

GENERAL PURPOSES COMMITTEE



Date: Tuesday, 29 November 2016

Democratic and Members' Services
Quentin Baker
LGSS Director: Law and Governance

10:00hr

Shire Hall
Castle Hill
Cambridge
CB3 0AP

Kreis Viersen Room
Shire Hall, Castle Hill, Cambridge, CB3 0AP

AGENDA

Open to Public and Press

CONSTITUTIONAL MATTERS

- 1 **Apologies for absence and declarations of interest**
Guidance on declaring interests is available at
<http://tinyurl.com/ccc-dec-of-interests>
- 2 **Minutes - 25th October 2016 and Action Log** **5 - 24**
- 3 **Petitions**

OTHER DECISIONS

- 4 **Finance and Performance Report - September 2016** **25 - 54**
- 5 **Integrated Resources and Performance Report for the period** **55 - 76**
ending 30th September 2016

6	Business Planning Update	77 - 82
7	Consultation Results for the 2017-18 Business Plan	83 - 170
8	Total Transport Pilot	171 - 184
9	Treasury Management Report Quarter 2	185 - 206
10	General Purposes Committee Agenda Plan, Training Plan and Appointments to Outside Bodies, Partnership Liaison and Advisory Groups, and Internal Advisory Groups and Panels KEY DECISIONS	207 - 216
11	Cambridgeshire Guided Busway Defects	217 - 390

Appendix C of this report is confidential. If members wish to discuss this appendix, it will be necessary to exclude the press and public as detailed in item 12 below.

12 Exclusion of Press and Public

That the press and public be excluded from the meeting during the consideration of the following report on the grounds that it is likely to involve the disclosure of exempt information under paragraphs 3 & 5 of Schedule 12A of the Local Government Act 1972 as it refers to information relating to the financial or business affairs of any particular person (including the authority holding that information) and information in respect of which a claim to legal professional privilege could be maintained in legal proceedings

13 Waste Private Finance Initiative Review

The General Purposes Committee comprises the following members:

Councillor Steve Count (Chairman) Councillor Roger Hickford (Vice-Chairman)

Councillor Anna Bailey Councillor Ian Bates Councillor David Brown Councillor Paul Bullen
Councillor Edward Cearns Councillor Steve Criswell Councillor Adrian Dent Councillor John Hipkin
Councillor David Jenkins Councillor Mac McGuire Councillor Lucy Nethsingha
Councillor Tony Orgee Councillor Peter Reeve Councillor Ashley Walsh and Councillor Joan Whitehead

For more information about this meeting, including access arrangements and facilities for people with disabilities, please contact

Clerk Name: Michelle Rowe

Clerk Telephone: 01223 699180

Clerk Email: michelle.rowe@cambridgeshire.gov.uk

The County Council is committed to open government and members of the public are welcome to attend Committee meetings. It supports the principle of transparency and encourages filming, recording and taking photographs at meetings that are open to the public. It also welcomes the use of social networking and micro-blogging websites (such as Twitter and Facebook) to communicate with people about what is happening, as it happens. These arrangements operate in accordance with a protocol agreed by the Chairman of the Council and political Group Leaders which can be accessed via the following link or made available on request: <http://tinyurl.com/ccf-film-record>.

Public speaking on the agenda items above is encouraged. Speakers must register their intention to speak by contacting the Democratic Services Officer no later than 12.00 noon three working days before the meeting. Full details of arrangements for public speaking are set out in Part 4, Part 4.4 of the Council's Constitution <http://tinyurl.com/cambs-constitution>.

The Council does not guarantee the provision of car parking on the Shire Hall site and you will need to use nearby public car parks <http://tinyurl.com/ccf-car-park> or public transport

GENERAL PURPOSES COMMITTEE: MINUTES

Date: Tuesday, 25th October 2016

Time: 10.00a.m. – 12.55p.m. (*adjourned to 27 October 2016*)

Present: Councillors Bailey, Bates, D Brown, Bullen, Cearns, Count (Chairman), Hickford, Hipkin, Jenkins, Mason (substituting for Councillor Hipkin), Nethsingha, Orgee, Reeve, Schumann (substituting for Councillor McGuire), Walsh and Whitehead

Apologies: Councillors Dent, Hipkin and McGuire

264. DECLARATIONS OF INTEREST

There were no declarations of interest.

265. MINUTES – 20TH SEPTEMBER 2016 AND ACTION LOG

The minutes of the meeting held on 20th September 2016 were agreed as a correct record and signed by the Chairman. The Action Log and following update from the Vice-Chairman were noted:

- the Chairman of Assets and Investments Committee would be meeting Cottenham Parish Council regarding the development of land at Rampton Road, Cottenham on 9 November. Speaking as a Local Member, Councillor Mason, offered to provide any assistance required and attend the meeting.

266. PETITIONS

No petitions were received.

267. FINANCE AND PERFORMANCE REPORT – AUGUST 2016

The Committee was presented with the August 2016 Finance and Performance report for Corporate Services and LGSS Cambridge Office. A year-end overspend on revenue of £179k was being forecast which included for Corporate Services £301k attributable to the Corporate Capacity Review (CCR) and for LGSS Managed £213k attributable to the wired area network and the roll out of laptops. Financing costs were currently predicting an underspend of £250k for the year. It was noted that further work was taking place to bring the CCR overspend down. The Chairman stressed the importance of reducing the overspend and thanked officers for their continuing work in this area. Some Members raised the following in relation to the report:

- queried how many of the Freedom of Information requests detailed on page 31 had been received from Councillors. The Director Customer Services and Transformation was asked to investigate. **Action Required.**

- queried why there was an overspend in IT Services in the LGSS Cambridge Office. It was noted that the expenditure related to staffing. One Member requested more information on what other actions were being taken to achieve savings in the LGSS Cambridge Office. **Action Required.**
- welcomed the reduction in the overspend attributable to CCR but queried who was monitoring staff leaving or staying. The Director Customer Services and Transformation reported that it was now clear who had been successful as part of the new structure. A number of staff were therefore leaving either voluntarily or as a result of the restructure. There was a three month transitional period to enable knowledge to be transferred to new teams. A longer period of notice had been negotiated to cover some areas of critical risk.
- queried who had overseen the CCR and whether the impact on staff morale and retention was being monitored. One Member was particularly concerned about the loss of expertise and the lack of Member involvement. It was noted that the CCR had been managed by the Chief Executive and Strategic Management Team (SMT). The Chief Executive highlighted the importance of the review which had been proposed as part of the Council's Peer Review in 2013. She acknowledged that redundancies would inevitably have an impact on staff morale. SMT therefore needed to understand this impact and take a dynamic lead in managing the new set of corporate capacity jobs. Energising and transforming services was vital in order to continue providing services to vulnerable people. It was noted that staff made redundant would be helped to find jobs outside the organisation. The Chairman of Staffing and Appeals Committee confirmed that he had regular meetings with the Chief Executive. He also drew attention to the action log where it was noted that a report on staff performance management would be brought to the Committee.
- queried the impact of a fall in the pound and possible increase in interest rates and whether both issues were being monitored. The Committee was informed that both issues were monitored very closely and any changes would be fed back quickly. The Chairman added that if interest rates did change they would not impact on areas where they had been fixed. However, it would affect the Council's ability to borrow in the future or refinance.
- requested an explanation regarding the contractual provision in relation to Capita/Mouchel latent defect corrections detailed on page 34. It was noted that this contract had been brought to an end several years ago. As it became clear that the corrections were not required funding had been released accordingly.
- the need to review the performance measurement for Deprivation measure – Number of physically active adults (narrowing the gap between Fenland and other) which did not provide any information about narrowing the gap and was measured as a percentage rather than a number. The Chairman added that this measure should be reported monthly or quarterly in order to monitor progress and target action effectively. There was also some discussion as to whether this measure should be monitored by Health Committee or General Purposes Committee (it should not be monitored by both) and clarification was requested. The Director of Customer Services and Transformation was asked to review the issues. **Action Required.**

- the need to expand the performance table to reflect the information in Appendix 7 so that it was easier for the public to understand. It was noted that the measure reflecting the proportion of all transformed transaction types to be completed online by 31 March 2015 would be reported in November and not October.

It was resolved unanimously to review, note and comment upon the report.

268. INTEGRATED RESOURCES AND PERFORMANCE REPORT FOR THE PERIOD ENDING 31ST AUGUST 2016

The Committee received a report detailing the financial and performance information to assess progress in delivering the Council's Business Plan. Attention was drawn to the forecast year-end of overspend of £1.9m which was an increase of £1.3m on the position reported last month. The change was due to an increase in Children, Families and Adults (CFA) overspends, particularly in Looked After Children (LAC). Members were informed that the Capital Programme was near profile with £6m of the £25m being utilised. The programme was being monitored closely by the Capital Programme Board.

The Chairwoman of the Children and Young People Committee (CYPC) reported that all councils had agreed an approach to reduce the cost of agency staff and the numbers had been reduced. The Children's Change Programme would help reduce the number even further.

One Member queried whether the reduction in the proportion of children in year 12 taking up a place in learning was as a result of the cost of transport. The Chairwoman of CYPC drew attention to the negligible fluctuation in this measurement and the fact there had been no impact on the Not in Education, Employment and Training measurement. She added that she was not aware of any difficulties but it was important to note that transport was provided for those young people from disadvantaged backgrounds. Councillor Bailey reported that she was a member of the Needham's Foundation which gave out grants for education. However, it had not received enough requests coming forward. It was proposed that the Foundation's e-mail should be added to the letter to young people. The Chairman requested a short briefing note detailing the issues to establish whether there was a need for substantive work. **Action Required.**

One Member requested information as to what was being done to address the target relating to delayed transfers of care. The Chairman reminded the Committee that he had queried at the previous meeting the element which related to the Council. He was surprised that the status was not amber as there was some variance allowed. The Chief Executive highlighted the importance of the whole system working together. The Council was currently working with the Clinical Commissioning Group and Addenbrooke's with a meeting planned for week beginning 31 October. The Vice-Chairwoman of Adults Committee reported that although the number attributable to adult social care had gone up recently, there was overall a significant trend downwards with a 40% reduction. The Chairman reminded the Committee that he had asked the Chief Executive to take action to help the media understand the background.

Another Member queried whether the table on page 65 reflected historic Section 106 contributions such as for the development at Northstowe. It was noted that the table reflected the funding of this year's capital programme. However, there was a separate mechanism to record outstanding Section 106 monies.

It was resolved unanimously to:

Analyse resources and performance information and note any remedial action currently being taken and consider if any further remedial action was required.

269. LOOKED AFTER CHILDREN STRATEGY AND SAVINGS

The Committee considered a report on the Looked After Children (LAC) Strategy to date and savings delivery. Attention was drawn to the fact that there was not sufficient funding in the budget to support LAC to meet demand at a safe level for Cambridgeshire. The strategic approach taken to date had not always had the desired impact by not being focussed on the right areas. Attention was drawn to an analysis of the LAC population which had been growing over the last three years beyond projection. There were currently 645 LAC, and approximately 65 unaccompanied asylum seeker children funded directly by government. In considering the report, Members commented as follows:

- highlighted the fact that the CIPFA benchmarking of a £4m average was not a guarantee as some authorities spent lower and others higher.
- welcomed the opportunity to understand fully the link regarding the increased mental health needs in children and young people.
- queried whether the Council was subsidising unaccompanied asylum seeker children. The Interim Service Director, Children's Social Care (Interim Director) reported that the whole placement cost was reclaimable from government. However, the Council was keen to ensure that these children received the necessary support such as the Virtual School and other support services in order to achieve a positive outcome. As far as she was aware government funding would not be removed for these children in the future.
- queried how the Council compared to its statistical neighbours. The Interim Director reported that performance data was considered by the Corporate Parenting Panel which focussed on key indicators such as placement moves. This indicator was at a medium level compared to the Council's statistical neighbours. It was noted that there would be a Transformation Fund request relating to foster carers in the future.
- expressed concern about children moving from foster placements many times and children being left suffering abuse and neglect as they would be more costly to look after in the future. The Interim Director reported that the Council needed to manage the balance appropriately with regard to intervening. It was noted that there were currently 24 unborn children with child protection plans. However, it was also important to note that a child was never left a risk.

- queried the action being taken to stop this becoming an annual event. The Interim Director drew attention to financial modelling underway as detailed in Section 7.7 to manage pressures and deliver savings. She added that re-baselining and a decrease in the number of LAC would enable the Service to achieve its savings. However, it was important to remember that a 10% change was a significant challenge.
- queried the scope for the prevention agenda in relation to how the Council supported communities and families. It was noted that the Council had a wide range of prevention services. However, it did need to target these services more effectively.

It was resolved unanimously to:

- note the identified pressures in the placements budget and the associated savings proposals and agree that these need to be addressed through the wider business planning process.

270. TRANSFORMATION FUND BIDS

The Committee received a report setting out requests for investments from the Transformation Fund that were required to deliver transformational improvements in service delivery and associated savings within the 2017-22 business plan. A brief presentation was received in relation to the following four requests:

- Enhanced Intervention Service for children with disabilities;
- Link workers within adult mental health services;
- Systemic family meetings offered at an earlier stage to increase the number of children diverted from care; and
- Improving commercial governance and investing in procurement savings opportunities.

Members made the following comments in relation to the requests:

Enhanced Intervention Service for children with disabilities

- queried whether the NHS was contributing to the proposal. Attention was drawn to the need to ensure partnerships, schools and health in particular were on board as detailed on page 101. The Interim Director, reported that health was on board and working with the County Council. However, this proposal was about investing in additional County Council staff; it was a social work project around family therapy rather than psychiatry which would be health. One Member commented that he believed that there should be greater commitment from health to this project. The Chairman queried whether it was possible to draw up a list of savings delivered to the NHS. Members noted that this proposal would have less pressure on the adult economy whether it was in relation to the core family or health care. The Interim Director acknowledged the importance of engagement with health colleagues to provide a lifelong service. The Chairman commented that health and social care had been integrated in the Manchester devolution deal.

- highlighted the fact that the proposal was not just about money, time and effort were also crucial. One Member commented that there was a considerable overlap between Educational Psychologists and Psychologists. It was therefore difficult to allocate funding responsibility to one or the other.
- queried the impact on the family of children with disabilities remaining at home. The Interim Director reported that the Council was always learning and growing from research which had shown that there was a positive impact if children with disabilities were cared for within their family. She acknowledged that this might not be the case for some children but she was confident that the Council would make the best plan for the child.
- queried why the impacts on specific groups with protected characteristics section on page 103 had not been completed. The Interim Director apologised for this error.
- queried what would happen to the three people being engaged as part of the project after it ended in two years. Members were informed that it would be included as part of mainstream work essentially by upskilling the existing workforce. One Member commented that the current assumption was that no additional expenditure would be needed to deliver the level of savings. The Chairwoman of CYPC reported that a Clinical Psychologist might be needed.
- highlighted the need to avoid cutting and pasting the draft community impact assessment in the future as it made frustrating reading.
- the need to review the return rate on page 99 which should be 1,232%.

Link workers within adult mental health services

- highlighted the importance of monitoring the reality of the proposal. The Chairwoman of CYPC suggested that most of these bids would inevitably report to her Committee as part of the business plan process. The Chairman requested that the reporting process should be identified. **Action Required.**
- queried the involvement of the Police in this proposal. The Interim Director reported that Children's Services was looking at the impact of adults taking drugs or abusing alcohol, which involved working proactively with the Police.
- queried again why the impacts on specific groups with protected characteristics section on page 105 was incomplete.
- queried what was meant by a reasonable assumption that 12 (8%) of these 160 children would be diverted from care per year. The Interim Director reported that this figure was based on 400 case files out of a total caseload of 2,500. She explained that more than a 10% change in the demographic group was ambitious.
- the need to avoid double counting adults by checking the assumptions in the financial modelling.

Systemic family meetings offered at an earlier stage to increase the number of children diverted from care

- welcomed this proposal focusing on the use of wider family as an asset.

Improving commercial governance and investing in procurement savings opportunities

- welcomed this innovative approach based on a commercial model of payment by results. It was clarified in relation to the last bullet on page 118 that this would be termination by the County Council.
- queried the membership of the Commercial Board. It was noted that it would include the Chairman of Assets and Investments and the Chief Finance Officer.
- queried the figures of £400k and £2m. It was noted that the first figure came from the Transformation Fund and the second figure was the estimated contracting savings. One Member commented that there would be an ongoing cost to this proposal.
- highlighted the need to commence this proposal and all the other proposals now rather than at the start of the next financial year. It was noted that the proposals would start as soon as possible to deliver savings in next year's budget.

It was resolved unanimously to approve the following business cases and associated investment from the Transformation Fund for:

- a) Enhanced Intervention Service for children with disabilities;
- b) Link workers within adult mental health services;
- c) Systemic family meetings offered at an earlier stage to increase the number of children diverted from care; and
- d) Improving commercial governance and investing in procurement savings opportunities.

271. WISBECH COMMUNITY LED LOCAL DEVELOPMENT FUND

Members received an overview of the Wisbech Community Led Local Development (CLLD) fund. The Committee was asked to agree the Council's financial contribution to the management and administration costs, which would enable Cambridgeshire ACRE to bid into the fund as the Accountable Body for a Wisbech Programme. Attention was drawn to the proposal which was for a £2.1m programme which levered in £1.05m European Social Fund investment. It was noted that Wisbech CLLD offered a longer-term approach that builds sustainability and community capacity to manage funding, decision-making and strategy. It would also feed into the community strand of the Wisbech 2020 work. A copy of the Local Development Strategy was circulated at the meeting.

The Chairman reported that he supported fully the proposal which could help break the cycle of deprivation in Wisbech. One Member queried the lack of reference to Local Member involvement in the report. In response, the Chairman reported that Councillor Hoy and the Town Council were behind this proposal.

It was resolved unanimously to:

- agree the proposal for the County Council to give a commitment to contribute £21,400 per annum for five years to the management and administration costs of the programme.

272. SERVICE COMMITTEE REVIEW OF DRAFT REVENUE BUSINESS PLANNING PROPOSALS FOR 2017/18 TO 2021/22

The Committee received a report detailing an overview of the draft Business Plan Revenue Proposals for Corporate and LGSS Managed Services, and cross-Council proposals that were within its remit. Members noted the overview of the Council's position which outlined how transformation would contribute towards balancing the budget. Section four outlined the draft proposals that had been developed so far in the process. A considerable amount had taken place to prepare an early draft and further work would be required by senior officers to identify how to close the funding gap. It was noted that E in the table on page 125 should be D.

One Member raised concern that the Government was suggesting that the Revenue Support Grant (RSG) might go negative for the period of the budget. The Chairman acknowledged that the position was not clear. However, the RSG would not go negative for the period up to 2018/19. It was noted that the Government was asking local authorities to sign up to a multi-year settlement by 26 October 2016. Following protests regarding the acceptability of this deadline and the lack of information, the Government had moved its deadline to 28 October 2016. The Chairman suggested that officers should be asked to prepare a full briefing note for Members. **Action Required.**

Following a discussion, it was resolved unanimously to:

- adjourn the meeting to consider this item only, with the assistance of a briefing note providing additional information, to 4.30p.m. on Thursday 27 October 2016.

273. DRAFT 2017-18 CAPITAL PROGRAMME AND CAPITAL PRIORITISATION

The Committee receive an overview of the full draft Business Plan Capital Programme and results from the capital prioritisation process.

The Chairwoman of CYPC drew attention to the significant demographic pressure of school age children as reflected in the amount of school building. She questioned whether 1.4% for demography was correct. It was noted that this reflected the general population increase although the revenue costs of schools was funded by grant.

Another Member queried why the costs of schools in Section 4.5 had increased particularly given the deflation in building costs. The Chairman requested that this

information together with the benchmarking on schools report considered by Assets and Investments Committee should be circulated to the Committee. It was agreed to take a report to the Capital Board and then circulate the response to the Committee. **Action Required.**

Another Member queried why developer contributions were not reflected for a number of schemes on pages 182 to 183. It was suggested that this reflected the issue relating to the Community Infrastructure Levy (CIL). Huntingdonshire District Council was refusing to pass on CIL funding to the County Council. It was acknowledged that there needed to be equitable contributions from all Districts. The Chairman of Economy and Environment Committee agreed to provide the Committee with a briefing note relating to this issue. **Action Required.** It was also noted that the spending profile was less than the one reflected on page 196 relating to Community Hubs-Sawston.

It was resolved unanimously to note:

- a) the overview and context provided for the 2017-18 Capital Programme;
- b) comment on the results of the capital prioritisation process, taking into consideration the most up to date estimations for financing costs and the overall revenue position; and
- c) comment on the draft proposals for the full 2017-18 Capital Programme and endorse their development.

274. LEVEL OF OUTSTANDING DEBT

The Chairman, with the agreement of the Committee, withdrew the report in order to allow more work to be carried out in relation to how much debt was being written off and how different kinds of debt should be managed. A report would be presented to the December meeting. **Action Required.**

275. GENERAL PURPOSES COMMITTEE AGENDA PLAN, TRAINING PLAN APPOINTMENTS TO OUTSIDE BODIES, PARTNERSHIP LIAISON AND ADVISORY GROUPS AND INTERNAL ADVISORY GROUPS AND PANELS

The Committee considered its agenda plan and training plan, and noted the following changes to the agenda plan:

- move "County Council Elections 2017", "Buurtzorg Business Case", "Community Hubs" to December.

Adjourned and reconvened as follows

Date: Thursday, 27th October 2016

Time: 4.32p.m. – 5.55p.m.

Present: Councillors Bailey, Bates, D Brown, Bullen, Cearns, Count (Chairman), Dent, Hickford, Hipkin, Jenkins, Mason (substituting for Councillor Hipkin),

Nethsingha, Orgee, Reeve, Schumann (substituting for Councillor McGuire), Walsh and Whitehead

Apologies: Councillors Hipkin and McGuire

272. SERVICE COMMITTEE REVIEW OF DRAFT REVENUE BUSINESS PLANNING PROPOSALS FOR 2017/18 TO 2021/22

The Committee reconvened to consider a report detailing an overview of the draft Business Plan Revenue Proposals for Corporate and LGSS Managed Services, and cross-Council proposals that were within its remit. Members had also received, as requested, a briefing note on the multi-year settlement and efficiency plan. The Chairman reported that he had spoken to Marcus Jones, Parliamentary Under Secretary of State (Minister for Local Government), who had confirmed that it was the Government's intention to introduce a full Business Rates Retention System (BRR) by 2019/20. There would be no Revenue Support Grant (RSG) for any local authority. He added that there needed to be an assessment of the amount of BRR the Council would receive that year. During a detailed discussion, the following points were raised by some Members:

- disappointment at the way the Government was conducting business. However, all the available information had been presented to the Committee in a very short period of time. It was noted that the Council would not be in a worse position if it accepted the multi-year settlement with a caveat reflecting that. It would therefore be remiss to the people of Cambridgeshire if the Council did not commit to this position which provided a degree of certainty.
- disappointment at the timescale for responding to DCLG who had only extended its deadline by two days. One Member commented that the way central government was behaving gave Councillors no faith whatsoever in the reliability of its promise that the Council would not be in a worse position. There was concern that the Council was being asked to agree a four-year settlement on information it did not have and in relation to the BRR it was being asked, based on no information, to take this on trust.
- welcomed multi-year agreements. However one Member suggested that what the Government was trying to do ran contrary to this approach. The Chairman reminded the Committee that the Government Settlement had made clear the forecasts for 2017/18 and 2018/19; the forecasts for 2019/20 onwards had always been assumptions.
- expressed concern that the Council could have to give £7.1m of its BRR contribution to central government therefore giving it a negative RSG in 2019/20. One Member reminded the Committee that the Government had stated that the Council would not be worse off if it accepted the multi-year settlement but it could be less for those authorities which preferred not to have a four year settlement as they would be subject to a yearly negotiating process. The Chairman added that these Councils could be excluded from any distribution formula and might also have to share any future funding cuts to local government.

- expressed concern that the Council was being asked to accept the multi-year settlement without any mitigation. One Member stressed the need to sort out the BRR pilot first. The Chairman reminded the Committee that the Council was part of the pilot and was currently receiving additional funding. He commented that it was difficult to get a BRR figure for the whole country as everyone had a different idea of what constituted a needs assessment.
- queried whether the Government would be reducing its control over Council Tax. The Chairman explained that there was no proposed change to government policy on Council Tax. The Chief Finance Officer (CFO) added that there was no plan to remove the Council Tax Regulations.
- queried whether the Council could trust the Government to ensure it was not worse off than had it not accepted the settlement. One Member commented that Cambridgeshire already suffered under the settlement process. He confirmed that he could not support a process which might undermine Cambridgeshire's position even further. He reported that there was no evidence that Cambridgeshire would benefit as part of BRR as it was possible funding would be channelled towards depressed local authorities. The Chairman explained that he was not planning for a hopeful settlement in year four but wanted the certainty that the Council would not be worse off.
- queried whether there was reasons to believe that the Government would accept the Council's caveat in Option 2 that it cannot be worse off than had it not accepted the settlement. It was noted that although it was the Government's stated position, there had been no definitive evidence provided such as Regulations for example. One Member suggested that the statement in 3.3 undermined the Government's position.
- queried whether the Council could mount a legal challenge to the Government's proposal to take £7.1m in 2019/20. The Chairman reported that he had checked with the LGSS Director of Law and Governance who had confirmed that a challenge could not be mounted.
- queried how many local authorities had accepted the multi-year settlement. The CFO believed that over 80% had accepted which was based on the Local Government Association Survey taken before the new information from Government. The Chairman reported that he had made contact with 14 upper tier/unitary authorities and all had accepted except for Surrey. The CFO reported of the 15 authorities receiving negative RSG in 2019/20 only Surrey and Lancashire had rejected the settlement.
- queried whether the Committee could constitutionally make a decision given the timing of the additional information. It was noted that the first meeting had been published according to the statutory timescales. The Committee had decided to adjourn this meeting to enable it to receive a briefing note to help it make a decision in relation to this item. The date of the reconvened meeting had been published on the Council's website. The Committee could therefore make a decision at the reconvened meeting. One Member felt that the decision should actually be taken by full Council.

Councillor Jenkins proposed an amendment detailed below, seconded by Councillor Walsh:

Additional recommendation

refuse the multi-year settlement but argue the case that Cambridgeshire should not be disproportionately hit by funding reductions because of its current underfunding and its role as an engine of economic growth.

The Chief Finance Officer in acknowledging the Committee's frustration advised in his professional capacity as Section 151 officer that the Committee should accept the multi-year settlement with the caveat to the submission that the Council cannot be worse off than had it not accepted the settlement. He was of the view that the Council would be in a better position to secure funding in the future. Although a negative RSG was unpalatable, the Council would be able to draw from BRR pooling.

One Member suggested that Option 1 - accept the multi-year settlement as it was currently offered could mean the Council losing £7.1m whilst Option 4 refuse the multi-year settlement could mean the Council losing zero funding. The Chairman explained that whilst Members proposing to refuse the four-year settlement (Option 4) did so because they were worried about what might or might not happen in 2019/20. Pursuing Option 4 potentially risked the £15m the Council was expecting to receive for next year's budget. In summarising the situation, the Chairman suggested the Committee needed to consider carefully the impact on the £15.3m settlement for 2017/18 in both scenarios, noting that if the four year deal was accepted it would be forthcoming, but if the four year deal was rejected the £15.3m could be at risk and urged the Committee to listen to the independent advice of the S151 officer.

Before putting the recommendation to the vote, as permitted under Part 4 - Rules of Procedure, Part 4.4 - Committee and Sub-Committee Meetings, Section 18 Voting of the Council's Constitution, the majority of members of the committee requested a recorded vote. The amendment on being put to the vote was carried.

[Councillors Bullen, Cearns, Dent, Jenkins, Mason, Nethsingha, Reeve, Walsh and Whitehead voted in favour; Councillors Bailey, Bates, D Brown, Count, Criswell, Hickford, Orgee, Schumann voted against]

The Committee raised issues in relation to the rest of the report as follows:

- the need for the Council to access as much as possible of the nationwide pool resulting from the Apprenticeship Levy. The Chairman asked officers to work up a proposal to increase the amount to be accessed so that it at least balanced out the funding the Council was paying as part of the levy. **Action Required.**
- requested information regarding the savings identified for the Total Transport project on page 139. **Action Required.**
- the need for further organisational structure review to reflect crossing cutting outcomes.

- the need to increase Council Tax was proposed by one Member and opposed by another Member of the Committee.

With the agreement of the Council, the Committee withdraw recommendation c) which had already been agreed at a previous meeting and replaced it with the amendment agreed at the meeting.

It was resolved to:

- a) note the overview and context provided for the 2017/18 to 2021/22 Business Plan revenue proposals for the Service.
- b) comment on the draft revenue savings proposals that were within the remit of the General Purposes Committee for 2017/18 to 2021/22.
- c) refuse the multi-year settlement but argue the case that Cambridgeshire should not be disproportionately hit by funding reductions because of its current underfunding and its role as an engine of economic growth.

Chairman

GENERAL PURPOSES COMMITTEE

Minutes-Action Log



Introduction:

This log captures the actions arising from the General Purposes Committee on 25th October 2016 and updates members on the progress on compliance in delivering the necessary actions.

This is the updated action log as at 21st November 2016.

Minutes of 25th October 2016

Item No.	Item	Action to be taken by	Action	Comments	Completed
267.	Finance and Performance Report – August 2016	S Grace	Request to find out how many of the Freedom of Information requests detailed on page 31 had been received from Councillors.	As at 8 November, there were 6 cases recorded as coming from Councillors since the start of 2016.	Yes
		S Grace	Request to receive more information on what other actions were being taken to achieve savings in the LGSS Cambridge Office.	This savings target has been reallocated across LGSS services to ensure the LGSS Cambridge Office comes in on budget	Yes

Item No.	Item	Action to be taken by	Action	Comments	Completed
		S Grace	<p>The need to review the performance measurement for Deprivation measure – Number of physically active adults (narrowing the gap between Fenland and other) which did not provide any information about narrowing the gap and was measured as a percentage rather than a number.</p> <p>This measure should be reported monthly or quarterly in order to monitor progress and target action effectively.</p> <p>The need to clarify whether this measure should be monitored by Health Committee or General Purposes Committee.</p>	<p>This measure is based on the Active People Survey undertaken by Sport England. It is also reported to the Health Committee. The Public Health Finance and Performance report Sep 2016 (reported to the Health Committee meeting 10 Nov 2016 App 7) provides further information, including expressing the gap between Fenland and Cambridgeshire.</p> <p>The main work that affects this indicator is overseen by Health Committee and delivered by Public Health directorate. The Health Committee approved the delivery of a new locality based programme to increase physical activity called 'Cambridgeshire Let's Get Moving' on 10 Nov 2016.</p> <p>It is therefore recommended for clarity that this indicator is removed from the Corporate Services and LGSS Cambridge Office scorecard and overseen by the Health Committee.</p>	Yes
268.	Integrated Resources and Performance Report for the Period Ending 31st August 2016	K Grimwade/ C Malyon	Requested a short briefing note detailing the issues such as transport in relation to the proportion of children in year 12 taking up a place in learning to	There is no evidence from parental or school feedback that the slight reduction in the proportion of children in year 12 taking up a place in learning as a result of the cost of transport. In February 2017 we will receive data from, and about, this	Yes

			establish whether there was a need for substantive work.	group of children that will give us objective evidence. We will report back to GPC at this point.	
270.	Transformation Fund Bids	C Malyon	Requested that the monitoring process for Transformation Bids should be identified.	<p>GPC will ensure fit with the Council's strategic framework and transformation programme, approve investment and monitor delivery of agreed financial return via a savings tracker.</p> <p>Service committees will own initiatives, driving pace and providing support and challenge to ensure delivery of intended benefits.</p> <p>Monitoring reports on delivery and benefits realisation will be available to all members through the transformation pipeline dashboard and underlying documentation.</p>	Yes
272.	Service Committee Review of Draft Revenue Business Planning Proposals for 2017/18 to 2021/22	C Malyon	Briefing note to be prepared on the Multi-Year Settlement and Efficiency Plan		Yes

	Service Committee Review of Draft Revenue Business Planning Proposals for 2017/18 to 2021/22	C Malyon	<p>Officers to work up a proposal to increase the amount to be accessed from the pool so that it at least balanced out the funding the Council was paying as part of the levy.</p>	<p>Work is progressing well with the Apprenticeship levy in Cambridge. Services have started to identify where potential apprentices could be placed, and work is taking place to map these roles against the national apprenticeship framework to determine the training that will be required.</p> <p>The government will be releasing more information on how the levy will be calculated in December. This will give us a definitive answer on how to calculate the cost of the levy payments. LGSS Learning and Development are developing in house courses and also sourcing external training providers to fill the gaps in training provision. Training providers will receive confirmation from the government if they have been successful in gaining apprenticeship accreditation in March, so it is expected that training against the new apprenticeships frameworks will be available from May 2017 onwards.</p> <p>In terms of the money, the first levy payments will be taken from payroll at the end of April with digital accounts being available to pull upon from May 2017. The actual levy payments paid each month will vary according to the pay bill that month, but we have 24 months to pull back from the levy before this money is lost. This does mean that it is likely that</p>	Yes
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		C Malyon	Requested information regarding the savings identified for the Total Transport project on page 139.	<p>we will build up some money in the account at the start of the financial year. However, the Workforce Planning and Strategy team will continue to work with services on an ongoing basis to develop apprenticeship routes so we maximise the amount of money that we pull back from the levy.</p> <p>The original business case for a limited investment in smartcard technology indicated savings at 5% over the next three years. The proposal was produced prior to Phase 1 of the Total Transport pilot, and used some of the approach taken in that pilot. The figures shown in the GPC agenda pack relate to this business case.</p> <p>The initial evaluation of Phase 1 of the pilot indicated a saving of 18.7% from Phase 1 – whilst this may be eaten into over the rest of the school year, it is significantly higher than the 5% referred to above.</p> <p>It was suggested a more ambitious business case could be developed, targeting more savings more quickly – closer to the 18% in one “big bang”, rather than 5% phased.</p> <p>Therefore an updated business case that would look to deliver a 15% saving in one go, from September 2017 has been</p>	Yes
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				produced. This replaces the original business case, therefore the figures in the GPC agenda pack are no longer current.	
273.	Draft 2017-18 Capital Programme and Capital Prioritisation	C Malyon Cllr Bates B Menzies	Requested information in relation to the deflation in building costs together with the benchmarking on schools report considered by Assets and Investments Committee be circulated to the Committee. Also asked for information detailing why there had been an increase in the cost of borrowing for schools detailed in section 4.5. It was agreed to take a report to the Capital Board and then circulate the response. The Chairman of Economy and Environment Committee to provide a briefing note on the provision of CIL funding to the Cambridgeshire County Council.	Benchmarking report and details on the increased costs shown in section 4.5 were emailed to GPC Members on 7 Nov and circulated to Capital Programme Board members.	Yes
274.	Level of Outstanding Debt	C Malyon	Report withdrawn to the December meeting.	On agenda for December meeting.	Yes

FINANCE AND PERFORMANCE REPORT – SEPTEMBER 2016

To: **General Purposes Committee**

Meeting Date: **29 November 2016**

From: **Director of Customer Service and Transformation
Chief Finance Officer**

Electoral division(s): **All**

Forward Plan ref: **Not applicable** *Key decision:* **No**

Purpose: **To present to General Purposes Committee (GPC) the September 2016 Finance and Performance Report for Corporate Services and LGSS Cambridge Office.**

The report is presented to provide GPC with an opportunity to comment on the projected financial and performance outturn position, as at the end of September 2016.

Recommendation: **The Committee is asked to review, note and comment upon the report.**

<i>Officer contact:</i>	
Name:	Chris Malyon
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Tel:	01223 699796

1. BACKGROUND

- 1.1 General Purposes Committee receives the Corporate Services and LGSS Cambridge Office Finance and Performance Report at all of its meetings, where it is asked to both comment on the report and potentially approve recommendations, to ensure that the budgets and performance indicators for which the Committee has responsibility, remain on target.

2. MAIN ISSUES

- 2.1 Attached as **Appendix A**, is the September 2016 Finance and Performance report.

- 2.2 **Revenue:** At the end of September, Corporate Services (including the LGSS Managed and Financing Costs) is forecasting a year-end overspend on revenue of £54k.

Financing Costs are predicted to underspend by £250k at year-end.

There are no new significant forecast outturn variances by value (over £100,000) to report for Corporate Services / LGSS Managed.

The LGSS Operational budget is forecasting a year-end overspend on revenue of £246k. This element of the budget is monitored by the LGSS Joint Committee and is not the responsibility of General Purposes Committee.

- 2.3 **Capital:** At the end of September, Corporate and LGSS Managed are forecasting that the capital budget will be fully spent in 2016-17. There are three significant forecast outturn variances by value (over £500k) reported in section 3.2 of the report.

At the end of September, LGSS Operational is forecasting that the capital budget will be fully spent in 2016-17. There are no new significant forecast outturn variances by value (over £500,000) to report

- 2.4 Corporate Services / LGSS have nine **performance indicators** for which data is available. Five indicators are currently at green status, two at amber and two red.

3. ALIGNMENT WITH CORPORATE PRIORITIES

3.1 Developing the local economy for the benefit of all

There are no significant implications for this priority.

3.2 Helping people live healthy and independent lives

There are no significant implications for this priority.

3.3 Supporting and protecting vulnerable people

There are no significant implications for this priority.

4. SIGNIFICANT IMPLICATIONS

4.1 Resource Implications

This report sets out details of the overall financial position for Corporate Services / LGSS and this Committee.

4.2 Statutory, Risk and Legal Implications

There are no significant implications within this category.

4.3 Equality and Diversity Implications

There are no significant implications within this category.

4.4 Engagement and Consultation Implications

There are no significant implications within this category.

4.5 Localism and Local Member Involvement

There are no significant implications within this category.

4.6 Public Health Implications

There are no significant implications within this category.

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	N/A
Has the impact on Statutory, Legal and Risk implications been cleared by LGSS Law?	N/A
Are there any Equality and Diversity implications?	N/A
Have any engagement and communication implications been cleared by Communications?	N/A
Are there any Localism and Local Member involvement issues?	N/A
Have any Public Health implications been cleared by Public Health	N/A

Source Documents	Location
CS and LGSS Cambridge Office Finance & Performance Report (Sept 16)	1 st Floor, Octagon, Shire Hall, Cambridge

Corporate Services and LGSS Cambridge Office

Finance and Performance Report – September 2016

1. SUMMARY

1.1 Finance

Previous Status	Category	Target	Current Status	Section Ref.
N/A	Income and Expenditure	Balanced year end position	Amber	2.1 – 2.4
N/A	Capital Programme	Remain within overall resources	Green	3.2

1.2 Performance Indicators – Current status: (see section 4)

Monthly Indicators	Red	Amber	Green	Total
September (Number of indicators)	2	2	5	9

2. INCOME AND EXPENDITURE

2.1 Overall Position

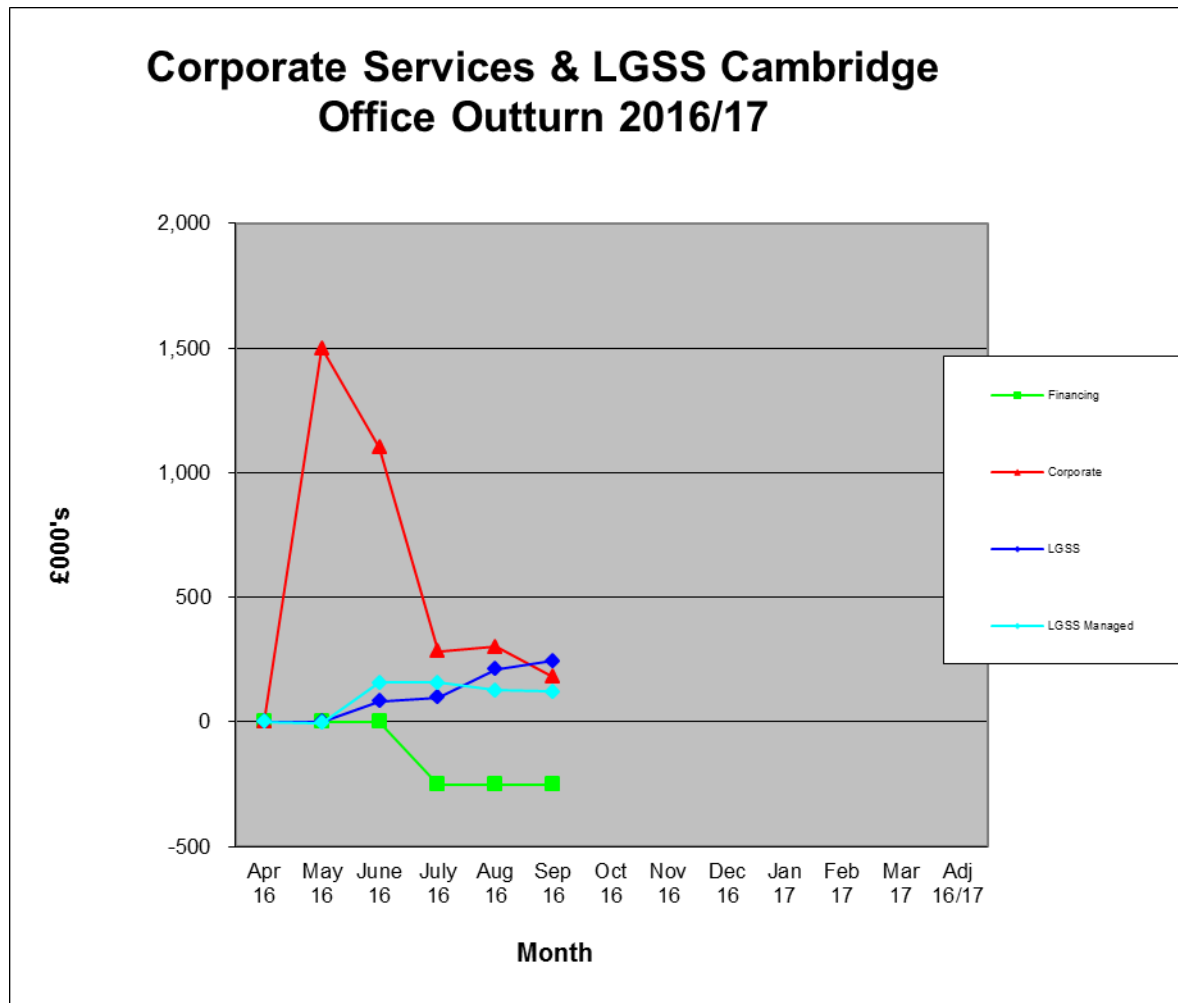
The budget figures in this table are net, with the 'Original Budget as per BP' representing the Net Budget column in Table 1 of the Business Plan for each respective Service. Budgets relating to Assets and Investments Committee have been disaggregated from these figures.

Original Budget as per BP ⁽¹⁾	Directorate	Current Budget	Forecast Variance - Outturn (August)	Forecast Variance - Outturn (Sept)	Forecast Variance - Outturn (Sept)	Current Status	DoT
£000		£000	£000	£000	%		
4,674	Corporate Services	4,830	301	181	4	Amber	↑
6,010	LGSS Managed	6,004	128	123	2	Amber	↑
34,206	Financing Costs	34,206	-250	-250	-1	Green	↔
44,890	Sub Total	45,040	179	54			
9,589	LGSS Cambridge Office	9,682	213	246	3	Amber	↓
54,479	Total	54,723	392	300			

The service level budgetary control report for Corporate Services, LGSS Managed and Financing Costs for September 2016 can be found in [CS appendix 1](#).

The service level budgetary control report for LGSS Cambridge Office for September 2016 can be found in [LGSS appendix 1](#)

Further analysis of the results can be found in [CS appendix 2](#) and [LGSS appendix 2](#)



2.2.1 Significant Issues – Corporate Services

- Corporate Services is currently predicting a year-end overspend of £181k.
- There are no exceptions to report this month.

2.2.2 Significant Issues – LGSS Managed

- LGSS Managed is currently predicting a year-end overspend of £123k.
- There are no exceptions to report this month.

2.2.3 Significant Issues – Financing Costs

- Financing costs are unchanged since last month, and are currently predicting an underspend of £250k for the year.
- A £250k underspend is currently forecast for Debt Charges. This reflects the fall in the forecast for net interest payable following falls in interest rates across all parts of the yield curve. The impact of lower borrowing on the Debt Charges budget would normally result in a favourable forecast variance (due to lower interest payments). However the Debt Charges budget was reduced in anticipation of capital expenditure slippage during the budget setting process, so the magnitude of the variance reported is muted.

2.2.4 Significant Issues – LGSS Cambridge Office

- LGSS Cambridge Office is currently predicting an overspend of £246k. Any year-end deficit / surplus is subject to a sharing arrangement with Northamptonshire County Council and Milton Keynes Council and will therefore be split between partner authorities on the basis of net budget, with an equalisation adjustment processed accordingly at year-end. This will be incorporated into the report as outturn figures become available during the course of the year.
- There is a forecast deficit of £250k on the consolidated trading activities in place prior to April 2016. This will be ring-fenced and met, if necessary, from the LGSS Smoothing Reserve at year end.
- There are no exceptions to report this month.

2.3 Additional Income and Grant Budgeted this Period (De minimis reporting limit = £30,000)

There were no items above the de minimis reporting limit recorded in June.

A full list of additional grant income for Corporate Services and LGSS Managed can be found in [CS appendix 3](#).

A full list of additional grant income for LGSS Cambridge Office can be found in [LGSS appendix 3](#).

2.4 Virements and Transfers to / from Reserves (including Operational Savings Reserve) (De minimis reporting limit = £30,000)

The following virements have been made this month to reflect changes in responsibilities.

LGSS Managed:

	£	Notes
Non material virements (+/- £30k)	-6	

A full list of virements made in the year to date for Corporate Services, LGSS Managed and Financing Costs can be found in [CS appendix 4](#).

