect	Deferred	HS1 stated at interview that they are will be taking into consideration the Master Plan, that includes estimates of demand, for CP3. The effect of key changes in station infrastructure on renewals, as stated in the Master Plan, will now be considered.	Yes (but not through reference to the EC Harris recommendation)

## Appendix C - Progress against CP2 key recommendations

### Technical Advice to the HS1 Government's Representative

Review of the International Stations' CP2 Proposals

August 2014

EC Harris

Extract from: Table 14 - Key Recommendations at the end of the Verification Review

No.	Key Recommendation	Status	Type	Progress made by HS1 in CP2 (as of October 2018)	Have HS1 addressed the EC Harris recommendation?
1	Investigate possible inconsistencies in the designation of elements with the same description and cycle summary and ensure they are allocated to the 'correct' activity (L/Q).	Outstanding	Good Practice	The roll up of elements to a 'system' level together with the review by Pell Frischman will have addressed this recommendation for CP3.	Yes, but not for CP2
2	Ensure correct unit rates are applied in the LCC models. Enhance descriptions and provide a detailed explanation of how each of these rates has been derived.	Partially Complete	Obligation	For CP3 this is being addressed through work commissioned from Pell Frischman. This work will include a report on why the rates have been set as they are. In establishing rates Pell Frischman has been using sources such as organisations with the same types of assets and national databases.	Yes, but not for CP2
5	<p>More frequent informal reviews (e.g. annually) of the efficiency overlay may be more beneficial in capturing and assessing short term risks.</p> <p>Undertake review on an interim basis and fully justify any removal and/or reduction of the declared efficiency target.</p>	<p>Future Action</p> <p>Stakeholders' Suggestion</p>	Good Practice	No reviews have been undertaken during CP2 of the efficiency overlay. The efficiency overlay approach was adopted by HS1 for CP2 in response to the TOCs request for ongoing efficiencies to be recognised in the submission. The efficiency overlay made general assumptions on saving over time such as for technology and labour; resulting in a blended 0.6% per annum efficiency saving from year 6 through to year 40. HS1's retrospective view is that the efficiency overlay approach adopted is inappropriate as it does not consider risk or contingency protection for HS1. The CP3 submission will not include an efficiency overlay, rather it will look to identify efficiencies on a case-by-case basis via Business Cases and reviews through the 'Stage Gate' process. HS1 is still considering how risk should be accounted for.	No

6	Consider adopting an alternative approach to smoothing expenditure profiles.	Future Action	Good Practice	HS1 recognise that the current smoothing of expenditure profile is simplistic and more realism needs to be incorporated into the profiling. HS1 are currently looking into how the profiling can be improved.	No (work in progress)
8	Provide an explanation as to whether or not environment and energy initiatives have been considered and if so state the financial impact associated with their implementation.	Partially Complete	Good Practice	This is now addressed in the renewal business cases.	Yes
9	The LCC/LTC models should be revised so as to support undertaking the monitoring of acceleration, deferrals, and omissions throughout control periods in a more automated way.	Future Action	Obligation	HS1 do not have a process for variance analysis within control periods. It is noted by the Reviewer that the HS1 Lease obligations do not require automation.	No
11	Complete full trend analysis of breakdown frequencies and performance of the monitored station elements	Future Action	Obligation	HS1 cited inherited NRHS contract issues for difficulties in obtaining the required information to enable such analysis. As HS1 wrote the contract with Mitie, this obtaining the required data is not considered an issue. During CP2 HS1 has worked with NRHS to progress improvement in capture and provision of asset data, but there remain constraints imposed by the current contract. HS1 has provided some funding to NRHS for reconfiguration of the NRHS asset information system to accommodate the new asset hierarchy. Evidence of progress with this recommendation is expected within the CP3 LCRs.	Work in progress
12	Produce CP2 delivery plan which should include detailed proposals for carrying out the forecast lifecycle works	Future Action	Obligation	A CP2 'delivery plan' has not been produced. Other artefacts may constitute parts of a 'delivery plan', however HS1 has not verified this.	No
13	Explore the potential for retailers making LTC contributions as it is considered that contributions for Stations renewals should be made from all those that use and/or benefit from them.	Stakeholder's Suggestion	Good Practice	HS1 have engaged an external consultant to look into retailer contributions.	Yes
14	Address lack of provision for enhancements within SACs ahead of the CP3 review and explain how enhancements will be dealt with, if they are required, in CP2.	Stakeholder's Suggestion	Good Practice	A definition of 'Enhancement' is being produced by an external consultant and this is expected to be available in November 2018.	Yes, but not for CP2