A full list of virements made in the year to date for LGSS Cambridge Office can be found in [LGSS appendix 4](#).

3. BALANCE SHEET

3.1 Reserves

A schedule of the Corporate Services and LGSS Managed reserves can be found in [CS appendix 5](#).

A schedule of the LGSS Cambridge Office Reserves can be found in [LGSS appendix 5](#).

3.2 Capital Expenditure and Funding

Expenditure

- Corporate Services has a capital budget of £48k in 2016/17 and there is £37k spend to date. It is currently expected that the programme will be fully spent at year-end and the total scheme variances will amount to £0k across the programme.

There are no exceptions to report for September.

- LGSS Managed has a capital budget of £4m in 2016/17 and there is spend to date of £1.8m. It is currently expected that the programme will be fully spent at year-end and the total scheme variances will amount to £0k across the programme.

Sawston Community Hub is expected to underspend by £945k in 2016/17 due to a delay in obtaining planning permission. As a result, construction work is not expected to start before February 2016 and some of the expenditure planned for 2016/17 will now be re-phased to 2017/18.

Microsoft Enterprise Agreement scheme is predicted to underspend by £500k in 2016/17. The final £500k payment for this scheme will be due in 2017/18, not 2016/17 as originally budgeted. The total scheme cost is unchanged and the expenditure will be re-phased to 2017/18.

As agreed by the Capital Programme Board, any forecast underspend in the capital programme is offset against the capital programme variations budget, leading to a balanced outturn overall. Slippage in the capital programme for LGSS Managed has exceeded its capital variation budget allocation. However, as the variation budget across the Council as a whole has not yet been fully utilised, at this stage this does not lead to an overall forecast underspend on the capital programme.

- LGSS Cambridge Office has a capital budget of £618k in 2016/17 and there is spend to date of £0k. It is currently expected that the programme will be fully spent at year-end and the total scheme variances will amount to £0k across the programme.

There are no exceptions to report for September.

Funding

- Corporate Services has capital funding of £48k in 2016/17 with the current expectation being that this continues to be required in line with the original budget proposals. There are no key funding changes to report.
- LGSS Managed has capital funding of £4m in 2016/17 and as reported above, a balanced budget is forecast at yearend.
- LGSS Cambridge Office has capital funding of £618k in 2016/17 with the current expectation being that this continues to be required in line with the original budget proposals.

A detailed explanation of the position for Corporate Services and LGSS Managed can be found in [CS appendix 6](#).

A detailed explanation of the position for LGSS Cambridge Office can be found in [LGSS appendix 6](#).

4. PERFORMANCE

4.1 The table below outlines key performance indicators for Customer Services and Transformation and LGSS Managed Services.

Measure	Reporting frequency	What is good	Unit	Data last entered	Target	Actual	RAG status	Direction of travel	Comments
Customer Service & Transformation									
Proportion of FOI requests responded to within timescales	Monthly	High	%	07/09/16	90.0%	87.0%	Amber	↓	117 Requests received and 102 Requests responded to on time. Team experienced significant IT difficulties as FOI Managing site was offline for 7 working days in August.
For context only - number of FOI requests received annually	Annually	Low	Num	05/07/16	N/A*	311	N/A	N/A	Running total will be collected quarterly. Data to be next reported on in October 2015 for Q2 2015/16.
Proportion of customer complaints received in the month before last that were responded to within minimum response times	Monthly	High	%	06/09/16	90.0%	83.6%	Amber	↓	
For context only - number of complaints received annually per thousand and population	Annually	Low	Num	12/07/16	N/A*	2.2**	N/A	N/A	Data to be next reported on in May 2016 for 2015/16
Proportion of all transformed transaction types to be completed online by 31 March 2015***	Annually	High	%	15/07/16	75.0%	55.83%.	Red	↓	
Deprivation measure - Number of physically active adults (narrowing the gap between Fenland and others)	Annually	High	%	24.03.16 (change to target and 2014 actual)	53.1% (2015) 54.1% (2016)	52.1% (2014)	TBC	N/A	Data to be reported on in May 2017 for year end.
LGSS Managed Services									
IT – availability of Universal Business System****	Half-yearly	High	%	28/07/16	95.0%	95.0%	Green	↑	To next be reported on in November 2016 for Q1 and Q2 2016/17.
IT – incidents resolved within Service Level Agreement	Half-yearly	High	%	28/07/16	90.0%	92.0%	Green	↓	To next be reported on in November 2016 for Q1 and Q2 2016/17.

The full scorecard for Customer Services and Transformation and LGSS Managed Services can be found at [CS appendix 7](#).

4.2 The table below outlines key performance indicators for LGSS Cambridge Office

Measure	Reporting frequency	What is good	Unit	Data last entered	Target	Actual	RAG status	Direction of travel	Comments
LGSS Cambridge Office									
Percentage of invoices paid within term for month	Monthly	High	%	01/10/16	97.5%	99.7%	Green	↑	99.6% last period
Percentage of invoices paid within term cumulative for year to date	Monthly	High	%	01/10/16	97.5%	99.6%	Green	↔	99.6% last period
Total debt as a percentage of turnover	Monthly	Low	%	01/10/16	10.0%	6.0%	Green	↓	5.6 % last period
Percentage of debt over 90 days old	Monthly	Low	%	01/10/16	20.0%	30.3%	Red	↑	34.2% last period

CS APPENDIX 1 – Corporate Service Level Budgetary Control Report

The variances to the end of September 2016 for Corporate Services, LGSS Managed and Financing Costs are as follows:

Original Budget as per BP £000	Service	Current Budget for 2016/17 £000	Forecast Variance - Outturn (August) £000	Forecast Variance - Outturn (September) £000	%
<u>Corporate Services</u>					
-846	Director, Policy & Business Support	-820	398	308	38
198	Chief Executive	198	-66	-66	-33
449	Corporate Information Management	449	0	0	0
1,305	Customer Services	1,382	0	0	0
381	Digital Strategy	381	0	0	0
237	Research	330	-4	-4	-1
0	Service Transformation	0	0	0	0
-1	Smarter Business	0	0	0	0
545	Strategic Marketing, Communications & Engagement	545	-10	-40	-7
165	Elections	165	0	0	0
908	Redundancy, Pensions & Injury	908	-18	-18	-2
1,434	City Deal	1,434	0	0	0
-101	Grant Income	-141	0	0	0
4,674		4,830	301	181	4
<u>LGSS Managed</u>					
141	External Audit	141	0	0	0
1,894	Insurance	1,894	0	0	0
1,869	IT Managed	1,863	139	150	8
1,020	Members' Allowances	1,020	0	0	0
131	OWD Managed	131	-12	-27	-21
108	Subscriptions	108	0	0	0
1,000	Corporate Redundancies	1,000	0	0	0
-53	Authority-wide Miscellaneous	-53	0	0	0
-100	Grant Income	-100	0	0	0
6,010		6,004	128	123	2
<u>Financing Costs</u>					
34,206	Debt Charges and Interest	34,206	-250	-250	-1
44,890	CORPORATE SERVICES TOTAL	45,040	179	54	0
<u>MEMORANDUM - Grant Income</u>					
-165	Public Health Grant - Corporate Services	-101	0	0	0
-100	Public Health Grant - LGSS Managed	-100	0	0	0
0	Other Corporate Services Grants	-40	0	0	0
-265		-241	0	0	0

CS APPENDIX 2 – Commentary on Forecast Outturn Position

Number of budgets measured at service level that have an adverse/positive variance greater than 2% of annual budget or £100,000 whichever is greater.

Service	Current Budget £'000	Forecast Variance - Outturn	
		£'000	%
Director, Policy & Business Support	-820	308	38%
<p>An overspend of £308k is predicted for Director, Policy & Business Support. Since last month the position has improved by £90k due to £40k in salary savings and £50k budgeted support for Corporate teams, which is not now required due to the ongoing work on Corporate Capacity Review.</p> <p>It is predicted that the Corporate Capacity Review will be unable to achieve the full year savings that were anticipated in Business Planning in the current year as a result of the unforeseen complexity and the capacity of the Council to manage a cross-organisation, multi-discipline restructure of this nature without a central resource to call upon to support its delivery, which led to a delay in the timing of the consultation process and thus the implementation of the restructure.</p> <p>A recruitment freeze has been in place since the consultation process commenced and although the position will improve slightly over the coming months as some staff that are at risk take the opportunity to leave the organisation it is likely that directly attributable savings from CCR will be in the region of £875k.</p> <p>In addition to the refining of the projection as set out above there are two opportunities to further reduce this pressure:</p> <ul style="list-style-type: none"> • A larger more in depth review of the whole organisation looking at spans of control and tiers of management was planned to be implemented on a phased basis over 2017/18 and 2018/19. Given the scale of these potential changes, and the slippage in delivering the CCR, it has been agreed to approach the review on a more tactical basis and therefore bring forward some early proposals. <p>It is anticipated that this will lead to a significant reduction in the numbers of management within the Council, the potential for some jointly funded posts with other organisations, leading to substantial savings in management costs. This will provide some protection to the services that we provide to our communities whilst potentially leading to a more integrated service offer that could provide improved outcomes for the population. The details of these proposals are still being refined but it is anticipated that savings in the region of £300k could be achieved in the current financial year.</p> <ul style="list-style-type: none"> • The Council has held a contractual provision in relation to Capita/Mouchel latent defect corrections. Given the passage of time it is believed that it is reasonable to release £322k of this provision. 			

Service	Current Budget £'000	Forecast Variance - Outturn £'000 %	
<ul style="list-style-type: none"> During the budget setting process the Council is provided with revised projections of both in-year council tax and business rate collections and future years. The 2015/16 year end position for business rates has resulted in an improvement of the sums that were assumed. Additional revenue in the sum of £100k will therefore be received that will negate the impact of slippage in delivery of the CCR. <p>The overall net position of these adjustments will therefore leave a shortfall of around £400k. Officers will continue to work on reducing this shortfall further throughout the year.</p>			
IT Managed	1,863	150	8%
An overspend of £150k is predicted for IT Managed budgets. This is made up primarily of £100k costs of WAN upgrades in libraries and community hubs and £65k revenue costs of new tablets, and offset by a credit in respect of a goods receipt relating to 2015/16.			
Debt Charges	34,206	-250	-250
A £250k underspend is forecast for Debt Charges. This reflects the fall in the forecast for net interest payable following falls in interest rates across all parts of the yield curve. The impact of lower borrowing on the Debt Charges budget would normally result in a favourable forecast variance (due to lower interest payments). However the Debt Charges budget was reduced in anticipation of capital expenditure slippage during the budget setting process, so the magnitude of the variance reported is muted.			

CS APPENDIX 3 – Grant Income Analysis

The table below outlines the additional grant income, which was not built into base budgets.

Grant	Awarding Body	Expected Amount £000
Grants as per Business Plan	Public Health	201
LGA Digital Transformation		40
Non-material grants (+/- £30k)		
Total Grants 2016/17		241

CS APPENDIX 4 – Virements and Budget Reconciliation

Corporate Services:

	£000	Notes
Budget as per Business Plan	4,674	
Transfer of SLA budget from CFA to Contact Centre	77	
Transfer of SLA budget from CFA to Research Team	52	
Non-material virements (+/- £30k)	27	
Current Budget 2016/17	4,830	

LGSS Managed:

	£000	Notes
Budget as per Business Plan	8,720	
Disaggregation of Assets and Investments budgets	-2,714	
Non-material virements (+/- £30k)	-2	
Current Budget 2016/17	6,004	

Financing Costs:

	£000	Notes
Budget as per Business Plan	34,206	
Non-material virements (+/- £30k)	0	
Current Budget 2016/17	34,206	

CS APPENDIX 5 – Reserve Schedule

1. Corporate Services Reserves

Fund Description	Balance at 31 March 2016	Movements in 2016-17	Balance at 30/09/16	Forecast Balance at 31 March 2017	Notes
	£'000	£'000	£'000	£'000	
General Reserve					
Corporate Services Carry-forward	1,218	0	1,218	206	1
subtotal	1,218	0	1,218	206	
Equipment Reserves					
Postal Service	57	0	57	57	
subtotal	57	0	57	57	
Other Earmarked Funds					
Shape Your Place - Fenland Grant	18	0	18	18	2
Election Processes	325	0	325	490	
EDRM Project	232	0	232	0	
City Deal - NHB funding	699	0	699	699	
subtotal	1,274	0	1,274	1,207	
Short Term Provisions					
Transforming Cambridgeshire	962	0	962	962	
Overarching Transformation Programme	0	250	250	250	
Community Resilience	100	0	100	100	
subtotal	1,312	0	1,312	1,312	
TOTAL	3,862	0	3,862	2,783	

Notes

- 1 The year-end position reflects the Corporate Services overspend of £181k and expected use of £831k from reserves to fund Transformation services as previously approved. Due to vacant posts, it is currently estimated that £831k will be required to fund Transformation services in 2016-17; this compares to an original estimate of £907k.
- 2 The underspend on the Elections budget will be transferred to the earmarked reserve. This is to ensure that sufficient funding is available for the four-yearly County Council election.
- 3 Provision for consultancy costs in respect of Transformation Fund work.
- 4 Provision in respect of Community Resilience.

2. LGSS Managed Reserves

Fund Description	Balance at 31 March 2016	Movements in 2016-17	Balance at 30/09/16	Forecast Balance at 31 March 2017	Notes
	£'000	£'000	£'000	£'000	
Other Earmarked Funds					
CPSN Partnership Funds	149	43	192	192	1
subtotal	149	43	192	192	
Short Term Provisions					
Insurance Short-term Provision	2,324	0	2,324	2,324	
External Audit Costs	89	0	89	89	
Insurance MMI Provision	1,182	0	1,182	1,182	
Back-scanning Reserve	56	0	56	56	
Contracts General Reserve	893	0	893	893	
Operating Model Reserve	1,000	0	1,000	1,000	
subtotal	5,545	0	5,545	5,545	
Long Term Provisions					
Insurance Long-term Provision	3,613	0	3,613	3,613	
subtotal	3,613	0	3,613	3,613	
SUBTOTAL	9,306	43	9,349	9,349	
Capital Reserves					
P&P Commissioning (Property)	422	-322	100	100	2
subtotal	422	-322	100	100	
TOTAL	9,728	-279	9,449	9,449	

Notes

- 1 Funds ring-fenced for CPSN partnership to be used for procurement of replacement contract.
- 2 Reserves totalling £322k have been written back to revenue - this relates to Capita/Mouchel latent defect corrections for which no further costs are expected.

CS APPENDIX 6 – Capital Expenditure and Funding

Capital Expenditure

Corporate Services & LGSS Managed Capital Programme 2016/17						TOTAL SCHEME	
Original 2016/17 Budget as per BP £000	Scheme	Revised Budget for 2016/17 £000	Actual Spend 2016/17 £000	Forecast Spend - Outturn (Sept) £000	Forecast Variance - Outturn (Sept) £000	Total Scheme Revised Budget £000	Total Scheme Forecast Variance £000
	Corporate Services						
33	Essential CCC Business Systems Upgrade	60	37	60	-	300	-
-	- Other Schemes	-	-	-	-	-	-
-	- Capital Programme Variations	(12)	-	(12)	-	-	-
33		48	37	48	-	300	-
	LGSS Managed						
1,105	Sawston Community Hub	1,105	2	160	(945)	1,309	-
1,150	Optimising IT for Smarter Business Working	1,638	984	1,638	-	3,863	-
900	IT Infrastructure Investment	912	201	500	(412)	2,400	(0)
-	- Cambridgeshire Public Sector Network	33	81	33	-	5,554	-
1,000	Microsoft Enterprise Agreement	1,000	496	500	(500)	1,902	-
250	Implementing IT Resilience Strategy for Data Centres	250	13	250	-	500	-
-	- Other Schemes	87	7	87	-	100	-
-	- Capital Programme Variations	(1,029)	-	828	1,857	-	-
4,405		3,996	1,783	3,996	-	15,628	(0)
4,438	TOTAL	4,044	1,820	4,044	-	15,928	(0)

Previously Reported Exceptions

The Optimising IT for Smarter Business Working scheme budget has been rephased, resulting in an increase of £500k in the budget for 2016/17. This will not affect the overall scheme cost.

Capital Funding

Corporate Services & LGSS Managed Capital Programme 2016/17					
Original 2016/17 Funding Allocation as per BP £000	Source of Funding		Revised Funding for 2016/17 £000	Forecast Spend Outturn (Sept) £000	Forecast Funding Variance Outturn (Sept) £000
	Corporate Services				
33	Prudential Borrowing	CS	48	48	-
33			48	48	-
	LGSS Managed				
4,405	Prudential Borrowing	Mgd	3,996	3,996	-
4,405			3,996	3,996	-
4,438	TOTAL		4,044	4,044	-

Previously Reported Exceptions

As previously reported, the Capital Programme Board recommended that services include a variation budget to account for likely slippage in the capital programme, as it is sometimes difficult to predict this against individual schemes in advance. As forecast underspends start to be reported, these are offset with a forecast outturn for the variation budget, leading to a balanced outturn overall up to the point when slippage exceeds this budget.

CS Appendix 7 – Performance Scorecard

Measure	Reporting frequency	What is good	Unit	Data last entered	Time period covered	Target	Actual	RAG status	Direction of travel	Comments
Customer Service and Transformation										
Proportion of FOI requests responded to within timescales	Monthly	High	%	07/09/16	1 - 31 August 2016	90%	87%	Amber	↓	117 Requests received and 102 Requests responded to on time. Team experienced significant IT difficulties as FOI Managing site was offline for 7 working days in August.
<i>For context only - number of FOI requests received annually</i>	<i>Annually</i>	<i>Low</i>	<i>Num</i>	05/07/16	1 April - 30 June 2016	N/A*	311	N/A	N/A	<p>* No target or RAG status for this indicator. Purpose is to set the context.</p> <p>2015/16 - 1228 2014/15 - 1177 2013/14 - 1153 2012/13 - 899 2011/12 - 917 2010/11 - 834</p> <p>Running total will be collected quarterly. Data to be next reported on in October 2016 for Q2 2016/17.</p>
Proportion of customer complaints received in the month before last that were responded to within minimum response times	Monthly	High	%	06/09/16	1 - 30 June 2016	90%	83.6%	Amber	↓	<p>Number of customer complaints for June 2016 = 122</p> <p><u>Breakdown of June 2016 figures</u></p> <p>CS&T - 11 complaints all responded to in time. ETE - 74 complaints. 63 responded to within 10 working days (85.13% pass rate) CFA - 37 complaints. 28 responded to within 10 working days (75.68% pass rate)</p>
<i>For context only - number of complaints received annually per thousand population</i>	<i>Annually</i>	<i>Low</i>	<i>Num</i>	12/07/16	1 April 2015 - 31 March 2016	N/A*	2.2**	N/A	N/A	<p>2014/15 was 1.68.</p> <p>* No target or RAG status for this indicator. Purpose is to set the context.</p> <p>Data to be next reported on in May 2017 for period of 1 April 2016 - 31 March 2017</p>
Proportion of all transformed transaction types to be completed online by 31 March 2015***	Annually	High	%	15/07/16	1 July - 30 September 2016	75%	55.83%	Red	↓	This is a substantial reduction due to the vast number of concessionary renewals which generally come from a segment of the population which does not have a high propensity to transact online.
Deprivation measure - Number of physically active adults (narrowing the gap between Fenland and others)	Annually	High	%	24.03.16 (change to target and 2014 actual)	1 April 2015 - 31 March 2016	53.1% (2015) 54.1% (2016)	52.1% (2014)	TBC	N/A	<p>New indicator identified by GPC in response to the deprivation motion passed by Council in July 2014. Indicator shared with Public Health.</p> <p>Update 24.03.16 - actual for 2014 and therefore target for 2015 and 2016 amended to reflect updates to data.</p> <p>Data to be reported on in May 2017 for year end.</p>

Measure	Reporting frequency	What is good	Unit	Data last entered	Time period covered	Target	Actual	RAG status	Direction of travel	Comments
LGSS Managed Services										
IT – availability of Universal Business System**** IT Availability	Half-yearly	High	%	28/07/16	1 January - 31 March 2016 (Q4)	95%	95.0%	Green	↑	Q3 2015/16 - 94% Q2 2015/16 - 100.0% Q1 2015/16 - 100.0% <i>To next be reported on in November 2016 for Q1 and Q2 2016/17.</i>
IT – incidents resolved within Service Level Agreement	Half-yearly	High	%	28/07/16	1 January - 31 March 2016 (Q4)	90%	92.0%	Green	↓	Q3 2015/16 - 97% Q2 2015/16 - 83% Q1 2015/16 - 98% <i>To next be reported on in November 2016 for Q1 and Q2 2016/17.</i>

LGSS APPENDIX 1 – Service Level Budgetary Control Report

The variances to the end of September 2016 for LGSS Cambridge Office are as follows:

Original Budget as per BP £000	Service	Current Budget for 2016/17 £000	Forecast Variance - Outturn (August) £000	Forecast Variance - Outturn (September) £000	%
<u>LGSS Cambridge Office</u>					
<u>Central Management</u>					
62	Service Assurance	8	0	0	0
-8,787	Trading	-8,634	0	0	0
587	LGSS Equalisation	580	0	0	0
-410	Grant Income	-220	0	0	0
-8,548		-8,265	0	0	0
<u>Finance & Property</u>					
1,019	Chief Finance Officer	1,049	0	0	0
1,955	Professional Finance	1,985	-2	45	2
571	Property Operations & Delivery	708	0	0	0
823	Strategic Assets	823	0	0	0
0	Pensions Service	0	0	0	0
4,368		4,565	-2	45	1
<u>Milton Keynes Council</u>					
740	Audit	448	0	0	0
213	Procurement	319	0	-78	-24
0	MKC	0	12	12	0
954		767	12	-66	-9
<u>People, Transformation & Transactional</u>					
1,312	HR Business Partners	1,328	0	0	0
322	HR Policy & Strategy	296	0	0	0
1,852	LGSS Programme Team	1,853	50	50	3
291	Organisational & Workforce Development	229	0	0	0
2,327	Revenues and Benefits	2,382	0	0	0
1,277	Transactional Services	1,295	0	0	0
7,381		7,383	50	50	1
<u>Law & Governance</u>					
425	Democratic & Scrutiny Services	425	-22	-16	-4
-174	LGSS Law Ltd	-291	21	10	3
250		134	-1	-6	-4
5,184	<u>IT Services</u>	5,098	154	223	4
9,589	Total LGSS Cambridge Office	9,682	213	246	3
MEMORANDUM - Grant Income					
-220	Public Health Grant	-220	0	0	0
0	Counter Fraud Initiative Grant	0	0	0	0
-220		-220	0	0	0

LGSS APPENDIX 2 – Commentary on Forecast Outturn Position

Number of budgets measured at service level that have an adverse/positive variance greater than 2% of annual budget or £100,000 whichever is greater.

Service	Current Budget £'000	Forecast Variance - Outturn	
		£'000	%
IT Services	5,201	223	4
<p>It is forecast that IT Services in the LGSS Cambridge Office will overspend by £223k at year end. There is a £50k forecast overspend within NCC/CCC operations due to the additional recruitment of digital analysts to in-source work previously procured at a premium by the retained organisations and additional developer posts recruited over and above the establishment in agreement with NCC and CCC.</p> <p>A £208k saving was originally planned to be delivered from additional IT budgets being transferred from the CCC retained organisation into LGSS, but this will not be achieved this year. In the first instance, it is anticipated that the £208k will be mitigated across the rest of LGSS budgets, including the Property and Strategic Assets budgets returned to NCC and CCC. The remaining £183k is shown here as an overspend, however, it may be necessary to offset this in LGSS through the application of carry forward balances.</p> <p>There is also a £30k pressure due to a decision to recruit to a Head of IT in Norwich in order to expand the LGSS offering in this geographical area.</p>			

LGSS APPENDIX 3 – Grant Income Analysis

The table below outlines the additional grant income, which is not built into base budgets.

	Awarding Body	Expected Amount £'000
Grants as per Business Plan	Various	220
Non-material grants (+/- £30k)		0
Total Grants 2014/15		220

LGSS APPENDIX 4 – Virements and Budget Reconciliation

	£'000	Notes
Budget as per Business Plan	9,589	
Transfer of Reablement budget from CFA to LGSS Finance	113	
Non-material virements (+/- £30k)	-20	
Current Budget 2015-16	9,682	

LGSS APPENDIX 5 – Reserve Schedule

Fund Description	Balance at 31 March 2016	Movements in 2016-17	Balance at 30/09/16	Forecast Balance at 31 March 2017	Notes
	£'000	£'000	£'000	£'000	
<u>General Reserve</u>					
LGSS Cambridge Office Carry-forward	1,013	0	1,013	252	1
subtotal	1,013	0	1,013	252	
<u>Other Earmarked Funds</u>					
Counter Fraud Initiative	130	0	130	130	
subtotal	130	0	130	130	
SUBTOTAL	1,143	0	1,143	382	
TOTAL	1,143	0	1,143	382	

LGSS APPENDIX 6 – Capital Expenditure and Funding

Capital Expenditure

LGSS Cambridge Office Capital Programme 2016/17						TOTAL SCHEME	
Original 2016/17 Budget as per BP £000	Scheme	Revised Budget for 2016/17 £000	Actual Spend 2016/17 £000	Forecast Spend - Outturn (Sept) £000	Forecast Variance - Outturn (Sept) £000	Total Scheme Revised Budget £000	Total Scheme Forecast Variance £000
	- R12 Convergence*	-	-	-	-	416	-
1,104	Next Generation ERP	773	-	773	-	1,288	-
	- Capital Programme Variations	(155)	-	(155)	-	-	-
1,104	TOTAL	618	-	618	-	1,704	-

Previously Reported Exceptions

There are no previous exceptions to report.

Capital Funding

LGSS Cambridge Office Capital Programme 2016/17					
Original 2016/17 Funding Allocation as per BP £000	Source of Funding		Revised Funding for 2016/17 £000	Forecast Spend Outturn (Sept) £000	Forecast Funding Variance Outturn (Sept) £000
1,104	Prudential Borrowing	LGSS	618	618	-
1,104	TOTAL		618	618	-

Previously Reported Exceptions

There are no previous exceptions to report.

**INTEGRATED RESOURCES AND PERFORMANCE REPORT FOR THE PERIOD ENDING
30TH SEPTEMBER 2016**

To: **General Purposes Committee**

Date: **29th November 2016**

From: **Chief Finance Officer**

Electoral division(s): **All**

Forward Plan ref: **N/A**

Key decision: **N/A**

Purpose: **To present financial and performance information to assess progress in delivering the Council's Business Plan.**

Recommendations: **General Purposes Committee (GPC) is recommended to:**

- **Analyse resources and performance information and note any remedial action currently being taken and consider if any further remedial action is required.**

<i>Officer contact:</i>
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Tel: 01223 699796

1. PURPOSE

- 1.1 To present financial and performance information to assess progress in delivering the Council's Business Plan.

2. OVERVIEW

- 2.1 The following table provides a snapshot of the Authority's forecast performance at year-end by value, RAG (Red, Amber, Green) status and direction of travel (DoT).

Area	Measure	Forecast Year End Position (August)	Forecast Year End Position (September)	Current Status	DoT (up is improving)
Revenue Budget	Variance (£m)	+£1.9m	+£1.5m	Amber	↑
Basket Key Performance Indicators	Number at target (%)	31% (5 of 16) ¹	38% (6 of 16) ¹	Amber	↑
Capital Programme	Variance (£m)	+£0.2m	£0.0m	Green	↑
Balance Sheet Health	Net borrowing activity (£m)	£418m	£421m	Green	↔

¹ The number of performance indicators on target reflects the current position.

- 2.2 The key issues included in the summary analysis are:

- The overall revenue budget position is showing a forecast year-end overspend of £1.5m, which is a reduction of £0.4m on the overspend reported last month. The change in position is mainly due to a net decrease in Children, Families and Adults (CFA) and Corporate Services overspends. See section 3 for details.
- Key Performance Indicators; the corporate performance indicator set has been refreshed for 2016/17. There are 18 indicators in the Council's new basket, with data currently being available for 16 of these. Of these 16 indicators, 6 are on target. However, 4 of the amber-rated indicators are within 5% of their target values. See section 5 for details.
- The Capital Programme is forecasting a balanced budget at year end. Although Economy, Transport and Environment (ETE), CFA, LGSS Managed and Assets & Investments (A&I) are all reporting in-year slippage on their capital programmes, totalling £8.13m, this is within the allowances made for capital programme variations, leading to a balanced outturn overall. See section 6 for details.
- Balance Sheet Health; the original forecast net borrowing position for 31st March 2017, as set out in the Treasury Management Strategy Statement (TMSS) is £479m. This projection has now fallen to £421m, which is £3m higher than reported last month. The

change since last month is due to the forecast for prudential borrowing in 2016/17 increasing from £73m to £76m. See section 7 for details.

3. REVENUE BUDGET

3.1 A more detailed analysis of financial performance is included below:

Key to abbreviations

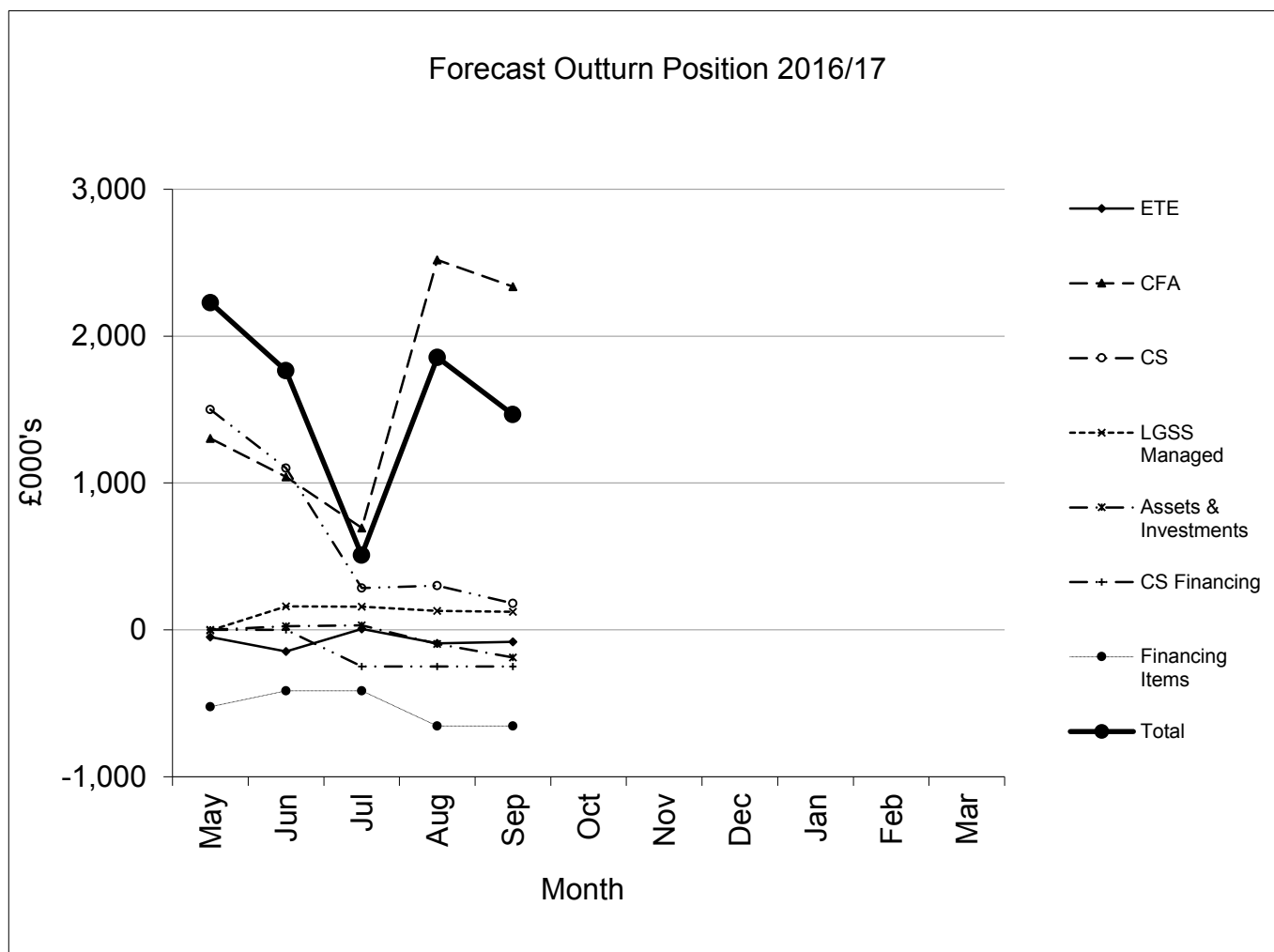
ETE – Economy, Transport and Environment
 CFA – Children, Families and Adults
 CS Financing – Corporate Services Financing
 DoT – Direction of Travel (up arrow means the position has improved since last month)

Original Budget as per Business Plan £000	Service	Current Budget for 2016/17 £000	Forecast Variance - Outturn (August) £000	Forecast Variance - Outturn (Sept) £000	Forecast Variance - Outturn (Sept) %	Overall Status	DoT
59,952	ETE	61,967	-93	-82	-0.1%	Green	↓
242,563	CFA	242,316	2,520	2,338	1.0%	Red	↑
182	Public Health	182	0	0	0.0%	Green	↔
4,674	Corporate Services	4,830	301	181	3.7%	Amber	↑
6,010	LGSS Managed	6,004	128	123	2.0%	Amber	↑
2,711	Assets & Investments	2,714	-96	-188	-6.9%	Green	↑
34,206	CS Financing	34,206	-250	-250	-0.7%	Green	↔
350,298	Service Net Spending	352,219	2,510	2,122	0.6%	Amber	↑
4,677	Financing Items	1,900	-655	-655	-34.5%	Green	↔
354,975	Total Net Spending	354,119	1,855	1,467	0.4%	Amber	↑
Memorandum items:							
9,589	LGSS Operational	9,682	213	246	2.5%	Amber	↓
222,808	Schools	222,808					
587,372	Total Spending 2016/17	586,610					

¹ The budget figures in this table are net, with the 'Original Budget as per BP' representing the Net Budget column in Table 1 of the Business Plan for each respective Service.

² The forecast variance outturn does not include the £9.3m budget saving in 2016/17 following the change in Minimum Revenue Provision (MRP) policy, which was approved by Council on 16 February 2016.

³ For budget virements between Services throughout the year, please see [Appendix 1](#).



3.2 Key exceptions this month are identified below.

3.2.1 **Economy, Transport and Environment:** -£0.082m (-0.1%) underspend is forecast at year-end. There are no new exceptions to report; for full and previously reported details see the [ETE Finance & Performance Report](#).

3.2.2 **Children, Families and Adults:** +£2.338m (1.0%) overspend is forecast at year-end.

- | | £m | % |
|---|--------|-------|
| <ul style="list-style-type: none"> Older People – All Localities – An underspend of -£1.5m is forecast for year end, which is an improvement of £605k on the position reported last month. There have been significant increases in the underspends forecast by Fenland and Hunts Localities (£265k and £399k increase respectively). All areas are expecting to continue the current trend of reducing commitments for longer term support and a new block contract for care home placements should deliver savings compared to previous spot purchasing patterns, particularly in the South of the county. These assumptions have been incorporated into the forecast outturns. | -1.500 | (-4%) |

- **Older People Mental Health** – An underspend of -£482k is forecast for year-end. This is an improvement of £276k on the position reported last month and is due to a revision in the projections for the underlying cost of care commitment, which has reduced by £116k this month following continued reduction in high cost nursing care package numbers. It is expected further savings in cost of care will be achieved before year-end, so this part of the forecast underspend has been increased to £341k. -0.482 (-6%)
- **Looked After Children (LAC) Placements** – An overspend of +£3.0m is forecast for year-end. This is an increase of £800k on the overspend reported last month. This is due to a combination of the underlying pressure from 2015/16 (£1.4m), as a result of having more LAC in care than budgeted, and the number of children in care and in placements not reducing as originally budgeted, and continuing to rise.

The level of LAC savings for both the current year and future years has recently been subject to an in depth review. The outcome of this work has revealed that there is currently inadequate budget to support the number of LAC in the care system, both in-year and going forward. This has therefore been reflected within the forecast outturn position this month, for the impact on the delivery of in-year savings. The impact to future year savings is being dealt with as part of the current Business Planning process.

Furthermore, the recent cohort of children becoming LAC have included children requiring high cost placements due to their complex needs. It should, however, be noted that a significant amount of work has been undertaken focussing on procurement savings. To date, c.£1.4m of savings have successfully been delivered around this work, against an annual savings target of £1.5m. +3.000 (+15%)

Actions currently being taken to address the forecast overspend include:

- A weekly Section 20 panel to review children on the edge of care, specifically looking to prevent escalation by providing timely and effective interventions. The panel also reviews placements of children currently in care to provide more innovative solutions to meet the child's needs.
- A weekly LAC monitoring meeting chaired by the Executive Director of CFA, which looks at reducing the number of children coming into care and identifying further actions that will ensure further and future reductions. It also challenges progress made and promotes new initiatives.

- For full and previously reported details see the [CFA Finance & Performance Report](#).
 - As well as the mitigating actions restricting the forecast overspend to +£2.34m at this point, CFA is continuing to review all expenditure headings to identify further offsetting underspends in addition to the major improvements forecast in Older People's Services identified above.
- 3.2.3 **Public Health:** a balanced budget is forecast at year-end. There are no exceptions to report this month; for full and previously reported details see the [PH Finance & Performance Report](#).
- 3.2.4 **Corporate Services:** +£0.181m (+3.7%) overspend is forecast at year-end. There are no exceptions to report this month; for full and previously reported details see the [CS & LGSS Finance & Performance Report](#).
- 3.2.5 **LGSS Managed:** +£0.139m (+2.3%) overspend is forecast at year-end. There are no exceptions to report this month; for full and previously reported details see the [CS & LGSS Finance & Performance Report](#).
- 3.2.6 **CS Financing:** -£0.250m (-0.7%) underspend is currently forecast for Debt Charges. This reflects the fall in the forecast for net interest payable following falls in interest rates across all parts of the yield curve. For full and previously reported details see the [CS & LGSS Finance & Performance Report](#).
- 3.2.7 **LGSS Operational:** +£0.246m (+2.5%) overspend is forecast at year-end. There are no exceptions to report this month; for full and previously reported details see the [CS & LGSS Finance & Performance Report](#).
- 3.2.8 **Assets & Investments:** -£0.188m (-6.9%) underspend is forecast at year-end. There are no new exceptions to report this month; for full and previously reported details see the [A&I Finance & Performance Report](#).

***Note:** exceptions relate to Forecast Outturns that are considered to be in excess of +/- £250k.*

4. KEY ACTIVITY DATA

- 4.1 The latest key activity data for: Looked After Children (LAC); Special Educational Needs (SEN) Placements; Adult Social Care (ASC); Adult Mental Health; Older People (OP); and Older People Mental Health (OPMH) can be found in the latest [CFA Finance & Performance Report](#) (section 2.5).

5. PERFORMANCE TARGETS

5.1 As previously reported to GPC the key performance indicators are currently under review and a new set of indicators will be considered as part of the Business Plan.

Corporate priority	Indicator	Service	What is good? High (good) or low	Date	Unit	Actual	Target	Status (Green, Amber or Red)	Direction of travel (up is good, down is bad)
Developing our economy	Percentage of Cambridgeshire residents aged 16 - 64 in employment: 12-month rolling average	ETE	High	At-31-Mar-2016	%	78.7%	80.3% (2015/16 target)	Amber	↓
	Additional jobs created*	ETE	High	To 30-Sep-2015	Number	+6,300 (provisional)	+ 3,500 (2015/16 target)	Green	↓
	'Out of work' benefits claimants – narrowing the gap between the most deprived areas (top 10%) and others*	ETE	Low	At-29-Feb-2016	%	Gap of 6.4 percentage points Most deprived areas (Top 10%) = 11.5% Others = 5.1%	Most deprived areas (Top 10%) <=12% Gap of <7.2 percentage points (2015/16 target)	Green	↔
	The proportion of children in year 12 taking up a place in learning	CFA (Enhanced & Preventative – E&P)	High	August 16	%	93.4%	96.5%	Amber	↓
	Percentage of 16-19 year olds not in education, employment or training (NEET)	CFA	Low	August 16	%	3.5%	3.3%	Amber	↓
	The proportion pupils attending Cambridgeshire Primary schools	CFA (Learning)	High	August 16	%	82.0%	82.0%	Green	↑

Corporate priority	Indicator	Service	What is good? High (good) or low	Date	Unit	Actual	Target	Status (Green, Amber or Red)	Direction of travel (up is good, down is bad)
	judged good or outstanding by Ofsted								
	The proportion pupils attending Cambridgeshire Secondary schools judged good or outstanding by Ofsted	CFA (Learning)	High	August 16	%	56.9%	75.0%	Red	↑
	The proportion pupils attending Cambridgeshire Special schools judged good or outstanding by Ofsted	CFA (Learning)	High	August 16	%	94.8%	100%	Amber	↔
	The proportion of Adult Social Care and Older People's Service users requiring no further service at end of re-ablement phase	CFA	High	August 16	%	54.3%	57%	Amber	↑
	Reduced proportion of Delayed Transfers of care from hospital, per 100,000 of population (aged 18+)	CFA	Low	July 16	Number	579	429 per month (4874.5 per year)	Red	↓
	Number of ASC attributable bed-day delays per 100,000 population (aged 18+)	CFA	Low	July 16	Number	124	114	Amber	↑
	Healthy life expectancy at birth (males)	Public Health	High	2012 – 2014	Years	66.1	N/A – contextual indicator	Green (compared with England)	↓ (compared with previous year)
	Healthy life expectancy at birth (females)	Public Health	High	2012 – 2014	Years	67.6	N/A – contextual indicator	Green (compared with England)	↑ (compared with previous year)

Corporate priority	Indicator	Service	What is good? High (good) or low	Date	Unit	Actual	Target	Status (Green, Amber or Red)	Direction of travel (up is good, down is bad)
	Absolute gap in life expectancy between the most deprived 20% of Cambridgeshire's population and the least deprived 80% (all persons)	Public Health	Low	2013-2015 (Q4 2015)	Years	2.6	N/A – contextual indicator	N/A – contextual indicator	↔
Supporting and protecting vulnerable people	The number of looked after children per 10,000 children	CFA (Children's Social Care)	Low	August 16	Rate per 10,000	47.0	40	Red	↓
	No/ % of families who have not required statutory services within six months of have a Think Family involvement.	CFA (E&P)	TBC	TBC	TBC	TBC	TBC new measure for 2016/17	TBC	TBC
An efficient and effective organisation	The percentage of all transformed transaction types to be completed online	Customer Service & Transformation	High	1 July – 30 September 2016	%	55.83%.	75%	Red	↓
	The average number of days lost to sickness per full-time equivalent staff member	LGSS HR	Low	September 2016	Days (12 month rolling average)	6.59	7.8	Green	↑

* 'Out of work' benefits claimants - narrowing the gap between the most deprived areas (top 10%) and others – the target of ≤12% is for the most deprived areas (top 10%). At 6.7 percentage points the gap is the same as last quarter, but is narrower than the baseline (in May 2014) of 7.2 percentage points.