15	Explore the Network Rail High Speed Management Fee which is out of line with that agreed in the recent PR14 process undertaken by the ORR.	Stakeholder's Suggestion	Good Practice	HS1 acknowledged that the NRHS management fee for station works has remained at 10% although the management fee for route has been reduced to 8%. The NRHS management fee for station work is however significantly less than that applied by Mitie, which is 15%. HS1 explained that the inherited NRHS contract for stations does not provide sufficient leverage opportunities to reduce the management fee.	Not specifically
16	Undertake close and regular monitoring of the top ten most expensive items, including revision of the costs and/or life span assumptions (as necessary) to ensure that LTC is appropriately funded.	Stakeholder's Suggestion	Good Practice	Monitoring does not currently happen, although HS1 is asking suppliers to provide maintenance information to enable such monitoring.	No
17	Six monthly reporting on progress against the plan and updated future plans, including a revision of the line of sight document and responses to emerging issues TOCs identify.	HS1 Ltd.'s Commitment	Good Practice	There is an ongoing activity whereby the executive management for each TOC fills out a score sheet and these score sheets input to HS1 'action trackers' that are then monitored to close out issues identified. The score sheets are not station renewal specific.	Yes
18	Move away from a fixed period and adopt a rolling 40-year view in terms of ensuring asset stewardship and achieving the Life Cycle Purpose	HS1 Ltd.'s Commitment	Good Practice	HS1 explained that a rolling 40-year view was a 'consideration' not a commitment. While HS1 have established a shadow 100 year plan, this is an internal HS1 document and the DfT reporting is still based on a fixed 40 year concession period.	No
19	Enhance the asset management planning/modelling capability including a review of how station assets can be specified more clearly, understanding the drivers of degradation, and collecting the 'right' data to ensure the optimal asset interventions can be identified over time.	HS1 Ltd.'s Commitment	Good Practice	This is being addressed through the establishment of the management system for asset management.	Work in progress
20	Undertake a review and clearly define the asset condition and other hand back requirements at the end of the HS1 Concession; this is likely to involve more sophisticated understanding of how asset condition is classified and we define and measured	HS1 Ltd.'s Commitment	Good Practice	No specific asset condition or other requirements for handback have been established. HS1 would notionally rank their current understanding of asset condition as 'Amber' in a scale Red, Amber, Green. The inherited NRHS contract was again cited by HS1 as a constraint in achieving a better understanding of asset condition, however HS1 stated they have made progress with negotiations to enable changes in the contract in this respect.	No

21	Ensure there is greater integration between LTC and Qx items so that whole-life cost optimization can be achieved; similar or identical interventions shouldn't fall into different categories	HS1 Ltd.'s Commitment	Good Practice	Integration between the LTC and Qx is an ongoing quest that is expected to become more achievable following establishment of the asset management system. However current expectations are that this integration will not be achievable until CP4 at the earliest.	Work in progress
22	Already moving to a five-year forecast of Qx to improve transparency and assist operators with their understanding of these important cost areas over time.	HS1 Ltd.'s Commitment	Good Practice	HS1 now have 5 year forecast for Qx.	Yes