5.2 Key exceptions are identified below:

- **The percentage of all transformed transaction types to be completed online**
This is a substantial reduction on the quarter 1 score (70.4%) due to the vast number of concessionary renewals in quarter 2, which generally come from a segment of the population that does not have a high propensity to transact online.
- For full and previously reported details go to the respective Service Finance & Performance Report:
 - [ETE Finance & Performance Report](#)
 - [CFA Finance & Performance Report](#)
 - [PH Finance & Performance Report](#)
 - [CS & LGSS Finance & Performance Report](#)
 - [A&I Finance & Performance Report](#)

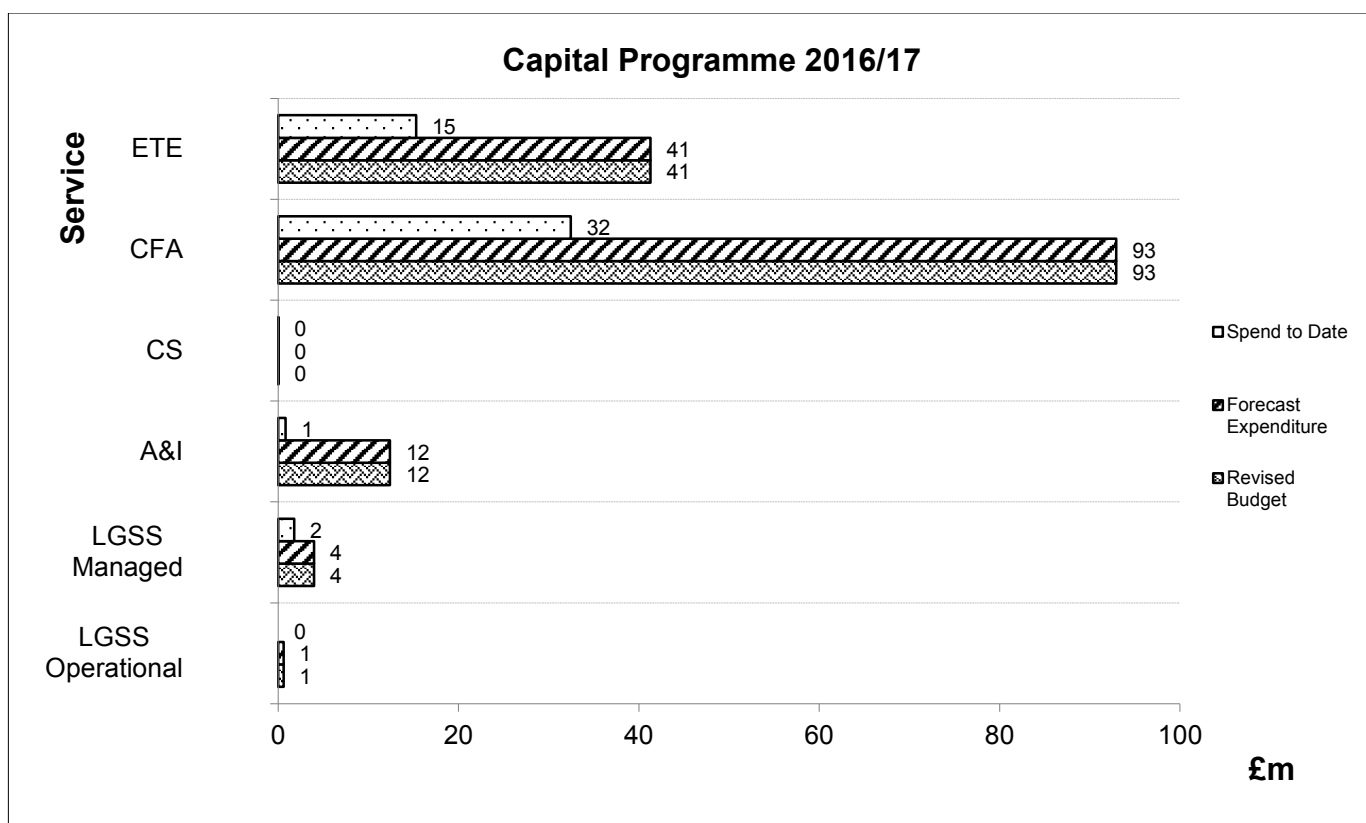
6. CAPITAL PROGRAMME

6.1 A summary of capital financial performance by service is shown below:

2016/17						TOTAL SCHEME	
Original 2016/17 Budget as per Business Plan £000	Service	Revised Budget for 2016/17 £000	Forecast Variance - Outturn (August) £000	Forecast Variance - Outturn (Sept) £000	Forecast Variance - Outturn (Sept) %	Total Scheme Revised Budget (Sept) £000	Total Scheme Forecast Variance (Sept) £000
71,699	ETE	41,293	-	-	0.0%	415,691	-
97,156	CFA	92,921	0	0	0.0%	543,222	31,629
33	Corporate Services	48	-	-	0.0%	300	-
4,405	LGSS Managed	3,996	-	-	0.0%	15,628	-0
11,397	A&I	12,398	195	-0	0.0%	240,310	-1,867
1,104	LGSS Operational	618	-	-	0.0%	1,704	-
185,794	Total Spending	151,274	195	-0	0.0%	1,216,855	29,761

Notes:

1. The 'Revised Budget' incorporates any changes in the funding available to what was originally budgeted, including the capital programme variations budget allocated to each service. A breakdown of the use of the capital programme variations budget by service is shown in section 6.2.
2. The reported ETE capital figures do not include City Deal, which has a budget for 2016/17 of £7.4m and is currently forecasting an in-year underspend of £0.15m.



Note: The 'Revised Budget' incorporates any changes in the funding available to what was originally budgeted.

6.2 A summary of the use of capital programme variations budgets by services is shown below. As forecast underspends start to be reported, these are offset with a forecast outturn for the variation budget, leading to a balanced outturn overall up to the point when slippage exceeds this budget.

2016/17					
Service	Capital Programme Variations Budget £000	Forecast Variance - Outturn (September) £000	Capital Programme Variations Budget Used £000	Capital Programme Variations Budget Used %	Revised Forecast Variance - Outturn (September) £000
ETE	-10,500	-4,573	4,573	43.55%	0
CFA	-10,282	-1,687	1,687	16.41%	0
Corporate Services	-12	0	0	0.00%	0
LGSS Managed	-1,029	-1,857	1,857	180.47%	0
A&I	-2,850	-13	13	0.46%	-0
LGSS Operational	-155	0	0	0.00%	0
Total Spending	-24,828	-8,130	8,130	32.75%	-0

- 6.3 Slippage in the capital programme for LGSS Managed is forecast to exceed its capital programme variations budget allocation of £1m. However, at this stage it is not anticipated that the capital programme as a whole will slip beyond the overall variations budget, but it is not clear where any offsetting under-utilisation of the variations budget will be realised. Thus the outturn on LGSS Managed does not currently lead to an overall forecast underspend on the capital programme, but this will be closely monitored with any changes to the position reflected in future reports.
- 6.4 A more detailed analysis of current year key exceptions this month by programme for individual schemes of £0.5m or greater are identified below.

6.4.1 **Economy, Transport and Environment:** a balanced budget is forecast at year-end.

	£m	%
<ul style="list-style-type: none"> King's Dyke – a -£3.3m in-year underspend is forecast. This is a movement of -£0.7m on the position reported last month. Due to land access and legal issues with the landowner it is now unlikely that expenditure on the scheme will begin before 2017/18. The works package is not due to be approved by the Economy and Environment Committee until March 2017. 	-3.3	(-96%)
<ul style="list-style-type: none"> ETE Capital Variation – as agreed by the Capital Programme Board, any forecast underspend in the capital programme is offset against the capital programme variations budget, leading to a balanced outturn overall. There has been a movement of +£0.5m in the outturn for ETE capital variation since last month. 	+4.6	(+44%)
<ul style="list-style-type: none"> For full and previously reported details see the ETE Finance & Performance Report. 		

6.4.2 **Children, Families and Adults:** a balanced budget is forecast at year end.

	£m	%
<ul style="list-style-type: none"> Basic Need – Primary – a -£3.2m in-year underspend is forecast, which is a movement of -£0.5m on the position reported last month. This is largely due to movement on the following schemes: <ul style="list-style-type: none"> Ramnoth Primary, Wisbech: -£1.2m (-38%) as the start of work on site has been delayed from October to December 2016. Grove Primary: +£0.3m (+27%) – movement of +£0.2m since last month due to increased costs associated with asbestos removal. Histon additional places: +£0.35m. Work has begun earlier than anticipated. 	-3.2	(-8%)
<ul style="list-style-type: none"> For full and previously reported details see the CFA Finance & Performance Report. 		

6.4.3 **Corporate Services:** a balanced budget is forecast at year-end. There are no exceptions to report this month; for full and previously reported details see the [CS & LGSS Finance & Performance Report](#).

6.4.4 **LGSS Managed:** a balanced budget is forecast at year-end.

	£m	%
<ul style="list-style-type: none"> • Sawston Community Hub – a -£0.9m in-year underspend is forecast due to a delay in obtaining planning permission. As a result construction work is not expected to begin until February 2017 and some of the expenditure planned for 2016/17 will now be re-phased to 2017/18. 	-0.9	(-86%)
<ul style="list-style-type: none"> • Microsoft Enterprise Agreement – the final payment on the contract is due in 2017/18, not 2016/17 as originally budgeted. Therefore there will be a -£0.5m in-year underspend, with this expenditure to be re-phased into 2017/18. 	-0.5	(-50%)
<ul style="list-style-type: none"> • LGSS Managed Capital Variation – as agreed by the Capital Programme Board, any forecast underspend in the capital programme is offset against the capital programme variations budget, leading to a balanced outturn overall. Slippage in the capital programme for LGSS Managed has exceeded its capital variation budget allocation. However, as the variation budget across the Council as a whole has not yet been fully utilised, at this stage this does not lead to an overall forecast underspend on the capital programme. 	+1.9	(+180%)
<ul style="list-style-type: none"> • For full and previously reported details see the CS & LGSS Finance & Performance Report. 		

6.4.5 **LGSS Operational:** a balanced budget is forecast at year-end. There are no exceptions to report this month; for full and previously reported details see the [CS & LGSS Finance & Performance Report](#).

6.4.6 **Assets & Investments:** a balanced budget is forecast at year-end. There are no exceptions to report this month; for full and previously reported details see the [A&I Finance & Performance Report](#).

6.5 A more detailed analysis of total scheme key exceptions this month by programme for individual schemes of £0.5m or greater are identified below:

6.5.1 **Economy, Transport and Environment:** a total scheme balanced budget is forecast. There are no exceptions to report this month; for full and previously reported details see the [ETE Finance & Performance Report](#).

6.5.2 **Children, Families and Adults:** a +£31.5m (+6%) total scheme overspend is forecast.

	£m	%
<ul style="list-style-type: none"> • Basic Need – Primary – a +£28.1m (+13%) total scheme overspend is forecast, which is an increase of £15.5m on the overspend reported last month. This is due to total scheme overspends emerging for the following schemes: 	+28.1	(+13%)
<ul style="list-style-type: none"> <ul style="list-style-type: none"> ○ Histon additional places: +£10.0m (+167%) increased scheme costs caused by the scope of the project significantly 		

increasing to include additional places for both infant and junior age ranges.

- St Ives, Eastfield/ Westfield/ Wheatfields: +£4.0m (+133%) increased cost due to additional building works required as the school are not planning to amalgamate into an all-through primary.
- Sawtry Infants: +£0.9m (+26%) increase in scheme costs after more detailed costings have been completed.
- Grove Primary: +£0.3m (+22%) increase in costs associated with asbestos removal.
- Burwell Primary phase one: +£0.3m (+13%) increase in scheme costs after more detailed planning and revised costing has been undertaken.

With the exception of Grove Primary, all these changes relate to future years and will be addressed in the 2017/18 Business Plan.

- **Basic Need – Secondary** – a +£2.6m (+1%) total scheme overspend is forecast. This is a movement of +£2.1m on the position reported last month and is largely caused by a £2.5m total scheme overspend on the Cambridge City three form entry scheme. This is in relation to St Bede's School where additional works are required to rectify fire damage, for which additional funding will be received from insurance payments. Other total scheme overspends have reduced by £0.4m, partially offsetting the £2.5m. +2.6 (+1%)
- For full and previously reported details see the [CFA Finance & Performance Report](#).

6.5.3 **Corporate Services:** a total scheme balanced budget is forecast. There are no exceptions to report this month; for full and previously reported details see the [CS & LGSS Finance & Performance Report](#).

6.5.4 **LGSS Managed:** a total scheme balanced budget is forecast. There are no exceptions to report this month; for full and previously reported details see the [CS & LGSS Finance & Performance Report](#).

6.5.5 **LGSS Operational:** a total scheme balanced budget is forecast. There are no exceptions to report this month; for full and previously reported details see the [CS & LGSS Finance & Performance Report](#).

6.5.6 **Assets & Investments:** -£1.8m (-0.7%) total scheme underspend is forecast. There are no new exceptions to report this month; for full and previously reported details see the [A&I Finance & Performance Report](#).

6.6 A breakdown of the changes to funding has been identified in the table below.

Funding Source	B'ness Plan Budget £m	Rolled Forward Funding ¹ £m	Revised Phasing £m	Additional/ Reduction in Funding £m	Revised Budget £m	Outturn Funding £m	Funding Variance £m
Department for Transport (DfT) Grant	20.5	0.2	-1.7	1.0	20.0	20.0	-
Basic Need Grant	3.8	-	-	-	3.8	3.8	-0.0
Capital Maintenance Grant	4.6	-	-	0.1	4.7	4.7	-
Devolved Formula Capital	1.1	0.9	-	-0.0	1.9	1.9	-0.0
Specific Grants	21.1	3.6	-12.7	1.6	13.7	10.2	-3.5
S106 Contributions & Community Infrastructure Levy	30.3	1.1	-3.7	0.1	27.8	27.8	0.0
Capital Receipts	10.3	-	-	-5.9	4.3	4.3	-0.0
Other Contributions	10.7	0.2	-8.8	0.8	2.9	2.9	-0.0
Revenue Contributions	-	-	-	-	-	-	-
Prudential Borrowing	83.4	10.2	-29.3	7.8	72.1	75.6	3.5
TOTAL	185.8	16.3	-56.1	5.3	151.3	151.3	-0.0

¹ Reflects the difference between the anticipated 2015/16 year end position, as incorporated within the 2016/17 Business Plan, and the actual 2015/16 year end position.

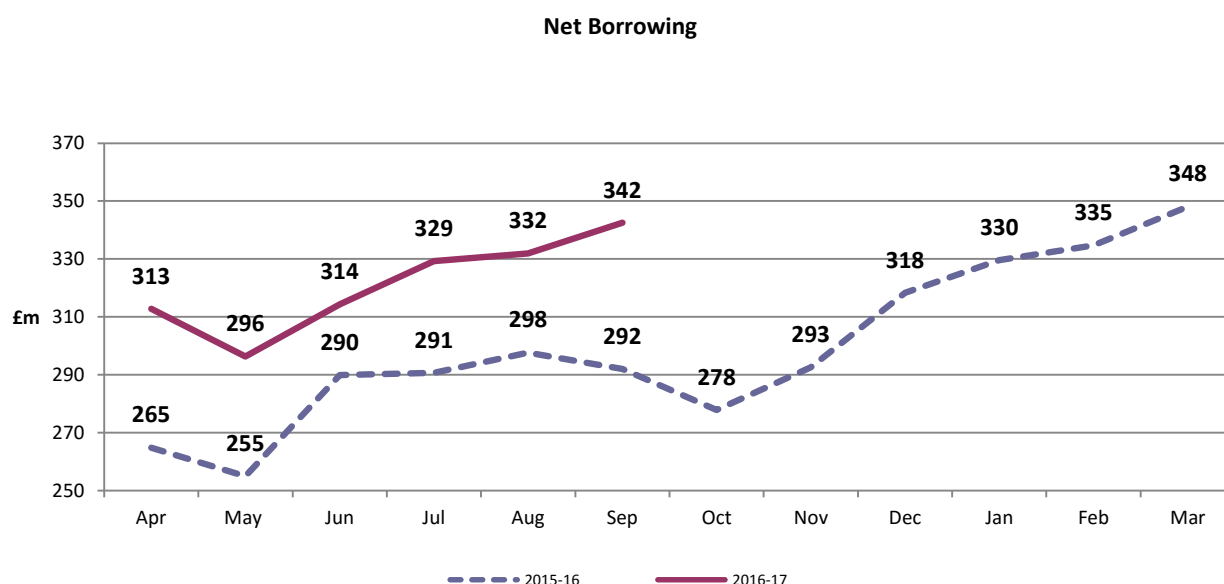
6.7 Capital receipts for 2016/17 are currently forecast to be £5.9m less than originally budgeted, which is £1.9m less than previously reported. Any further changes to this position will be reported throughout the year. Any shortfall in capital receipts will need to be met with additional prudential borrowing, which General Purposes Committee will be asked to approve as part of the 2016/17 outturn report.

7. BALANCE SHEET

7.1 A more detailed analysis of balance sheet health issues is included below:

Measure	Year End Target	Actual as at the end of September
Level of debt outstanding (owed to the council) – 4-6 months, £m	£0.4m	£0.7m
Level of debt outstanding (owed to the council) – >6 months, £m	£1.0m	£2.0m
Invoices paid by due date (or sooner)	97.5%	99.6%

7.2 The graph below shows net borrowing (investments less borrowing) on a month by month basis and compares the position with the previous financial year. The levels of investments at the end of September were £19.6m (excluding 3rd party loans) and gross borrowing was £362.1m.



7.3 Key exceptions are identified below:

Key exceptions	Impacts and actions
Less borrowing activity than planned –original net borrowing forecast was £479m. Actual net borrowing at 30th September was £342m.	<p>A £250k underspend is currently forecast for Debt Charges. This reflects the fall in the forecast for net interest payable following falls in interest rates across all parts of the yield curve.</p> <p>The impact of lower borrowing on the Debt Charges budget would normally result in a favourable forecast variance (due to lower interest payments). However the Debt Charges budget was reduced in anticipation of capital expenditure slippage during the budget setting process, so the magnitude of the variance reported is muted.</p> <p>The Council is continually reviewing options as to the timing of any potential borrowing and also the alternative approaches around further utilising cash balances (where possible) and undertaking shorter term borrowing which could potentially generate savings next year, subject to an assessment of the interest rate risks involved.</p>

7.4 Further detail around the Treasury Management activities can be found in the latest [Treasury Management Report](#).

7.5 A schedule of the Council's reserves and provisions can be found in [appendix 2](#).

8. ALIGNMENT WITH CORPORATE PRIORITIES

8.1 Developing the local economy for the benefit of all

There are no significant implications for this priority.

8.2 Helping people live healthy and independent lives

There are no significant implications for this priority.

8.3 Supporting and protecting vulnerable people

There are no significant implications for this priority.

9. SIGNIFICANT IMPLICATIONS

9.1 Resource Implications

This report provides the latest resources and performance information for the Council and so has a direct impact.

9.2 Statutory, Risk and Legal Implications

There are no significant implications within this category.

9.3 Equality and Diversity Implications

There are no significant implications within this category.

9.4 Engagement and Consultation Implications

No public engagement or consultation is required for the purpose of this report.

9.5 Localism and Local Member Involvement

There are no significant implications within this category.

9.6 Public Health Implications

There are no significant implications within this category.

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	Yes Name of Financial Officer: Chris Malyon
Has the impact on Statutory, Legal and Risk implications been cleared by LGSS Law?	No Name of Legal Officer: Not applicable
Are there any Equality and Diversity implications?	No Name of Officer: Not applicable
Have any engagement and communication implications been cleared by Communications?	No Name of Officer: Not applicable
Are there any Localism and Local Member involvement issues?	No Name of Officer: Not applicable
Have any Public Health implications been cleared by Public Health	No Name of Officer: Not applicable

Source Documents	Location
ETE Finance & Performance Report (September 16) CFA Finance & Performance Report (September 16) PH Finance & Performance Report (September 16) CS and LGSS Cambridge Office Finance & Performance Report (September 16) A&I Finance & Performance Report (September 16) Performance Management Report & Corporate Scorecard (September 16) Capital Monitoring Report (September 16) Report on Debt Outstanding (September 16) Payment Performance Report (September 16)	1 st Floor, Octagon, Shire Hall, Cambridge

APPENDIX 1 – transfers between Services throughout the year (only virements of £1k and above (total value) are shown below)

	CFA	Public Health	ETE	CS Financing	Corporate Services	LGSS Managed	Assets & Investments	LGSS Operational	Financing Items
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Opening Cash Limits as per Business Plan	242,563	182	59,952	34,206	4,674	8,720	0	9,589	3,915
Adjustment LGSS Managed and Operational						10		-10	
LGSS property virement					10			-10	
Licenses budget from LGSS Op. to CS					17	-17			
Contact Centre budget from CFA to CS	-77				77				
CPFT NHS accommodation budget from CFA to LGSS Man.	-10					10			
Reablement budget from CFA to LGSS Op.	-113							113	
Pupil forecasting/demography budget to research group	-53				53				
ETE use of service reserves			2,015						-2,015
Disaggregation of Assets and Investments budgets						-2,714	2,714		
Centralised mobile phones budget	6					-6			
Current budget	242,316	182	61,967	34,206	4,831	6,004	2,714	9,682	1,900
Rounding	0	0	0	0	0	0	0	0	0

APPENDIX 2 – Reserves and Provisions

Fund Description	Balance at 31 March 2016	2016-17		Forecast Balance 31 March 2017	Notes
		Movements in 2016-17	Balance at 30 September 16		
	£000s	£000s	£000s	£000s	
<u>General Reserves</u>					
- County Fund Balance	18,921	-27	18,894	19,671	
- Services					
1 CFA	1,623	-1,062	561	-1,777	
2 PH	1,138	-155	983	638	
3 ETE	3,386	-2,015	1,371	0	
4 CS	1,218	0	1,218	206	
5 LGSS Operational	1,013	0	1,013	252	
subtotal	27,299	-3,259	24,040	18,990	
<u>Earmarked</u>					
- Specific Reserves					
6 Insurance	2,864	0	2,864	2,864	
subtotal	2,864	0	2,864	2,864	
- Equipment Reserves					
7 CFA	782	-80	702	98	
8 ETE	218	0	218	250	
9 CS	57	0	57	57	
subtotal	1,057	-80	977	405	
<u>Other Earmarked Funds</u>					
10 CFA	4,097	-2,070	2,027	939	Includes liquidated damages in respect of the Guided Busway - current balance £2.4m.
11 PH	2,020	0	2,020	1,445	
12 ETE	6,631	-377	6,254	4,919	
13 CS	1,274	0	1,274	1,207	
14 LGSS Managed	149	43	192	192	
15 Assets & Investments	233	71	304	327	
16 LGSS Operational	130	0	130	130	
17 Transformation Fund	9,891	-158	9,733	18,984	Savings realised through change in MRP policy
subtotal	24,425	-2,491	21,934	28,143	
SUB TOTAL	55,645	-5,830	49,815	50,402	
<u>Capital Reserves</u>					
- Services					
18 CFA	2,428	7,776	10,204	425	Section 106 and Community Infrastructure Levy balances.
19 ETE ¹	11,703	13,767	25,470	10,200	
20 LGSS Managed	422	-322	100	100	
21 Assets & Investments	230	85	315	230	
22 Corporate	39,388	1,308	40,695	21,154	
subtotal	54,171	22,614	76,784	32,109	
GRAND TOTAL	109,815	16,784	126,599	82,511	

Notes:

1. The figures do not include City Deal reserves, which have a current balance of £37.8m and are anticipated to have a year-end balance of £30.4m.

In addition to the above reserves, specific provisions have been made that set aside sums to meet both current and long term liabilities that are likely or certain to be incurred, but where the amount or timing of the payments are not known. These are:

Fund Description	Balance at 31 March 2016	2016-17		Forecast Balance 31 March 2017	Notes
		Movements in 2016-17	Balance at 30 September 16		
	£000s	£000s	£000s	£000s	
- Short Term Provisions					
1 ETE	712	-33	679	0	
2 CS	1,312	0	1,312	1,312	
3 LGSS Managed	5,545	0	5,545	5,545	
4 Assets & Investments	50	0	50	50	
subtotal	7,619	-33	7,586	6,907	
- Long Term Provisions					
5 LGSS Managed	3,613	0	3,613	3,613	
subtotal	3,613	0	3,613	3,613	
GRAND TOTAL	11,232	-33	11,199	10,520	

BUSINESS PLANNING UPDATE

To: **General Purposes Committee**

Meeting Date: **29 November 2016**

From: **Chris Malyon, Chief Finance Officer**

Electoral division(s): **All**

Forward Plan ref: **Not applicable** *Key decision:* **No**

Purpose: **This report provides the Committee with an overview of the draft Business Planning Proposals and budget position following October Service Committees.**

Recommendation: **The Committee is asked to consider the Council's current budget position and provide comment ahead of Service Committee consideration of Business Planning proposals in December.**

<i>Officer contact:</i>	
Name:	Chris Malyon
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Email:	Chris.Malyon@cambridgeshire.gov.uk
Tel:	01223 699796

1. CONTEXT

- 1.1 General Purposes Committee (GPC) is responsible for the oversight and strategic leadership of the Council's business planning process. This year that leadership has included the implementation of a cross-council programme of transformation, bringing forward innovative ideas to better achieve outcomes at the same time as ushering in a new era of truly one-council working.
- 1.2 The transformation programme has delivered a significant proportion of the savings the Council needs to achieve. Of the £96.8m savings needed across the five years of the plan, £54.9m have been identified to date.
- 1.3 However, the scale of the challenge facing this Council is such that further work is still needed to balance the budget. This report sets out the current state of play and the remaining timetable for GPC's awareness.

2. BUDGET POSITION

- 2.1 The current budget position is set out in the table below. This outlines the budget position at the point of October Service Committees and subsequent developments.

	2017-18 £'000	2018-19 £'000	2019-20 £'000	2020-21 £'000	2021-22 £'000
October Committee gap	-6,207	-3,749	-8,919	-11,785	-11,268
E&E Committee changes*	-834	-	-	-	-
H&CI Committee changes*	-175	-	-	-	-
Post Committee gap	-7,216	-3,749	-8,919	-11,785	-11,268
Further Business Plan developments	1,599	378	-689	-524	274
Current gap	-5,617	-3,371	-9,608	-12,309	-10,994

- 2.2 The Committees changes summarised in the table above are outlined below:

	2017-18 £000
B/R.6.106 – Remove Transport & Infrastructure Policy & Funding services that are not self-funding	-20
B/R.6.107 – Remove Transport & Infrastructure Policy & Funding services that are not self-funding	-30
B/R.6.104 – Reduction in Passenger Transport support	-694
B/R.6.105 – Reduce staff following reduction in provision of passenger transport services	-90
ETE Committee changes	-834
B/R.6.210 – Reduce Community Resilience and Development delivery work	-85
B/R.6.215 – Reduce service levels in Archives	-75
B/R.6.214 – Remove community grants	-15
H&CI Committee changes	-175
Total	-1,009

2.3 The Service level detail of further Business Plan developments is given below:

	2017-18 £'000	2018-19 £'000	2019-20 £'000	2020-21 £'000	2021-22 £'000
CFA	142	92	-956	-791	-
ETE	-45	-	-	-	-
CS	1,479	-	-	-	-
LGSS	-1	-152	-131	-150	-147
PH	10	-	-	-	-
Technical adjustments - inflation	14	438	398	417	421
Total	1,599	378	-689	-524	274

3. RISKS AND OTHER ISSUES TO NOTE

3.1 In addition to the pressures that are accounted for within the figures presented to Service Committees in October there are also a number of risks known to the Council. These risks are regularly monitored by Strategic Management Team (SMT) and within Services, each risk is RAG rated according to a judgement on likelihood and impact. These risks do not appear in the budget figures (e.g. they have not become so highly likely that they are treated as a pressure).

Risk	RAG
Dedicated Schools Grant – potential pressure arising from the consultation on national funding reforms.	Red
Permanent unfunded pressures emerging during 2016-17 financial year	Red
Business Rates Revaluation – due to take effect from 1 st April 2017, which could see significant rises in business rate liabilities in some areas and for some types of property.	Amber
Pension Triennial Review – the pension fund is being re-valued in 2016-17, with consultation results due in November.	Amber
Local Government Finance Settlement	Amber

3.2 With several of the risks being outside of the Council's control - there is a realistic chance that some of the risks outlined above will materialise, to some extent, throughout the remainder of this business planning process.

3.3 Therefore it is advised that for the remainder of the business planning process the Council considers the 2017-18 savings gap that must be met to achieve a balanced budget as ranging from £5.6m to £18m, excluding any adjustment to Revenue Support Grant through the Local Government Finance Settlement.

4. FURTHER TRANSFORMATION PROPOSALS

4.1 It is clear therefore that a significant number of further proposals must be brought forward during the December round of Service Committee meetings. Strategic Management Team have been working hard to identify other opportunities to enable a balanced budget to be considered by the Committee. These opportunities will be included within the December papers considered by service committees.

- 4.2 Following Service Committees in December, GPC will receive a draft of the full Business Plan at its meeting on 10 January. At this point there will be an opportunity provide any final and urgent comments before receiving the Business Plan for the final time on 24 January and being asked to recommend to Council on 14 February.

5. ALIGNMENT WITH CORPORATE PRIORITIES

5.1 Developing the local economy for the benefit of all

For details on significant implications within this category, please see the October Service Committee reports.

5.2 Helping people live healthy and independent lives

For details on significant implications within this category, please see the October Service Committee reports.

5.3 Supporting and protecting vulnerable people

For details on significant implications within this category, please see the October Service Committee reports.

6. SIGNIFICANT IMPLICATIONS

6.1 Resource Implications

This report outlines the overall resource position for the Council over the business planning cycle 2017-21. Significant implications are included throughout the report.

6.2 Statutory, Legal and Risk Implications

Business planning proposals will inevitably carry statutory, risk and legal implications. Significant risks are outlined in section 3.

6.3 Equality and Diversity Implications

Draft Community Impact Assessments were published as part of Service Committee Business Planning documents in October.

6.4 Engagement and Consultation Implications

The significant engagement and consultation implications will be addressed as part of the overarching Business Planning Process.

6.5 Localism and Local Member Involvement Implications

There are no significant implications within this category.

6.6 Public Health Implications

For details on significant implications within this category, please see the October Service Committee reports.

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	Yes Chris Malyon
Has the impact on Statutory, Legal and Risk implications been cleared by LGSS Law?	Not applicable
Are there any Equality and Diversity implications?	Not applicable
Have any engagement and communication implications been cleared by Communications?	Not applicable
Are there any Localism and Local Member involvement issues?	Not applicable
Have any Public Health implications been cleared by Public Health	Not applicable

Source Documents	Location
CYP Committee Business Planning papers (item 6)	Item 6
Adults Committee Business Planning papers (item 5)	Item 5
E&E Committee Business Planning papers (item 4)	Item 4
H&CI Committee Business Planning papers (item 5)	Item 5
Health Committee Business Planning papers (item 4)	Item 4
GPC Business Planning papers (item 9)	Item 9

CONSULTATION RESULTS FOR THE 2017/18 BUSINESS PLAN

To: General Purposes Committee

Meeting Date: 29th November 2016

From: Sue Grace, Executive Director: Customer Services & Transformation

Electoral division(s): All

Forward Plan ref: Not applicable *Key decision:* **No**

Purpose: To inform the committee of the results of the business plan consultation for 2016/17.

Recommendation: General Purposes Committee is asked to note the results of the 2017/18 Business Plan consultation.

<i>Officer contact:</i>	
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Email:	Michael.Soper@cambridgeshire.gov.uk
Tel:	01223 715312

1. BACKGROUND

- 1.1 The approach to the 2017/18 Business Plan consultation was approved by General Purposes Committee (GPC) in May 2016. This paper reports back on the results of the consultation.

2. MAIN ISSUES

2.1 Methodology

Previously GPC approved the following methodology:

- To commission a household survey of approximately 1,300 residents so the results will be significant at a County level. The sample was a stratified, random sample. That is to say participants were randomly selected within the criteria of having a final sample that reflects the age / location structure of the County's population. The survey was competitively tendered and awarded to M-E-L Research.
- As with previous years there was an accompanying digital / on-line consultation with a short animation to explain the County Council's budget position.
- Officers took the opportunity to attend community events during the consultation time scale (September 2016) to talk to the public in detail about the budget options and the challenges faced by the organisation.

2.2 Results: Household Survey

Cambridgeshire County Council commissioned M·E·L Research to undertake a public survey to better understand residents views on council priorities and a proposed increase to council tax. In total 1,327 residents participated in a face-to face interview during the month of September 2016. The full written results from M·E·L Research are provided in **Appendix One**.

Awareness

- 44% were aware of the financial challenges facing the County Council
- 72% of respondents under 35 were unaware of the financial challenges
- 53% were worried about the financial challenges facing the Council
- Respondents over 35 were more likely (58%) to be worried than young people (18-34) (38%)

Priorities

All outcome priority areas for the council were rated highly; in order of importance (out of 10):

- 8.84—Children reaching their full potential
- 8.55—People with disabilities live well independently
- 8.37—People at risk of harm are kept safe
- 8.20—The road network is safely maintained
- 8.06—Older people live independently

- 7.86—The Cambridgeshire economy prospers to the benefit of all residents
- 7.86—People live in strong, supportive communities
- 7.75—People lead a healthy lifestyle and stay healthy longer

Valued Services

- 33% of respondents use libraries regularly, this was the most popular service used from those listed
- 47% did not use any of the services listed
- 56% 'particularly valued' a County Council service.
- 49% who valued a service, said they valued recycling and/or waste services (unprompted)
- 27% who valued a service, said they valued roads (unprompted)

Potential Changes to Council Tax

Respondents chose from 4 options

- 34% support no change in council tax (Option 1)
- 25% support a 2% increase for the Adult Social Care Precept (ASCP) (Option 2)
- 18% support a 1.99% general increase (Option 3)
- 23% support a 3.99 increase (includes 2% ASCP and 1.99% general increase) (Option 4)

Those who were aware of the financial challenges facing the Council were more likely (72%) to support an increase in council tax than those who were not aware (61%). Respondents who use council's services were more likely to support an increase in council tax (69%) than non-service users (62%). Working age respondents and those who live in more affluent areas (using ACORN profile, see **Appendix C** for details) tend to support Option 4 more than other groups.

Figure One: Consultation Results Comparison Table

	2017/18 Consultation Results			2015 consultation (on-line only) 668 residents	2014 consultation Household survey 1,179 residents
	Household Survey 1,327 residents	Community Events 342 residents	On-line Consultation 201 residents		
Option 1: no change in council tax	34%	14%	15%	People were able to select a range between 0% and 5% at ½ increments.	People were able to select a range between 0% and 5% at ½ increments.
Option 2 2% increase, the Adult Social Care Precept (ASCP)	25%	20%	16%	19% selected no increase	48.3% selected No increase
Option 3 a 1.99% general increase	18%	20%	21%	32% selected an increase of 0.5% to 1.99%	38.4% selected an increase of 0.5% to 1.99%
(Option 4) a 3.99 increase (includes 2% ASCP and 1.99% general increase)	23%	46%	48%	48% selected an increase of 2% or above	13.3% selected an increase of 2% or above

2.3 Results: Community Consultation

Council Members and officers talked with well over 350 people (some interviewed as part of groups) at five separate events around the County. 342 people were able to indicate the level of Council Tax increase that they would be happy with. This choice was made after people were shown information about the County Council's budget challenge and the current costs of services. The interviewers asked people why they were making their particular choice and which services were particularly valued.

Potential Changes to Council Tax

Respondents chose from 4 options

- 14% support no change in council tax (Option 1)
- 20% support a 2% increase for the Adult Social Care Precept (ASCP) (Option 2)
- 20% support a 1.99% general increase (Option 3)
- 46% support a 3.99 increase (includes 2% ASCP and 1.99% general increase) (Option 4)

Looking across all the responses (see individual sections) some clear themes emerge:

- A significant reason given for not increasing council tax was for issues of affordability. During the engagement sessions we spoke to people who didn't think that that could afford an increase because they were currently struggling with their household bills. We also met those that were against tax increases as a matter of principle. This group were generally sceptical about public services and linked together many disparate issues as reasons why public services 'couldn't be trusted'.
- Of particular importance was the balance between those opting for the Adult Social Care (ASC) precept (2%) or the general increase of 1.99%.
 - Those supporting the (ASC) precept did so because they had a clear understanding as to what the additional income was for and / or they could clearly identify with the demands arising from this service area through personal experience.
 - Those supporting the 1.99% general increase particularly spoke about the needs for children's services.
- Those seeking the maximum increase (option 4) were likely to comment about the need to 'protect' services or they expressed the 'value' that they felt services delivered for the community together with the feeling that there should be continued support. There were those who felt that they could happily afford an increase, particularly in Cambridge.

Further detail is supplied in **Appendix 2**.

2.4 Results: On-line Consultation

Unlike last year where the on-line survey was the main element of our consultation this year the approach was very much to see this as an additional activity. The on-line survey was

made available on the County Council's website. The survey was supported by a short animated video¹. The link to the survey and video were then promoted on the front page of the County Council's website, via mailing lists to organisations such as parish councils and via Facebook.

A total of 201 people responded to the survey. The following are the main points of the survey results.

- 15% support no change in council tax (Option 1)
- 16% support a 2% increase for the Adult Social Care Precept (ASCP) (Option 2)
- 21% support a 1.99% general increase (Option 3)
- 48% support a 3.99 increase (includes 2% ASCP and 1.99% general increase) (Option 4)

Further detail is supplied in Appendix 2.

3. ALIGNMENT WITH CORPORATE PRIORITIES

3.1 Developing the local economy for the benefit of all

There are no significant implications for this priority.

3.2 Helping people live healthy and independent lives

There are no significant implications for this priority

3.3 Supporting and protecting vulnerable people

There are no significant implications for this priority

4. SIGNIFICANT IMPLICATIONS

3.1 Resource Implications

The commissioned survey cost around £18,000. Other consultation activity was met within the County Council's existing staffing / resources.

3.2 Statutory, Risk and Legal Implications

The County Council has a broad duty to consult in regard to major decisions such as the development of the Business Plan.

3.3 Equality and Diversity Implications

Effective consultation is one of the ways the County Council can meet its equality and diversity obligations.

¹ <https://www.youtube.com/watch?v=LE7E0raHStQ>

3.4 Engagement and Consultation Implications

This is the core subject of the paper.

3.5 Localism and Local Member Involvement

There are no significant implications within this category.

3.6 Public Health Implications

There are no significant implications within this category.

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	n/a
Has the impact on Statutory, Legal and Risk implications been cleared by LGSS Law?	n/a
Are there any Equality and Diversity implications?	n/a
Have any engagement and communication implications been cleared by Communications?	n/a
Are there any Localism and Local Member involvement issues?	n/a
Have any Public Health implications been cleared by Public Health	n/a

Source Documents	Location
Appendix One Business Plan Consultation: 2016 Public Survey, Cambridgeshire County Council. Produced by M-E-L Research, October 2016	Room 015, Shire Hall, Cambridge
Appendix Two Cambridgeshire County Council business planning consultation, results summary, Produced by the Research Group, November 2016	E-mail Michael.Soper@Cambridgeshire.gov.uk for access.



Business Plan Consultation: 2016 Public Survey

Cambridgeshire County Council

**Final Report
October 2016**

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Project details

Title	Business Plan Consultation: 2016 Public Survey
Client	Cambridgeshire County Council
Project number	16115
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Executive Summary

Cambridgeshire County Council commissioned M·E·L Research to undertake a public survey to better understand residents views on council priorities and a proposed increase to council tax. In total 1,327 residents participated in a face-to face interview during the month of September 2016.

Awareness and Priorities

- 44% were aware of the financial challenges facing the County Council
- 72% of respondents under 35 were unaware of the financial challenges
- 53% were worried about the financial challenges facing the Council
- Respondents over 35 were more likely (58%) to be worried than young people (18-34) (38%)
- All outcome priority areas for the council were rated highly, in order of importance (out of 10):
 - **8.84—Children reaching their full potential**
 - **8.55—People with disabilities live well independently**
 - **8.37—People at risk of harm are kept safe**
 - **8.20—The road network is safely maintained**
 - **8.06—Older people live independently**
 - **7.86—The Cambridgeshire economy prospers to the benefit of all residents**
 - **7.86—People live in strong, supportive communities**
 - **7.75—People lead a healthy lifestyle and stay healthy longer**

Valued Services

- 33% of respondents use libraries regularly, this was the most popular service used from those listed
- 47% did not use any of the services listed
- 56% 'particularly valued' a County Council service.
- 49% who valued a service, said they valued recycling and/or waste services (unprompted)
- 27% who valued a service, said they valued roads (unprompted)

Potential Changes to Council Tax

- Respondents chose from 4 options
 - **34% support no change in council tax (Option 1)**
 - **25% support a 2% increase for the Adult Social Care Precept (ASCP) (Option 2)**
 - **18% support a 1.99% general increase (Option 3)**
 - **23% support a 3.99 increase (includes 2% ASCP and 1.99% general increase) (Option 4)**
- Those who were aware of the financial challenges facing the Council were more likely (72%) to support an increase in council tax than those who were not aware (61%)
- Respondents who use council's services were more likely to support an increase in council tax (69%) than non-service users (62%)
- Working age respondents and those who live in more affluent areas (using ACORN profile, see **Appendix C** for details) tend to support Option 4 more than other groups

Introduction

Background

Cambridgeshire County Council, like all councils, faces the major challenge of shrinking budgets along with rising costs and increased demand on services. This means that the Council has to do a lot more with less money. To better understand residents' views on levels of council tax and to inform the Council's transformation plans, Cambridgeshire County Council commissioned M·E·L Research to undertake a public survey on their behalf. The main aim of this research was to understand residents' informed preference for their council tax; pro or against an increase. Residents were provided with context around and reasons for a potential increase and asked to choose between four options that best aligned with their preference.

Methods

Design and Sampling

A 10-minute, face to face (doorstep) survey was administered by trained interviewers via a computer-assisted personal interview (tablet computer) to a broad cross-section of residents during the month of September 2016. In total, 1,327 residents responded to the survey. A full respondent profile is available in **Appendix A**. A copy of the paper survey is located in **Appendix B**.

A sample of starting addresses was drawn randomly from the Postal Address File and was stratified by ward. From each starting postcode, interviewers aimed to achieve approximately 6 interviews. This varies slightly (between 3 and 8 interviews) to align with the population of the ward and most wards had more than one starting postcode. In addition to achieving the desired number of interviews by ward, quotas were set for age, gender, ethnicity, and working status. Interviewers were sent to urban and rural areas to reflect the same split as the county.

Analysis

The adult population (18+) of Cambridgeshire is nearly 500,000; a sample size of 1,327 yields a 95% confidence interval of 2.7 for a response of 50%. This means that when a result is 50%, we can be 95% confident that the true result lies between 47.3% and 52.7%. Data were analysed using SNAP Professional v11 and IBM SPSS V24. Frequencies and percentages were calculated for all of the main questions. Cross-tabulations were calculated by key variables including district, age, ethnicity, gender, working status and if there were children in the household to represent the demography of the county. Average scores were computed for survey items with a 0 to 10 scale (Question 4).

A powerful segmentation tool from CACI called ACORN has been utilised in the analysis and is referenced throughout this report. A detailed explanation of ACORN can be found in **Appendix C**.

Differences in proportions were compared using z-tests and statistically significant results (at the 5% level) are indicated in the text. Where average scores were computed, differences across subgroups were tested for significance using unpaired t-tests and F-tests (ANOVA), where appropriate. Statistical significance means that a result is unlikely due to chance (i.e. It is a real difference in the population).

Reporting

Owing to the rounding of numbers, percentages displayed visually on graphs in the report may not always add up to 100% and may differ slightly when compared with the text. The figures provided in the text should always be used. For some questions, respondents could give more than one response (multi choice). For these questions, the percentage for each response is calculated as a percentage of the total number of respondents and therefore percentages do not add up to 100%.

The main body of this report presents the key findings including subgroup analysis of the key sections of the survey. The results do not appear in the order of the questionnaire.

Results

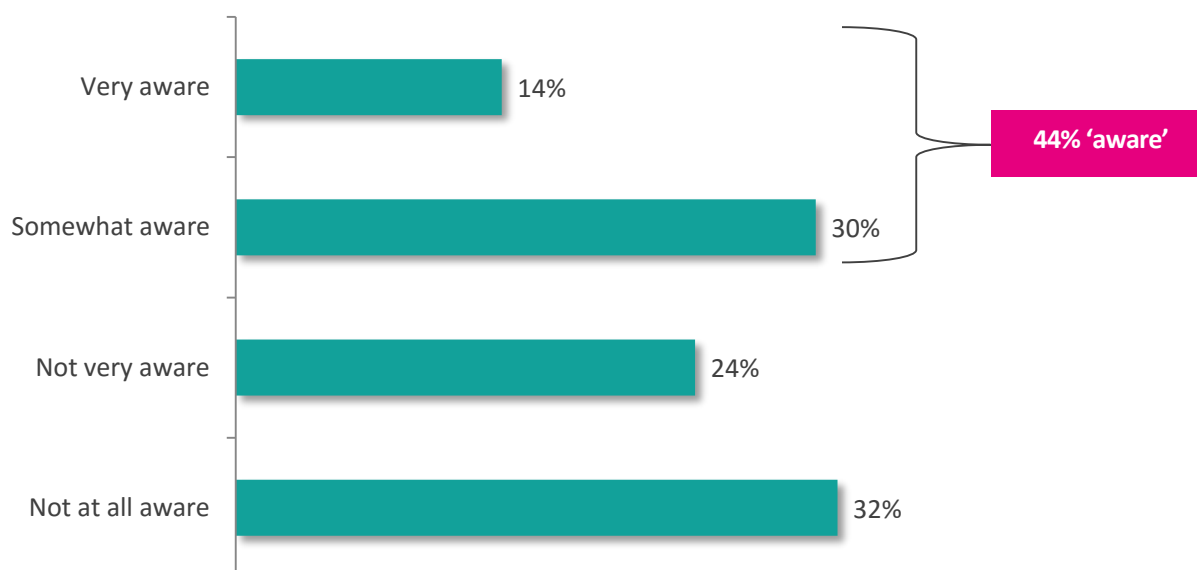
Awareness and Priorities

Cambridgeshire County Council sought to gather insight into the level of awareness about the financial challenges the County faces (i.e. the need to save £23 million in the next year and £86 million in the next 5 years). More than half (56%) of respondents said they were unaware of the financial challenges facing the Council (Figure 1).

Young people (35 and under) were the least aware (72% unaware) compared to those aged 35-44 (58% unaware) and people over 45 (46% unaware). Respondents from the Affluent Achievers ACORN group were the most aware (54%) compared to all the other groups (42%).

Figure 1: Awareness of financial challenges of the Council

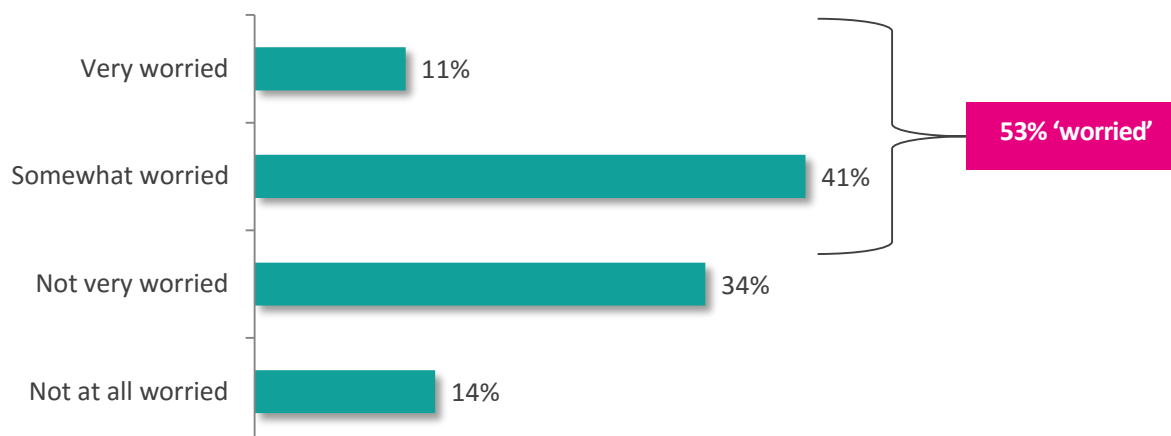
Percentage of respondents – base size 1312



The Council also wanted to understand how respondents felt about the financial challenges and just over half (53%) said that they were worried (Figure 2). Respondents over 35 were more likely to be worried (58%) than younger people (38%). Women were also more likely (56%) to be worried than men (49%). Worrying and awareness tended to overlap. Nearly seven in ten (68%) respondents who were aware of the challenges prior to the interview were also worried, compared to just four in ten (40%) who were unaware and also worried.

Figure 2: Feelings about continuing financial challenges of Council

Percentage of respondents – base size 1210



Valued Services

The Council aims to achieve specific outcomes that ensure the wellbeing and safety of their residents; these outcomes overlap with key service areas. Respondents were asked to indicate the importance of each from 0 to 10, where 10 is very important. Average scores were calculated for each outcome and are shown in order of importance (Figure 3). Generally, respondents rated each area as high in importance with scores ranging from 7.75 to 8.84. Helping children to reach their full potential was rated as the most important with an average score of 8.84 out of 10.

Figure 3: Average Score for importance

Percentage of respondents – base size 1294



A subgroup analysis was undertaken to better understand how different groups place importance on each of these key areas (**Appendix D**). Average scores were highest for ‘Children are helped to reach their full potential’ for all groups except older people, whose highest score was for ‘Older people live independently’. ‘People with disabilities live well independently’ received the second highest average score across all subgroups.

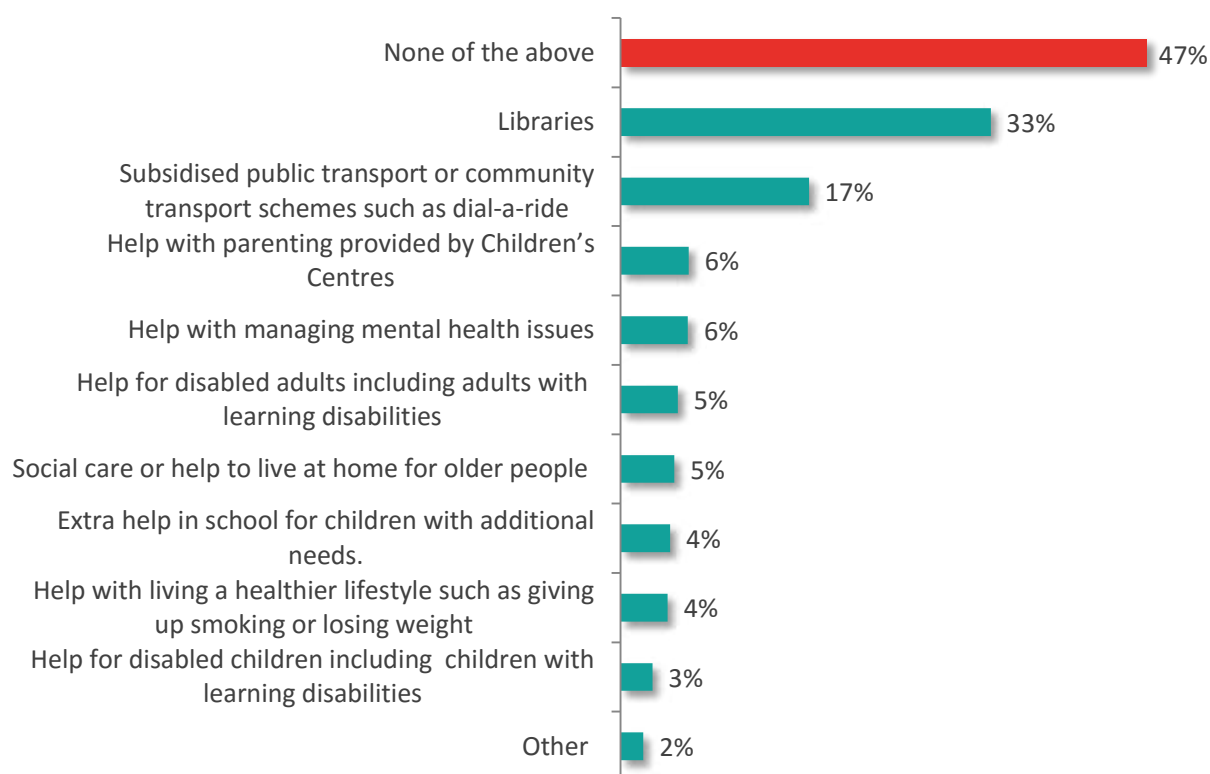
‘People lead a healthy lifestyle and stay healthy longer’ received the lowest average score (eighth place ranking) for all groups, except for older people (65+) and the Rising Prosperity ACORN group where average scores were ranked sixth.

Experience of County Council Services

Respondents were given a specific list of County Council services and asked which (if any) they use regularly. It should be noted that general County Council work carried out on behalf of the whole community such as road maintenance was not included in the list. The most popular services from the list were libraries (33%) followed by subsidised transport (17%) (Figure 4). Just under half (47%) of respondents said that they don’t use any of the services regularly.

Figure 4: Council services used regularly (multiple response)

Percentage of respondents – base size 1327



Respondents were asked to keep in mind that in addition to services listed above, the Council also maintains the County's roads and cycle-ways, manages the disposal of waste and develops the County's economy. They were then asked if there was any part of the County Council's Services that they particularly valued and more than half (56%) said yes (Figure 5). The most popular services that respondents valued, and by a large margin, were waste and recycling services (49%); roads were also valued by over one quarter (27%) of respondents (Figure 6). Over one in ten (13%) said that they valued 'all services'.

Figure 5: Valued services

Percentage of respondents – base size 1193

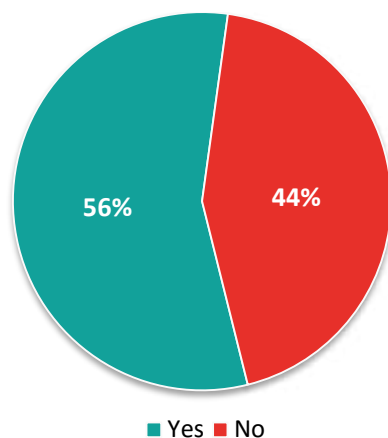
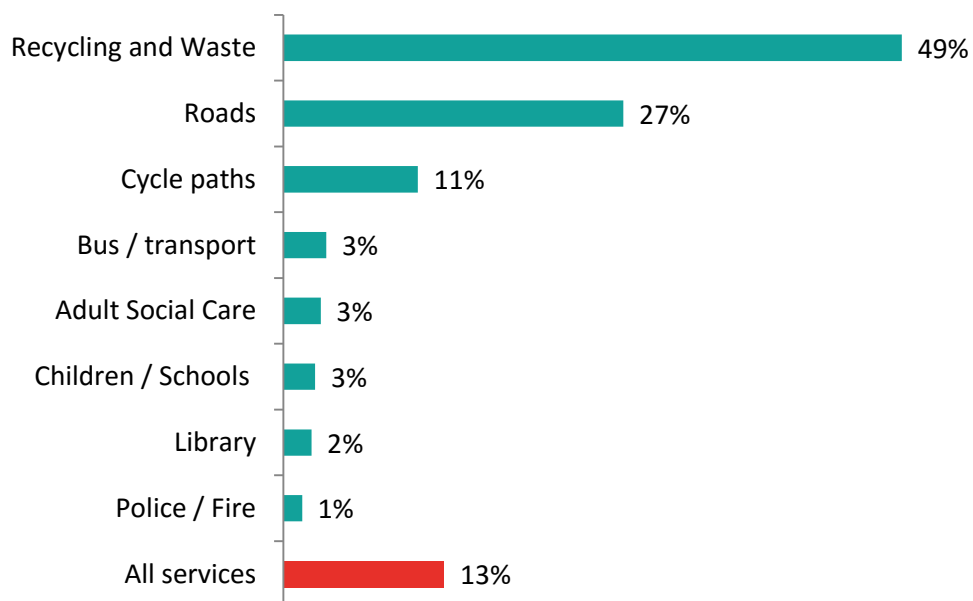


Figure 6: Part of the County Council that services that are particularly valued (open ended, multiple response)

Percentage of respondents – base size 669



Potential Changes to Council Tax

Respondents were told about four options for a change in council tax in Cambridgeshire, including an option for no change to the current council tax rates (Option 1). Respondents were also given a card so they could read the information for themselves (Table 1). This included an option (Option 2) for an increase that is already included in the Council's current business plan that would increase council tax by 2%, called the Adult Social Care Precept (ASCP). The ASCP is an amount the Council is allowed to increase council tax by specifically to pay for care for adults, particularly the elderly.

It was also explained to respondents that any increase applies only to the County Council's part of Council tax (i.e. other parts of council tax also go to pay for police, fire, parish and district council services).

Table 1: Council Tax Options with descriptions (taken from survey Showcard provided to resident)

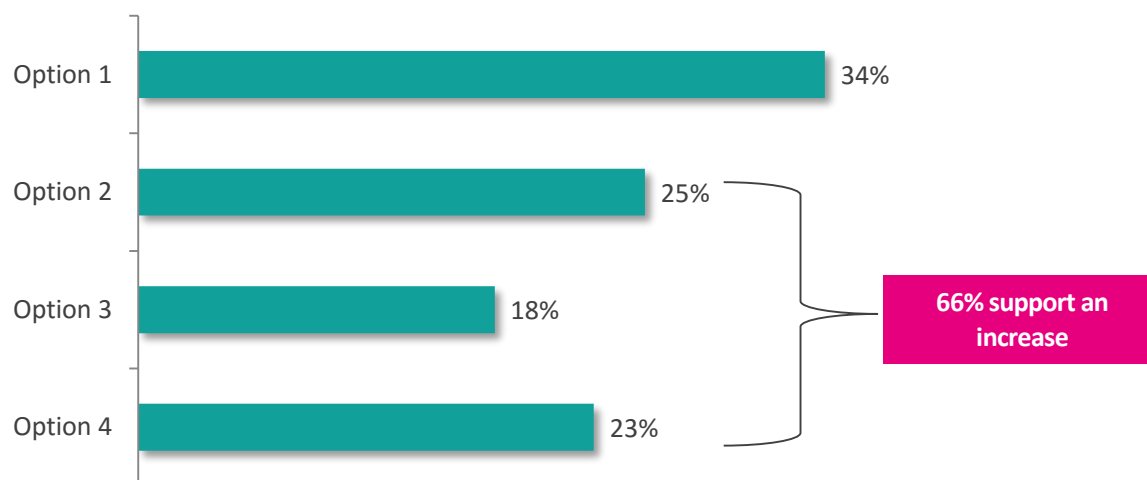
Option 1	Not increasing council tax. This would mean <u>not</u> raising the Adult Social Care Precept of 2%. An average band D property would not have to pay the 45p per week currently planned (£23.34 a year) <u>but</u> the County Council would have to find an additional £5.13 million of savings from Adult Social Care in order to balance the budget.
Option 2	<u>Only raising the Adult Social Care Precept of 2%.</u> An average band D property would pay an extra 45p per week (£23.34 a year) and the resulting £5.13 million already included in our plans would <u>just</u> be spent on Adult Social Care.
Option 3	<u>Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.</u> An average band D property would pay an extra 45p per week (£23.22 a year). The County Council would have to find at least an extra £200,000 from Adult Social Care in savings to balance our budget, however it means the £5.11m raised can be spent <u>on all services</u> rather than only ring fenced and currently planned to Adult Social Care.
Option 4	<u>Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%</u> An average band D property would pay an extra 90p per week (£46.56 a year). This would mean that the £5.13 million currently planned would be spent on Adult Social Care <u>and</u> a further £5.11 million would be available to be spent on other services.

The majority of respondents (66%) were in favour of an increase of some sort and Option 2 was supported by slightly more residents (25%) than Option 4 (23%) (Figure 7). Option 3, a general increase of 1.99% had the least support (18%).

The remainder of respondents (34%) were in support of no increase (Option 1) in Council Tax. Although most respondents (98%) provided a response, a small number (33 respondents) said that they would need more information to make a decision.

Figure 7: Preference of Council Tax increase

Percentage of respondents – base size 1294

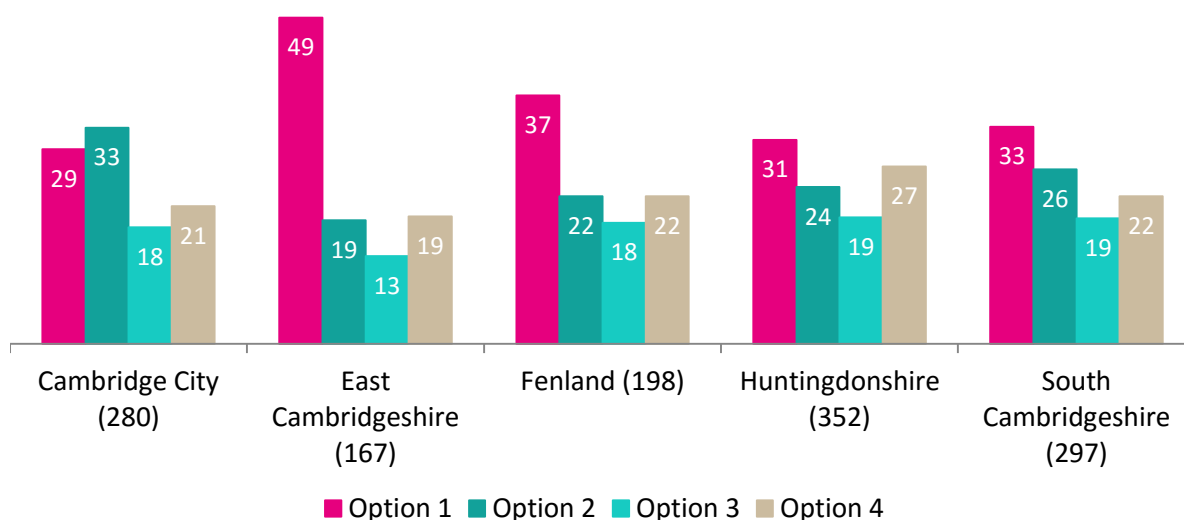


The majority of respondents across all districts were in support of an increase in council tax, with the exception of East Cambridgeshire where only half (51%) supported an increase to tax (Figure 8). East Cambridgeshire had the highest proportion of respondents (61%) in the Comfortable Communities ACORN group, which may have contributed to this result.

Option 1 was the most frequently selected option in all districts, except Cambridge City (29%), where slightly more respondents preferred Option 2 (33%). The profile for Cambridge City respondents was younger than in any other district which likely contributed to this result. Out of all districts, Huntingdonshire favoured Option 4 the most.

Figure 8: Option Preference of Council Tax increase by District (%)

Percentage of respondents – base size indicated in graph



A full subgroup analysis was undertaken to better understand the preferences of different groups. Group differences that were statistically significant are shown in Table 2.

Working aged people (35-64) were more likely (27%) to select Option 4 than younger or older people (both 19%). More residents in the Affluent Achiever ACORN group preferred Option 4 (30%) to Option 1 (27%), although this difference is not significant. Differences in the lower three ACORN groups were significant, with respondents preferring Option 1 over Options 2-4. The majority of non-white respondents (59%) prefer Option 1 and less than one in ten (7%) preferred Option 4.

Table 2: Option preference by demographics (group differences that are statistically significant)

Sub-group (N)	Supports No Increase (Option 1)	Supports Increase (Options 2-4)	Option 2	Option 3	Option 4
Age					
18-34 (375)	37%	64%	23%	22%	19%
35-64 (640)	32%	68%	25%	16%	27%
65+ (260)	37%	63%	29%	16%	19%
ACORN					
Affluent Achiever (304)	26%	74%	27%	17%	30%
Rising Prosperity (179)	34%	66%	28%	18%	20%
Comfortable Communities (440)	36%	64%	23%	18%	23%
Financially Stretched (210)	36%	64%	23%	20%	21%
Urban Adversity (139)	42%	58%	30%	14%	14%
Ethnicity					
White (1198)	32%	68%	26%	19%	24%
All other groups (85)	59%	41%	25%	9%	7%

Differences in gender, caring responsibilities, tax reduction status, working status, and whether or not children live in the home were not significant (Table 3). A higher proportion (73%) of respondents with caring responsibilities supported an increase in council tax than non-carers (65%) although this is not significant likely due to the small base size. Respondents who receive a reduction in their council tax were slightly more likely (38%) to support no increase than those who pay full price (32%), but the difference is not statistically significant.

Table 3: Option preference by demographics (group differences that are not statistically significant)

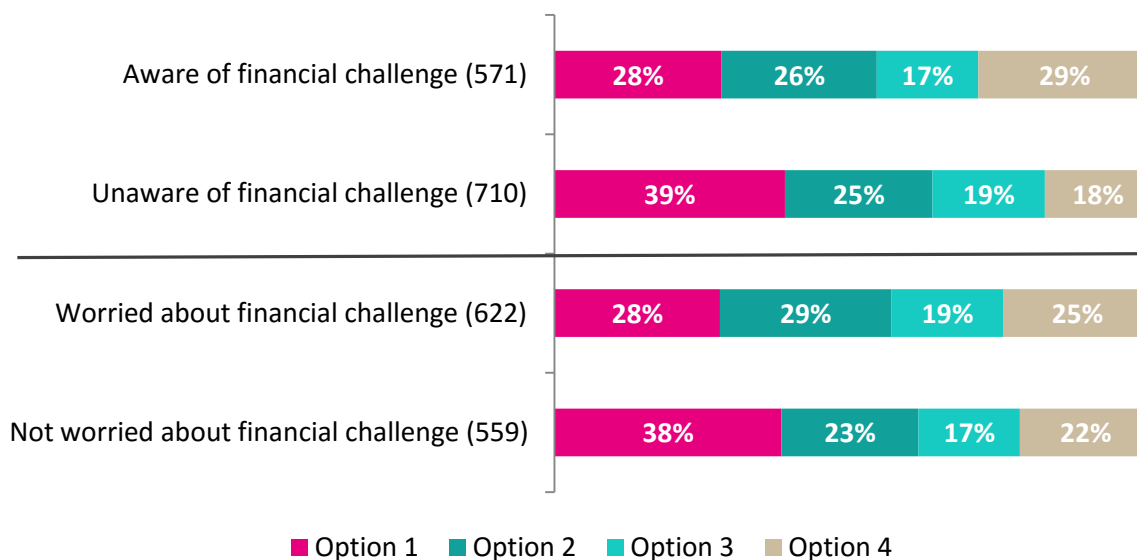
Sub-group (N)	Supports No Increase (Option 1)	Supports Increase (Options 2-4)	Option 2	Option 3	Option 4
Gender					
Female (647)	33%	67%	26%	19%	22%
Male (646)	35%	65%	25%	16%	23%
Working Status					
Working (777)	33%	67%	24%	19%	24%
Retired (303)	36%	64%	29%	14%	21%
Not working (214)	36%	64%	26%	18%	20%
Caring responsibilities					
Carer (123)	27%	73%	29%	19%	25%
Non-carer (1169)	35%	65%	25%	18%	22%
Children in household					
Children (448)	35%	65%	23%	21%	21%
No children (846)	34%	66%	27%	16%	24%
Tax Reduction Recipient					
Receive tax reduction (274)	38%	62%	26%	16%	19%
No tax reduction (882)	32%	68%	25%	19%	24%

Respondents who were aware of the financial challenges facing the County Council were more likely (72%) to support an increase in council tax compared to those who were unaware (61%) (Figure 9). Respondents who said they were aware, were split between Option 1 (28%) and Option 4 (29%); compared to 39% and 18%, respectively for those who were not aware of the financial challenges before they participated in the interview.

Results were similar for those who were worried about the financial challenges (Figure 9). Respondents who were worried about the challenges were more likely (72%) to support an increase in council tax than those who were not worried (62%).

Figure 9: Option preference by awareness and worry of financial challenge

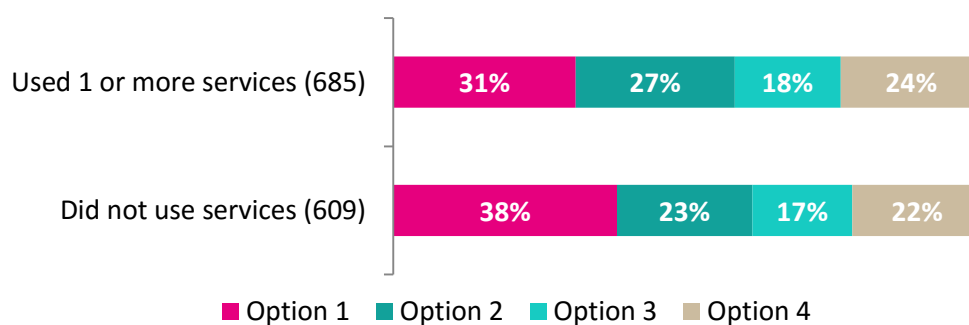
Percentage of respondents – base size indicated in graph



Respondents who regularly use council services were more likely (69%) to support an increase in tax than regular service users (62%).

Figure 10: Option preference by use of council services

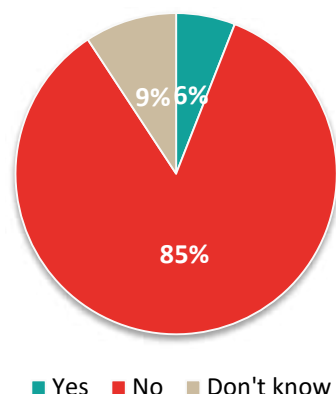
Percentage of respondents – base size indicated in graph



All respondents were asked if they would increase Council Tax by more than 3.99% if there were no restrictions on the size of the increase and approximately one in twenty (6%) said they would (Figure 11). We also examined this for those who selected Option 4 in the previous question and 24% said they would increase tax by more than 3.99%.

Figure 11: Increasing Council Tax by more than 3.99%

Percentage of respondents – base size 1327



Where a respondent was in favour of an increase of more than 3.99%, they were asked what percentage they would raise tax by and responses (71 in total) ranged from 4% to 10%, with 5% (46 responses) the most common response.

Reasons for choosing each option

After selecting their preferred option, residents were asked their reasons. There were a few common themes throughout and these are shown in Table 4. The majority of respondents (82%) who gave a reason for selecting Option 1, said that tax is too high already or they could not afford any increase. It is important to note that not everyone gave a reason and 40% of all those who selected Option 1 did not indicate their reason. For Options 2-4, respondents tended to comment on what was more important to them—either money spent on adult social care or money spent on all services. Illustrative quotes are shown in Table 5.

Table 4: Most popular reasons given for choosing each Option

Option 1	Tax is too high already / cannot afford increase (217 comments)	Council should find efficiencies instead (32 comments)	
Option 2	Adult social care is important / needs money (203 comments)	2% not too much / can afford the increase (25 comments)	
Option 3	Money used on all services (106 comments)	1.99% not too much / can afford the increase (25 comments)	Seems the most fair (21 comments)
Option 4	Money used on all services (167 comments)	3.99% not too much / can afford the increase (58 comments)	Adult social care is important (15 comments)

Table 5: Illustrative quotes for choosing each option

Option 1	<p>"The council tax is already expensive for families trying to balance their finances which are already a struggle for most. We find it difficult meeting all our bills every month."</p> <p>"I don't want to pay anything extra, already we are paying too much. They should spend more wisely and planning."</p>
Option 2	<p>"Because I know the social care for adults have cut down drastically and its extra pressure on hospital and GPs. I think they really need help."</p>
Option 3	<p>"Help for the adult social care is very important but providing for all services is better."</p>
Option 4	<p>"We could afford it. We need to increase levels of care and can only do this with more money"</p> <p>"The funds would go to help adult social care significantly but will also benefit other services too"</p>

Conclusions

This research engaged with over 1,300 residents in Cambridgeshire to seek their views on priorities for the County Council and informed preference for a potential change in council tax. Before directly asking what residents thought, we explained the Council's current situation so that everyone was making a decision with a general level of knowledge about the current financial challenges. We learned that less than half (44%) of residents were already aware of the financial challenges and more than half (53%) were worried about them. Many of the comments provided indicate that residents appreciate the need for the Council to look after residents and perhaps a potential reduction in services for either themselves or their families was worrisome.

Residents were also asked to rate the importance of eight key outcomes that the Council aims to achieve and helping 'children to reach their full potential' was rated the most important followed closely by helping 'people with disabilities live well independently'. All outcomes were rated highly in general, but the top two reflect that protecting vulnerable people, including children, as the highest priority. Children's social care, children's centres and schools were mentioned relatively fewer times in the comments section compared to adult social care, but this may reflect the attention on adult social care (e.g. adult social care precept) and the public's increased knowledge of the pressures on the Council and NHS because of an aging population.

Residents were asked directly what, if any, services that the Council provides that they particularly value and recycling and waste was listed by nearly half (49%) of those that said that they value services. This was an open text box, although examples were given and likely prompted residents to think of these areas first.

In addition to giving their views on County Council services, residents were provided with four options for a potential change to their council tax rate and asked to select their preferred option. Residents were provided with some context and implications to help make an informed decision. They were also provided with an example of what an increase would be for the 'average Band D' property (e.g. 2% would be 45p per week); they were not provided with the exact figures for their own property band or other property bands.

Two thirds (66%) of residents were in favour of an increase (Options 2-4), but the amount they were comfortable with and where they wanted it spent varied. Slightly more residents were in favour of raising tax by 2% for the adult social care precept (ASCP) (Option 2). A similar portion of residents (23%) were in support of a 3.99% increase that includes the ASCP and a 1.99% general increase. The comments reflect that many residents considered both their personal circumstances (e.g. what they can afford) and the importance of services for the community.

Residents in favour of Option 4 tended to be from more affluent areas, perhaps reflecting that a greater percentage increase would be more welcome and affordable for people who live in more expensive areas.

One third (34%) of residents were in support of no increase to their council tax (Option 1) and the majority of the comments given were financial in nature—either they were paying too much already or that they could not afford any increase. Residents who were in support of no increase tended to be from less affluent backgrounds; 42% of residents in the Urban Adversity ACORN group (who tend to be from the most deprived and poorest backgrounds) were in support of no increase.

Any increase to council tax should consider those in the most deprived areas to ensure the increase is affordable. As mentioned earlier, residents were given an example of a Band D property and it is possible that they considered the implication of a 45p or 90p weekly increase, instead of a smaller amount that would correspond to a lower band. This research does not directly assess the financial implications on residents. However, comments from a small portion of residents who selected Option 1 suggested an increase would be unaffordable.

Appendix A: Respondent Profile

Appendix B: Questionnaire

Appendix C: About CACI ACORN

Appendix D: Subgroup analysis for Priority Areas (Question 4)

Appendix A: Respondent Profile

Sub-group	No.	%
Age		
18-24	154	12
25-34	231	17
35-44	243	18
45-54	233	18
55-64	182	14
65-84	262	20
85+	21	2
Gender		
female	662	50
male	664	50
Ethnicity		
white British	1101	83
other white	127	10
all other groups	83	7
Working Status		
employed	799	60
retired	307	23
student	59	4
looking after home / family	73	6
long-term sick / disabled	40	3
something else	49	4

Sub-group	No.	%
Long-standing illness, disability, or infirmity that limits activity in any way		
yes	218	16
no	1106	83
Carer		
yes	123	9
no	1201	91
Number of people in household		
one	203	15
two	466	35
three	264	20
four or more	394	30
Children < 16 in household		
yes	462	35
no	864	65
ACORN		
Affluent Achiever	313	24
Rising Prosperity	183	14
Comfortable Communities	452	35
Financially Stretched	215	16
Urban Adversity	142	11

Appendix B: Questionnaire

Cambridgeshire Budget Consultation - 16115

Hello, my name is and I work for MEL Research an independent research company. I am conducting a survey on behalf of Cambridgeshire County Council.

The Council is seeking resident views to help them plan the budget next year, including setting the level of council tax as well as making savings.

The information you provide will be kept confidential and not be linked to your name or address. The survey should take about 10 minutes, are you happy to continue?

Section 1

Q1 First can I just check that you are 18 or over?

Yes ☐ 1 No (Thank you and close) ☐ 2

Q2 Just to give you a bit of background. The Council spends £549 million a year on services for residents and needs to find savings over £23 million in the next year and £86 million over the following 5 years. This is in addition to the £175 million already saved over the past 5 years.
[Optional SHOWCARD 0, for those interested in current breakdown of Council spending]

Before today, how aware were you of the level of financial challenges facing the County Council?
(i.e. the amount they need to save) **SHOWCARD 1**

Very aware ☐ 1 Not at all aware ☐ 4
Somewhat aware ☐ 2 Unsure / Don't know ☐ 5
Not very aware ☐ 3

Q3 How do you feel about the continuing financial challenges faced by the County Council?
SHOWCARD 2

Very worried ☐ 1 Not at all worried ☐ 4
Somewhat worried ☐ 2 Unsure / Don't know ☐ 5
Not very worried ☐ 3

Q4 On a scale of 0 to 10, with 10 being 'very important' and 0 being 'not at all important', how important do you think each of the following outcomes are that County Council services are working to achieve? **SHOWCARD 3**

	0	1	2	3	4	5	6	7	8	9	10	Don't know
Older people live independently	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People with disabilities live well independently	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People live in strong, supportive communities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The road network is safely maintained	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Children are helped to reach their full potential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People at risk of harm are kept safe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Cambridgeshire economy prospers to the benefit of all residents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People lead a healthy lifestyle and stay healthy longer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Council Tax:

Q5 Do you or does someone in your household pay council tax? (If council tax is included in your rent, tick YES)

Yes (Go to Q6) ☐ 1 Don't know (Go to Q7) ☐ 3
No (Go to Q7) ☐ 2

Q6 Do you receive a reduction in Council Tax due to household circumstances?

Yes ☐ 1 Don't know ☐ 3
No ☐ 2

Question 7

READ OUT: For the next question, the council wants your view on a proposed increase to council tax by 2% and there are four options to choose from. The 2% increase is called the Adult Social Care Precept, this is what the Council is allowed to increase tax by and it goes to pay for care for adults, mostly the elderly.

The increase applies to the Council's portion of your tax only (other parts of tax go to police, fire, parish and district councils).

READ OUT: Just so you know, a 2% increase means the average household (Band D council tax) will pay an extra 45p a week or £23.34 per year. To quickly summarise the 4 OPTIONS:

Option 1 is no increase in Council Tax. The Council would need to find over £5 million in savings from the planned Adult Social Care budget.

Option 2 is the 2% planned increase and would all go to Adult Social Care.

Option 3 is a general increase of 1.99% instead, and the money could be used across services (not exclusively for adult social care).

Option 4 is to raise both the Adult Social Care Precept and a general increase (option 2 and 3 above). A total increase of 3.99%.

Which of the following four options for the County Council's part of Council tax do you support? **SHOWCARD 4 (Allow resident to read showcard, assist them if needed)**

Option 1: Not increasing council tax.

This would mean not raising the Adult Social Care Precept of 2%.

An average band D property would not have to pay the 45p per week currently planned (£23.34 a year) but the County Council would have to find an additional £5.13 million of savings from Adult Social Care in order to balance the budget.

Option 2: Only raising the Adult Social Care Precept of 2%.

An average band D property would pay an extra 45p per week (£23.34 a year) and the resulting £5.13 million already included in our plans would just be spent on Adult Social Care.

Option 3: Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.

An average band D property would pay an extra 45p per week (£23.22 a year).

The County Council would have to find at least an extra £200,000 in savings from Adult Social Care to balance our budget, however it means the £5.11m raised can be spent on all services rather than only ring fenced and currently planned to Adult Social Care.

Option 4: Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%

An average band D property would pay an extra 90p per week (£46.56 a year).

This would mean that the £5.13 million currently planned would be spent on Adult Social Care and a further £5.11 million would be available to be spent on other services.

Q7 INTERVIEWER TO CONFIRM WITH RESPONDENT (SHOWCARD 4)

- | | | | |
|---------------|----------------------------|-------------------------------|----------------------------|
| Option 1..... | <input type="checkbox"/> 1 | Option 4..... | <input type="checkbox"/> 4 |
| Option 2..... | <input type="checkbox"/> 2 | Don't know - DO NOT READ..... | <input type="checkbox"/> 5 |
| Option 3..... | <input type="checkbox"/> 3 | | |

Q8 Can you please tell us why you chose {Q7} for Council tax? (If don't know, tell us if you require more information to make a decision)

Q9 If there were no restrictions on the size of Council tax increase would you increase Council tax by more than 3.99%?

- | | | | |
|----------------------|----------------------------|-----------------------------|----------------------------|
| Yes (Go to Q10)..... | <input type="checkbox"/> 1 | Don't know (Go to Q11)..... | <input type="checkbox"/> 3 |
| No (Go to Q11)..... | <input type="checkbox"/> 2 | | |

Q10 In total, including 3.99%, by how much would you increase Council Tax? Please put a total percent (%) figure below.

(As a guide, for each 1% an average band D property would pay approximately an extra 23p per week £11.67 a year)

Experience of County Council Services:

Q11 Which of the following County Council services do you or someone in your household use regularly? **SHOWCARD 5 - TICK ALL THAT APPLY**

- | | | |
|---|--------------------------|----|
| Help with parenting provided by Children's Centres | <input type="checkbox"/> | 01 |
| Extra help in school for children with additional needs | <input type="checkbox"/> | 02 |
| Help for disabled children including children with learning disabilities | <input type="checkbox"/> | 03 |
| Libraries | <input type="checkbox"/> | 04 |
| Help with living a healthier lifestyle such as giving up smoking or losing weight | <input type="checkbox"/> | 05 |
| Help with managing mental health issues | <input type="checkbox"/> | 06 |
| Help for disabled adults including adults with learning disabilities | <input type="checkbox"/> | 07 |
| Social care or help to live at home for older people | <input type="checkbox"/> | 08 |
| Subsidised public transport or community transport schemes such as dial-a-ride | <input type="checkbox"/> | 09 |
| Other (please specify) | <input type="checkbox"/> | 10 |
| None of the above | <input type="checkbox"/> | 11 |

Other

Q12 Keeping in mind that as well as the above the County Council also maintains the County's roads and cycle-ways, manages the disposal of waste and develops the County's economy.

Is there any part of County Council services that you particularly value?

Yes.....☐ 1 No.....☐ 2 Don't know.....☐ 3

If yes, please explain

READ OUT: In the next section we will ask a few questions about you. This is to help make sure we talk to a range of residents.

Q13 Can I please take your postcode? This will not be passed back to the Council.

INTERVIEWER TO WRITE REFUSED WHERE APPLICABLE

Q14 And can I confirm that you live in - **READ OUT**

- | | | | | | |
|--------------------------|--------------------------|---|----------------------------|--------------------------|---|
| Cambridge City..... | <input type="checkbox"/> | 1 | Huntingdonshire | <input type="checkbox"/> | 4 |
| East Cambridgeshire..... | <input type="checkbox"/> | 2 | South Cambridgeshire | <input type="checkbox"/> | 5 |
| Fenland | <input type="checkbox"/> | 3 | | | |

Q15 How would you describe your gender?

Female.....☐ 1 Male.....☐ 2 Other.....☐ 3

Q16 What age band do you fall in? **SHOWCARD 6**

- | | | | | | |
|-------------|--------------------------|---|-------------------------|--------------------------|---|
| 18-24 | <input type="checkbox"/> | 1 | 55-64 | <input type="checkbox"/> | 5 |
| 25-34 | <input type="checkbox"/> | 2 | 65-84 | <input type="checkbox"/> | 6 |
| 35-44 | <input type="checkbox"/> | 3 | 85+ | <input type="checkbox"/> | 7 |
| 45-54 | <input type="checkbox"/> | 4 | Prefer not to say | <input type="checkbox"/> | 8 |

Q17 Do you have any long-standing illness, disability, or infirmity that limits your activities in any way?

Yes ☐ 1 Prefer not to say ☐ 3
 No ☐ 2

Q18 How would you describe your ethnic group? **SHOWCARD 7**

English / Welsh / Scottish / Northern Irish / British <input type="checkbox"/> 01	Bangladeshi <input type="checkbox"/> 11
Irish <input type="checkbox"/> 02	Chinese <input type="checkbox"/> 12
Gypsy or Irish Traveller <input type="checkbox"/> 03	Any other Asian background <input type="checkbox"/> 13
Any other White background <input type="checkbox"/> 04	African <input type="checkbox"/> 14
White and Black Caribbean <input type="checkbox"/> 05	Caribbean <input type="checkbox"/> 15
White and Black African <input type="checkbox"/> 06	Any other Black / African / Caribbean background <input type="checkbox"/> 16
White and Asian <input type="checkbox"/> 07	Arab <input type="checkbox"/> 17
Any other Mixed / multiple ethnic background <input type="checkbox"/> 08	Any other ethnic group <input type="checkbox"/> 18
Indian <input type="checkbox"/> 09	Prefer not to say <input type="checkbox"/> 19
Pakistani <input type="checkbox"/> 10	

(IF Q18= 4, 8, 13, 16, or 18) Other, please explain

Q19 What is your working status? **SHOWCARD 8**

Employee: Part-time (30 or fewer hours per week) <input type="checkbox"/> 01
Employee: Full-time (31 or more hours per week) <input type="checkbox"/> 02
Self-employed: Part-time (30 or fewer hours per week) <input type="checkbox"/> 03
Self-employed: Full-time (31 or more hours per week) <input type="checkbox"/> 04
Unemployed and available for work <input type="checkbox"/> 05
Retired <input type="checkbox"/> 06
Student (including full-time students) <input type="checkbox"/> 07
Looking after home or family <input type="checkbox"/> 08
Long-term sick or disabled <input type="checkbox"/> 09
Other <input type="checkbox"/> 10

Other, please explain

Q20 Including yourself how many people (adults and children) live in the household?

1-One <input type="checkbox"/> 01	6-Six <input type="checkbox"/> 06
2-Two <input type="checkbox"/> 02	7-Seven <input type="checkbox"/> 07
3-Three <input type="checkbox"/> 03	8-Eight <input type="checkbox"/> 08
4-Four <input type="checkbox"/> 04	9-Nine <input type="checkbox"/> 09
5-Five <input type="checkbox"/> 05	10 or more <input type="checkbox"/> 10

Q21 (IF Q20 = two or more) Are there any children, under 16 years old living in the household?

Yes ☐ 1 No ☐ 2 Prefer not to say ☐ 3

Q22 Are you a carer? By carer we mean, do you look after, or give any help or support to family members, friends, neighbours or others because of either (1) they have long-term physical or mental ill-health or disability or (2) they have problems related to old age?

[Additional notes: This is an unpaid carer, but they can be seeking carer benefits. They don't need to live in the same household.]

Yes.....☐¹ No.....☐² Prefer not to say.....☐³

Q23 The County Council would like to offer you the opportunity to remain in touch by e-mail and from time to time and send you links so you can take part in further consultation surveys.

Would you like to participate?

Yes.....☐¹ No.....☐² Don't know.....☐³

Q24 Just to let you know that for quality control purposes, someone from my office may call you to verify my work. Are you happy for them to do so?

These details are kept confidential and are not linked to your responses and will not be passed on to any third party.

Yes.....☐¹ No.....☐²

(IF Q23 or Q24 = YES) Thank you for agreeing to provide this information. Could I please take your name, email address, and phone number? This information will not be linked to your responses.

Q25

Respondent Name	<input type="text"/>
Email Address	<input type="text"/>
Telephone Number	<input type="text"/>
Full Address (Interviewer to write where they are)	<input type="text"/>

Thank you for your time.

Q26 Interviewer name

Q27 Starting Postcode

Appendix C: About CACI ACORN

A Classification of Residential Neighbourhoods (Acorn) is a powerful segmentation tool from CACI.

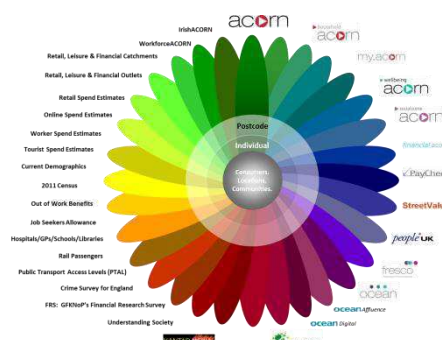
What is Acorn?

Acorn is a powerful consumer classification that segments the UK population. By analysing demographic data, social factors, population and consumer behaviour, it provides precise information and an understanding of different types of people. Acorn provides valuable consumer insight helping you target, acquire and develop profitable customer relationships and improve service delivery.

Acorn segments postcodes and neighbourhoods into 6 Categories, 18 Groups and 62 types, three of which are not private households (see the reference table overleaf). By analysing significant social factors and population behaviour, it provides precise information and in-depth understanding of the different types of people.

What data goes into Acorn?

Acorn takes advantage of the new data environment created by the Public Data Group, Open Data and similar initiatives. CACI have followed the lead of the ONS Beyond 2011 project to investigate how to replace the census with alternative sources of information.



The advantage of this approach is the use of public registers and large private sector permissioned databases to build up comprehensive data for households and families across the country. Data such as house type, housing tenure, family structure and age, have been the core of all geodemographic segmentations. Having this information for nearly every household provides a base for Acorn and Household Acorn.

Many of the inputs are government registers or data sets available as Open Data, through freedom of information, or purchased under licence. CACI has also made extensive use of data from the private sector, for example housing adverts placed on a number of online property portals.

Where useful information is not readily available CACI have compiled the data themselves.