## Appendix D – CP2 Stations Portfolio

Project No.	Renewal	LCC Budget (Feb '13 prices)
<b>St Pancras</b>		
HS1RENSTP-0001	Fire Compartmentation	£100,346
HS1RENSTP-0003	UPS	£538,017
HS1RENSTP-0004	SCSR	£8,395,835
HS1RENSTP-0004	Technical Scoping of BMS	£679,372
HS1RENSTP-0005	Repair to West Side Copings to Energy Centre	£35,592
HS1RENSTP-0006	RZ Baby Change & Slate Refurbishment	£2,576
HS1RENSTP-0007	Seal Replacement - Deck Extension Window Cassette Unit	£65,254
HS1RENSTP-0008	Repainting External Gable Ends	£172,800
HS1RENSTP-0009	Combined Project works - Kerbs, Road Surfaces, Lining, External Furniture and Lightning.	£44,826
HS1RENSTP-0010	Terrazzo and Slate	£68,208
HS1RENSTP-0011	Angel of the South - Electronic Signage (Unplanned not in CP2)	£0
	Fire Panel Renewal	£0
	Waste Evacuation	£0
	<b>St Pancras Renewals</b>	<b>£10,102,826</b>
<b>Stratford</b>		
HS1RENSTR-0001	Survey & Renewal/refurbishment of toilets & gate barriers	£207,432
HS1RENSTR-0002	SCSR	£1,407,161
HS1RENSTR-0003	Fire Compartmentation & Door Seal (Survey & Replacement)	£9,422
HS1RENSTR-0004	Replacement of Main Waste Water Pipework (Public & Domestic areas)	£4,891
HS1RENSTR-0005	Chilled Water Pipework Distribution System	£34,278
HS1RENSTR-0006	Combined Works to breach and Landing Valve Cabinets	£6,386
HS1RENSTR-0007	Replacement of ETFE Roof Pumps	£6,765
HS1RENSTR-0008	Survey of AHU, Local Cooling & Louvered Air Control Systems	£5,666

HS1RENSTR-0009	Technical Scoping of BMS	£29,395
	Stratford Escalator Acceleration (Not in CP2 Plan)	NA
	Stratford Renewals	<b>£1,711,396</b>
<b>Ebbsfleet</b>		
HS1RENEBB-0001	Survey & Renewal/refurbishment of toilets & gate barriers	£91,318
HS1RENEBB-0002	SCSR	£1,544,587
HS1RENEBB-0003	Survey & Replacement of CHW & LTHW Pipework Distribution Systems	£85,628
HS1RENEBB-0004	Works to Compressed Air Distribution System	£5,685
HS1RENEBB-0005	Fire Compartmentation & Door Seal (Survey & Replacement)	£4,663
HS1RENEBB-0006	Replacement of Main Waste Water Pipework (Public & Domestic areas)	£6,964
HS1RENEBB-0007	Combined Works to Breach & Landing Valve Cabinets	£6,409
HS1RENEBB-0008	Technical Scoping of BMS	£55,747
	Ebbsfleet Renewals	<b>£1,801,001</b>
<b>Ashford</b>		
HS1RENASH-0001	Fire Compartmentation & Door Seal (Survey & Replacement)	£89,030
HS1RENASH-0002	Tandem Seating to Lounge Areas	£90,072
HS1RENASH-0003	Survey/Scope Works Sump Pump & Water Treatment Equipment Sets	£44,247
HS1RENASH-0004	Scoping & Renewals Extract/Supply/Smoke/Hydrovane & Compressed Air Systems	£273,419
HS1RENASH-0005	Scoping & Renewal of Air Handling System	£296,591
HS1RENASH-0006	Survey & Refurbishment of Lifts & Escalators	£575,049
HS1RENASH-0007	External Lighting Fittings to the Station	£13,344
HS1RENASH-0008	Survey and Repair of Glass Block Work Joints/Seals	£117,372
HS1RENASH-0009	Survey & Replacement of External Defective ALU doors and window seals	£95,956
HS1RENASH-0010	BMS Head End Control Firmware Replacement	£74,587
HS1RENASH-0011	SCSR	£304,783
HS1RENASH-0012	External Furniture Replacement	£88,724
HS1RENASH-0013	Suspended Ceiling Works	£4,675
HS1RENASH-0014	Survey & Replacement/Repair of Passport & Check in Desks	£98,662
HS1RENASH-0015	Electrical Distribution Works	£129,654