Acorn Category	Acorn Group	Acorn Type
1 Affluent Achievers	1.A Lavish Lifestyles	1.A.1 Exclusive enclaves
		1.A.2 Metropolitan money
		1.A.3 Large house luxury
	1.B Executive Wealth	1.B.4 Asset rich families
		1.B.5 Wealthy countryside commuters
		1.B.6 Financially comfortable families
		1.B.7 Affluent professionals
		1.B.8 Prosperous suburban families
		1.B.9 Well-off edge of towners
	1.C Mature Money	1.C.10 Better-off villagers
		1.C.11 Settled suburbia, older people
		1.C.12 Retired and empty nesters
		1.C.13 Upmarket downsizers
2 Rising Prosperity	2.D City Sophisticates	2.D.14 Townhouse cosmopolitans
		2.D.15 Younger professionals in smaller flats
		2.D.16 Metropolitan professionals
		2.D.17 Socialising young renters
	2.E Career Climbers	2.E.18 Career driven young families
3 Comfortable Communities	3.F Countryside Communities	2.E.19 First time buyers in small, modern homes
		2.E.20 Mixed metropolitan areas
		3.F.21 Farms and cottages
	3.G Successful Suburbs	3.F.22 Larger families in rural areas
		3.F.23 Owner occupiers in small towns and villages
		3.G.24 Comfortably-off families in modern housing
	3.H Steady Neighbourhoods	3.G.25 Larger family homes, multi-ethnic areas
		3.G.26 Semi-professional families, owner occupied neighbourhoods
		3.H.27 Suburban semis, conventional attitudes
	3.I Comfortable Seniors	3.H.28 Owner occupied terraces, average income
		3.H.29 Established suburbs, older families
4 Financially Stretched	3.J Starting Out	3.I.30 Older people, neat and tidy neighbourhoods
		3.I.31 Elderly singles in purpose-built accommodation
	4.K Student Life	3.J.32 Educated families in terraces, young children
		3.J.33 Smaller houses and starter homes
		4.K.34 Student flats and halls of residence
	4.L Modest Means	4.K.35 Term-time terraces
		4.K.36 Educated young people in flats and tenements
		4.L.37 Low cost flats in suburban areas
		4.L.38 Semi-skilled workers in traditional neighbourhoods
	4.M Striving Families	4.L.39 Fading owner occupied terraces
		4.L.40 High occupancy terraces, many Asian families
		4.M.41 Labouring semi-rural estates
		4.M.42 Struggling young families in post-war terraces
5 Urban Adversity	4.N Poorer Pensioners	4.M.43 Families in right-to-buy estates
		4.M.44 Post-war estates, limited means
		4.N.45 Pensioners in social housing, semis and terraces
	5.O Young Hardship	4.N.46 Elderly people in social rented flats
		4.N.47 Low income older people in smaller semis
		4.N.48 Pensioners and singles in social rented flats
	5.P Struggling Estates	5.O.49 Young families in low cost private flats
		5.O.50 Struggling younger people in mixed tenure
		5.O.51 Young people in small, low cost terraces
		5.P.52 Poorer families, many children, terraced housing
	5.Q Difficult Circumstances	5.P.53 Low income terraces
		5.P.54 Multi-ethnic, purpose-built estates
		5.P.55 Deprived and ethnically diverse in flats
		5.P.56 Low income large families in social rented semis
		5.Q.57 Social rented flats, families and single parents
		5.Q.58 Singles and young families, some receiving benefits
		5.Q.59 Deprived areas and high-rise flats

Appendix D: Subgroup analysis for priority areas

Results for 'Older People Live Independently'

Subgroup (N)	Average Score	Rank of Importance
Age		
18-34 (379)	7.38	7
35-64 (648)	7.98	5
65+ (281)	9.14	1
ACORN		
Affluent Achiever (308)	8.17	5
Rising Prosperity (180)	7.50	5
Comfortable Communities (449)	8.15	5
Financially Stretched (210)	8.37	4
Urban Adversity (140)	7.92	5
Gender		
Female (654)	8.26	5
Male (654)	7.85	5
Caring responsibilities		
Carer (123)	8.75	3
Non-carer (1183)	7.99	5
Children in household		
Children (454)	7.72	7
No children (854)	8.23	4

Results for 'People with disabilities live well independently'

Subgroup (N)	Average Score	Rank of Importance
Age		
18-34 (381)	8.23	2
35-64 (649)	8.56	2
65+ (282)	8.98	2
ACORN		
Affluent Achiever (312)	8.60	2
Rising Prosperity (179)	8.13	2
Comfortable Communities (450)	8.55	2
Financially Stretched (211)	8.87	2
Urban Adversity (140)	8.54	2
Gender		
Female (657)	8.72	2
Male (655)	8.38	2
Caring responsibilities		
Carer (123)	8.88	2
Non-carer (1187)	8.52	2
Children in household		
Children (455)	8.39	2
No children (857)	8.64	2

Results for 'People live in strong supportive communities'

Subgroup (N)	Average Score	Rank of Importance
Age		
18-34 (381)	7.68	5
35-64 (650)	7.91	7
65+ (281)	7.98	8
ACORN		
Affluent Achiever (312)	7.90	7
Rising Prosperity (179)	7.40	8
Comfortable Communities (448)	7.90	6
Financially Stretched (213)	8.14	6
Urban Adversity (139)	7.79	6
Gender		
Female (658)	8.05	6
Male (654)	7.66	7
Caring responsibilities		
Carer (123)	8.24	6
Non-carer (1187)	7.82	7
Children in household		
Children (456)	7.89	5
No children (856)	7.84	7

Results for 'The road network is safely maintained'

Subgroup (N)	Average Score	Rank of Importance
Age		
18-34 (381)	7.89	4
35-64 (653)	8.26	4
65+ (281)	8.48	5
ACORN		
Affluent Achiever (313)	8.33	4
Rising Prosperity (179)	7.79	4
Comfortable Communities (451)	8.23	4
Financially Stretched (214)	8.36	5
Urban Adversity (138)	8.07	4
Gender		
Female (657)	8.31	4
Male (658)	8.09	4
Caring responsibilities		
Carer (123)	8.64	4
Non-carer (1190)	8.15	4
Children in household		
Children (457)	8.19	4
No children (858)	8.19	5

Results for 'Children are helped to reach their full potential'

Subgroup (N)	Average Score	Rank of Importance
18-34 (381)	8.71	1
35-64 (649)	8.89	1
65+ (277)	8.91	3
ACORN		
Affluent Achiever (310)	8.86	1
Rising Prosperity (178)	8.55	1
Comfortable Communities (449)	8.81	1
Financially Stretched (212)	9.08	1
Urban Adversity (139)	8.88	1
Gender		
Female (654)	8.99	1
Male (653)	8.70	1
Caring responsibilities		
Carer (123)	9.02	1
Non-carer (1182)	8.83	1
Children in household		
Children (456)	9.06	1
No children (851)	8.72	1

Results for 'People at risk of harm are kept safe'

Subgroup (N)	Average Score	Rank of Importance
Age		
18-34 (382)	8.13	3
35-64 (650)	8.36	3
65+ (281)	8.74	4
ACORN		
Affluent Achiever (311)	8.43	3
Rising Prosperity (179)	7.84	3
Comfortable Communities (449)	8.43	3
Financially Stretched (212)	8.80	3
Urban Adversity (141)	8.21	3
Gender		
Female (656)	8.59	3
Male (657)	8.16	3
Caring responsibilities		
Carer (123)	8.59	5
Non-carer (1188)	8.36	3
Children in household		
Children (456)	8.29	3
No children (857)	8.42	3

Results for 'The Cambridgeshire economy prospers to the benefit of all residents'

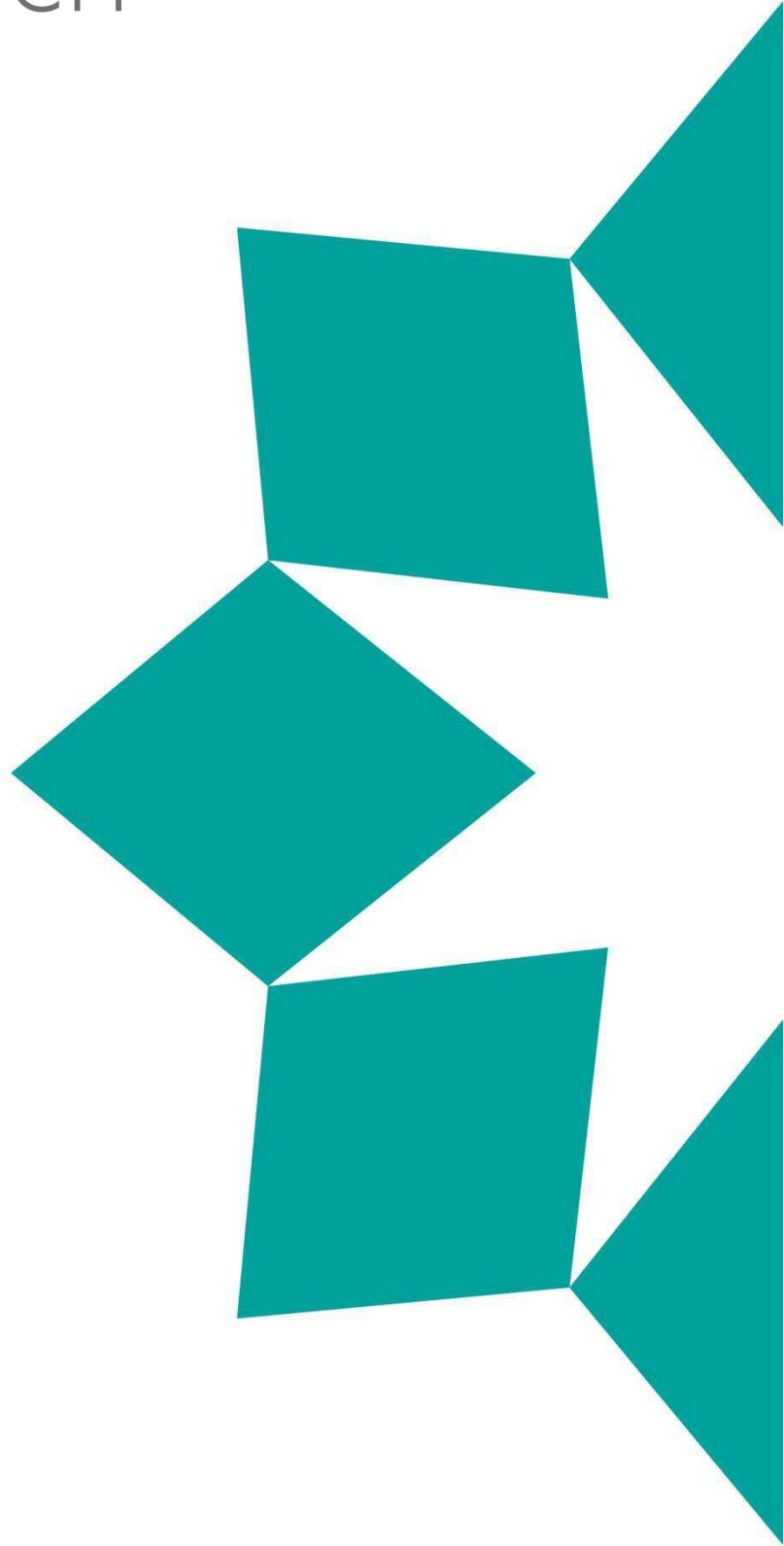
Subgroup (N)	Average Score	Rank of Importance
Age		
18-34 (378)	7.45	6
35-64 (649)	7.94	6
65+ (280)	8.25	7
ACORN		
Affluent Achiever (310)	7.99	6
Rising Prosperity (179)	7.46	7
Comfortable Communities (448)	7.86	7
Financially Stretched (212)	8.12	7
Urban Adversity (137)	7.75	7
Gender		
Female (655)	7.99	7
Male (652)	7.74	6
Caring responsibilities		
Carer (123)	8.12	7
Non-carer (1184)	7.84	6
Children in household		
Children (454)	7.78	6
No children (853)	7.91	6

Results for 'People lead a healthy lifestyle and stay healthy longer'

Subgroup (N)	Average Score	Rank of Importance
Age		
18-34 (382)	7.37	8
35-64 (650)	7.74	8
65+ (282)	8.28	6
ACORN		
Affluent Achiever (310)	7.72	8
Rising Prosperity (179)	7.50	6
Comfortable Communities (449)	7.76	8
Financially Stretched (214)	8.07	8
Urban Adversity (141)	7.64	8
Gender		
Female (656)	7.97	8
Male (658)	7.53	8
Caring responsibilities		
Carer (123)	8.03	8
Non-carer (1189)	7.72	8
Children in household		
Children (457)	7.70	8
No children (857)	7.79	8



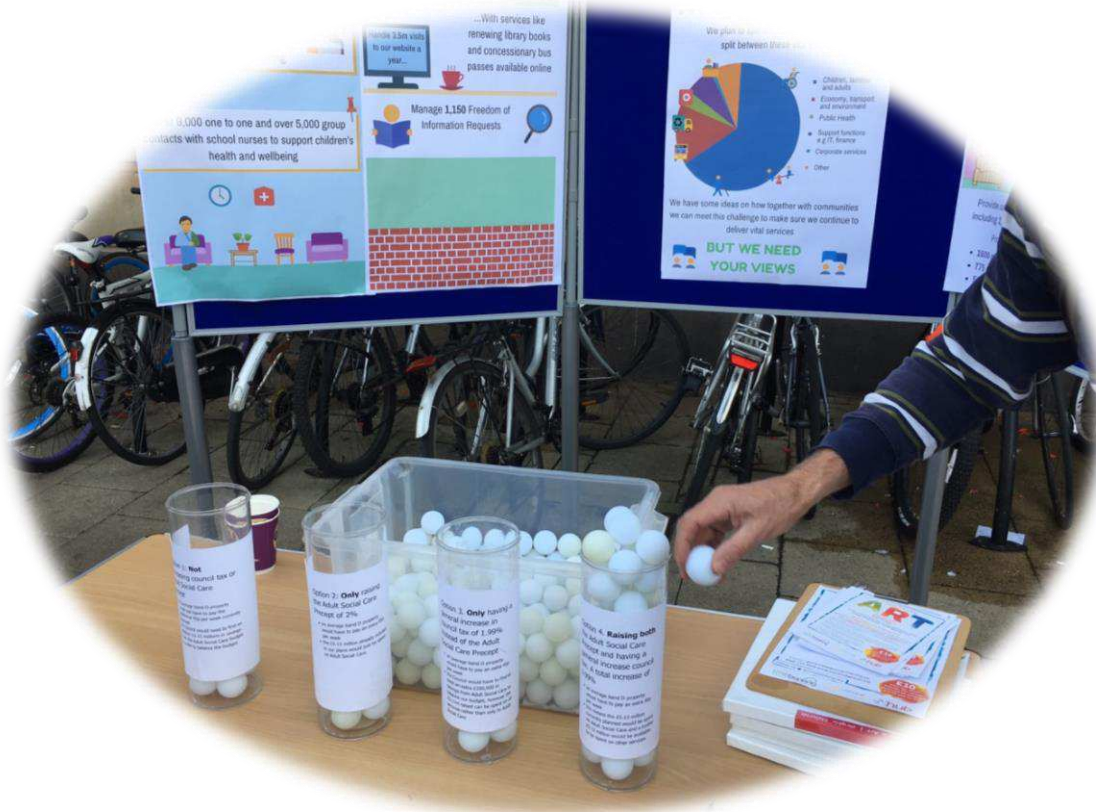
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CAMBRIDGESHIRE COUNTY COUNCIL BUSINESS PLANNING CONSULTATION

RESULTS SUMMARY

(For Residents Household survey – see separate report)



OCT 2016

SUMMARY RESULTS

COMMUNITY CONSULTATION

Council Members and officers talked with well over 350 people (some interviewed as part of groups) at five separate events around the County. 342 people were able to indicate the level of Council Tax increase that they would be happy with. This choice was made after people were shown information about the County Council's budget challenge and the current costs of services. The interviewers asked people why they were making their particular choice and which services were particularly valued.

Figure 1: Total Responses from community events

Council Tax Options	Number of votes	% of votes
Option 1: Not increasing council tax. This would mean not raising the Adult Social Care Precept of 2%	47	14%
Option 2: Only raising the Adult Social Care Precept of 2%.	69	20%
Option 3: Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	69	20%
Option 4: Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	157	46%
Total	342	-

Looking across all the responses (see individual sections) some clear themes emerge:

- A significant reason given for not increasing council tax was for issues of affordability. During the engagement sessions we spoke to people who didn't think that that could afford an increase because they were currently struggling with their household bills. We also met those that were against tax increases as a matter of principle. This group were generally sceptical about public services and linked together many disparate issues as reasons why public services 'couldn't be trusted'.
- Of particular importance was the balance between those opting for the Adult Social Care (ASC) precept (2%) or the general increase of 1.99%.
 - Those supporting the (ASC) precept did so because they had a clear understanding as to what the additional income was for and / or they could clearly identify with the demands arising from this service area through personal experience.

- Those supporting the 1.99% general increase particularly spoke about the needs for children's services.

- Those seeking the maximum increase (option 4) were likely to comment about the need to 'protect' services or they expressed the 'value' that they felt services delivered for the community together with the feeling that there should be continued support. There were those who felt that they could happily afford an increase, particularly in Cambridge.

ONLINE CONSULTATION

Figure 2: Total Responses from the On-line consultation

Council Tax Options	Number of Responses	% of votes
Option 1: Not increasing council tax. This would mean not raising the Adult Social Care Precept of 2%	30	15%
Option 2: Only raising the Adult Social Care Precept of 2%.	32	16%
Option 3: Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	42	21%
Option 4: Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	97	48%
Total	201	100%

Looking across all the responses (see individual sections) the following themes emerge:

- There was a very high level of awareness of the County Council's financial situation amongst on-line responses. There was also a similarly high level of worry / concern about the situation.
- Only 15% of the on-line respondents voted for a 0% increase in Council Tax; 48% voted for a 3.99% increase
- The clear priorities for the on-line respondents were that "Children are helped to reach their full potential" and that "People at risk of harm and kept safe"
- The full results for the on-line survey are shown at the end of this document.

COMMUNITY EVENTS

METHODOLOGY

County Council attendance at local community events to discuss business planning was coordinated by the Community Engagement Team; five community events were selected. Selections was made as a matter of convenience, due to their timing (during September) and spread across each of Cambridgeshire's five districts. Events attended were:

- Friday 9th September – St Ives Market (Huntingdonshire)
- Saturday 10th September – Haddenham Steam Rally (East Cambridgeshire)
- Sunday 11th September – Whittlesey Festival (Fenland)
- Saturday 24th September – Cambridge Market (Cambridge)
- Sunday 25th September – Milton Country Park, Autumn Festival (South Cambridgeshire)

Members of staff from across the organisation volunteered to talk to members of public. In advance a briefing document and a set of consultation questions were prepared. Display boards were also used at each event so show the breadth of County Council services. In addition members of the public were shown a series of tubes in which to place their 'vote' for their preferred level of council tax increase. Each of the options were communicated in detail (see figure one) and people's opinions / reaction recorded. The level of public understanding differed with some being aware of the issues whilst others needed a detailed explanation in order to participate. Awareness of the Adult Social Care precept was generally low. Also the ability to explain the precise impact of the budget changes was limited due to where the County Council is within the current business plan cycle.

Figure 3: Options for council tax

<u>Option</u>	<u>Description</u>	<u>Example</u>
1	Not increasing council tax or Adult Social Care Precept. The council would need to find over £5 million in savings from the planned Adult Social Care budget.	An average band D property would not have to pay the 45p per week currently planned (£23.34 a year) The County Council would have to find an additional £5.13 million of savings from Adult Social Care in order to balance the budget.
2	Only raising the Adult Social Care Precept of 2%.	An average band D property would pay an extra 45p per week (£23.34 a year). Resulting in £5.13 million already included in our plans would just be spent on Adult Social Care.
3	Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	An average band D property would pay an extra 45p per week (£23.22 a year). The County Council would have to find at least an extra £200,000 in savings from Adult Social Care to balance our budget, however it means the £5.11m raised can be spent on all services rather than only ring fenced and currently planned to Adult Social Care.
4	Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	An average band D property would pay an extra 90p per week (£46.56 a year). This would mean that the £5.13 million currently planned would be spent on Adult Social Care and a further £5.11 million would be available to be spent on other services

The results were later summarised in a report and circulated to those that had attended the events to check understanding.

Figure 4: Total Responses from community events

Council Tax Options	Number of votes	% of votes
Option 1: Not increasing council tax. This would mean not raising the Adult Social Care Precept of 2%	47	14%
Option 2: Only raising the Adult Social Care Precept of 2%.	69	20%
Option 3: Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	69	20%
Option 4: Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	157	46%
Total	342	-

Figure two above shows the summary of people's response to the core council tax question. It should be noted that the result is skewed towards the relatively large response from Cambridge Market and Milton Country Park where a significant proportion of people were in favour of a total increase of 3.99% and away from Haddenham Steam Rally where poor weather hampered responses.

Figure 5: Variation in response between community events

	St Ives	Whittlesey	Haddenham	Cambridge	Milton	Total
Option 1	26%	20%	18%	8%	10%	14%
Option 2	33%	33%	24%	13%	13%	20%
Option 3	13%	17%	41%	17%	24%	20%
Option 4	28%	30%	18%	61%	53%	46%
Total for an increase of 1.99% or above	74%	80%	82%	92%	90%	86%

Looking across all the responses (see individual sections) there are some clear themes that emerge.

- A significant reason given for not increasing council tax was for issues of affordability. During the engagement sessions we spoke to people who didn't think that that could afford an increase because they were currently struggling with their household bills. This was notable amongst those in older age ranges. The broad sentiment from this group was that they understood why council tax increases were necessary but
- We met those that were against tax increases as a matter of principle. This group were generally sceptical about public services and linked / interchanged between many disparate issues such as their perception that public services 'waste' money, devolution, MPs expenses, migration and local infrastructure projects (e.g. guided bus or Whittlesey crossing) as reasons why public services 'couldn't be trusted'.
- There were a small number of people who didn't want to pay an increase because they didn't use services; viewing council tax in the same bracket as utility bills. There was also a small group of individuals (only within Cambridge City / South Cambridgeshire) who made the case for no increase on the basis that 'Westminster' or central government should be footing the bill rather than local people.
- Of particular importance is the balance between those opting for the Adult Social Care (ASC) precept (2%) or the general increase of 1.99%.
 - Those supporting the (ASC) precept did so because they had a clear understanding as to what the additional income was for and / or they could clearly identify with the demands arising from this service area through personal experience.
 - Those supporting the 1.99% general increase particularly spoke about the needs for children's services.
- Those seeking the maximum increase (option 4) were likely to comment about the need to 'protect' services or they expressed the 'value' that they felt services delivered for the community together with the feeling that there should be continued support.
- There were those who felt that they could afford an increase, particularly in Cambridge, with '£50' across the whole year being a slight increase in their eyes. Another sub – group of those opting for the maximum increase was those who worked within the public sector e.g. police officer, pharmacist, NHS worker.

Figure 6: Responses from the St Ives Market event

Council Tax Options	Number of votes	% of votes
Not increasing council tax. This would mean not raising the Adult Social Care Precept of 2%	10	26%
Only raising the Adult Social Care Precept of 2%.	13	33%
Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	5	13%
Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	11	28%

The following are the main findings / observations from the St Ives Market event:

- In total 74% of people that we spoke to indicated that they'd be content for a council tax increase of some sort.
- 46% opted to increase council tax by either 2% or 1.99% (options 2 or 3).
- People opting for no increase in council tax offered the following views:
 - liked the idea of and increase but struggled to pay council tax as they were a pensioner on a low income.
 - stop funding smoking cessation services as people could pay for this themselves.
 - need to repair roads and pot-holes
 - If services are being cut anyway it seems unfair to put up council tax.
 - Not a heavy user of council services as having to pay for everything myself, pay enough tax already.
 - Waste should be tackled first such as the 'Police and Crime Commissioner', 'Guided Busway', 'Devolution' and any regional government.
- People opting for only raising the Adult Social Care Precept gave the following comments:
 - Older people need support and libraries need to continue with reasonable opening hours.
 - I have elderly parents and elderly in-laws who need social care support.
 - Have a parent in the 'adult social care system' and I'm very worried about the future.

- You can only cut things so far, some essential services need to go up
- People opting for a general increase of 1.99% said the following:
 - Grandchildren use the local children's centre.
 - It is important that people understand how it is spent as money is being used to support others in society.
 - Don't think the government is going to give you any more money!
- People opting for an increase of 3.99% gave the following reasons:
 - Cycle ways in Cambridge are better looked after than in St Ives.
 - Keep services for disabled, more hedge-trimming for road safety, worried about effect on residents of further service cuts.
 - Can't see away around not increase Council Tax (owns a care business), library services should be protected.

HADDENHAM STEAM RALLY

It should be noted that the weather was particularly poor on the day which limited the number of people out and about at the steam rally and their willingness to stop and talk.

Figure 7: Responses from the Haddenham Steam Rally event

Council Tax Options	Number of votes	% of votes
Not increasing council tax. This would mean not raising the Adult Social Care Precept of 2%	3	18%
Only raising the Adult Social Care Precept of 2%.	4	24%
Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	7	41%
Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	3	18%

The following are the main findings / observations from the Haddenham event:

- In total 82% of people that we spoke to indicated that they'd be content for a council tax increase of some sort.
- 65% opted to increase council tax by either 2% or 1.99% (options 2 or 3).
- People opting for no increase in council tax offered the following views:
 - would like to increase council tax but personal income was low (retired).
 - wants to see improvements in public transport; it is insufficient and too costly. Doesn't think the Council uses its money well.
 - The increases in parish precepts put some people off the thought of additional increases. Some parishes have seen higher increases than others.
- People opting for only raising the Adult Social Care Precept gave the following comments:
 - Happy if this is definitely ring-fenced. Libraries and adult care services are a priority.
 - Shocked at the figures (level of cuts); appreciate that the extra income is needed. Did not realise the extent to which services need money / are being cut.
 - Knows that we will all need adult social care at some point in our lives.

- Thinks that there should be more back office efficiencies.
- People opting for a general increase of 1.99% said the following:
 - Lives 'off the grid' and doesn't use any services. Don't have street lights where they live but appreciates that others need them.
 - Need funding to support preventative work with young people
- People opting for an increase of 3.99% gave the following reasons:
 - Understands as they are a pharmacist. Particularly values prevention services such as public health / social care. Cuts are affecting both health and social care.
 - Increases are fine as I'm in a position to afford these. Not the same for everyone.

Figure 8: Responses from the Whittlesey Festival event

Council Tax Options	Number of votes	% of votes
Not increasing council tax. This would mean not raising the Adult Social Care Precept of 2%	14	20%
Only raising the Adult Social Care Precept of 2%.	23	33%
Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	12	17%
Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	21	30%



The following are the main findings / observations from the Whittlesey Festival event:

- In total 80% of people that we spoke to indicated that they'd be content for a council tax increase of some sort.
- 50% opted to increase council tax by either 2% or 1.99% (options 2 or 3).
- People opting for no increase in council tax offered the following views:
 - Didn't think we get enough for our money as it is!

- stop funding smoking cessation services as people could pay for this themselves.
- If we pay more we want to see more.
- More efficiency can be made.
- Interest from my savings is too low to afford an increase.
- We are all on benefits and we can't afford an increase.
- People opting for only raising the Adult Social Care Precept gave the following comments:
 - Council tax will go up and it's good to know where it is going.
 - More and more people are going to need care as they get older.
 - Happy with 2% if it is ring-fenced.
 - I'm retired and look after even older parents.
- People opting for a general increase of 1.99% said the following:
 - Opted for this as feels that children who are looked after should be the main priority
 - Concerned about the provision of school places for primary children in Whittlesey, this should be a priority.
- People opting for an increase of 3.99% gave the following reasons:
 - Previously worked in children's social care for 17 years. Yes put it up.
 - Put it up as the 'bills need to be paid'. Increases are due to migration.

Figure 9: Responses from the Cambridge Market event

Council Tax Options	Number of votes	% of votes
Not increasing council tax. This would mean not raising the Adult Social Care Precept of 2%	9	8%
Only raising the Adult Social Care Precept of 2%.	14	13%
Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	19	17%
Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	67	61%



The following are the main findings / observations from the Cambridge Market event:

- In total 92% of people that we spoke to indicated that they'd be content for a council tax increase of some sort.
- 30% opted to increase council tax by either 2% or 1.99% (options 2 or 3) and 61% opted for a 3.99% increase
- People opting for no increase in council tax offered the following views:
 - Cuts should be stopped and government should pay. Maggie Thatcher is dead!
 - Cambridge is a very expensive place to live and 2% sounds high. Rates are too high already.
 - There is 'deadwood' left to cut. We can't afford child care at the moment so can't afford a tax increase.
 - No. Give the council more money centrally.
- People opting for only raising the Adult Social Care Precept gave the following comments:
 - Adult social care is hugely important.
 - I would opt for 4 if I knew the money would be well directed and spent.
- People opting for a general increase of 1.99% said the following:
 - If I ruled the world I would abolish Council Tax and replace with another tax system.
 - I think the money should go to all services.
 - Investment in younger people should be prioritised.
- People opting for an increase of 3.99% gave the following reasons:
 - Believe that this is important for a fair and 'social' society
 - It is not a huge amount.
 - An extra £50 per year is not a big amount to pay. Put the money towards the benefit of society.
 - My council doesn't consult like this so 'full-marks' for being here!
 - Would pay 5% health services for older people are so important.
 - Central government spends billions on less important things than social care.
 - Houses needed to be taxed according to their rateable value. This should be reviewed.

- Moved from 0% to 4%. Recognise that whilst I'm skint – people getting stuck in hospital unable to be discharged are a big problem.

MILTON COUNTRY PARK AUTUMN FESTIVAL

Figure 10: Responses from the Milton Country Park event

Council Tax Options	Number of votes	% of votes
Not increasing council tax. This would mean not raising the Adult Social Care Precept of 2%	10	10%
Only raising the Adult Social Care Precept of 2%.	13	13%
Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	23	24%
Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	51	53%



The following are the main findings / observations from the Milton Country Park event:

- In total 90% of people that we spoke to indicated that they'd be content for a council tax increase of some sort.
- 37% opted to increase council tax by either 2% or 1.99% (options 2 or 3) and 53% opted for an increase of 3.99%
- People opting for no increase in council tax offered the following views:
 - Struggling to afford it at the moment.
 - Houses should be re-banded and high cost housing pay much more.
 - Get rid of the 'Cambridge Matters' glossy magazine.
 - Adult Social Care precept wouldn't benefit me yet.
 - I think we pay too much and don't get anything in Cambourne.
- People opting for only raising the Adult Social Care Precept gave the following comments:
 - I think Adult Social Care is the most important service.
 - Practically I haven't got the time to volunteer. 2% increase in tax is above my annual wage increase but I'm willing to pay it.
 - I know some people who live in social housing.
- People opting for a general increase of 1.99% said the following:
 - Need to raise money but having flexibility on how it is spent is also important.
 - I want to support children's centres and children's social care as well.
 - I've taught in Cambridgeshire's schools and they are the lowest funded of all the schools in the Country. Think increase should be for everyone not just Adult Social Care.
- People opting for an increase of 3.99% gave the following reasons:
 - I'm a police officer. The less Council Services then the more work for me.
 - Nobody likes raising taxes but if we want the services then we have to pay for them.
 - I'm lucky and can afford the increase. We should all help each other.
 - Doesn't seem like all that much. We can afford 90p extra a week.
 - Since the Thatcher years there has been a lack of social conscience, we all need to be more social minded.

- It is not right that government is taking so much away.

ON-LINE SURVEY

METHODOLOGY

Unlike last year where the on-line survey was the main element of our consultation this year the approach was very much to see this as an additional activity. The on-line survey was made available on the County Council's website. The survey was supported by a short animated video¹. The link to the survey and video were then promoted on the front page of the County Council's website, via mailing lists to organisations such as parish councils and via Facebook.

METHODOLOGY

A total of 201 people responded to the survey. The following are the main points of the survey results.

Figure 11: Total Responses from the On-line consultation

Council Tax Options	Number of Responses	% of votes
Option 1: Not increasing council tax. This would mean not raising the Adult Social Care Precept of 2%	30	15%
Option 2: Only raising the Adult Social Care Precept of 2%.	32	16%
Option 3: Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept.	42	21%
Option 4: Raising both the Adult Social Care Precept and having a general increase council tax. A total increase of 3.99%	97	48%
Total	201	100%

Looking across all the responses (see individual sections) some clear themes emerge:

¹ <https://www.youtube.com/watch?v=LE7E0raHStQ>





- There was a very high level of awareness of the County Council's financial situation amongst on-line responses. There was also a similarly high level of worry / concern about the situation.
- Only 15% of the on-line respondents voted for a 0% increase in Council Tax; 48% voted for a 3.99% increase
- The clear priorities for the on-line respondents were that "Children are helped to reach their full potential" and that "People at risk of harm and kept safe"






The full results for the on-line survey are shown at the end of this document.

Cambridgeshire County Council: Business Plan Consultation

1. Introduction

2. Awareness

1. Before today, how aware were you of the level of financial challenges facing Cambridgeshire County Council? (i.e. the amount they need to save)							Response Percent	Response Total
1	Very aware						47.26%	95
2	Somewhat aware						39.80%	80
3	Not very aware						8.46%	17
4	Not at all aware						4.48%	9
5	Unsure / Don't know						0.00%	0
Analysis	Mean:	1.7	Std. Deviation:	0.8	Satisfaction Rate:	17.54	answered	201
	Variance:	0.65	Std. Error:	0.06			skipped	0









2. How do you feel about the continuing financial challenges faced by the County Council?							Response Percent	Response Total
1	Very worried						35.82%	72
2	Somewhat worried						49.75%	100
3	Not very worried						10.95%	22
4	Not at all worried						2.49%	5
5	Unsure / Don't know						1.00%	2
Analysis	Mean:	1.83	Std. Deviation:	0.79	Satisfaction Rate:	20.77	answered	201
	Variance:	0.63	Std. Error:	0.06			skipped	0












3. Services







3. On a scale of 0 to 10, with 10 being 'very important' and 0 being 'not at all important', how important do you think each of the following outcomes are that County Council services are working to achieve?													
	0	1	2	3	4	5	6	7	8	9	10	Don't know	Response Total
Older people live independently	1.5% (3)	0.5% (1)	0.5% (1)	1.0% (2)	2.5% (5)	9.5% (19)	4.5% (9)	10.4% (21)	25.4% (51)	17.9% (36)	25.9% (52)	0.5% (1)	201
People with disabilities live well independently	0.5% (1)	1.0% (2)	0.5% (1)	1.5% (3)	1.5% (3)	9.5% (19)	3.0% (6)	6.5% (13)	23.4% (47)	19.4% (39)	33.3% (67)	0.0% (0)	201
People live in strong, supportive communities	1.0% (2)	0.0% (0)	2.5% (5)	2.5% (5)	3.0% (6)	12.6% (25)	8.0% (16)	16.1% (32)	21.1% (42)	9.5% (19)	22.6% (45)	1.0% (2)	199
The road network is safety maintained	0.5% (1)	1.5% (3)	0.5% (1)	0.5% (1)	3.0% (6)	6.5% (13)	4.5% (9)	14.4% (29)	20.4% (41)	14.9% (30)	32.3% (65)	1.0% (2)	201
Children are helped to reach their full potential	0.5% (1)	0.0% (0)	1.5% (3)	0.0% (0)	2.5% (5)	2.0% (4)	4.5% (9)	9.0% (18)	14.4% (29)	10.9% (22)	52.7% (106)	2.0% (4)	201
People at risk of harm and kept safe	0.5% (1)	0.5% (1)	1.5% (3)	1.0% (2)	2.5% (5)	6.0% (12)	3.0% (6)	6.5% (13)	16.5% (33)	11.0% (22)	49.0% (98)	2.0% (4)	200
The Cambridgeshire economy prospers to the benefit of all residents	2.0% (4)	0.5% (1)	3.5% (7)	1.5% (3)	2.5% (5)	9.0% (18)	10.0% (20)	10.4% (21)	21.9% (44)	9.0% (18)	28.9% (58)	1.0% (2)	201
People lead a healthy lifestyle and stay healthy longer	2.0% (4)	1.5% (3)	3.0% (6)	2.0% (4)	2.0% (4)	10.9% (22)	11.4% (23)	13.9% (28)	19.9% (40)	10.4% (21)	21.9% (44)	1.0% (2)	201
												answered	201
												skipped	0

Matrix Charts













3.1. Older people live independently				Response Percent	Response Total
1	0			1.5%	3
2	1			0.5%	1
3	2			0.5%	1
4	3			1.0%	2









3.1. Older people live independently							Response Percent	Response Total	
5	4						2.5%	5	
6	5						9.5%	19	
7	6						4.5%	9	
8	7						10.4%	21	
9	8						25.4%	51	
10	9						17.9%	36	
11	10						25.9%	52	
12	Don't know						0.5%	1	
Analysis	Mean:	8.9	Std. Deviation:	2.1	Satisfaction Rate:		71.82	answered	201
	Variance:	4.41	Std. Error:	0.15					

3.2. People with disabilities live well independently							Response Percent	Response Total
1	0						0.5%	1
2	1						1.0%	2
3	2						0.5%	1
4	3						1.5%	3
5	4						1.5%	3
6	5						9.5%	19
7	6						3.0%	6
8	7						6.5%	13
9	8						23.4%	47
10	9						19.4%	39
11	10						33.3%	67
12	Don't know						0.0%	0
Analysis	Mean:	9.18	Std. Deviation:	2.03	Satisfaction Rate:	74.36	answered	201
	Variance:	4.13	Std. Error:	0.14				













3.3. People live in strong, supportive communities						Response Percent	Response Total
1	0					1.0%	2
2	1					0.0%	0
3	2					2.5%	5
4	3					2.5%	5
5	4					3.0%	6
6	5					12.6%	25
7	6					8.0%	16













3.3. People live in strong, supportive communities							Response Percent	Response Total
8	7		<div><div></div></div>				16.1%	32
9	8		<div><div></div></div>				21.1%	42
10	9		<div><div></div></div>				9.5%	19
11	10		<div><div></div></div>				22.6%	45
12	Don't know		<div><div></div></div>				1.0%	2
Analysis	Mean:	8.4	Std. Deviation:	2.24	Satisfaction Rate:	67.29	answered	199
	Variance:	5	Std. Error:	0.16				

3.4. The road network is safety maintained							Response Percent	Response Total
1	0						0.5%	1
2	1						1.5%	3
3	2						0.5%	1
4	3						0.5%	1
5	4						3.0%	6
6	5						6.5%	13
7	6						4.5%	9
8	7						14.4%	29
9	8						20.4%	41
10	9						14.9%	30
11	10						32.3%	65
12	Don't know						1.0%	2
Analysis	Mean:	9.08	Std. Deviation:	2.06	Satisfaction Rate:	73.45	answered	201
	Variance:	4.26	Std. Error:	0.15				

3.5. Children are helped to reach their full potential						Response Percent	Response Total
1	0					0.5%	1
2	1					0.0%	0
3	2					1.5%	3
4	3					0.0%	0
5	4					2.5%	5
6	5					2.0%	4
7	6					4.5%	9
8	7					9.0%	18
9	8					14.4%	29
10	9					10.9%	22

3.5. Children are helped to reach their full potential							Response Percent	Response Total
11	10		<div><div></div></div>				52.7%	106
12	Don't know		<div><div></div></div>				2.0%	4
Analysis	Mean:	9.76	Std. Deviation:	1.88	Satisfaction Rate:	79.6	answered	201
	Variance:	3.53	Std. Error:	0.13				

3.6. People at risk of harm and kept safe							Response Percent	Response Total
1	0						0.5%	1
2	1						0.5%	1
3	2						1.5%	3
4	3						1.0%	2
5	4						2.5%	5
6	5						6.0%	12
7	6						3.0%	6
8	7						6.5%	13
9	8						16.5%	33
10	9						11.0%	22
11	10						49.0%	98
12	Don't know						2.0%	4
Analysis	Mean:	9.53	Std. Deviation:	2.11	Satisfaction Rate:	77.55	answered	200
	Variance:	4.45	Std. Error:	0.15				

3.7. The Cambridgeshire economy prospers to the benefit of all residents							Response Percent	Response Total	
1	0						2.0%	4	
2	1						0.5%	1	
3	2						3.5%	7	
4	3						1.5%	3	
5	4						2.5%	5	
6	5						9.0%	18	
7	6						10.0%	20	
8	7						10.4%	21	
9	8						21.9%	44	
10	9						9.0%	18	
11	10						28.9%	58	
12	Don't know						1.0%	2	
		Mean:	8.55	Std. Deviation:	2.45	Satisfaction Rate:	68.61	answered	201

3.7. The Cambridgeshire economy prospers to the benefit of all residents					Response Percent	Response Total
Analysis	Variance:	5.98	Std. Error:	0.17		

3.8. People lead a healthy lifestyle and stay healthy longer					Response Percent	Response Total
1	0				2.0%	4
2	1				1.5%	3
3	2				3.0%	6
4	3				2.0%	4
5	4				2.0%	4
6	5				10.9%	22
7	6				11.4%	23
8	7				13.9%	28
9	8				19.9%	40
10	9				10.4%	21
11	10				21.9%	44
12	Don't know				1.0%	2
Analysis	Mean:	8.25	Std. Deviation:	2.45	Satisfaction Rate:	65.94
	Variance:	5.99	Std. Error:	0.17		
					answered	201

4. Council Tax

4. Do you or does someone in your household pay council tax? (If council tax is included in your rent, tick YES)					Response Percent	Response Total
1	Yes				99.50%	200
2	No				0.50%	1
3	Don't know				0.00%	0
Analysis	Mean:	1	Std. Deviation:	0.07	Satisfaction Rate:	0.25
	Variance:	0	Std. Error:	0		
					answered	201
					skipped	0

5. Council Tax (cont)

5. Do you receive a reduction in Council Tax due to household circumstances?					Response Percent	Response Total
1	Yes				13.78%	27
2	No				85.20%	167

5. Do you receive a reduction in Council Tax due to household circumstances?							Response Percent	Response Total
3	Don't know						1.02%	2
Analysis	Mean:	1.87	Std. Deviation:	0.36	Satisfaction Rate:	43.62	answered	196
	Variance:	0.13	Std. Error:	0.03			skipped	5

6. Council Tax Increase

6. Which of the following four options for the County Council's part of Council tax do you support?			Response Total
Option 1: Not increasing council tax	100.0% (30)		30
Option 2: Only raising the Adult Social Care Precept of 2%	100.0% (32)		32
Option 3: Only having a general increase in council tax of 1.99% instead of the Adult Social Care Precept	100.0% (42)		42
Option 4: Raising both the Adult Social Care Precept and having a general increase in council tax. A total increase of 3.99%	100.0% (97)		97
	answered		201
	skipped		0

7. Council Tax Increase (cont)

7. Can you please tell us why you chose this option for Council tax?			
		Response Percent	Response Total
1	Open-Ended Question	100.00%	169
1	Funding is needed for all areas of the Council not just Adult Social Care, and understand more funds are required.		
2	You need the money, 2018 you will need to do this anyway plus we should have paid more years ago so services were not CUT		
3	I would rather we all paid a bit more than see services lost		
4	I think we should all pay more tax to make sure services run well in Cambridgeshire		
5	Would effect people paying council tax less that option 4 but would also raise money for adult social care		
6	Money should be for services generally and not ring fenced to one area.		
7	It is impossible to meet all the demands on the Council if there is a concentration only on providing additional funding for adult social care. We are heading for a disastrous situation where the grwing, ageing population is support more than younger people and children who need to be protected and able to fulfill their potential. The rapid and disproportionate population growth eg more children with special needs in new communities, more ex service men and women returning with major health and physical health issues needs to be supported - at the expense of people whone life style choices make them uber consumers of public service.		
8	If we want services they need to be paid for however appreciate that many households will find any increase difficult to bear.		
9	Because where am I suppose to find the increase when I have had not a increase in my wages for 7 years		
10	Council tax has risen *way* over inflation for many years. Yet the council is riddled with inefficiency - fix some of that and you'll have your 4%.		
11	To forestall cuts		
12	The additional cost to me of less than £50 is more than worth it to ensure vital services are not cut. Although increased council tax will negatively impact those on lower incomes I believe the impact of cutting services would be far greater.		
13	Adult social care will place greater and greater demand on the authority and therefore I feel investing now would be prudent. I have 3 relatives who have been service users and hope that increased funding would help residents access services more readily and efficiently to maintain independent living for longer.		
14	It's what the Council should have done last year. The council *must* recognise that carrying out is duties effectively is more of a priority than keeping council taxes low.		
15	I am only choosing this option if it stops the cuts including library closures and hours reductions.		
16	Pressure on adult services can only grow. One would hope that savings could be made in other areas ie non-statutory services to help ease pressure on frontline services.		
17	Because elderly need support after paying all there working life		
18	because without an increase our services will not be properly funded		
19	It allows the flexibility for the funds raised to be spent on both adult care and other areas		
20	There are other ways to save, IE public libraries, why not charge for use		
21	it seems the fairest		
22	You spend a significant amount on "debt management". If funds are properly managed this should not be necessary. Manage the money you have more effectively rather than taking even more from your residents.		
23	Social care is the largest problem area for the future		
24	We need to make sure we fund our services like social care and looking after our roads. Like gritting.		

7. Can you please tell us why you chose this option for Council tax?

		Response Percent	Response Total
25	I think the council will struggle without an increase to its general budget as well as to the adult social care.		
26	We must fund services sufficiently to ensure that they continue to be available to our community		
27	Too much money is wasted		
28	I would expect that any adult care that affects my family would have to be funded by my family and we would not get support from the council. As a result I would prefer not to pay towards a service I would not be able to benefit from in the future.		
29	21 increases in the last 24 yrs, enough is enough, we don't want another mortgage to pay for!!!		
30	We need to provide for the elderly		
31	To maintain services as much as is possible		
32	To maintain some level of services residents have to understand that they have to be paid for.		
33	Money is not being spent wisely. I feel social care deserves more funding and I am happy to pay this, but the rest of what I pay to council tax is mispent.		
34	Older people chose Brexit.... it is also the older generations that have past in this situation....		
35	Many people are struggling to make ends meet. An extra increase in Council Tax to meet specific adult social care needs could topple them over the edge if it is in addition to a general rise.		
36	Because we are basically an affluent society, we are fortunate to be living in a relatively safe environment and those who need help should be able to access it. As a Community Carer for a number of years I know how vital this service is; particularly in this day and age when many families live many miles apart and elderly relations are frequently isolated.		
37	There has to be a way to increase income from non government funding as the cuts are seriously affecting the levels of service. Already the cuts have meant that lots of preventative work has stopped, the thresholds for help have risen and services are reduced. Simply stating you want communities to be resilient is naive and dangerous. Communities will not replace support, there will be a postcode lottery and you are not investing enough to make this happen. You need more money not more outsourcing like Peterborough.		
38	Fair option		
39	I suspect previous reductions in government funding mean that the council's budget situation is now very difficult to manage without additional funding from somewhere.		
40	Fairest option on offer		
41	So long as admin costs are slashed and managers' salaries are frozen for 10 years. This will help. Better still make 50% cuts in middle and senior management. This will free up money to care for the community at large.		
42	I am happy to contribute to ensure services continue to be delivered.		
43	We already pay too much tax		
44	Because the ageing and less healthy population needs it		
45	I do not want to see the services school as the local children's centre cut.		
46	BECAUSE ADULT SOCIAL CARE IS AN IMPORTANT ISSUE		
47	I think that it is better to preserve existing services and this rise would help that.		
48	Because the cuts in adult social care are appalling and immoral		
49	Don't want to restrict funding increase to just one area.		
50	Adult care is underfunded and I cannot see how other services can be maintained at a satisfactory level with constant cuts.		
51	Maintaining the roads is equally important to older people services		
52	There are more services in need apart from elderly and disabled. Feel I already contribute enough.		

7. Can you please tell us why you chose this option for Council tax?

		Response Percent	Response Total
53	The tax should rise to improve services. The council is delivering our shared services and had no right to cut them.		
54	Meet budget shortfall		
55	Aging population		
56	Council tax is already too high. Council should run their affairs with regard to the cost to the taxpayer and if councillors are not up to spending less of the taxpayers money, they should consider their position.		
57	In general I support higher taxes and higher services. I think it's a relatively small increase for each household and would be better than cutting services further.		
58	I don't think council tax should be increased by 3.99% at a time we are being squeezed in every direction already and there is a prospect of having to pay for our parking at work.		
59	Because I struggle to live now as my hours have been cut due to you cutting funding given to schools. Children need our support too and having one teacher and a TA only for mornings is not giving children the help they need.		
60	The government has given you this option, why wouldn't you use it? Also, maybe if you collected more of the council tax you wouldn't have such gaps in the budgets anyway		
61	Central government should not be cutting funding and expecting taxpayers to make up the difference is unfair.		
62	No brained - ought to have been done last year		
63	Because everybody should pay a little bit more for the benefit of everyone. Too many people want more but don't want to pay. This is a fairly low cost option that is fair to all		
64	Its important that adult social care is prioritised there is too much emphasis on the younger generation who can be looked after by parents and guardians		
65	I would rather not have an increase at all but realise it is important that our elderly and vulnerable people generally are looked after properly		
66	£45 a year increase is affordable		
67	I am having to give up my job to care for my disabled child because the Local Authority has failed to provide appropriate care. I can't afford to pay any more money.		
68	Because local authorities are responsible for their citizens and the elderly often neglected in preference to those living in social housing and/or in receipt of benefits		
69	Wages are not rising but cost of living is. Every year I am worse off.		
70	An increase should go to helping all parts of the councils funding, other issues as well as adult allowance are important too, a 4% to accommodate both would be too high for many people		
71	Adult social care is important. Dignity, safety and living in a reasonable level of comfort are important for well being. We must look after each other		
72	Vital services are needed. However if this money is used to fund things like 3 PAs for an executive at the CC then I would choose differently.		
73	We need to support each other, but money is limited. Wages are not increasing at the same rate as costs. We could pay a little more, but not this much more.		
74	In general the cost of living is either staying the same or rising for most families, this should be reflected proportionally in any rise in council tax		
75	Amount per household is tiny, benefits far outweigh extra cost.		
76	I think it is fair to have a raise however this should cover all areas		
77	We pay a huge amount already but don't really benefit from it we have no street lights, no roads swept, continuous pot holes, roads never gritted in winter. No mains sewage. No policing. Fly tipping along the roads frequently.		

7. Can you please tell us why you chose this option for Council tax?

		Response Percent	Response Total
78	We all need to pay a little extra to be fit the community.		
79	Because my wage has not increased for years and I have to pay a lot to get my children to school to do A levels as there are no sixth forms that do it local to me.		
80	Social services are sucking far too much funding from other areas of Council services. Their funding needs heavy cuts.		
81	Because I am 64 years old. Purely selfish reasons.		
82	Small difference in yearly cost...		
83	Council funding has been under pressure for too long and given the demands being placed on services, leaving rates frozen is only going to result in cutbacks and deterioration of services.		
84	Tax keeps increasing and services reduced.....		
85	<p>When government funding is decreasing, contributions from residents clearly need to increase. Care of the elderly is important and increasingly totally unaffordable for most.</p> <p>On the other hand, ensuring that children reach their full potential is not really the job of councils, but most importantly of the child's parents, and secondly of the education system - most of which is determined by the government.</p>		
86	If you didn't waste money on a non strategic approach to GCCP you might have enough money for adult social care. The two budgets are separate.		
87	A small increase for the greater good helping the vulnerable and disabled and our local economy		
88	While I am not happy for any increase I am also not wanting so many cuts but I truly hope that money is spent more wisely in the future For instance with so many bike lanes being built they should be payed for by. People who are benefiting from them. Allowing money to improve roads care homes children's services I count any bikes on the newly made bike path on the way to Cambridge five has been the highest number this doesn't make good use of my money x		
89	I am happy to contribute more if it helps those less well off in my community		
90	I would rather pay more and know that people needing services can access them		
91	<p>Because it is foolish to think that services can be provided without increasing council tax when central govt has cut funding. The council should stop fooling itself that it can continue capital road developments such as Kings Dyke and the Ely bypass adding additional prudential borrowing to satisfy the vanity of groups of Councillors. Instead it should concentrate on maintaining revenue funded services by better maintains roads. Cambridge City continues to drain resources from the rest of the county and failing to use the benefit of the City Deal for fundamental improvements to access for Cambridgeshire residents to the Cambridge economy. Instead, Cambridge City and South Cambs are using the City Deal to restrict access to Cambridge for local political kudos in attacking the general access of Cambridgeshire residents. Cycle ways must not be increased unless these are better balanced with improve vehicular access routes to the City centre.</p> <p>I support a 3.99% council tax rise because it is dishonest for the Govt to cut funding to County Council whilst expecting continuation of services. However, it is also dishonest of the County Council to claim to be more efficient when failing to maintain current infrastructure in favour of interest on capital borrowing. And, when the County Council leaves Parish Councils deciding either to accept cuts in local residents County provided services or increasing precepts. The financial crisis was caused by lack of responsibility in borrowing. Borrowing because you cannot afford to pay for something today but have no prospect of paying for it tomorrow puts self gratification ahead of financial sense.</p>		
92	It is important that services are properly funded		
93	<p>I chose this option because I am ok with taking on more responsibility for the services we receive. Plus, I want communities to thrive and be more resilient to cuts.</p> <p>In my opinion, the proposed raise in council tax, spread over a year is not that much.</p>		
94	I would like to see all the services provided by the council maintained if not improved. Increasing the CT in percentage terms will generally ensure that people will contribute depending on their wealth/ability to pay. If		

7. Can you please tell us why you chose this option for Council tax?

		Response Percent	Response Total
	the govt is restricting cash they should not restrict the ability of local authorities to raise capital instead of worrying about votes. As the govt has changed its fiscal policy surely we don't need to worry anymore!		
95	I pay enough Council Tax and my salary has not increased in line with inflation		
96	Raising council tax should benefit everyone, as their will be a cost to everyone. Though it's an immature view, I don't like the idea of my council tax getting higher to pay for Adult care, when for myself there are more pressing issues such as the state of our roads, the need for pedestrians, cycles and motorised road vehicles to each have their space on the roads, the emergency services being so stretched and my local area needing repair and tidy up work.		
97	The Council should look to find more efficiencies and concentrate on key core services.		
98	Because it makes more sense to support people before they need more expensive health care. Because I am a decent human being who understands the need to look after the most vulnerable people in the community.		
99	I'm happy to pay more and have better services in the City. That includes MY ability to freely drive in Cambridge. Blocking Cambridge to residents alienates both the city and the council from its citizens		
100	Savings should be found. Our council tax is already disproportionate to our burden on the system.		
101	We need these services and they have to be paid for.		
102	Because the services are vital and would have significant impact if cut		
103	We all need to pay more to make sure that the help that is needed can be given		
104	It is the fairest for all members of society whether that is those who will contribute in the future, those who currently contribute or those who have already contributed and now receive favourable pension benefits.		
105	Need to pay more if the government are not funding our services adequately.		
106	Best option. Adult social care is a must. The rest isn't		
107	People are already paying out more than they can afford in quite a few cases		
108	Because I think the council has now cut its services to the bone and there is no more room to manoeuvre.		
109	Too many things are getting cut that are affecting peoples lives and well being. The public need to see what the real costs are for services as many are oblivious to what is happening.		
110	Money is tight enough, but i want to do my share		
111	As low income families who do not receive any benefits at all will struggle to pay a larger increase, this is the area that needs investment more than the rest		
112	It's not that large an increase & we need to care for the more vulnerable people in our society.		
113	Unfair to have one or the other when both needed, cuts rarely beneficial in the long run.		
114	some households should pay more for the general good		
115	its fairer for all people in the county and will help to reduce the impact of government cuts		
116	So many sections need more help.		
117	Personal Finances		
118	We pay enough already and you need to look at back room staffing - too many and need to cut back		
119	With an ageing population this is the area most stretched financially		
120	Pay enough already and wages we are paid do not increase for most people		
121	It worries me greatly that the public seem to demand more all the time when clearly the council is struggling to cut back and save money where it can. Services are already suffering - I am most concerned about social care & education services - which is abysmally underfunded and desperately needs more money. I think our refuse services are brilliant, especially compared to some areas I have visited so that should not be touched. I think the public have to wake up to the fact that we must pay more in to save and maintain		

7. Can you please tell us why you chose this option for Council tax?

		Response Percent	Response Total
	essential services and I would be happy to do that. There would be an outcry no doubt but if all councils did the same, I think it would have to be accepted.		
122	Other services should be cut - adult care cannot.		
123	It's fairer to everyone		
124	It seems to me the only way to keep the majority of the services the county council is responsible for.		
125	I use many services that the council financially support including baby groups and I would be extremely disappointed if they were to shut due to funding.		
126	It is the right and only proper thing to do to help people in Cambridgeshire.		
127	The money has to come from somewhere.		
128	Like any business the council should look to cut as much COST as possible before looking to increase revenue by increasing prices (council tax). I don't feel this has been done sufficiently.		
129	Think we pay to much already		
130	Because we are an ageing population and services for the elderly CANNOT keep being cut. Also other areas need more money ploughed into them so, whether we like it or not, we as Council Tax Payers will have to fund them.		
131	I am prepared to pay more for most council services , particularly policing. What I don't like is paying for non productive services such as flower displays. I also feel house occupiers should be named and shamed if they don't cut there plants back that overgrow on to footpaths. And while I am at it, grass cutting and hedge cutting contractors should be forced to complete their works - cutting hedges back but not trimming back around road signs.		
132	More money for adults and children in the care of the social services, I work with adults with learning disabilities I am heart broken at what the last 5 years of cuts has already done. Cambridgeshire needs a bigger budget not to cut further.		
133	I do not feel council tax is calculated fairly. However, I do believe those of us who can should contribute to local services and to keeping each other safe. None of us want to pay more council tax, but if we need to do so to maintain appropriate adult social care and other services, I'd prefer an increase over axing services.		
134	The increase in Council Tax is greater than inflation, and greater than any increase in average earnings. It is unfair, and unconscionable, to keep increasing council tax for those who are deemed "fit & well", when there are other savings that should be realised first.		
135	Cuts cause hardship and put additional pressure on communities and families. I'd be happy to pay the extra money to maintain and even improve services.		
136	We can and should do more		
137	With people living longer it's important to help them live reasonably comfortably and keep them out of hospitals bed blocking.		
138	I think it's very important to maintain safety and security in all the services the council provides. These are reasonable increases to pay for increased demands.		
139	I'm worried about the cuts in social care so hope a little increase could go towards that.		
140	The more money you can raise (provided that you spend it efficiently and responsibly) the better it is for the provision of elderly care. The ageing population across the country but also specifically in this region will put increased pressure on local services, so they need to be equipped to handle that extra pressure.		
141	The council need to demonstrate its strategy and risk analysis on how it manages it's funding. I have not seen or been shown how it prioritises it's spending. Until it can effectively demonstrate this it should not be allowed additional revenue.		
142	Its a small amount		
143	If I'm being asked to pay more I would like it to benefit areas that are of relevance to me.		
144	You can decide the best way to share this increase amongst services.		

7. Can you please tell us why you chose this option for Council tax?

		Response Percent	Response Total
145	Help towards the cuts that will be put in place		
146	I can personally afford to pay more and believe that the money is needed for supporting those not in a position to otherwise help themselves. I understand that not everyone can afford such an increase, but am hopeful that those most unable to pay would be in receipt of some discount or benefit to enable them to pay.		
147	Social care is important. Fed up being ripped off by the council for other so called services. We cannot even have a street lighting now in the dead of night. This country is a disgrace.		
148	The cost per week to the average house is negligible, less than the cost of a daily paper		
149	I think I could afford the rise. However, I feel these services should be paid for by central government.		
150	Elderly need help. Don't waste money on encouraging healthy living. You encourage people to be lazy and unmotivated honk someone else has to sort out their unhealthy lives. It's not rocket science: eat less, move more.		
151	Too much spent on Adult care		
152	I am willing to pay more tax to get a better service.		
153	Council should raise the money it requires		
154	40 quid a year isnt much, but im not confident that it wont be wasted on red tape and overpaid senior management		
155	I think it's best new revenue can be spent in a variety of areas and not just care for adults		
156	I'm young, I'm happy to pay more local tax to help the council and local services, but I don't want the services for the young to be penalised		
157	Too much tax across everything, fuel, vat, income tax starting to reach a stage where my salary has been eroded to the point I'd be better off on benefits than working		
158	Adult social care desperately needs this money		
159	Because I don't know what 'other services' means in case of a higher tax increase.		
160	Because essential services are being cut and this is NOT acceptable		
161	It is imperative that we protect our services for the elderly and vulnerable. Cutting services is a false economy as increases pressure on other services such as the NHS		
162	As long as councils keep paying astronomical fees for social care, providers will keep increasing their charges.		
163	We desperately need our Council to provide adequate services and should accept that Council tax needs to rise in order to achieve this. The Government should not be putting restrictions on local Councils. Children's and adult services are very important and should not be restrictive.		
164	This survey is balatantly biased by the style of questions featuring words that emotionally lead the responder. If the council genuinely wants to canvas views it should be more competent in in its surveys. The only response which is unbiased is option1.		
165	People in need are depressed enough as it is. More money means more services		
166	take pressure of hospitals and doctors		
167	Because it gives you the flexibility to use the money in the way you see fit rather tahn just for one group of the population		
168	I think the council have opportunity to reduce costs in many areas without raising more taxes		
169	we need to care for our most vulnerable citizens, and our current rates are amongst the lowest in the country		
		answered	169
		skipped	32

8. Council Tax Increase (cont)

8. If there were no restrictions on the size of Council tax increase would you increase Council tax by more than 3.99%?								
						Response Percent	Response Total	
1	Yes			<div></div>		18.41%	37	
2	No			<div></div>		64.18%	129	
3	Don't know			<div></div>		17.41%	35	
Analysis	Mean:	1.99	Std. Deviation:	0.6	Satisfaction Rate:	49.5	answered	201
	Variance:	0.36	Std. Error:	0.04			skipped	0

9. Council Tax (cont)








9. In total, including 3.99%, by how much would you increase Council Tax? Please put a total percent (%) figure below. (As a guide, for each 1% an average band D property would pay approximately an extra 23p per week £11.67 a year)						Response Percent	Response Total
1	Open-Ended Question					100.00%	37
1	10%						
2	10						
3	20%						
4	2						
5	10%						
6	5						
7	10%						
8	5						
9	8						
10	5						
11	20%						
12	6%						
13	10%						
14	5						
15	10%						
16	8						
17	7						
18	5						
19	2%						
20	7						
21	20%						

9. In total, including 3.99%, by how much would you increase Council Tax? Please put a total percent (%) figure below. (As a guide, for each 1% an average band D property would pay approximately an extra 23p per week £11.67 a year)

		Response Percent	Response Total
22	5%		
23	8		
24	10		
25	5%		
26	6		
27	5%		
28	6%		
29	5%		
30	10		
31	7%		
32	10%		
33	5		
34	10%		
35	5%		
36	9%		
37	5%		
		answered	37
		skipped	164

10. Experience of County Council Services

10. Which of the following County Council services do you or someone in your household use regularly? Please tick all that apply.

			Response Percent	Response Total
1	Help with parenting provided by Children's Centres		8.08%	16
2	Extra help in school for children with additional needs		7.07%	14
3	Help for disabled children including children with learning disabilities		2.53%	5
4	Libraries		41.41%	82
5	Help with living a healthier lifestyle such as giving up smoking or losing weight		4.55%	9
6	Help with managing mental health issues		9.09%	18
7	Help for disabled adults including adults with learning disabilities		3.03%	6

10. Which of the following County Council services do you or someone in your household use regularly? Please tick all that apply.

							Response Percent	Response Total
8	Social care or help to live at home for older people			<div><div></div></div>			6.06%	12
9	Subsidised public transport or community transport schemes such as dial-a-ride			<div><div></div></div>			11.11%	22
10	None of the above			<div><div></div></div>			45.96%	91
11	Other (please specify):			<div><div></div></div>			2.02%	4
Analysis	Mean:	9.24	Std. Deviation:	4.89	Satisfaction Rate:	78.33	answered	198
	Variance:	23.92	Std. Error:	0.35			skipped	3
Other (please specify): (4)								
1	cfs service							
2	Roads							
3	bus pass							
4	I work in mental health							

11. Keeping in mind that as well as the above the County Council also maintains the County's roads and cycle-ways, manages the disposal of waste and develops the County's economy. Is there any part of County Council services that you particularly value?

							Response Percent	Response Total
1	Don't know		<div></div>				16.58%	33
2	No		<div></div>				19.10%	38
3	Yes (please explain):		<div></div>				64.32%	128
Analysis	Mean:	2.48	Std. Deviation:	0.76	Satisfaction Rate:	73.87	answered	199
	Variance:	0.58	Std. Error:	0.05			skipped	2
Yes (please explain): (128)								
1	Highways, looking after the roads							
2	School transport							
3	Travelling safely and confidence in the county's economy are important to me.							
4	All of yhe above, it is vital to keep the road network in good order and develop it to facilitate business and population demands. As a cyclist any improvements to the cycle network is appreciated. The county would be a very messy place without waste disposal!							
5	Transport							
6	Household recycling seems to be among the best in the country							
7	Library support for the elderly and children							
8	Cycleways - enable cost free transport and a healthier lifestyle.							
9	Protecting and keeping vulnerable chuldren safe.							
10	Better road maintenance, street lighting, libraries.							

11. Keeping in mind that as well as the above the County Council also maintains the County's roads and cycle-ways, manages the disposal of waste and develops the County's economy. Is there any part of County Council services that you particularly value?

		Response Percent	Response Total
11	Wisbech recycling centre		
12	Road maintenance and waste disposal are services we use.		
13	Street Lighting and Wast Collection Including Garden Wast		
14	Highways, Libraries, Recycling, cycle ways		
15	Repairing potholes		
16	Open spaces need to be kept accessible for all and grass needs cutting along with paths kept clear		
17	All services are valued.		
18	Disposal of waste		
19	Libraries		
20	Safety is my main concern, no potholes on the roads, safe clean pavements and safe health from regular bin collections and waste disposal.		
21	Highways		
22	support for vulnerable adults		
23	I particularly value the work of the county council staff who deliver the services, I do not value the unnecessary layers of managers, consultants and senior management.		
24	Libraries		
25	All those services that reduce all types of inequality. For example the problems associated with becoming a parent are not based on income so services need to be universal, likewise loneliness is not income dependent.		
26	Libraries - allow access for me and my children to a great wealth of books and learning		
27	Cycling facilities and the Guided Bus Route.		
28	highways and refuse, keeps the area safe and looking good		
29	Better roads, better healthcare.		
30	Highways,street lighting		
31	Maintenance of the road network. Maintenance of other Rights of Way. Waste recycling centres.		
32	children's centres as they offer excellent support to young families to aid child development where I live (march)		
33	Road maintenance, keeping it moving and safe.		
34	the guided busway		
35	The Voluntary sector. Help for those who wish to volunteer but have additional needs		
36	Maintenance of the transport infrastructure for economic development.		
37	Children's Centres in Kings Hedges and Chesterton are my lifeline		
38	Recycling centre; cycle lanes		
39	cycle ways. keep fit and meet goals easily		
40	Education and treating the elderly with dignity and tespect		
41	Road mending		

11. Keeping in mind that as well as the above the County Council also maintains the County's roads and cycle-ways, manages the disposal of waste and develops the County's economy. Is there any part of County Council services that you particularly value?

		Response Percent	Response Total
42	Services for disabled children. We have a disabled son and I work at a special school. I see the effects of the cuts every day, for example a severely overstretched school nursing service.		
43	why spend money on cycle ways when they are under used? until people have to use them if they are there, there is no point!		
44	It's all valuable to someone - it's all part of a maintaining a decent, modern society		
45	Cycleways are a cheap and safe way of maintaining healthy lifestyle for my family		
46	Better cycleways		
47	Libraries. Important in helping children and adults learn		
48	The total lack of support the schools receive for children with additional educational needs is disgraceful and it should be substantially improved		
49	Services that support families		
50	Maintaining roads.		
51	Disabled children		
52	Libraries - help my children to be adventurous readers		
53	Waste disposal and road maintenance		
54	Libraries		
55	Learning centres		
56	Cycle routes.		
57	Waste recycling centre		
58	Children's services and education		
59	Waste disposal and road/cycleway maintenance are critical. Education is also critical, but seems to be out of council control - teachers need to be paid much more and be much more highly valued.		
60	Our cycle paths are in desperate need of maintenance (and building!) Fromm Haslingfield to Cambridge, no street lighting or cycle paths until out of village. If you want people to cycle (improving health and congestion) and to link to GCCP then this should be a priority.		
61	Most of the above services even though I don't use them at the moment but I feel they are important		
62	Waste disposal, roads,		
63	Adult Social Care services which my parents access.		
64	Roads but not cycle ways which add little value for the County transport movements as a whole and are only of benefit to a minority of residents.		
65	Items look listed in q11		
66	I'm interested in keeping the county clean whilst making sure that everything that is done is with regard to the environment and wildlife that is under huge pressure due to the overpopulation of this country and in fact the world.		
67	Roads & cycleways, waste management and emergency services.		
68	Well maintained roads		
69	ALL social care for children, adults, people with disabilities and older people.		

11. Keeping in mind that as well as the above the County Council also maintains the County's roads and cycle-ways, manages the disposal of waste and develops the County's economy. Is there any part of County Council services that you particularly value?

		Response Percent	Response Total
70	Road network for cars and cycles including city centre road network		
71	Children's centres, breastfeeding support, support for schools		
72	cycle path and walking/cycling networks		
73	Road maintenance and public transport, health education and support		
74	Adult services and highways.		
75	Highways. Not cycleways. Waste management		
76	Refuse collection		
77	Cycle ways for a healthy lifestyle, and work with young people.		
78	Too many to list		
79	cycle ways. They encourage greener lifestyles		
80	Archives and culture - should be looked after locally		
81	Libraries		
82	street lights		
83	I would like to see road markings made clearer thus reducing costs to NHS and insurance companies too		
84	Refuse services because they are so efficient & recycling is so easy		
85	Library services		
86	Cycle routes		
87	Baby groups		
88	Libraries		
89	Waste disposal and ongoing road maintenance		
90	As a driver more money spent on safer roads would be a must.		
91	Waste collection as it is better than delivering waste to a central point		
92	I valued the street lights before they were replaced and then switched off.		
93	Roads as have a long commute and travel to see family often. Waste collections are vital to public health and the environment		
94	Libraries, swimming pools, and cycle paths and bicycle parking		
95	The transport services and infrastructure are things upon which the entire community depends for its economic wellbeing.		
96			
97	roads		
98	Local infrastructure, so: roads, general upkeep of the area, modernisation		
99	Refuse, environment and roads. A far better public transport system would be advantageous		
100	Waste management		
101	Roads and waste management. I cycle, so safer cycle paths are important to me. I also want to see safe playgrounds available for my child.		

11. Keeping in mind that as well as the above the County Council also maintains the County's roads and cycle-ways, manages the disposal of waste and develops the County's economy. Is there any part of County Council services that you particularly value?

		Response Percent	Response Total
102	Safety individuals and roads		
103			
104	childrens centres		
105	Of value to me personally, maintenance of the roads is the most valued. However support for the elderly, disabled, and homeless is something that I care deeply about. I also value libraries highly.		
106			
107	Bin collections, road repairs, town redevelopment (better shops)		
108	It would be nice to have a street lighting in the dead of night. What exactly am I getting for £160 per month. Precious little. This country is a disgrace.		
109	Recycling		
110	cycle way / road management		
111	Social care		
112	All		
113	recycling, cycle-ways maintenance and development		
114	Caring for our elderly, disabled and vulnerable		
115	Please build a cycle path between Great Paxton and St. Neots! Please provide regular a bus service from Great Paxton!		
116	Physical infrastructure such as roads and cycle ways		
117	Disabled adult services		
118	Encouraging reducing waste and energy use		
119	Cycle ways		
120	Waste disposal.		
121	Waste disposal		
122	All childrens and adult care services		
123	Care, waste management, help with disability		
124	maintenance of roads and drains		
125	all are important		
126	Waste disposal is excellent		
127	Education, education, and education. Highways.		
128	trying to maintain good roads, including rapid repairs when necessary		

13. Which district do you live in?

			Response Percent	Response Total
1	Cambridge City		18.37%	36

13. Which district do you live in?

							Response Percent	Response Total
2	East Cambridgeshire			<div><div></div></div>			9.69%	19
3	Fenland			<div><div></div></div>			14.80%	29
4	Huntingdonshire			<div><div></div></div>			37.24%	73
5	South Cambridgeshire			<div><div></div></div>			19.90%	39
Analysis	Mean:	3.31	Std. Deviation:	1.38	Satisfaction Rate:	57.65	answered	196
	Variance:	1.91	Std. Error:	0.1			skipped	5




14. What is your gender?

							Response Percent	Response Total
1	Male			<div><div></div></div>			39.30%	79
2	Female			<div><div></div></div>			54.73%	110
3	Other			<div><div></div></div>			1.49%	3
4	Prefer not to say			<div><div></div></div>			4.48%	9
Analysis	Mean:	1.71	Std. Deviation:	0.71	Satisfaction Rate:	23.71	answered	201
	Variance:	0.5	Std. Error:	0.05			skipped	0









15. What age band do you fall in?

							Response Percent	Response Total
1	Under 18						0.00%	0
2	18-24			<div><div></div></div>			1.49%	3
3	25-34			<div><div></div></div>			14.43%	29
4	35-44			<div><div></div></div>			20.90%	42
5	45-54			<div><div></div></div>			28.86%	58
6	55-64			<div><div></div></div>			22.89%	46
7	65-74			<div><div></div></div>			10.45%	21
8	75 or over			<div><div></div></div>			1.00%	2
Analysis	Mean:	4.93	Std. Deviation:	1.28	Satisfaction Rate:	56.08	answered	201
	Variance:	1.65	Std. Error:	0.09			skipped	0











16. Do you have any long-standing illness, disability, or infirmity that limits your activities in any way?

						Response Percent	Response Total
1	Yes					12.44%	25
2	No					81.09%	163
3	Prefer not to say					6.47%	13
Analysis						answered	201
						skipped	0
	Mean:	1.94	Std. Deviation:	0.43	Satisfaction Rate:	47.01	
	Variance:	0.19	Std. Error:	0.03			







17. How would you describe your ethnic background?

						Response Percent	Response Total
1	British					85.57%	172
2	Irish					0.50%	1
3	Gypsy & Traveller					0.00%	0
4	Eastern European					0.00%	0
5	Other					3.48%	7
6	African					0.00%	0
7	Caribbean					0.00%	0
8	Other					0.00%	0
9	White and Black African					0.00%	0
10	White and Black Caribbean					0.00%	0
11	White and Asian					0.00%	0
12	Other					0.50%	1
13	Indian					0.50%	1
14	Pakistani					0.00%	0
15	Bangladeshi					0.00%	0
16	Chinese					0.00%	0
17	Other					0.50%	1
18	Any other Ethnic Group					1.00%	2
19	Prefer not to say					7.96%	16
Analysis						answered	201
						skipped	0
	Mean:	4.34	Std. Deviation:	6.46	Satisfaction Rate:	14.51	
	Variance:	41.77	Std. Error:	0.46			


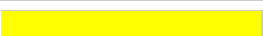

18. What is your working status?

			Response Percent	Response Total
1	Employee: Part-time (30 or fewer hours per week)		14.50%	29
2	Employee: Full-time (31 or more hours per week)		50.50%	101
3	Self-employed: Part-time (30 or fewer hours per week)		5.00%	10
4	Self-employed: Full-time (31 or more hours per week)		3.50%	7
5	Unemployed and available for work		0.50%	1
6	Retired		15.50%	31
7	Student (including full-time students)		1.00%	2
8	Looking after home or family		3.00%	6
9	Long-term sick or disabled		3.00%	6
10	Other (please specify):		3.50%	7
Analysis		Mean: 3.33 Std. Deviation: 2.48 Satisfaction Rate: 25.89	answered	200
		Variance: 6.13 Std. Error: 0.18	skipped	1
Other (please specify): (7)				




19. Including yourself how many people (adults and children) live in the household?




			Response Percent	Response Total
1	1		13.93%	28
2	2		38.81%	78
3	3		20.40%	41
4	4		19.90%	40
5	5		5.97%	12
6	6		1.00%	2
7	7		0.00%	0
8	8		0.00%	0
9	9		0.00%	0
10	10 or more		0.00%	0
Analysis		Mean: 2.68 Std. Deviation: 1.17 Satisfaction Rate: 18.68	answered	201
		Variance: 1.37 Std. Error: 0.08	skipped	0

12. About You (cont)

20. Are there any children, under 16 years old living in the household?							Response Percent	Response Total
1	Yes						43.35%	75
2	No						56.07%	97
3	Prefer not to say						0.58%	1
Analysis	Mean:	1.57	Std. Deviation:	0.51	Satisfaction Rate:	28.61	answered	173
	Variance:	0.26	Std. Error:	0.04			skipped	28

13. About You (cont)

21. Are you a carer? By carer we mean, do you look after, or give any help or support to family members, friends, neighbours or others because of either (1) they have long-term physical or mental ill-health or disability or (2) they have problems related to old age? [Additional notes: This is an unpaid carer, but they can be seeking carer benefits. They don't need to live in the same household.]							Response Percent	Response Total
1	Yes						17.91%	36
2	No						79.10%	159
3	Prefer not to say						2.99%	6
Analysis	Mean:	1.85	Std. Deviation:	0.43	Satisfaction Rate:	42.54	answered	201
	Variance:	0.19	Std. Error:	0.03			skipped	0

22. The County Council would like to offer you the opportunity to remain in touch by e-mail and from time to time and send you links so you can take part in further consultation surveys.Would you like to participate?							Response Percent	Response Total
1	Yes						40.00%	80
2	No						55.50%	111
3	Don't know						4.50%	9
Analysis	Mean:	1.64	Std. Deviation:	0.56	Satisfaction Rate:	32.25	answered	200
	Variance:	0.32	Std. Error:	0.04			skipped	1

TOTAL TRANSPORT – CHANGING DAY CENTRE SESSION TIMES

To: **General Purposes Committee**

Meeting Date: **29 November 2016**

From: **Graham Hughes, Executive Director (Economy, Transport and Environment)**

Electoral division(s): **Those divisions substantially affected by the proposal are:**

- **Ely North & East**
- **Ely South & West**
- **Haddenham**
- **Littleport**
- **Soham & Fordham villages**
- **Sutton**

In addition a small number of individual residents of the following divisions may be affected, as all transport to day centres in Ely would be affected and some users reside outside of the Total Transport pilot area.

- **Chatteris**
- **Forty Foot**
- **March West**
- **Woodditton**

Forward Plan ref: **Not applicable** *Key decision:* **No**

Purpose: **This report sets out the results of the engagement and analysis work undertaken following the Committee meeting on 26 July 2016. The question posed was whether there would be a net benefit to changing day centre times in the Total Transport pilot area in order to allow integration with special educational needs transport.**

Recommendation: **This Committee is recommended to:**

- **maintain existing day centre times, accepting that the potential costs involved in changing times would outweigh the benefits.**
- **note the alternative approach of considering the Flexible Minibus Service as an enabler for residents, helping them maintain their independence and to access community-based solutions.**

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1 BACKGROUND

- 1.1 Total Transport is a national initiative that looks to use resources more efficiently, by integrating different types of transport. The County Council has been exploring this opportunity in a pilot area within East Cambridgeshire.
- 1.2 General Purposes Committee (GPC) considered a range of Total Transport proposals on 26 July 2016. The Committee agreed to two phases of implementation: the first, from September 2016, involved a full review of mainstream school bus services and some integration with local bus routes; the second, from January 2017, will involve the setting up of a new Flexible Minibus Service to replace existing day centre transport, weekly bus routes, and dial-a-ride.
- 1.3 It was identified that school transport for pupils with special educational needs and disabilities (SEND) could also be provided by the Flexible Minibus Service and that this would offer financial savings, but that it would also require changes to the session times at Bedford House and Larkfield day centres in Ely, and at The Café (co-located with Larkfield at Ely Community Centre). The original Total Transport consultation had indicated that a number of users would find such a change difficult.
- 1.4 GPC therefore required a further report on the likely impact, costs and savings associated with such a change. This was to be presented to both Adults and Children & Young People Committees for information and discussion, before being returned to GPC on 29 November 2016.

2 MAIN ISSUES

Engagement Process

- 2.1 A public consultation was undertaken in the spring of 2016, inviting views on all of the changes that were being considered as part of Total Transport. The number of responses from individuals who identified themselves as adult social care users (or their carers) was small, however the content indicated that significant challenges would be created by a change to day centre times.
- 2.2 Following the instruction by GPC on 26 July 2016, the Service Director: Adult Social Care delegated the Operations Manager: East Cambridgeshire to spend one day a week undertaking a more detailed consultation with service users at the day centres affected by the proposal. This time commitment was funded by the Total Transport grant.
- 2.3 Approaches were made to: staff at Bedford House, Larkfield and The Café; social care teams, both for learning disabilities and older people; service users at all of the locations; and organisations within the private, voluntary and independent sectors which provide support for these users.
- 2.4 A particular effort was made to ensure that all users were able to share their views. If there was no initial response to the survey forms that were distributed, individual phone calls were made. This approach was also used where the written replies indicated that more detailed discussion was needed; this has allowed the inclusion of a number of case studies.

Outcome of Engagement Process

- 2.5 A number of general issues were raised, both by individual users and by those providing support to clients. These are considered in points 2.10 to 2.15 below.
- 2.6 Individual replies were received from 18 service users (or their carers) at Larkfield, 21 at Bedford House, and four at The Café. This represents a total of 43 out of a possible 68 users, giving a response rate of 63%.
- 2.7 Users were asked to reply to the following questions;
- Would this change affect the user's ability to attend the day centre?
 - Would this change cause problems for family or carers?
 - Would this change cause any extra expense?
 - Would this change have any other impact?

The full responses (word for word, i.e. including any inconsistencies or uncertainties) are included in **Appendix A**. Points 2.8 and 2.9 below, along with the general sections from 2.10 to 2.15, summarise the views expressed.

- 2.8 There were 11 respondents from Larkfield who confirmed that the proposed change would not affect their ability to attend. The equivalent figure at Bedford House was 20, with three at The Café. This means that 79% of users who responded (and 50% of all users) would still be able to attend the centres even if times were changed. It should be noted that the views varied across the centres – from 95% acceptance at Bedford House to 61% at Larkfield.
- 2.9 There were three respondents who provided detail about the specific issues that would be caused by the proposed changes to day centre times. The Operations Manager: East Cambridgeshire has written two of these up as individual case studies; these are included as Appendix B (the wording has been agreed with the users). In the first of these cases, the individual concerned already only spends 3 hours at Larkfield, due to the need to return home at midday for gastrostomy peg tube feeding, medication and rest; the changes would reduce her social interaction time (and her family's respite time) to two hours. In the second case, the user's primary carer would no longer be able to continue in her paid work, due to the shift times involved.

General Themes

- 2.10 The emotional impact of changing established **routines** was highlighted in three of the responses. One carer considered that it would be "distressing". There was also feedback from staff which indicated that changes to routine may destabilise users for a period of time and result in behavioural challenges, although this would be expected to settle down again once a new routine is established.
- 2.11 **Arriving home in the dark** was cited in three responses as a potential problem. Based on sunset times and a drop-off at 6pm rather than 5pm, a user might arrive home in the dark for an additional five to six weeks a year, if times were to be changed.
- 2.12 One response referred to **rush hour traffic** and the consequent impact on journey times. This was also mentioned in feedback from staff. There is

some possible mitigation if routes can be shortened by more efficient scheduling or the use of more vehicles (which could still be cost effective, if each had previously operated a school journey), but a longer journey would indeed be likely with a 5pm finishing time.

- 2.13 There were six responses explaining the impact on **family members or others in the household**. These included one person whose mother would be unable to continue working, and one who would lose their respite from caring (on the basis that their partner would not be able to attend if times change). Two of the respondents were positive about the change.
- 2.14 However, six responses referred to the timing of **medication**, with three suggesting that adjustments would be possible, and two users for whom it was specifically mentioned as not being a problem. The remaining response did highlight significant issues, which are covered within the case studies in **Appendix B**.
- 2.15 There were five comments relating to the **length of day**. One of these is contained within the case studies in Appendix B (the user would see their hours reduced due to medication / feeding issues), and a second considered that the later finish time would make it impossible for the user to continue attending. The remaining three responses were all positive about the change.

Additional Costs Incurred

- 2.16 The current day care provision at Bedford House is from 10am to 3pm; this allows time for social interaction and personal care either side of lunch. The return journey would need to move to 5pm, however it is unlikely that a start time of 12.00 noon would be operationally possible or acceptable to users (it would remove any morning respite, for example). It is therefore likely that additional **staffing costs** would be incurred, due to longer shifts (e.g. 10am to 5pm). Based on current ratios and hourly rates, including approximate add-ons, the annual cost for each extended hour would be £15k; increasing to the full 10am to 5pm would therefore incur an extra £30k per year in staff costs.
- 2.17 Given that a departure time of 5pm would result in some users not returning home until 6pm or later, it would be necessary to provide **food** prior to the end of the day centre session. This would not need to be a full meal, and the unit cost would be relatively low, however this requirement should be noted.
- 2.18 As identified in 2.9 above, a small number of respondents identified significant issues in changing times. These users are all supported in family settings at present, and whilst there was no clear statement that this would cease to be possible, it should be noted that supporting family units is a Council priority. This reflects both the benefit it offers to the individual, and the fact that **residential care** incurs a high cost for the Council. A headline figure would put such care for any these three individuals at over £100k per annum, which is more than the maximum potential saving from changing times.

Potential Saving

- 2.19 The main saving which could be secured by changing day centre times to allow integration with SEND transport is the reduced need for separate

vehicles at school times. A new procurement process for services from 2017 is being undertaken, and this will provide exact figures to work from. As a guideline, however, each SEND route to be replaced would be expected to cost between £20k and £30k per year. The proposed Flexible Minibus Service could cover up to three routes, offering a saving of £60k to £90k.

- 2.20 Taking into account the costs and savings referred to in 2.16 and 2.19 above, there is a potential net saving of between £30k and £60k. If additional measures were identified to mitigate the impact on certain users, or if residential care were required for one or more individuals currently supported at home, this figure would reduce, and could indeed turn into a net cost.

The Wider Perspective

- 2.21 The work undertaken so far has only considered the services within a pilot area (the northern part of East Cambridgeshire). Members have asked for an indication as to whether the same principles of integrating day centre and SEND transport could be applied across the county.
- 2.22 The default expectation is that a similar approach could be followed in any location where day centres and SEND schools exist in close proximity. A particular caveat has to be made with regard to congestion levels, especially within Cambridge itself, but also along the A14 corridor and potentially within Huntingdon. The higher traffic volumes in these areas compared with the northern part of East Cambridgeshire could undermine reliability and/or exacerbate issues such as long journeys and arrivals home in the dark.
- 2.23 The first phase of the Total Transport pilot was introduced in September 2016; this focused on mainstream school transport. The initial evaluation has shown that the savings target of 10% was exceeded, however it should be noted that we are only around a fifth of the way through the year. There is potential for savings to be eaten into during the coming months, for example due to more pupils travelling as the weather gets worse.
- 2.24 Whilst noting the caveat in point 2.23 above, the indication is that there is scope for further savings if the approach used in phase 1 of the Total Transport pilot were to be rolled out. Given that the impact on service users was relatively low, and that resource for implementing significant change across different areas is limited, this may present a better opportunity for achieving savings whilst minimising the impact on service users.

Maintaining Current Timings

- 2.25 If changes to day centre timings were not progressed as a part of Total Transport at this point, the Flexible Minibus Service would still be introduced from January 2017. Its focus would be on securing the best use of a known resource – in addition to providing existing trips to day centres, the new scheduling software purchased with the Total Transport grant would allow other journeys to be included where possible, in some cases replacing taxi provision. Over a period of six to twelve months a much more comprehensive picture of transport demand within adult social care, and possible efficiencies, would be built up.
- 2.26 Transport is repeatedly raised as a barrier to accessing services. Given the focus on preventative and community based interventions, establishing a service that allows users to request specific journeys would potentially

increase the opportunities for residents to maintain their independence and reduce the time spent by social workers and carers in trying to secure transport.

- 2.27 The current model of day centre sessions is relatively inflexible; for example, half day sessions are often not possible due to transport restrictions. There may also be opportunities for activities at different times (early morning or evening, for example). Even if current timings were officially maintained, future changes to timings would be possible where this added to the offer made to users. This would be a service-led change, however, rather than one imposed in order to achieve transport efficiencies, and it would have scope to include earlier as well as later times.

Proposed Approach

- 2.28 Given the views contributed by staff, social workers, service users and carers, it is proposed that the Flexible Minibus Service is introduced with four vehicles primarily delivering day centre transport at the current timings, and also covering existing dial-a-ride and weekly bus routes. It is envisaged that one school route would be provided by the core fleet of minibuses, but that the remaining journeys to Highfield would be delivered through separate contracts.
- 2.29 This means that there would be no requirement to change day centre times.
- 2.30 The Flexible Minibus Service would be implemented with a view to providing as many journeys as possible within the defined resource, and to actively supporting residents (particularly those vulnerable groups) in accessing whatever services they require. This represents a change in approach from strict “gate-keeping” to one of enabling users through flexible provision.
- 2.31 The Total Transport Member Steering Group discussed this proposed approach at its meeting of 5 October 2016, and agreed that it represented a sensible way forward. The Total Transport Programme Board (comprising the relevant Service Directors) considered the draft report on 21 October 2016, and similarly agreed with the proposed approach. Both Adults and Children & Young People Committees considered the above content at their November meetings, and endorsed the recommendation not to change times.

3 ALIGNMENT WITH CORPORATE PRIORITIES

3.1 Developing the local economy for the benefit of all

There are no significant implications for this priority.

3.2 Helping people live healthy and independent lives

The report above sets out the implications for this priority in 2.25 and 2.26.

3.3 Supporting and protecting vulnerable people

The following bullet points set out details of implications identified by officers:

- In deciding not to change day centre times, service users (many of whom are vulnerable people) would not be subject to a change that they may find distressing and which may reduce their ability to access

services.

- In providing a safe, easy to access transport service through the Flexible Minibus Service, the County Council would provide a suitable method of transport for vulnerable people in the pilot area.

4 SIGNIFICANT IMPLICATIONS

4.1 Resource Implications

- 4.1.1
- A decision not to change day centre times will remove a potential saving, that could otherwise have been targeted by integrating adult social care and special educational needs transport in the pilot area.
 - If this is the decision, the Flexible Minibus Service would instead be seen as a tool for supporting long-term cost avoidance in the wider social care budget, rather than as an opportunity for immediate savings.
 - Conversely, a decision to change day centre times would generate a transport saving, but could incur greater cost to other Council budgets, particularly if it leads to the breakdown of established family care arrangements.

4.2 Statutory, Risk and Legal Implications

- 4.2.1
- There are no significant implications within this category, if a decision is taken not to change day centre times.

4.3 Equality and Diversity Implications

- 4.3.1
- The following bullet points set out details of significant implications identified by officers:
- The provision of a Flexible Minibus Service that is able to accommodate existing users within their current arrangements (i.e. journeys to day centres without changes to times) would maintain access to services and would indeed have a positive impact on equality and diversity through improving choice.

4.4 Engagement and Communication Implications

- 4.4.1
- The report above sets out details of significant implications in points 2.1 to 2.4 (process) and 2.5 to 2.15 (views expressed).

4.5 Localism and Local Member Involvement

- 4.5.1
- The introduction of a flexible minibusservice would allow for more local options to meet the needs of people in a given locality. Local Members could assist in the promotion of the changes by explaining how the new service would operate and the potential benefits for local people.

4.6 Public Health

- 4.6.1
- The report above sets out details of significant implications in points 2.25 and 2.26, and in the feedback documented in the appendices.

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	Yes Tom Kelly
Has the impact on Statutory, Legal and Risk implications been cleared by LGSS Law?	The draft report was sent to Lynne Owen on 11 October
Are there any Equality and Diversity implications?	Yes – See 4.3.1 Claire Bruin – Adults Section only
Have any engagement and communication implications been cleared by Communications?	Yes Simon Cobby
Are there any Localism and Local Member involvement issues?	Yes Claire Bruin – Adults Section only
Have any Public Health implications been cleared by Public Health	Yes Iain Green

Source Documents	Location
General Purposes Committee – 26 January 2016 Adults Policy and Service Committee – 3 November 2016 Children and Young People Policy and Service Committee – 8 November 2016	https://cmis.cambridgeshire.gov.uk/ccclive/Committees.aspx

APPENDIX A

Ref	<i>Would this change affect the user's ability to attend the day centre?</i>	<i>Would this change cause problems for family or carers?</i>	<i>Would this change cause any extra expense?</i>	<i>Would this change have any other impact?</i>
1	"The way you judge a society is how it treats its disabled and vulnerable people" This would be putting them to the back of the queue. I would say that every other service user at larkfield would be badly effected by the change of times. They are all set in routines of getting up, being at larkfield for nine. Keeping people hanging around causes great anxiety. le effects the carers who come in. One lady has to be on her bed at home by one this will shorten her lovely social time she has at larkefield. Morning sessions would be really short taking time from the outside sessions such as pony carting, gowing to town. People would be going home in the dark in Winter. Please do not do this to our service users.			
2	no	no	no	no
3	16 miles from Larkfield means long journey currently finishing at 5pm. Later finish would mean sitting in rush hour traffic and not being home until after 6pm	new times would impact on mum working for Age UK, breakfast etc	Mum could not continue working,= drop in household income	as a household of early risers a later start would be unbearable, why change something that has worked fine for more than 20 years.
4	yes as xxx goes onto her bed and feeding pump at lunchtime so this woul give her harly anytime at the daycentre. This is her only time away from home with her friends so only having two hours away is so unfair as she really loves going.	xxx is up very early so waiting around until 1030 will be impossible. She has to have her medication at lunchtime	I as xxx's mother get the mornings (when xxx is well enough to attend) to do all the things that people have all day to do, but having only two hours will restrict most things, such as shopping, hospital trips and doctors for me as she is not well enough to stay any l9onger.	This change of time will be awful for xxx and me. Se is severely disabled, cannot stay in her chair for long and has to go on her bed to be attached to her pump at lunchtime. Her quality of life, which she loves going to Larkfields, will be reduced enormously. Please listen to everyone espically us as I thing this is very unfair. My daughter does not get much in life and to take awy this from her is so sad.
5	no	no	no	no
6	Not to attend	yes xxx's carers come at 7.30 in morning	Yes carers would be affected	very late in returning home and very dark in winter
7	No it wouldn't	no	I would not of thought so	no it wouldn't
8	no	no	no	no
9	no	no	no	no
10		It would affect xxxx time with carers coming as they would be very elarly in the morning and she will have to wait around 2 hours before going to Larkfield	It would affect my time ie going shopping to cambridge woul make me very late as I would not get there untill 11 oclock or later	Mum will have later appointments
11				

12	unable to assess as this would depend on the impact the time changes have on xxxx routine	This may cause issues for xxx as it will be a change in his routine. Routine is very important to him and changes can be distressing. xxxx has had the same routine for many years now. The change will be difficult for him	no	other than the disruption to routine, no
13	no	no	no	no xxx is independent of me, but I will know he will not be home until 5.30
14	no this would be more beneficial	no this would not affect any medications	No xxx has support 24 hours so it would cause problems	It would be a positive change
15	no	no	no	no
16	no it may make it easier. I will get an extra hour in bed in the mornings	no staff can change support hours. CSL will oversee this.	I don't believe so	No not really, I will enjoy being in bed longer
17	Current shift plans would be a problem	Staff shifts currently fit Larkfield times	shifts would need changing	Would confuse my other house mates
18	no	no	no	no
19	no change	no	no	no
20	no	no	no	no
21	this would be better	no problems	no	no
22	no	no	no	no
23	No	no	no	no
24	no	no	no	no
25	will not affect ability to attend	no major problems created Mum has medication at 5pm but delay would not be a problem	no extra expense	none
26	no	no	no	It would just give me a little extra time to get things done. It would help me a great deal.
27	no	no	not at present	xxx needs to be home by 5.15 because of having tea, tablets and evening care.
28	yes the increase in hours would have an effect on his wellbeing. He gets very tired and the extra 2 hrs would be too much and add to his confusion	No problems as medication is not taken in the new working hours	I would have to arrange for a taxi to collect him earlier or ask a relative to collect him, meaning they would have to re-arrange their employment	yes, I would not receive any "respite" from my caring duties.
29	No	no	no	no
30	no	no	no	no
31	I do not think so	My mum currently as a carers call at 4pm - that would need to be rearranged/cancelled	don't think so	
32	no if transport is arranged	no	no	no

33	no	no	no	no
34	No	no	no	no
35	No	no	no	no
36	No extra hours would be a help	no not a problem	no not a problem	positive impact increased hours of respite for my elderly father who is her carer. xxx doesnt currently use the transport, but would like to ask if she could be brought home from now onwards. Dad is finding this very difficult.
37	no the extra time is perfect for my mum	No, medication is given after 7pm and the carers are on site so very flexible	No, no effect at all	No, this would be better for mum
38	no	no	no	no
39	no	carers come in at 3.30 - 4.30 also husband nees feed putting on, if he was to travel after a feed he must take sickness tablet 2 hours before feed	carers would be affected	no
40	yes it would affect xxx's ability to volunteer at the café as at present I take her on my way t5o work and I would not be able to start 1 hour later	no the only effect would be transport	Yes I would have to get a taxi there. xxx already get a taxi on the way home which costs £18.00	It might mean that xxx would not be able to vlunteer. This would be a shame as it has really improved her confidence
41	no currently travels with xxx by bus 12 it is easy now I know the way	travelling home may be difficult in the winter as it gets dark early. The next available bus would be at 4.45	currently all travel is paid as part of my support	I don't think so but not sure
42	no uses public buses - would prefer the 10-4 opening	wouldn't make any difference	no increase in expenditure	no change
43	no 10-4 is fine	no problem	No	No impact

APPENDIX B

Case Study 1:

AD has attended the Larkfield service every weekday morning (Monday – Friday) from 9am – 12 noon for many years. She is 35 years old and lives at home with her mother and father. They value this service and also have some trusted home respite in the form of hours they collect together to go away for a weekend or two a year. When AD was 3 years old she became very ill with Haemolytic Uraemic Syndrome which left her with severely brain damaged. AD does not communicate verbally, she is a quadriplegic who uses a moulded wheelchair to move around. In 1999 AD had a gastrostomy peg tube fitted and can no longer eat or drink due to having problems eating and drinking. AD's complex health needs are significant and she has a DNR in place for the future.