HS1RENASH-0016	Replacement of Small Internal MEWP - Deferred	£36,078
HS1RENASH-0017	Replacement of Smoke Curtain and Control Systems	£23,098
HS1RENASH-0018	Heating System Ashford Boilers	£77,451
HS1RENASH-0019	Bird Proofing	£74,500
	Ashford Renewals	<b>£2,507,292</b>
	<b>ALL STATIONS</b>	<b>£16,122,515</b>

# Appendix E – CP3 Stations Review Meetings

**21 September 2018**

## **Meeting 1: Asset Management Strategic Context (1)**

- Review Asset Management Framework - linked to Lease Requirements for Life Cycle Report (LCR)
  - Framework – Joseph Inniss
  - LCR link - AMCL - Mark Sexton
- Asset Management Policy and Asset Management Objectives
  - Policy and Objectives - Joseph Inniss

**10 October 2018**

## **Meeting 2: Asset Management Strategic Context (2)**

- Review Strategic Asset Management Plan
  - Introduction - Joseph Inniss
  - SAMP – AMCL - Matthew McConville
- Review 6 x Specific Asset Strategies
  - SAS walk through - AMCL - Matthew McConville
- Review HS1 Project Process
  - Project Process – Andrew Ellis

**01 November 2018**

## **Meeting 3: Engineering & Strategic Decision Making + Intervention Volumes**

- Review Long Term Charge (LTC) models
  - Introduction – Jay Newton
  - Walk through model – Pell Frischmann - Olu Kongi
- Review Specific Asset Strategies (with costs)
  - SAS walk through - AMCL - Matthew McConville
- Review Sample Project Charters
  - TBC (Either HS1 or NRHS)
- Review Template of the Life Cycle Report (LCR)
  - LCR template - AMCL - Mark Sexton

**23 November 2018**

## **Meeting 4: Control Period 3 Costing**

- Review unit cost for renewals
  - Introduction – Geoff Jones
  - Unit Costs – Pell Frischmann - Oluseye
- Review Process and As Is for Qx (Qualifying expenditure) estimations
  - Introduction – Jay Newton
  - Outline Approach to Qx – NRHS - Andrew Franks
- High Level Insights from review of Stations Intervention Effectiveness (aka stations benchmarking)
  - Insights - Rebel - Kimmo Oostermeyer
- Review Renewals unit cost benchmarking
  - Unit Cost Benchmark Report – Pell Frischmann - Olu Kongi

**17 December 2018**

## **Meeting 5: Long Term Cost and Deliverability**

- Review 100 year Long Term Charge (LTC) Shadow model
  - Introduction – Jay Newton
  - 100 year Model – Pell Frischmann - Olu Kongi
- Review Operational Context and Master planning
  - Impact on LTC – Pell Frischmann - Olu Kongi
- Review Stations Enhancements Framework
  - Enhancements Framework - Oxera - Andy Meaney
- Review Future aspirations and capability improvement in CP3/CP4
  - Improvement Plan in SAMP – Joseph Inniss
- Review Structure of Stations Charges

- Charges - Oxera - Andy Meaney

**23 January 2019**

**Meeting 6: How we've made changes to meet customer expectations**

- Review 4x Life Cycle Reports (LCR) (including detail of changes)
  - Introduction – Geoff Jones
  - Changes in LCR - AMCL - Mark Sexton
- Review all stations project charters for remainder of CP2 and year 1 of CP3
  - TBC (Either HS1 or NRHS)



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