AD's mother brings AD to Larkfield in the morning at 9 and picks her up at 12. She takes her home and puts her on her bed so that she can be fed and medicated through the tube and pump at about 12.30. This whole process takes about 3 to 3 and a half hours. During this time AD rests and Mum stays by her bed. This routine has been altered on occasion, but AD has become agitated so routine is important. We explored the possibility of Larkfield staff carrying out this afternoon peg feeding routine but AD's mother believes that routine is so important to AD's ongoing wellbeing that she wouldn't consider trying to change it again as attempts have been made in the past and these have not been successful. AD's mother also feels that this feeding and medication process needs the peace and quiet of home. If the service were to open early for AD she would be coming into a service where her friends and staff were not yet there. This would be unsettling for AD and she would not be able to achieve the social element of her attendance at Larkfield, which is so important to her.

The proposed change to times will reduce the hours AD will spend with her friends from 3 to 2. This will also reduce these Larkfield respite hours available to this family by a third. AD's mother has expressed her concerns about the impact this change will have for her daughter and her family in this loss of hours.

Case Study 2:

KC has attended the Larkfield day service every day (Monday to Friday) from 9am until 4 pm for 15 years. KC is 33 years old and lives at home, near Newmarket, with her mother and father. KC is an early riser and will often be awake from 4am. She is picked up from her home on the bus at 7.30am to be at Larkfield at 9am. At the end of the day KC leaves Larkfield at 4 pm and returns home around 5 to 5.30 pm. KC like to travel on the bus a lot and this time spent in travel is not a problem. A mystery virus at 7months old left KC with severe learning disabilities and low muscle tone, she doesn't communicate verbally but understands quite a lot. KC needs full support with all elements of her personnel care and has little to no concept of danger.

KC's mother works for Age UK in the mornings. She attends to the early needs of older people on her round in things like personal care, breakfast and getting dressed etc. This is a paid position and a job the KC's mother enjoys immensely. If TT goes ahead this will mean that KC will not be picked up until about 9.15 and KC's mother starts work at 8.15 am. This will mean that KC's mother will not be able to carry out her current work activity.

KC's mother has expressed her concerns about this change and losing a job that she loves. She asked me to reiterate how important this day service is to the daily lives of families like hers in the community. Families who she believes, like hers would not cope if things were to change too much.

TREASURY MANAGEMENT REPORT QUARTER TWO

To: **General Purposes Committee**

Meeting Date: **29th November 2016**

From: **Chief Finance Officer**

Electoral division(s): **All**

Forward Plan ref: **Not applicable** *Key decision:* **No**

Purpose: **To provide the second quarterly update and mid-year review on the Treasury Management Strategy 2016-17, approved by Council in February 2016.**

Recommendation: **The General Purposes Committee is recommended to:**

a) Note the Treasury Management Report; and

b) Forward to Full Council for approval.

Officer contact:

Name: Mike Batty
Post: Group Accountant – Treasury & Investments
Email: mbatty@northamptonshire.gov.uk
Tel: 01604 367858

1. BACKGROUND

- 1.1 Treasury Management is governed by the Chartered Institute of Public Finance and Accountancy (CIPFA) Code of Practice on Treasury Management (the Code). The Code has been developed to meet the needs of Local Authorities and its recommendations provide a basis to form clear treasury management objectives and to structure and maintain sound treasury management policies and practices.
- 1.2 The Code was adopted via the Treasury Management Strategy Statement (TMSS), which was approved by Council in February 2016. It requires the Council to produce an annual treasury report and a half yearly report. Alongside these, General Purposes Committee are also provided with quarterly updates on progress against the Strategy.
- 1.3 This report has been developed in consultation with the Council's external investment manager and treasury adviser, Capita Asset Services (CAS) and provides an update for the second quarter to 30th September 2016.

2. SUMMARY OF KEY HEADLINES

- 2.1 The main highlights for the quarter are:
 - Investment returns received on cash balances, compares favourably to the benchmarks. A return of 0.50% was achieved compared to the 3 month and 6 month London Interbank Bid Rate (LIBID) benchmark (0.20%, 0.31% respectively). See section 6.
 - A £250k underspend is currently reported. This is largely due to falling interest rates across the yield curve resulting in lower net interest payment projections. Careful management of the Council's balance sheet and a strategy of internal borrowing will continue throughout the course of the year to optimise the treasury position and maximise savings where possible. For further information please see Section 10.
 - Capita were reappointed as the Council's Treasury Advisors for a further two years following a formal procurement exercise over the summer. See Section 12.
 - The UK Municipal Bonds Agency is expected to issue its first bond on behalf of local authorities in the coming months which this authority will participate in. See Section 11.
 - A balance sheet review (31st March 2016) sets out how the Capital Financing Requirement is resourced from external loans and internal borrowing, and how cash backed reserves and working capital supports the cash that is invested. See Section 9.

3. THE ECONOMIC ENVIRONMENT

- 3.1 A detailed economic commentary is provided in **Appendix 1**. This information has

been provided by Capita Asset Services – Treasury Solutions (CAS Treasury Solutions), the Council's treasury management advisors.

3.2 During the quarter ended 30th September 2016, the significant UK headlines of this analysis were:

- The Economy remained surprisingly robust since Brexit;
- Households and firms shrugged off referendum uncertainty;
- The labour market began to soften;
- Consumer Price Index (CPI) inflation started to pick up;
- The Bank of England cut interest rates and expanded their asset purchases;
- Both the European Central Bank (ECB) and Federal Reserve kept policy unchanged;

4. SUMMARY PORTFOLIO POSITION

4.1 A snapshot of the Council's debt and investment position is shown in the table below:

	TMSS 2016-17 31 Mar 2017 Forecast (as agreed by Council Feb 2016)		Actual as at 31 March 2016		Actual as at 30 September 2016		Revised Forecast to March 2017	
	£m	Rate %	£m	Rate %	£m	Rate %	£m	Rate %
Long term borrowing								
PWLB	405.0	4.3	278.6	4.3	278.6	4.3	278.6	4.3
PWLB (3 rd Party Loans)	-		0	-	4.0	2.3	4.0	2.3
Market	-		0	-	45.0	4.0	45.0	4.0
LOBO	79.5	3.7	79.5	3.7	34.5	3.3	34.5	3.3
Total long term	484.5	4.2	358.1	4.2	362.1	4.2	362.1	4.2
Short term borrowing	-	-	-	-	-	-	68.6	0.5
Total borrowing	484.5	4.2	358.1	4.2	362.1	4.2	430.7	4.2
Investments	5.6	0.5	10.1	0.5	19.6	0.5	10.0	0.4
Total Net Debt / Borrowing	478.9	-	348	-	342.5	-	420.7	-
3rd Party Loans & Share Capital	-	-	0.4	-	4.4	-	4.4	-

4.2 The revised forecast reflects the current prudential borrowing projections in the capital programme, which is likely to fluctuate through the course of the year. This currently shows that net borrowing is likely to be significantly lower than originally forecast. The change is largely due to a stronger than anticipated working capital

surplus driven by increases in capital grants received in advance (particularly City Deal and Local Enterprise Partnership (LEP)). A balance sheet review is included Section 9 of this report which provides useful analysis of how the Capital Financing Requirement is resourced, and how balance sheet reserves supports the cash that is invested.

- 4.3 Further analysis of borrowing and investments is covered in the following two sections.

5. BORROWING

- 5.1 The Council can take out loans in order to fund spending for its Capital Programme. The amount of new borrowing required is determined by capital expenditure plans and projections of the Capital Financing Requirement, forecast reserves and current and projected economic conditions.

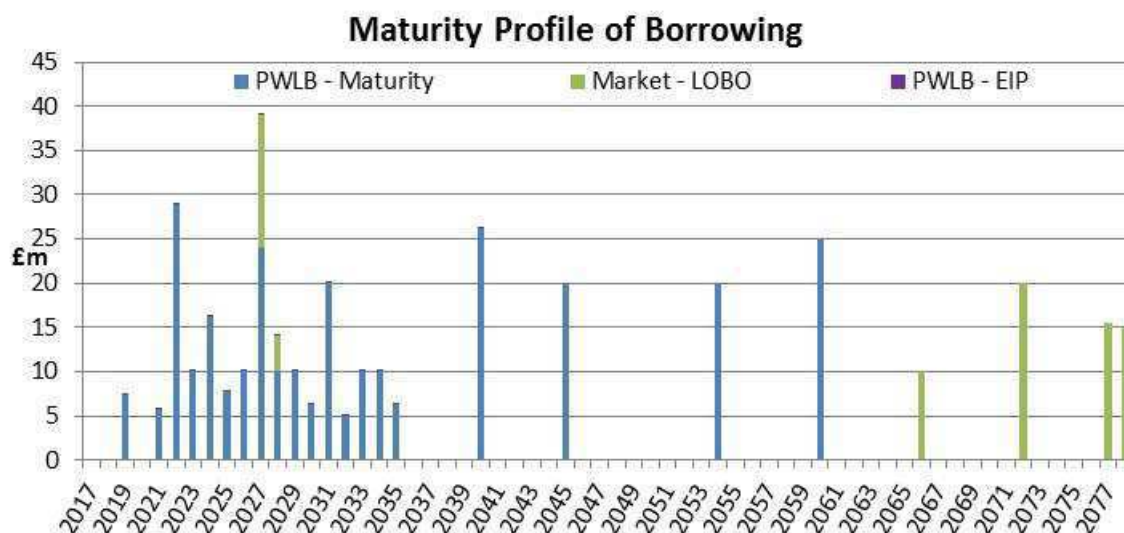
New loans and repayment of loans:

- 5.2 The table below shows details of new long term (>1yr) loans raised and loans repaid during 2016-17. No loans were repaid during this year to date.
- 5.3 The £4m Public Works Loan Board (PWLB) loan below was raised to on-lend to the Arthur Rank Hospice Charity.

Lender	Raised / Repaid	Start Date	Maturity Date	£m	Interest Rate %	Duration (yrs)
PWLB	Raised	16/06/2016	16/06/2041	4.00	2.34%	25

Maturity profile of borrowing:

- 5.4 The following graph shows the maturity profile of the Council's loans. The majority of loans have a fixed interest rate and are long term which limits the Council's exposure to interest rate fluctuations. The weighted average years to maturity of the portfolio (assuming Lender Option Borrowing Option (LOBO) Loans run to maturity) is 23.7 years.
- 5.5 The presentation below differs from that in Treasury Indicator for maturity structure of borrowing in **Appendix 2** paragraph 4, in that the graph below includes LOBO loans at their final maturity rather than their next call date. In the current low interest rate environment the likelihood of the interest rates on these loans being raised and the loans requiring repayment at the break period is extremely low.

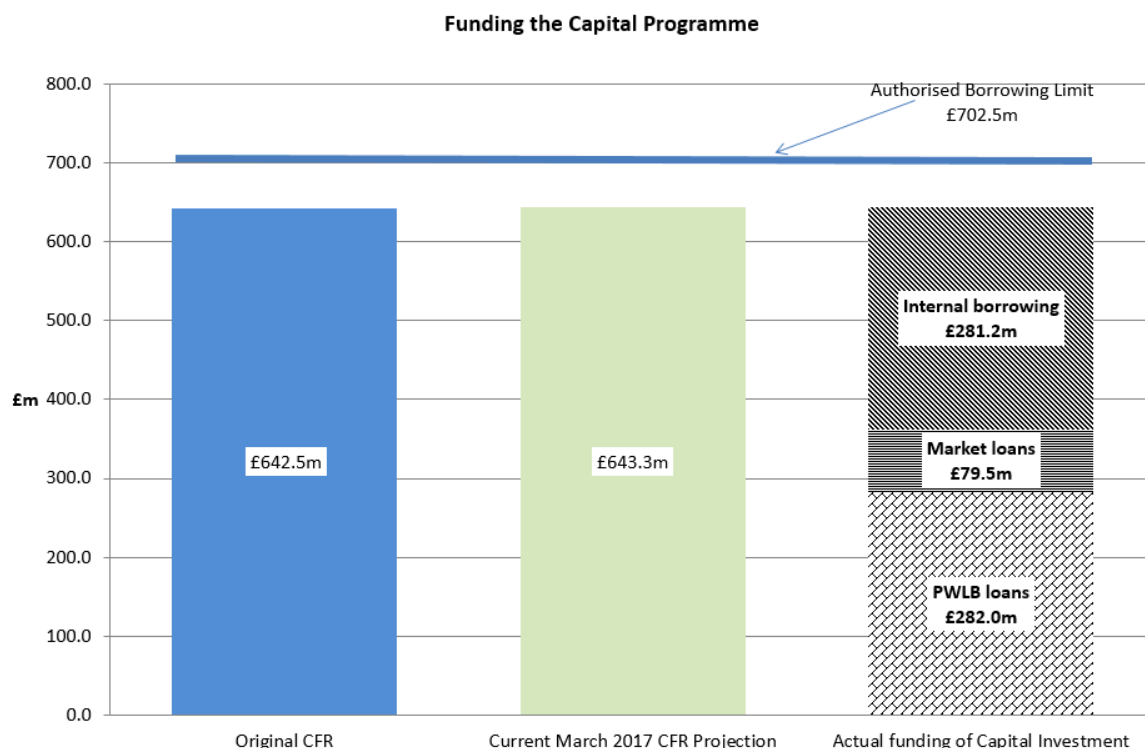


Loan restructuring:

- 5.6 When market conditions are favourable long term loans can be restructured to:
- to generate cash savings
 - to reduce the average interest rate
 - to enhance the balance of the portfolio by amending the maturity profile and/or the level of volatility. (Volatility is determined by the fixed/variable interest rate mix.)
- 5.7 During the quarter there were no opportunities for the Council to restructure its borrowing due to the position of the Council's borrowing portfolio compared to market conditions. Debt rescheduling will be considered subject to conditions being favourable but it is unlikely that opportunities will present themselves during this year. The position will be kept under review, and when opportunities for savings do arise, debt rescheduling will be undertaken to meet business needs.

Funding the Capital Programme:

- 5.8 The Treasury Management Strategy Statement (TMSS) sets out the plan for treasury management activities over the next year. It identifies where the authority expects to be in terms of borrowing and investment levels. When the 2016-17 TMSS was set, it was anticipated that the Capital Financing Requirement (CFR), the Council's liability for financing the agreed Capital Programme, would be £642.5m. This figure is naturally subject to change as a result of changes to the approved capital programme.



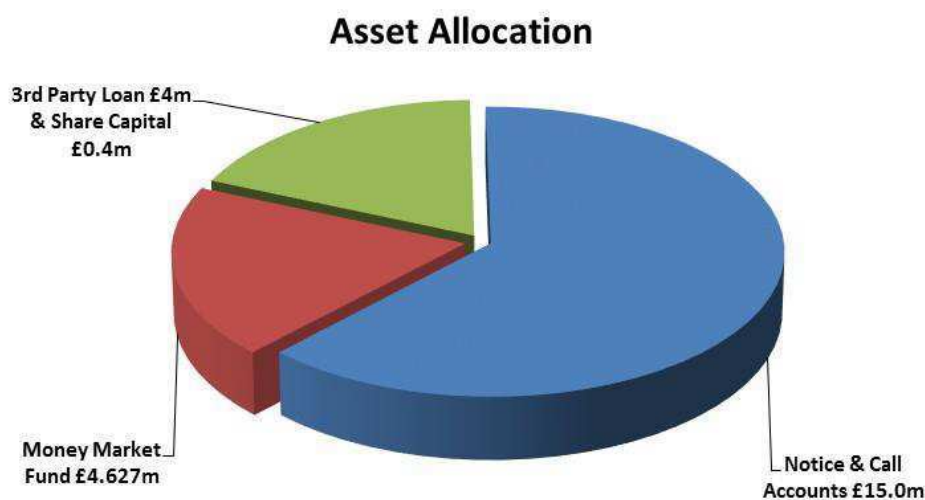
- 5.9 The graph above compares the maximum the Council could borrow in 2016-17 with the forecast CFR at 31st March 2017 and the actual position of how this is being financed at 30th September 2016.
- 5.10 The graph shows the projection for the Capital Financing Requirement (CFR) is significantly below the statutory Authorised Borrowing Limit set for the Council at the start of the year.
- 5.11 In addition, the graph shows how the Council is currently funding its borrowing requirement, through internal and external resources. As at 30th September internal borrowing is forecast to be £281.2m at the end of the year. Internal borrowing is the use of the Council's surplus cash to finance the borrowing liability instead of borrowing externally.
- 5.12 The Council has now maximised this internal borrowing position to optimise the treasury position, reduce credit risk associated with investing and generate revenue savings. Therefore new loans, which have been budgeted for, will be required to maintain sufficient operational cash resources. Sources of finance include short term loans (out to 5 years) from other local authorities, the PWLB and the Municipal Bonds Agency.

6. INVESTMENTS

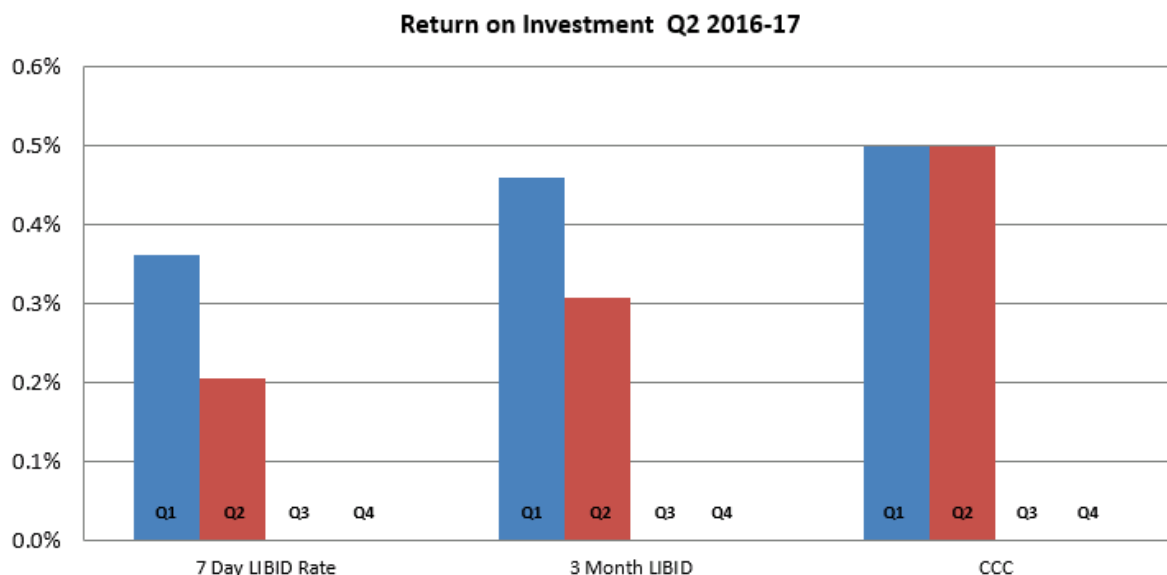
- 6.1 Investment activity is carried out within the Council's counterparty policies and criteria, and with a clear strategy of risk management in line with the Council's treasury strategy for 2016-17. This ensures that the principle of considering security, liquidity and yield, in that order (SLY), is consistently applied. The Council will therefore aim to achieve the optimum return on investments

commensurate with proper levels of security and liquidity. Any variations to agreed policies and practices are reported to General Purposes Committee (GPC) and Council.

- 6.2 As described in paragraph 5.11, the strategy currently employed by the Council of internal borrowing also has the affect of limiting the Council's investment exposure to the financial markets, thereby reducing credit risk.
- 6.3 As at 30th September the level of investment totalled £19.6m, excluding 3rd party loans and share capital which are classed as capital expenditure. The level of cash available for investment is as a result of reserves, balances and working capital the Council holds. These funds can be invested in money market deposits, placed in funds or used to reduce external borrowings.
- 6.4 A breakdown of investments by asset allocation are shown in the graph below, with detail at **Appendix 3**. The majority of investments are in notice and call accounts and money market funds to meet the liquidity demands of the Council. The weighted average time to maturity of investments at 30th September is 22 days. Where possible deposits are placed for longer durations with appropriate counterparties to obtain enhanced rates of return in an environment of falling interest rates.



- 6.5 The graph below compares the returns on investments with the relevant benchmarks for the first quarter this year.



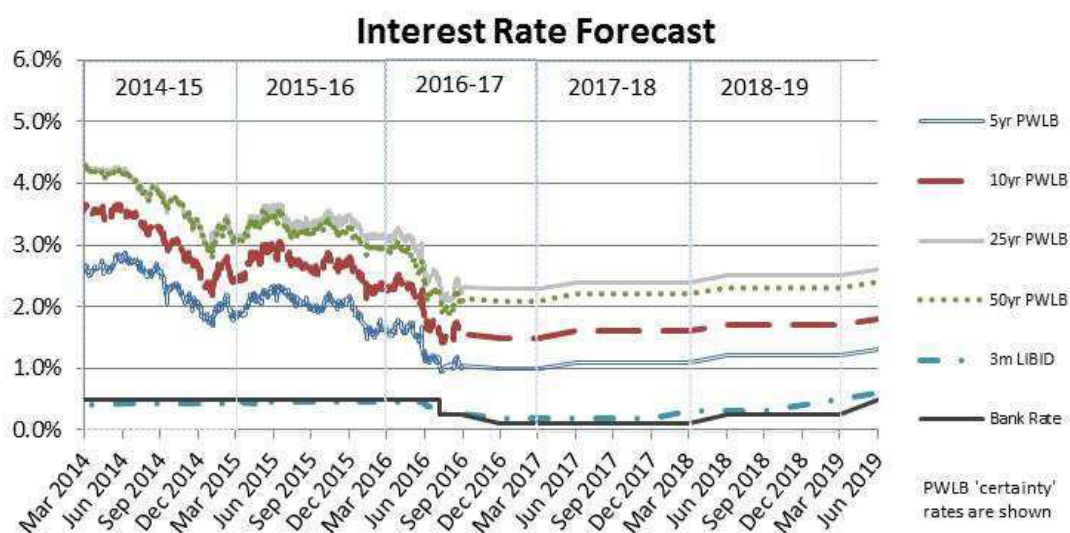
- 6.6 It can be seen from the graph that investments returned 0.50% during the quarter which is more than both the 7 day London Interbank Bid Rate (LIBID) (0.20%), 3 month LIBID (0.31%) benchmarks.
- 6.7 Using credit ratings, the investment portfolio's historic risk of default stands at 0.009%. This simply provides a calculation of the possibility of average default against the historical default rates. The Council is also a member of a benchmarking group run by Council's Treasury Advisors (CAS) which shows that, for the value of risk undertaken and duration of investments, the returns generated are in line with the Model Band.
- 6.8 A further cut in Bank Rate will result in falling returns on the Council's investment portfolio. However interest rates have fallen across all parts of the yield curve right out to 50 years, so the revenue pressure resulting from falling interest rates has been more than offset by lower borrowing costs.
- 6.9 Leaving market conditions to one side, the Council's return on investment is influenced by a number of factors, the largest contributors being the duration of investments and the credit quality of the institution or instrument. Credit risk is a measure of the likelihood of default and is controlled through the creditworthiness policy approved by Council. The duration of an investment introduces liquidity risk; the risk that funds cannot be accessed when required, and interest rate risk; the risk that arises from fluctuating market interest rates. These factors and associated risks are actively managed by the LGSS Treasury team together with the Council's Treasury Advisors (CAS).

7. OUTLOOK

- 7.1 The current interest rate forecast, updated following the referendum result to take account of the Monetary Policy Committee meeting of the 4th August which cut Bank Rate from 0.5% to 0.25%, is shown in the graph below. Forward guidance had suggested that a further cut in Bank Rate to near zero was likely, but this view has now faded. Clearly the performance of the economy over the coming months will be critical to this decision. The forecast now is for increases in Bank Rate in

June 2018 to 0.25% and then to 0.5% in June 2019, but these will very much depend on how strongly and how soon the economy makes a gradual recovery, and so start a process of very gradual increases in Bank Rate over a prolonged period.

- 7.2 Geopolitical events, sovereign debt crisis developments and slowing emerging market economies make forecasting PWLB rates highly unpredictable in the shorter term. The general expectation for an eventual trend of gently rising gilt yields and PWLB rates is expected to remain unchanged. An eventual world economic recovery may also see investors switching from the safe haven of bonds to equities.



- 7.3 From a strategic perspective, the Council is continually reviewing options as to the timing of any potential borrowing and also the alternative approaches around further utilising cash balances and undertaking shorter term borrowing which could potentially generate savings subject to an assessment of the interest rate risks involved. Cash flows in the last couple of years have been sufficiently robust for the Council to use its balance sheet strength to limit the amount of new borrowing undertaken. However during 2016-17 it is anticipated that some new additional borrowing will be required as the Council experiences an increasing Capital Financing Requirement.

8. THIRD PARTY LOANS

- 8.1 A loan to Arthur Rank Hospice Charity of £4m was approved in 2015-16 and advanced in the form of a secured loan in June 2016 to enable the charity to build a 24 bedded hospice.
- 8.2 Interest and principle repayments for this loan, will be paid in accordance with the loan agreements.

9. BALANCE SHEET REVIEW 31ST MARCH 2016

- 9.1 A balance sheet review has been carried out following completion of the final accounts. This shows:

- The underlying borrowing requirement rose by £52m to £559m. The borrowing requirement was financed by external loans of £359m (down £23m y/y) resulting in internal borrowing of £202m.
- Reserves and balances in the balance sheet amounted to £122m (up £29m y/y). Cash investments totalled £1m, resulting in a difference of £121m representing internal investments.
- A net working capital surplus of £78m, which when added to internal investments equals £199m (internal borrowing).
- The above shows that cash balance remained strong during the year and were able to sufficiently support the internal borrowing strategy adopted. This strategy optimises net interest payable and revenue savings that flow from that and mitigates credit risk. PWLB loans totalling £23m, running at 3.9% were repaid and not refinanced. Given the underlying borrowing required is forecast to rise over the coming years borrowing options are actively being considered. See **Appendix 4** for further information.

10. DEBT FINANCING BUDGET

10.1 Overall an under spend of £250k is currently forecast and reported for Debt Charges. The variance is largely due to the continuation of the Internal Borrowing strategy resulting in lower than budgeted interest net interest payable.

- Interest rates across the yield curve have softened since the referendum result in June and the Bank of England Bank Rate cut to 0.25% in August. This has impacted the Council's investment returns, however the adverse variance is more than offset by falling borrowing rates resulting in lower interest payable.

	Budget	Estimated Outturn	Variance
	£m	£m	£m
Interest payable	16.363	16.053	-0.310
Interest receivable	-0.459	-0.319	0.140
Internal recharges & Other	0.568	0.468	-0.100
Technical	-0.085	-0.065	0.020
MRP	8.560	8.560	0.000
Total	24.947	24.697	-0.250

10.2 Although there is link between the capital programme, net borrowing and the revenue budget, the Debt Charges budget is impacted by the timing of long term borrowing decisions. These decisions are made in the context of other factors including, interest rate forecasts, forecast levels of cash reserves and the borrowing requirement for the Council over the life of the Business Plan and beyond.

11. MUNICIPAL BONDS AGENCY

- 11.1 The UK Municipal Bonds Agency is now ready to issue bonds on behalf of local authorities and the first issuance is expected in the autumn. This authority has approved the relevant documents and guarantees that allow borrowing from the Agency and it is anticipated that Cambridgeshire will participate in the first bond issue to raise a small amount of borrowing.

12. TREASURY MANAGEMENT ADVISORY CONTRACT

- 12.1 The Council's Treasury Management Advisory Contract was put out to public tender in July in a joint procurement process with LGSS partners and customers (Northamptonshire County Council, Northampton Borough Council and Norwich City Council). This was concluded in September and the contract was awarded to Capita Asset Services for a two year period.

13. COMPLIANCE WITH TREASURY LIMITS AND PRUDENTIAL INDICATORS

- 13.1 With effect from 1st April 2004 The Prudential Code became statute as part of the Local Government Act 2003 and was revised in 2011.
- 13.2 The key objectives of the Prudential Code are to ensure, within a clear framework, that the capital investment plans of the Council are affordable, prudent and sustainable. To ensure compliance with this the Council is required to set and monitor a number of Prudential Indicators.
- 13.3 During the financial year to date the Council has operated within the treasury limits and Prudential Indicators set out in the Council's Treasury Management Strategy Statement (TMSS) and in compliance with the Council's Treasury Management Practices. The Prudential and Treasury Indicators are shown in Appendix 2.

14. ALIGNMENT WITH CORPORATE PRIORITIES

14.1 Developing the local economy for the benefit of all

There are no significant implications for this priority.

14.2 Helping people live healthy and independent lives

There are no significant implications for this priority.

14.3 Supporting and protecting vulnerable people

There are no significant implications for this priority.

15. SIGNIFICANT IMPLICATIONS

15.1 Resource Implications

This report provides information on performance against the Treasury Management Strategy. Section 10 shows the impact of treasury decisions

impacting the Debt Charges Budget, which are driven by the capital programme and the Council's overall financial position.

15.2 Statutory, Risk and Legal Implications

The Council continues to operate within the statutory requirements for borrowing and investments. Further details can be found within the Prudential Indicators in **Appendix 2**.

15.3 Equality and Diversity Implications

There are no significant implications in this category

15.4 Engagement and Consultation Implications

There are no significant implications in this category.

15.5 Localism and Local Member Involvement

There are no significant implications in this category

15.6 Public Health Implications

There are no significant implications in this category

Source Documents	Location
None	N/A

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	Yes Name of Financial Officer: Chris Malyon
Has the impact on Statutory, Legal and Risk implications been cleared by LGSS Law?	Yes Name of Legal Officer: Fiona McMillan
Are there any Equality and Diversity implications?	No Name of Officer: Dan Thorp
Have any engagement and communication implications been cleared by Communications?	No Name of Officer: Mark Miller
Are there any Localism and Local Member involvement issues?	No Name of Officer: n/a
Have any Public Health implications been cleared by Public Health	No Name of Officer: n/a

Economic Update (provided by CAS Treasury Solutions)

Quarter ending 30th September 2016

1. The economic recovery regained some momentum in Q2 2016, with real GDP growth accelerating from 0.4% in Q1 to 0.7% in Q2 – an annual rate of 2.1%. Both households and firms appeared to shrug off pre-referendum uncertainty, driving the acceleration in Q2. However, growth remained unbalanced, with net trade making a big negative contribution to GDP growth for the third quarter out of the last four and the current account deficit close to 6% of GDP.
2. Moreover, growth looks to have slowed considerably in Q3. The average level of the Markit/CIPS Composite PMI in July and August points to GDP growth of barely above zero. Other surveys, such as the CBI's composite growth indicator, paint only a marginally more upbeat picture.
3. The limited official output data we have so far supports this view of slowing growth, but no outright recession. Services output rose by 0.4% in July, industrial production rose by 0.1%, and construction output was flat. Meanwhile, the drop in the pound appears to be having a positive impact on exports, with goods volumes up by 2% on the month. However, we would caution reading too much into the monthly figures as they are volatile and prone to revision.
4. Meanwhile, the strong trend in household spending suggests that consumers are coping well post-referendum. Despite August's slight dip, retail sales volumes have generally been rising robustly and annual growth stands at a robust 6.2%. Admittedly, consumer confidence slumped immediately after the referendum, but this was not too surprising given the political upheaval at the time. Confidence has since bounced back to pre-referendum levels and above its long-run average on the GfK measure. This is unsurprising given that the fundamentals – such as low interest rates and inflation – remain supportive. However, spending growth is unlikely to maintain its pace for much longer as the labour market softens and rising inflation begins to squeeze on household spending power.
5. Granted, the labour market performed strongly prior to the referendum and is yet to show signs of damage from the leave vote. Employment growth rose by 174,000 in the three months to July, up from 172,000 in June. What's more, the unemployment rate has remained at its post-crisis low of 4.9% for the past three months and the employment rate stands at its highest since records began in 1971. The timelier claimant count measure has held steady at 2.2% so far in Q3.
6. Nonetheless, the leave vote is likely to cause some firms to start putting hiring decisions on hold and cut back on headcounts altogether. Indeed, employment surveys suggest that the worst is yet to come. What's more, pay growth has also showed some signs of slowing, with the headline average weekly earnings growth (including bonuses) falling from 2.5% y/y in June to 2.2% in July.

7. Meanwhile, after months of subdued price growth, inflation picked up in Q3. Headline CPI stood at 0.6% in July and August, driven by a rise in food and fuel inflation. What's more, there are signs that price pressures are building at the start of the production pipeline, with producer input costs rising by an annual 7.6% in August. This will feed through to higher prices in shops in time. As such, we expect inflation to break through the MPC's 2% target by mid-2017. Indeed, the Monetary Policy Committee (MPC) revised up its inflation forecasts in the August Inflation Report to show inflation remaining above the target from the latter half of 2017 onwards.
8. Despite this, the MPC implemented a package of policy measures to cushion the economy from the adverse effects of the Brexit vote: -
9. a cut in Bank Rate from 0.50% to 0.25%
10. new gilt purchases of £60bn
11. corporate bond purchases of £10bn
12. a new Term Funding Scheme (TFS) to provide cheap funds to banks
13. Granted, the continued resilience of post-referendum data has led to some suggestions that the August loosening package was premature and unnecessary. Nonetheless, the package is probably part of the reason why the economy has bounced back. Although the MPC left policy untouched in September's meeting, it signalled a further cut of Bank Rate to around 0.10% in November, so long as the incoming data was in line with its August forecasts.
14. However, unlike the Bank of England, both the Federal Reserve and the ECB kept rates on hold during Q3. Nonetheless, 14 out of the 17 FOMC officials still expect at least one rate hike this year, suggesting the Fed is still on track for a hike in December (although this depends on the outcome of the election). However, officials did revise down their projections for rate hikes in future years. The median estimate now shows only two rate hikes next year (previously three), taking the fed funds rate to between 1.00% and 1.25% by year-end. Meanwhile, although the ECB left policy unchanged in Q3, President Mario Draghi stated again that the Bank was "ready, willing and able to act" if required. In particular, he stressed that asset purchases would continue until at least March 2017.
15. On the fiscal policy front, new Chancellor Phillip Hammond will set out how the government will use tax and spending to bolster the UK economy at the Autumn Statement on the 23rd November. In light of the vote to leave the EU, the chancellor said there is an opportunity to "reset fiscal policy" in the Autumn Statement. We suspect this is likely to involve a slowdown in the pace of fiscal tightening and an increase in infrastructure spending on short and medium term projects.
16. However, an outright loosening looks unlikely. After all, while the public finances in Q3 have improved on a year earlier, they are nonetheless still on track to miss the OBR March forecast. What's more, this improvement is unlikely to continue as the

post-referendum economic slowdown begins to bite. So austerity will be less intense but could drag on for a few more years than previously planned.

17. Turning to markets, the FTSE 100 is up by around 10% since the vote to leave, the FTSE 250 with a higher exposure to the domestic market, is only up by 3%. However, the even more domestically focused FTSE local which only includes firms from which 70% of their sales are generated in the UK, is down by over 5%. Meanwhile, 10-year bond yields continued to fall to new record lows of around 0.6% and sterling is still down some 10% since the referendum on a trade-weighted basis.
18. Finally, in regards to Brexit, there is still not much detail to the government's plans for the new UK-EU relationship. Indeed, it would appear that Article 50 won't be triggered until Q1 next year at the earliest. What's more, the chance of a "hard Brexit" deal appears to have grown over recent weeks.

Prudential and Treasury Indicators at 30th September 2016

Monitoring of Prudential and Treasury Indicators: approved by Council in February 2016.

1. **Has the Council adopted CIPFA Code of Practice for Treasury Management in the Public Services?**

The Council has adopted CIPFA's Treasury Management in the Public Services: Code of Practice and Cross Sectoral Guidance Notes. This is a key element of the Treasury Strategy 2016-17 which was approved by Council in February 2016.

2. **Limits for exposure to fixed and variable rate net borrowing (Borrowing less investments)**

	Limits	Actual
Fixed rate	150%	96.8%
Variable rate	65%	3.2%
Total		100%

The Interest rate exposure is calculated as a percentage of net debt. Due to the mathematical calculation exposures could be greater than 100% or negative depending upon the component parts of the formula. The formula is shown below:

$$\frac{\text{Total Fixed (or Variable) rate exposure}}{\text{Total borrowing} - \text{total investments}}$$

Fixed Rate calculation:

$$\frac{(\text{Fixed rate borrowing } £331.6m^* - \text{Fixed rate investments } £0m^*)}{\text{Total borrowing } £362.1m - \text{Total investments } £19.627m} = 96.83\%$$

*Defined as greater than 1 year to run

Variable Rate calculation:

$$\frac{(\text{Variable rate borrowing } £30.5m^{**} - \text{Variable rate investments } £19.627m^{**})}{\text{Total borrowing } £362.1m - \text{Total investments } £19.627m} = 3.17\%$$

** Defined as less than 1 year to run or in the case of LOBO borrowing the call date falling within the next 12 months.

3. **Total principal sums invested for periods longer than 364 days**

	2016-17 Limit £m	Actual £m
Investment longer than 364 days to run	7.0	0.0

Notes: This indicator is calculated by adding together all investments that have greater than 364 days to run to maturity at the reporting date.

4. **Limits for maturity structure of borrowing**

	Upper Limit	Actual
under 12 months	80%	8%
12 months and within 24 months	50%	1%
24 months and within 5 years	50%	6%
5 years and within 10 years	50%	21%
10 years and above	100%	63%

Note: The guidance for this indicator requires that LOBO loans are shown as maturing at the next possible call date rather than at final maturity.

Affordability

5. **Ratio of financing costs to net revenue stream**

2016-17 Original Estimate %	2016-17 Revised Estimate %	Difference %
10.53	6.96	-3.57

6. **Estimated incremental impact of capital investment decisions on band D council tax**

2016-17 Original Estimate £	2016-17 Revised Estimate £	Difference £
21.27	(37.36)	-58.63

This indicator has fallen significantly as a result reductions to the Debt Charges budget in respect of lower Minimum Revenue Provision of £9.3m adjustments to the debt charges budget during budget setting and savings reported to date.

Prudence:

7. Gross borrowing and the Capital Financing Requirement (estimated borrowing liability excluding PFI)

Original 2016-17 Capital Financing Requirement (CFR) £m	2016-17 CFR (based on latest capital information) £m	Actual Gross Borrowing £m	Difference between actual borrowing and original CFR £m	Difference between actual borrowing and latest CFR £m
642.5	643.3	362.1	280.4	281.2

Capital Expenditure

8. Estimates of capital expenditure

For details of capital expenditure and funding please refer to the monthly capital report.

External Debt

9. Authorised limit for external debt

2016-17 Authorised Limit £m	Actual Borrowing £m	Headroom £m
702.5	362.1	340.4

The Authorised limit is the statutory limit on the Council's level of debt and must not be breached. This is the absolute maximum amount of debt the Council may have in the year.

10. Operational boundary for external debt

2016-17 Operational Boundary £m	Actual Borrowing £m	Headroom £m
672.5	362.1	310.4

The operational boundary is set as a warning signal that debt has reached a level nearing the Authorised limit and must be monitored carefully.

Appendix 3

Investment Portfolio as at 30th September 2016

Class	Type	Deal Ref	Start / Purchase Date	Maturity Date	Counterparty	Profile	Rate	Principal O/S (£)
Share Capital	Share Capital	CCC/59			The UK Municipal Bonds Agency	-	-	400,000.00
3 rd Party Loan	Fixed	CCC/88	16/06/16	16/06/41	Arthur Rank Hospice Charity	EIP	3.3400%	4,000,000.00
3rd Party Loans & Share Capital Total							3.3400%	4,400,000.00
Deposit	Call	CCC/CE/6			Barclays Bank plc	Maturity	0.2000%	5,000,000.00
Deposit	95 Day Notice	CCC/84 (60 DAY)	20/10/15	24/10/2016	Santander UK plc	Maturity	0.6500%	5,000,000.00
Deposit	95 Day Notice	CCC/85 (95DAY)	20/10/15	29/11/2016	Santander UK plc	Maturity	0.6500%	5,000,000.00
Call Total							0.5000%	15,000,000.00
Deposit	Money Market Fund	CCC/ST/3	31/03/14		SLI Sterling Liquidity/CI 2	Maturity	0.3687%	4,627,000.00
MMF Total							0.3687%	4,627,000.00
Deposit Total							0.9392%	24,027,000.00

Appendix 4

A balance sheet review has been carried out following completion of the draft accounts. This analysis provides useful information on how we are resourcing the Capital Financing Requirement (i.e. through internal and external borrowing). The analysis also explains how cash backed reserves and working capital surplus supports the cash that is invested.

	31st March 2016 £m		31st March 2015 £m	
Capital Financing Requirement (CFR)	685		621	
PFI & Finance Lease Liabilities	126		114	
Underlying borrowing requirement	559		507	
	£m	%	£m	%
External loans				
PWLB	279	50	302	60
LOBO	35	6	80	16
Market	45	8	0	0
Local Authorities	0	0	0	0
Internal resources		=£199m		=£125m
Internal investments	121	22	55	11
Working capital surplus	78	14	70	13
Total	559	100	507	100
Investments Analysis				
Cash backed reserves, provisions & balances	122	-	93	-
Internal Investments	(121)	-	(55)	-
Actual cash investment	1	-	38	-

Key Points:

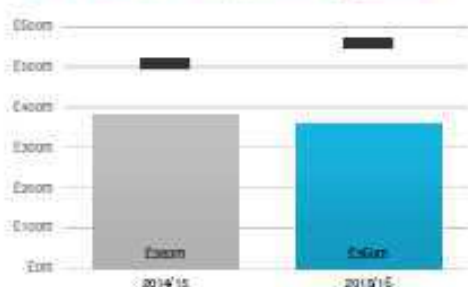
- The underlying borrowing requirement has increased by £52m from £507m to £559m
- External borrowing fell by £23m during the year to £359m as two PWLB loans were repaid and not replaced.
- Internal borrowing has increased from £125m to £199m. This is resourced from two areas;
 - 1) internal investments of £121m at 31st March 2016 (£122m cash backed reserves and balances compared to £1m investments)
 - 2) working capital surplus of £78m

- The Council has maintained a robust use of its balance sheet to maximise revenue savings (net interest payable) and mitigate credit risk, by continuing with the implementation of the internal borrowing strategy. Both cash backed reserves and the working capital surplus improved during the course of the year enabling PWLB loans totalling £23m running at 3.9% to be repaid during the year without refinancing. Much of this improvement is in relation to City Deal and LEP money which the Council has received and not yet spent. However, we need to ensure that we don't become a forced borrower over the next couple of years as capital spend gains momentum. Impact of the funding of future capital schemes will be carefully monitored to ensure that the internal investment position is prudent in light of the potential for interest rates to rise from the current historical lows in the future.
- A line by line analysis is shown in the schedule produced by the Council's Treasury Management advisors on the next page.

CAPITAL FINANCING AND BORROWING (£'000)			2014/15 (£'000)	2015/16 (£'000)	Change (£'000)
Capital Financing Requirement	2014/15	2015/16	£620,649	£684,771	
Underlying Borrowing Requirement	£507,061	£558,647			
External Borrowing	£392,747	£359,733			
Under Borrowing	£124,314	£198,914			
Net Borrowing (exc TFR debt)	£344,973	£358,270			

Capital Financing Requirement (CFR)	1,758,615	1,782,169	
Property, Plant & Equipment	-	2,658	
Investment Property	1,098	614	
Assets Held for Sale	(432,081)	(461,822)	
Revaluation Reserve	(705,953)	(518,648)	
Capital Adjustment Account	620,649	684,771	64,122
CFR (as per Prudential Code)	(113,402)	(126,032)	
PFI Liability	(56)	(32)	
Finance Lease Liability	507,061	558,647	51,586
Underlying Borrowing Requirement			
External Borrowing	(26,557)	(3,425)	
Short-Term	(356,190)	(356,305)	
Long-Term	(392,747)	(359,733)	23,014
TOTAL External Borrowing (Principal)			
Under Borrowing	124,314	198,914	74,600

External Borrowing vs Underlying Borrowing Requirement



RESERVES / BALANCES AND INVESTMENTS (£'000)			2014/15 (£'000)	2015/16 (£'000)	Change (£'000)
Balances Available for Investment	2014/15	2015/16	£97,662	£122,114	
External Investments	£37,774	£1,463			
(Internal Investments)	£59,888	£120,651			

Reserves / Balances	(16,001)	(18,021)	
General Fund Balance	60	(257)	
Collection Fund Adjustment Account	(54,648)	(66,675)	
Earmarked reserves / other balances	(1,439)	-	
Capital Receipts Reserve	(9,764)	(9,270)	
Provisions (i.e. any accumulating absences)	(15,950)	(26,990)	
Capital Grants Unapplied	(97,662)	(122,114)	(24,452)
Amount Available for Investment			
Investments	50	-	
Short-Term	-	400	
Long-Term	37,724	1,063	
Cash & Cash Equivalents	37,774	1,463	(36,311)
TOTAL Investments			
(Internal Investments)	(59,888)	(120,651)	(60,763)

Investments vs Balances



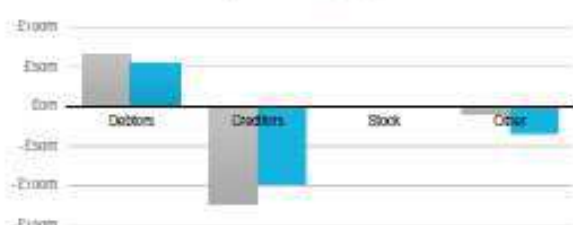
Analysis of (Internal Investments)



WORKING CAPITAL (£'000)			2014/15 (£'000)	2015/16 (£'000)	Change (£'000)
TOTAL Working Capital (Surplus)	2014/15	2015/16	-£54,426	-£78,263	

Working Capital	65,508	53,593	(11,915)
Debtors	(121,312)	(58,446)	22,864
Creditors	(12,975)	(42,024)	
Capital Grants Receipts in Advance	(262)	-	
Cash Overdrawn	671	951	
Stock / WIP	(68,370)	(85,928)	(17,558)
NET Working Capital (Surplus)			
Other	3,139	25,598	
Balance LT Debtors	(506)	2,087	
Balance of LT Liabilities	1,331	1,260	
FIAA - Premiums, (Discounts) etc	-	(21,300)	
Deferred credits / receipts (non capital)	3,944	7,665	3,721
Other Long-Term Working Capital	(54,426)	(78,263)	(13,837)
TOTAL Working Capital (Surplus)			

Analysis of Working Capital



GENERAL PURPOSES COMMITTEE AGENDA PLAN

Published on 1st November 2016
As at 21st November 2016



Cambridgeshire
County Council

Agenda Item No.10

Notes

Committee dates shown in bold are confirmed.

Committee dates shown in brackets and italics are reserve dates.

The definition of a key decision is set out in the Council's Constitution in Part 2, Article 12.

* indicates items expected to be recommended for determination by full Council.

+ indicates items expected to be confidential, which would exclude the press and public. Additional information about confidential items is given at the foot of this document.

Draft reports are due with the Democratic Services Officer by 10.00 a.m. eight clear working days before the meeting.

The agenda dispatch date is six clear working days before the meeting.

Committee date	Agenda item	Lead officer	Reference if key decision	Spokes meeting date	Deadline for draft reports	Agenda despatch date
29/11/16	1. Minutes – 25/10/16	M Rowe	Not applicable		16/11/16	18/11/16
	2. Integrated Resources and Performance Report (September)	R Bartram	2016/030			
	3. Resources and Performance Report (September) – Customer Service and Transformation and LGSS Managed	S Heywood	Not applicable			
	4. Business Plan Consultation	C Malyon	Not applicable			
	5. Overview of Business Planning Proposals (Including Community Impact Assessments)	C Malyon	Not applicable			
	6. Total Transport Pilot	T Parsons	Not applicable			

Committee date	Agenda item	Lead officer	Reference if key decision	Spokes meeting date	Deadline for draft reports	Agenda despatch date
	7. Treasury Management Report – Quarter 2*	M Batty	Not applicable			
	8. Cambridgeshire Guided Busway Defects (<i>confidential appendix</i>)	B Menzies	2016/040			
	9. Renegotiation of the Waste PFI Contract+	G Hughes	2016/066			
20/12/16	1. Minutes – 29/11/16	M Rowe	Not applicable		07/12/16	09/12/16
	2. Amendments to Business Plan Tables (if required)	C Malyon	Not applicable			
	3. Integrated Resources and Performance Report (October)	R Bartram	2016/053			
	4. Resources and Performance Report (October) – Customer Service and Transformation and LGSS Managed	S Heywood	Not applicable			
	5. Transformation Bids a) Assistive Technology in Older People's Care & Assessments Phase 2	C Black	2016/065			
	6. Level of Outstanding Debt	C Malyon	Not applicable			
	7. Transformation Bids a) Buurtzog business case	C Black C Malyon	2016/046			
	8. County Council Elections 2017	S Grace	Not applicable			
	9. Community Hubs	C May	2016/051			
	10. A Corporate Energy Strategy for Cambridgeshire County Council	S Pledger/ S French	Not applicable			
10/01/17	1. Minutes – 20/12/16	M Rowe	Not applicable		28/12/16	30/12/16
	2. Local Government Finance Settlement	C Malyon	Not applicable			

Committee date	Agenda item	Lead officer	Reference if key decision	Spokes meeting date	Deadline for draft reports	Agenda despatch date
	3. Draft Business Plan	C Malyon	Not applicable			
	4. Quarterly Risk Management Report	S Norman	Not applicable			
24/01/17	1. Minutes – 10/01/17	M Rowe	Not applicable		11/01/17	13/01/17
	2. Integrated Resources and Performance Report (November)	R Bartram	2017/001			
	3. Resources and Performance Report (November) – Customer Service and Transformation and LGSS Managed	S Heywood	Not applicable			
	4. Business Plan*	C Malyon	Not applicable			
	5. Housing Development Agency - Approval to Set Up As A Company	C Malyon	2017/013			
	6. Tender for insurance cover for the Council	M Greenhall	2017/011			
	7. Treasury Management Strategy	C Malyon	Not applicable			
	8. Medium Term Financial Strategy	C Malyon	Not applicable			
	9. Capital Strategy	C Malyon	Not applicable			
	10. Transformation Strategy	C Malyon	Not applicable			
[28/02/17] Provisional Meeting					15/02/17	17/02/17
21/03/17	1. Minutes – 24/01/17	M Rowe	Not applicable		08/03/17	10/03/17
	2. Quarterly Risk Management Report	S Norman	Not applicable			

Committee date	Agenda item	Lead officer	Reference if key decision	Spokes meeting date	Deadline for draft reports	Agenda despatch date
	3. Integrated Resources and Performance Report (January)	R Bartram	2017/002			
	4. Resources and Performance Report (January) – Customer Service and Transformation and LGSS Managed	S Heywood	Not applicable			
	5. Treasury Management Report – Quarter 3	M Batty	Not applicable			
	6. Assistive Technology in Older People's Care & Assessments – Monitoring Report	C Black	Not applicable			
	7. Community Resilience and Cambridgeshire County Council's Innovation Fund – Monitoring Report	S Ferguson	Not applicable			
<i>[25/04/17] Provisional Meeting</i>					25/04/17	13/04/17
06/06/17	1. Minutes – 21/03/17	M Rowe	Not applicable		23/05/17	25/05/17
	2. Integrated Resources and Performance Report (March)	R Bartram	2017/003			
	3. Resources and Performance Report (March) – Customer Service and Transformation and LGSS Managed	S Heywood	Not applicable			
	4. Treasury Management Report – Quarter 4*	M Batty	Not applicable			

Notice made under the Local Authorities (Executive Arrangements) (Meetings and Access to Information) (England) Regulations 2012 in compliance with Regulation 5(7)

1. At least 28 clear days before a private meeting of a decision-making body, public notice must be given which must include a statement of reasons for the meeting to be held in private.
2. At least 5 clear days before a private meeting of a decision-making body, further public notice must be given which must include a statement of reasons for the meeting to be held in private, details of any representations received by the decision-making body about why the meeting should be open to the public and a statement of the Council's response to such representations.

Forward plan reference	Intended date of decision	Matter in respect of which the decision is to be made	Decision maker	List of documents to be submitted to the decision maker	Reason for the meeting to be held in private
2016/066	29/11/16	Renegotiation of the Waste PFI Contract+	General Purposes Committee	Democratic Services Division at Shire Hall michelle.rowe@cambridgeshire.gov.uk (01223) 699180	Information relating to the financial or business affairs of any particular person (including the authority holding that information)

Decisions to be made in private as a matter of urgency in compliance with Regulation 5(6)

3. Where the date by which a meeting must be held makes compliance with the above requirements impracticable, the meeting may only be held in private where the decision-making body has obtained agreement from the Chairman of the Council.
4. Compliance with the requirements for the giving of public notice has been impracticable in relation to the business detailed below.
5. The Chairman of the Council has agreed that the Committee may hold a private meeting to consider the business referred to in paragraph 4 above because the meeting is urgent and cannot reasonably be deferred for the reasons stated below.

Date of Chairman's agreement	Matter in respect of which the decision is to be made	Reasons why meeting urgent and cannot reasonably be deferred

For further information, please contact Quentin Baker on 01223 727961 or Quentin.Baker@cambridgeshire.gov.uk

GENERAL PURPOSES COMMITTEE TRAINING PLAN	The Training Plan below includes topic areas for GPC approval. Following sign-off by GPC the details for training and development sessions will be worked up.	
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Ref	Subject	Desired Learning Outcome/Success Measures	Priority	Date	Responsibility	Nature of training	Attendance by:	Cllrs Attending	Percentage of total
	Strategic finance and budgeting	Members will gain a more detailed understanding of the strategic financial management of the Council's budget, and the future challenges associated.		TBC	Chris Malyon				
	The Council's asset portfolio and approach to asset management	Background knowledge on the Council's asset portfolio, and understanding of the approaches taken to best utilise this		TBC	Chris Malyon				
	Background to services provided by Customer Service & Transformation	Members will gain an insight into the range of frontline and back-officer services provided across CS&T: <ul style="list-style-type: none"> Consultation 		24 Nov	Sue Grace Mike Soper / Elaine O'Connor	Presentations & Q&A.	Cllrs Schumann, Count, Leeke, Kavanagh, Rouse, Orgee, Hickford, Bates. Criswell, Cearn, Tew, Reeve,		

Ref	Subject	Desired Learning Outcome/Success Measures	Priority	Date	Responsibility	Nature of training	Attendance by:	Cllrs Attending	Percentage of total
							Bullen, Jenkins, Nethsingha & McGuire		
	Understanding Health and Social Care integration	<i>Collaboration with Service Committee development around the Better Care Fund to be explored</i>		TBC	TBC				
	Regional governance	Understanding the range of regional governance structures that exist across Cambridgeshire, such as the LEP. Also understanding potential future models of governance for local public services		TBC	TBC				
	Equality and Diversity responsibilities	Understanding the responsibilities the Committee has to comply with equality legislation and to provide services for all Cambridgeshire communities		20 Oct 2015	LGSS Law / CS&T		Cllrs Bailey, Bates, D Brown, Count, Criswell, Hickford, Hipkin, Jenkins, McGuire, Reeve, Tew, Walsh, Divine, Williams		

Ref	Subject	Desired Learning Outcome/Success Measures	Priority	Date	Responsibility	Nature of training	Attendance by:	Cllrs Attending	Percentage of total
	Background to services provided by Customer Service & Transformation	Members will gain an insight into the range of frontline and back-officer services provided across CS&T: Information Security & Sharing		22 Dec 2015	Sue Grace Dan Horrex. (CS&T)	Presentati on & Q&A.	Cllrs Bailey, Bates, D Brown, Bullen, Cearn, Count, Criswell, Hickford, Jenkins, McGuire, Orgee, Reeve, Tew, Whitehead		
	Emergency Planning	Members will gain an insight into the role of Emergency Planning		14 Jan 2016	Sue Grace Stuart Thomas	Presentati on & Q&A.	Cllrs Bailey, Bates, D Brown, Cearn, Count, Criswell, Divine, Hickford, Hipkin, Orgee, Reeve, Rouse and Tew		
	Open Data & Cambridgeshire Insight Training			15 March 2016	M Soper	Presentati on & Q&A.	Cllrs Bailey, Bates, D Brown, Bullen,		

Ref	Subject	Desired Learning Outcome/Success Measures	Priority	Date	Responsibility	Nature of training	Attendance by:	Cllrs Attending	Percentage of total
							Cearns, Count, Criswell, Hickford, Hipkin, Jenkins, Nethsingha, Reeve, and Tew		

CAMBRIDGESHIRE GUIDED BUSWAY DEFECTS

To: **General Purposes Committee**

Meeting Date: **29th November 2016**

From: **Executive Director, Economy, Transport and Environment**

Electoral division(s): **All**

Forward Plan ref: **2016/040** *Key decision:* **Yes**

Purpose: **To consider expert technical and legal advice regarding the rectification of defects in the construction of the Cambridgeshire Guided Busway and the recovery of costs from the contractor Bam Nuttall.**

Recommendation:

The General Purposes Committee is asked to:

- a) **Note the advice of the Council's expert technical advisers regarding the causes of, and options, for rectification of the defects as set out in the report and Appendices A, and B.**
- b) **Note the advice of Mr Stephen Furst QC regarding the Council's legal remedies and assessment of the strength of case, as set out in confidential Appendix C.**
- c) **Resolve to carry out works to rectify all of the superstructure, foundation and drainage defects in accordance with the assessment of the Project Manager and the advice of the Council's expert technical advisers, subject to securing funds from Bam Nuttall in accordance with the defect provisions in the construction contract or alternative legal argument.**
- d) **Instruct Officers to initiate negotiations and any necessary legal proceedings to recover the assessed cost of defect correction in accordance with the contract, consequential losses arising from those defects, and any costs incurred to date and incurred in future in investigating and taking advice on the defects.**
- e) **Note that in the event that a settlement is not reached and it is necessary to pursue the matter through the courts the estimated costs of legal action will exceed the amount remaining in the specific reserve and agree that any additional costs should be met from the general reserve.**

<i>Officer contact:</i>	
Name:	Bob Menzies
Post:	Director, Strategy and Development
Email:	Bob.menzies@cambridgeshire.gov.uk
Tel:	01223 728368

1. CONFIDENTIALITY

- 1.1. This report contains confidential advice within a separate appendix (**Appendix C**). This advice is subject to litigation privilege. If Members wish to discuss this advice then it will be necessary for the meeting to be held in closed session.

2. PURPOSE

- 2.1. General Purposes Committee on 7th October 2014 considered a report on Busway Defects <http://tinyurl.com/GPC-Committee-Report> (agenda item 7) and
 - i. Resolved to carry out works to rectify all of the superstructure, foundation and drainage defects in accordance with the assessment of the Project Manager and the advice of the Council's expert technical advisers, subject to securing funds from Bam Nuttall in accordance with the defect provisions in the construction contract or alternative legal argument.
 - ii. Instructed Officers to initiate negotiations and any necessary legal proceedings to recover the assessed cost of defect correction in accordance with the contract, consequential losses arising from those defects, and any costs incurred to date and incurred in future in investigating and taking advice on the defects.
- 2.2. GPC were also advised of discussions with BAM Nuttall regarding further investigations into the defects. These investigations have now been completed.
- 2.3. The purpose of this report is to consider the revised expert technical and legal advice regarding the rectification of defects in the light of the investigations and to reconfirm the actions to be taken to rectify the defects and recover the costs from the contractor BAM Nuttall.
- 2.4. The report is structured as follows: background, the defects and new information arising from the investigations, the costs and options for rectification, the expert's opinion, meetings with BAM, the costs of action, and a summary of the position.

3. BACKGROUND

- 3.1. Following the completion of the Cambridgeshire Guided Busway in April 2011 the County Council took legal action to recover money owed by the contractor BAM Nuttall. The dispute over the final cost of the Busway was settled in September 2013 when the Council agreed to accept a settlement from Bam Nuttall.
- 3.2. The settlement included payment for these defects that were known about at the formal contract completion date with three exceptions. These three defects were excluded from the settlement because at the time the full extent of their impact could not be quantified. These defects were 'stayed' in legal parlance; that is the legal action was put on hold for future resolution.

- 3.3. Since completion of the Busway a number of other defects have come to light; most noticeably the movement of the bearing pads on which the guideway beams rest. This has resulted in a number of instances of 'steps' appearing in the guideway. Bam Nuttall have failed to address this or any other defect notified since completion.
- 3.4. Following the decision by GPC in October 2014 a Letter of Claim was sent to BAM Nutall on 11th December 2014 setting out the basis of the Council's claim. Bam Nuttall responded by denying that there were any defects but also by proposing that a programme of investigations be undertaken, to which proposal the Council agreed in early 2015. A legal claim has not been commenced pending the outcome of the investigations. It was considered advisable to agree to BAM Nuttall's proposal for joint investigation both in the expectation that it would provide greater information and would be in compliance with the Pre-Action Protocol for Construction and Engineering Disputes which requires the parties to seek to resolve their differences other than through court action.
- 3.5. The Council has continued to take legal advice from Mr Stephen Furst QC, and independent advice on both the technical issues and valuation or quantum of the costs involved. Technical advice in respect of the concrete guideway has been provided by Mr Tony Cort and advice in respect of foundations and drainage by Mr Robin Sanders, both of Capita. Valuation advice has been provided by Mr Chris Ennis of Time Quantum Expert Forensics Limited.
- 3.6. Mr Cort and Mr Sanders have advised on the joint investigations programme and all of them have now provided revised technical advice attached in **Appendix A**. Mr Furst's further advice is attached in confidential **Appendix C**, and the valuation advice as **Appendix B**. Legal and technical advice has only been taken in respect of defects with an estimated assessed value of £50,000 or more, in order to limit costs.

4. THE DEFECTS AND THE INVESTIGATIONS

- 4.1. The principal problems with the Busway are that:
- Vertical and horizontal steps have developed at the joints between the precast track sections or 'ladders'
 - The foundations of the guideway are moving differentially; and
 - The concrete of the guideway is spalling (slivers of concrete breaking off corners) in numerous locations
- 4.2. Details of the defects are set out in the attached advice.
- 4.3. Following the discussions with BAM a programme of investigations was agreed and procured from specialist contractors. Some of the investigations produced results that required further investigations and the agreement of additional investigations. This has led to the process taking longer than anticipated.
- 4.4. The results of the investigations have led to Capita modifying their views regarding the mechanism by which the steps appear in the guideway. The primary cause of this is that the neoprene bearing pads and the plastic shims

which support the ladder beams on the foundations are not restrained other than by surface friction and become displaced allowing the ladder beam ends to drop. In addition to the issues previously identified of lack of sufficient friction, thermal expansion and contraction and the dynamic loading of buses, the investigations have identified that the ladder beams are excessively stiff and thus do not flex to take up settlement of the foundations. As a result even the smallest differential settlement of the foundations reduces the load on the bearings and thus the friction that restrains the bearings in place.

- 4.5. This is contrary to BAM Nuttall's design which assumed a level of flexibility to deal with minor settlement within the overall specified tolerances. Thus in addition to the inadequacy of BAM Nuttall's bearing design their design of the guideway ladders is incompatible with their foundation design.
- 4.6. The investigations have also established that the lateral restraint brackets fail to prevent sideways movement at a fraction of their design load, thus explaining the horizontal steps between guideway beams.
- 4.7. The investigations included walkover and level surveys of the guideway. This established that at the time of the survey 3.9% of the 5612 guiderails joints had vertical steps of more than 2mm and 11% had horizontal displacements of more than 2mm.
- 4.8. In Bam Nuttall's design the longitudinal movement of the beams should be constrained by metal brackets bolted to the foundations and restraining the cross members at every other joint. This being a 'fixed' joint. The other end of each beam being free to take up thermal movement at the alternate 'free' joints. It has been found that neither the brackets nor the cross members are sufficient to resist longitudinal forces and there is evidence of both having moved.
- 4.9. There is also evidence of lateral (sideways) movement of the guideway. The Works Information requires the guideway beams to be aligned to within 2mm. The entire guideway has been surveyed and a number of lateral steps greater than 2mm have been found. Again analysis has shown that the lateral restraint brackets are not sufficient to resist the design loadings.
- 4.10. The solution to these superstructure defects is to fix the guideway beams together in pairs so that the fixed ends are properly fixed and held in alignment both longitudinally and laterally, and to fix the bearings so that they cannot move out from under the beams. Capita have given further thought to how this might best be achieved taking into account the stiffness of the ladder beams. This will require each section of guideway to be lifted.
- 4.11. The foundation defect relates to a unilateral decision by Bam not to follow national guidance in dealing with clay susceptible to heave (expanding), when it is saturated and shrinking when moisture is reduced. Such clays are common in this area of the County and were identified in geotechnical investigations undertaken by the Council and provided to the tenderers.
- 4.12. On an annual basis the clay shrinks and swells seasonally, but over the longer term it is affected by tree roots removing moisture. The foundations should have been built sufficiently deep to minimise the risk of either of these occurring, but BAM unilaterally chose to reduce the depth.

- 4.13. The investigation proposed by BAM Nuttall primarily considered the superstructure defects but did include monthly levelling at a number of locations in the susceptible areas. The information produced from these surveys has not altered Capita's opinion regarding the problem or solution. This was anticipated when this survey was proposed and in consequence the Council declined to contribute to the funding.
- 4.14. Several of the investigations required the removal of the infill between the guideway beams. In doing so it was identified that a number of the beams had spalling of their underside at the ends. Spalling is where edges and corners of concrete break away, usually as a result of point loading being applied. An additional investigation was agreed to examine a sample of beam ends to establish how frequently this occurred and to measure the extent of the spalling. This established that some 13.5% of beam ends have significant or severe spalling that needs to be repaired to prevent corrosion of the concrete.
- 4.15. It is considered that this spalling is caused by localised pressure exerted by lateral restraint brackets applying a point contact load where they are not perfectly aligned against the concrete.
- 4.16. The levelling surveys have revealed that there are sudden short ramps or steps where the precast ladder beams interface with in-situ concrete slabs close to junctions and at the park and ride sites. These are outside the specified tolerances and are therefore a defect.

5. COSTS

- 5.1. The costs of rectifying the defects has been re-assessed by our independent valuation expert. As set out in the previous report rectification has been priced on two basis. Firstly on the basis of carrying out pro-active rectification to deal with the defects, and secondly on a reactive basis to deal with the defects as they occur.
- 5.2. The expert refers to the pro-active approach as Option 1. As all the superstructure and foundation defects require the guideway beams to be lifted the reactive approach has considered two further options: Option 2 to carry out all required remedial works including foundation works whenever it is necessary to deal with excessive movement of the guideway, and Option 3 to carry out only superstructure remedial works whenever it is necessary but to deal with foundation settlement by adding concrete blocks on an as required basis between the foundation and the bearing pads.
- 5.3. Option 1 requires a one-off short term expenditure while the cost of the reactive approach would be spread over the lifetime of the guideway and depend on the actual rate of failure as it is not possible to predict precisely the future rate of failure the reactive approach has also considered a low, medium and high intensity rate of repair.

5.4. The comparative costs are set out below.

Option	Estimated Cost
Option 1	£36,500,000
Option 2 – Low Intensity	£102,000,000
Option 2 – Medium Intensity	£128,000,000
Option 2 – High Intensity	£164,500,000
Option 3 - Low Intensity	£74,000,000
Option 3 – Medium Intensity	£91,000,000
Option 3 – High Intensity	£119,000,000

- 5.5. The costs of the reactive approach include an allowance for inflation over the remaining 35 year design life of the Busway.
- 5.6. As a result of the additional information and the additional defects identified by the investigations the costs of rectification have risen.
- 5.7. While there is considerable uncertainty around forecasting the rate at which defects will manifest themselves it can be seen that even on the most optimistic scenario the reactive approach is very much more expensive than the pro-active approach.
- 5.8. As before the cost assessment has been made on the basis of the Busway being closed one section at a time to allow bus services to be maintained with the minimum of disruption. The work will take around three years to complete. Evening or weekend working is not practical given the scale of the operation. Replacing the foundations will require at least the partial removal and hence closure of the adjacent maintenance track. It may be possible for the maintenance track to remain operational during superstructure works but this will depend on the detailed working methods adopted.
- 5.9. The cost assessments are considered sufficient for the purposes of considering the appropriate course of action at this time, but Officers propose to commission further work to develop more detailed proposals for the remedial work and the methodology for carrying it out.

6. LEGAL ADVICE & PROCESS

- 6.1. The legal advisers and the independent experts have reviewed the defects, including correspondence with BAM Nuttall, against the Contract requirements, and concur with the Project Manager that all of the defects are defects.
- 6.2. The Project Manager, the legal advisers and the independent experts have considered the results of the investigatory work and remain of that view. Indeed the evidence revealed from the investigations provides further support for that view.

- 6.3. As a result of the investigations a number of the defect notices already issued to BAM Nuttall have been revised and updated, and additional defect notices have been issued.
- 6.4. The contract states:
If the Contractor has not corrected a notified defect within its defect correction period, the Project Manager assesses the cost of having the defect corrected by other people and the Contractor pays this amount. (Clause 45.1 NEC 2nd Edition)
- 6.5. If, as expected, Bam Nuttall do not pay the amounts assessed by the Project Manager they will be in breach of contract and this would be the primary basis on which the Council would commence legal action.
- 6.6. The Council also has a second basis for claim against Bam Nuttall for breach of contract for failing to provide the works in accordance with the works information.
The Contractor provides the works in accordance with the works information. (Clause 20.1 NEC 2nd Edition)
- 6.7. Under an action for breach of contract the Council is entitled to claim consequential losses, such as loss of access charges, in addition to defect correction costs, but a claim made on this basis would need to show that costs were reasonably incurred.
- 6.8. It should be noted that in addition to cost it is also appropriate to take into account other associated impacts such as the disruption to passengers and maintenance track users of ongoing reactive repairs, the risks to the Council, both that the forecasts might underestimate the volume of repairs and that the volume of repairs at any one time might be too great to effectively manage, and the ongoing management and monitoring of the busway for defects.
- 6.9. As set out above it is not reasonably possible to precisely quantify the likelihood of these outcomes occurring, the expert advice has assessed a material risk that a significant number of the potential problems will emerge over the life time of the Guideway. The Council is required to consider and weigh in the balance a range of matters including the following:-
- i) the potential future risks of faults emerging over the lifetime of the guideway.
 - ii) the impacts upon the Busway users and to the Council and indirectly to Council tax payers.
 - iii) the relative costs of the options for rectifying the defects.

7. MEETINGS WITH BAM

- 7.1. The investigations arose following an approach from BAM involving a senior Bam representative and a senior representative of their designers, neither of whom have had any previous involvement in the project.
- 7.2. The BAM representative's original proposal included a programme that concluded with 'Agree Recommended Technical Resolution'. While there has been extensive engagement with the BAM representatives in the undertaking

of the investigations, discussions following the investigations have been limited to agreeing the factual results. There has been no discussion of the reasons for the results or of potential solutions, and at no time have BAM accepted liability for any defects nor have they identified who would be responsible for implementing any technical resolution that was identified.

- 7.3. It should be noted that any contractual obligation on the Council to allow Bam Nuttall to investigate or fix the defects has long since expired; Bam have been fully aware since the settlement that the Council is taking advice on legal action regarding the defects.
- 7.4. If Committee decide to reconfirm the instruction to officers to commence legal action the process will be governed by the pre-action protocol, which encourages the parties to seek ways to settle their differences. This could well include further discussions between experts as to the causes of the defects for example. The Executive Director also meet regularly with a senior director of BAM Nuttall.
- 7.5. None of the above is considered to be a reason to delay or defer a decision on taking further legal action. Should a proposal be put forward by or on behalf of BAM Nuttall to the County Council then the decision can be revisited based on the substance of that or any other proposal.

8. COSTS OF LEGAL ACTIONS

- 8.1. The Council has set aside from liquidated damages deducted from BAM Nuttall a fund that has been used to date to fund the work on the Busway defects. £2.2m remains in this reserve.
- 8.2. It is hoped that a settlement will be reached by negotiation or mediation, which could be on a cost inclusive basis, but this cannot be guaranteed.
- 8.3. Since October 2013 £3.07m has been spent on professional fees in regard to advice on the Busway defects and £192,000 on the Council's share of the investigations. It is estimated that the cost of pursuing legal action should the matter proceed all the way to court a further £5.7m could be spent.
- 8.4. The costs to date and any future costs incurred will form part of the claim against BAM Nuttall and the Council would seek to recover as much of these costs as possible, but typically, with the usual uncertainties in litigation, only 50% to 60% of costs are recovered.
- 8.5. The estimated costs of legal action exceed the amount currently held in the earmarked reserve and therefore further resources will need to be made available should the Council wish to pursue legal action against BAM. As the timing of this action is not known, at this point it is suggested that should the Council incur any costs within the financial year ending 31st March 2018 that these will be funded from within the General Reserve. During the autumn of next year greater clarity will be available on both the timing and incidence of any potential costs and therefore provision will be made within the Business Plan for 2018/19 at that point should this be necessary.

9. SUMMARY

- 9.1. The total cost of rectifying the Busway defects is estimated as at least £36.5m.
- 9.2. Counsel and the independent technical experts agree that the defects are defects under the Contract.
- 9.3. The Project Manager and the independent technical experts agree that the defects should be corrected given the costs, risks, uncertainties and ongoing disruption of a partially or wholly reactive approach.
- 9.4. Counsel has advised that in his view BAM are in breach of contract in respect of both the defect provisions and their general responsibility to provide the works. Counsel's detailed advice on the conduct of legal action and the potential outcomes is contained in confidential appendix C.
- 9.5. Counsel's advice is that if the Council opts to take legal action then the first step is to resolve to rectify the defects.
- 9.6. Officers' advice is that the risks to the Busway and the potential costs to the Council of adopting a reactive approach to the defects is unacceptable and that the defects need to be rectified. Officers also consider that, based on experience to date, it will be necessary to commence legal action to secure a satisfactory settlement from BAM.
- 9.7. Litigation is never risk free, and while the facts of the case support the Council's position, the case involves some complexity, particularly around the issue of what is a reasonable course of action. In coming to a decision members will need to balance the risks of litigation against the potential future repair costs of the Busway.

10. ALIGNMENT WITH CORPORATE PRIORITIES

Developing the local economy for the benefit of all

- 10.1. The report identifies the costs and risks in respect of the defects to the guided busway. The Busway is an important piece of transport infrastructure supporting the growth of housing and jobs. Ensuring its ongoing availability is therefore important.

Helping people live healthy and independent lives

- 10.2. The Busway is used to access employment, education and recreation. Ensuring its ongoing availability is therefore important.

Supporting and protecting vulnerable people

- 10.3. The Busway is used to access employment, education and recreation by people who are unable to drive or cycle, or do not have access to a car. Ensuring its ongoing availability is therefore important for these groups.

11. SIGNIFICANT IMPLICATIONS

Resource Implications

- 11.1. There are significant resource implications. These are detailed in the report and attached appendices.

Statutory, Risk and Legal Implications

- 11.2. There are significant risk and legal implications. These are detailed in the report and attached appendices.

Equality and Diversity Implications

- 11.3. The Busway is used to access employment, education and recreation by people who are unable to drive or cycle, or do not have access to a car. Ensuring its ongoing availability is therefore important for a wide range of people.

Engagement and Consultation Implications

- 11.4. Undertaking remedial works will require a programme of engagement and communication to advise and inform people regarding disruption to bus journeys and closures of the maintenance track. This would not be possible with an ad-hoc reactive approach.

Localism and Local Member Involvement

- 11.5. Undertaking remedial works will require a programme of engagement and communication to advise and inform local members regarding disruption to bus journeys and closures of the maintenance track. This would not be possible with an ad-hoc reactive approach

Public Health Implications

- 11.6. The Busway provides significant public health benefits to both bus passengers and for cyclists and walkers. Undertaking a planned programme of remedial works will be less disruptive and will ensure the longer term availability of both the Busway and maintenance track. An ad-hoc reactive approach is likely in the longer term to have a greater impact in discouraging healthy travel options.

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	Yes Name of Financial Officer: Sarah Heywood
Has the impact on Statutory, Legal and Risk implications been cleared by LGSS Law?	Yes Name of Legal Officer: Quentin Baker
Are there any Equality and Diversity implications?	Yes Name of Officer: Tamar Oviatt-Ham
Have any engagement and communication implications been cleared by Communications?	Yes Name of Officer: Mark Miller
Are there any Localism and Local Member involvement issues?	Yes Name of Officer: Paul Tadd
Have any Public Health implications been cleared by Public Health	Yes Name of Officer: Iain Green

Source Documents	Location
Agenda and Minutes, Cabinet 1/3/2005, 7/2/06, 13/6/06, 11/7/06, 16/10/07, 16/12/08, 29/9/09, 16/3/10, 27/4/10, 25/5/10, 15/6/10, 5/7/10, 7/9/10, 28/9/10, 26/10/10, 16/11/10, 14/12/10, 25/1/11, 22/2/11, 15/3/11, 5/4/11, 15/6/11, 5/7/11, 17/9/12, 28/5/13, 18/6/13, 2 4/7/13, 9/8/13, 15/4/14	Shire Hall Room 322

Cambridgeshire Guided Busway

Advisory Report on Guideway Investigations, Defects and Corrective Measures



Cambridgeshire Guided Busway
Cambridgeshire County Council v BAM Nuttall Ltd.

Advisory Report on Guideway Investigations, Defects and
Corrective Measures

Instructed	:	Tony Cort / Robin Sanders
	:	
For	:	BDB
	:	Cambridgeshire County Council
Date	:	1 November 2016
Ref	:	CS/059090

This document is for use solely by our Client and its legal team in providing preliminary advice following investigations carried out to further understand the behaviour of the guideway.

Drafted : Tony Cort, Andy Hallum, and Robin Sanders

Checked : Claire Clark

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INTRODUCTION

Instructions

1. This report follows an earlier report dated 11 September 2014 that was addressed to elected members of Cambridgeshire County Council ('the Council') which examined notified Defects on the Guideway, explained why the defects need to be addressed, and described options that we considered appropriate at that time for correcting the Defects. This led to a subsequent decision of the Council and BAM Nuttall ('BAMN') to carry out additional investigations that would further inform the parties in understanding the reasons for the Defects that had been observed. Those investigations have now been carried out, although certain investigations, namely thermal monitoring to determine expansion/contraction movements and levelling to determine foundation movement, are ongoing. The results of these ongoing investigations (called H and J respectively) are unlikely, however, to affect the conclusions in this report.
2. This second report is for issue to elected members of the Council. It has been prepared by us, Messrs Tony Cort and Robin Sanders, as independent engineering experts instructed by the Cambridgeshire County Council's ('CCC') solicitors Bircham Dyson Bell ('BDB'). We acknowledge that we have been assisted by Andy Hallum BSc(Hons), CEng, MICE, MStructE, ACI Arb and Darren King BSc, MSc, FGS, CGeol, CEng, CEnv, MIMMM, ACI Arb who have carried out under our supervision supporting reviews, calculations and analyses. The Curriculum Vitae of Tony Cort, Andy Hallum, and Robin Sanders are enclosed in Appendix A.
3. The report informs elected members of the development of our opinions following receipt of the results of the additional investigations. These investigations have been on the northern section of the busway, between St Ives and Milton Road, and were funded by CCC and BAMN and administered by Skanska under two investigation contracts. Our opinions herein relate to specific notified Defects on the superstructure (i.e. the elements of the guideway above the foundations) on the entirety of the guideway and notified Defects on the foundations on the northern section of the guideway, i.e. between St Ives and Milton Road, Chesterton. The ground conditions on the southern section of the guideway, from Cambridge Railway station to Trumpington and Addenbrookes hospital are different to those for the northern section and, at this time, are not considered to have the potential for an adverse impact on the guideway.

Report contents

4. The advisory report:
 - (i) summarises the September 2014 report;
 - (ii) describes the investigations which were undertaken on the guideway;
 - (iii) describes the conclusions we have drawn from the investigations;
 - (iv) describes the Defects we are considering in outline;
 - (v) summarises the reasons why it is necessary that something is done about the Defects;
 - (vi) explains what, in our opinion, could happen to the guideway over time if nothing is done to correct the Defects;

- (vii) reassesses the remedial works outlined in the September 2014 report;
 - (viii) explains what, in our opinion, are the options available to the CCC to correct/manage the Defects, covering both pre-emptive repairs, reactive repairs when the effects of Defects manifest themselves and both pre-emptive and reactive work that will, in part or in whole, alleviate or reduce the effects of the Defects.
5. Mr Cort has prepared the sections of this advisory report that discuss the investigations that relate primarily to the performance of the superstructure (i.e. Investigations A, E, H & I carried out by Straininstall, Investigation G carried out by BICS, Investigations B, C, D & F carried out by Survey Solutions, and Investigation K carried out by Skanska. Mr Sanders has prepared the sections of this advisory report that relate to foundations and ground conditions on the northern section of the guideway. This includes Investigation J undertaken by Survey Solutions and, funded solely by BAMN. This later investigation is still being carried out. It comprises the monitoring of beam movement over approximately monthly intervals on selected parts of the guideway to aid assessment of possible foundation movement due to seasonal and/or vegetation related changes in ground conditions particular ground moisture contents.

SUMMARY OF SEPTEMBER 2014 REPORT

6. By way of summary, our report dated 11 September 2014 contained:
7. For the superstructure:
 - (i) A description of the construction of the guideway including details of the various elements;
 - (ii) A description of the Defects that exist within the guideway detailing an extensive scope of the remedial works or repairs required to the guideway to rectify the Defects;
 - (iii) Consideration of potential remedial works options to correct the Defects to the guideway itself that have collectively been given the overarching title of 'Grand Unified Defect' (GUD). A major problem is that bearings and shims continue to displace and come out and steps greater than the permitted tolerance of 2mm are arising in the guide face of the guiderails (see Figure 2 on page 7). There are other miscellaneous notified Defects that require correction which are not within our brief;
 - (iv) Outline and preliminary details of the potential remedial works (three options) based on information available at that stage;
 - (v) Option 1 pre-emptive remedial works. In essence, this involved the bearing pads being fixed in place and the shims arranged so that they do not slide out and are able to take a proportion of the horizontal load that the guideway is required to accommodate. For this Option, the guideway would have been closed in sections to carry out the remedial works with the details for this remaining to be fully assessed in conjunction with the Council and the bus operators. The estimated timeframe to carry out these works was 30 to 36 months, including proposed remedial works to foundations;
 - (vi) Option 2 reactive remedial scheme. This consisted of implementing the Option 1 proposals on a piecemeal basis. Should one or more bearings and/or shims slip out resulting in a step in the guideway running surface, this would trigger remedial works being carried out to a 30 metre section. It was expected that the remedial scheme would be protracted and could extend over the remaining life of the project i.e. 35 years to complete;
 - (vii) Option 3 scheme of reactive repairs. This comprised relocating the bearing pads/shims (but not fixing them in place) into the original design position when steps appeared in the running surface of the guideway together with repairing concrete spalling and other issues. We anticipate that the work would be carried out in the manner adopted for the emergency repairs to bearings, i.e. jacking up the guiderails to access the bearing pads and shims in order to relocate them. . The bearing pads and shims remain unfixed. It did nothing to prevent the pads/shims continuing to slip out, nor did the Option correct the Defects that in our opinion were inherent in the design.
 - (viii) Cost estimates for Options 1, 2 & 3 were prepared by Mr Chris Ennis of TQEF.
 - (ix) The report considered the merits and demerits of the superstructure remedial works options.
8. For the foundations:
 - (i) A discussion of the background to the foundation Defects;

- (ii) An assessment of the required depth of all the shallow foundations on the northern section of the busway based on the potential growth of trees in close proximity to the guideway during its design life, and BAMN's zonation of ground conditions. The assessment considered two scenarios, firstly compliance with the contractual requirements to construct to the recommended depths given in NHBC design guidance for shallow foundations and a second scenario based on the BAMN's stated maximum capacity for the guiderails to deflect in response to differential settlement between the foundations without impairment of the guiderail's required performance,
- (iii) A listing of those shallow foundations that have been constructed to an inadequate depth for both above scenarios, with a estimate of when the defective and inadequate foundations may display unacceptable movements.
- (iv) The most reasonable and practical means of undertaking work to correct or nullify the effects of the foundation Defects;
- (v) An outline and preliminary details of the remedial works (three options, A, B & C) based on information available at that stage;
- (vi) All options dealt with the assessed future effects of trees planted as part of the guideway construction work by recommending pre-emptive arboricultural works and an enhanced arboricultural maintenance regime. All options also included pre-emptive foundation deepening works for the foundations between chainages 17510 – 17645 and chainages 17691 – 17811 due to excessive movements that had already occurred to most of the foundations along these sections
- (vii) Option A full pre-emptive works. Consideration of the two scenarios described in (ii) above. Scenario 1 remediate all 868 foundations which did not comply with NHBC recommended depths thus placing the Council in the position it would have been if it BNL had constructed the works in accordance with the contractual requirements. Scenario 2 remedying a reduced number of such foundations, 643, allowing up to 25mm of differential foundation settlement with only a slightly heightened risk to the Council of future damage.
- (viii) The application of the latter approach under Option A may possibly have been a slightly conservative approach in respect of the number of foundations that would, with time, move sufficiently to develop excessive differential movement between them. This was because of an inherent uncertainty as to how the roots of the trees would develop with time and thus precisely how many, and which, of the foundations assessed as requiring remediation by pre-emptive works, would move such that the differential movement between adjacent foundations would definitely be sufficient for deflections on the guiderails to become excessive.
- (ix) Option B was essentially a 'half way house' between Options A and C (see (viii) below for Option C). It pre-emptively remediates the foundations assessed as being at greatest risk of excessive differential movement, many of which could be expected to show such movement in the next 10 – 15 years if not remediated. It thus significantly reduced the amount of reactive remedial works in those early years but only slightly reduced the amount of reactive remedial works in subsequent years. It reduced the impact on the temporary works methodology and programming of the remedial

works Option 1 for the GUD and environment impact inherent in Option A. The option, however, required long term monitoring to occur and predicted significant reactive remedial works could be necessary over the remaining life of the guideway. Accurate prediction of when such reactive remedial works would be required was not feasible and thus forward year-on-year budgeting for such reactive remedial works would not have been possible. Additionally, as the expected effective life of the root barrier form of remedial works was around 20 years, a second phase of remediation would be necessary in the final years of the life of the guideway. This second phase would include a significant number of root barriers that would fail to halt differential movement and in such cases foundation deepening was likely to be required as a third phase of remediation.

- (x) Option C was a wholly reactive approach. Remediation would only address the inadequate foundation depths when monitoring revealed that excessive differential movement was being approached. There would be no impact on the GUD remedial works programme and temporary works and a reduced environmental impact over the other two options. As with Option B, prediction of when such reactive remedial works would be required and forward year-on-year budgeting for such works was not feasible. As the expected effective life of the remedial works was around 20 years, a second phase of remediation would be necessary in the latter half of the life of the guideway. This second phase would include a significant number of root barriers that would fail to halt differential movement and in such cases foundation deepening is likely to be required as a third phase of remediation. As Option C would have the 105 additional 'very high risk' foundations being remediated reactively there would be considerably more on-going disruption to the operation of the guideway than with Option B in the forthcoming 10 – 15 years. The report advised that if the Council was adverse to the environmental impact associated with Option A and/or wished to minimise the frequency of closure of the guideway during its life and could accept additional risks inherent with reactive remedial works, as summarised below, Option B was recommended. The report advised there was a risk that 14 'high risk' and 235 'at risk' foundations on clays particularly prone to shrinkage may move in excess of 25mm during the first period of significant movement. This could compromise the durability of overlying guiderails.
- (xi) The report discussed the merits and demerits of the foundation remedial works options and considered the combination of options for the superstructure and foundations.

DESCRIPTION OF GUIDEWAY

9. The guideway is formed of three principal elements
 - (i) the foundations;
 - (ii) the concrete elements which should provide a stable running surface ('guiderails') and guidance for the buses; and
 - (iii) the supports between these two elements, which are formed of bearings and shims.
10. The guiderails are made of concrete and have upstands on the outer edges which keep the buses on the track. The guiderails are kept apart by spacer beams that are bolted to the guiderails, thereby forming a series of 'ladders'. The arrangement is shown in the photograph below.



Figure 1. Photograph of a section of the guideway showing the spacer beams and foundation pads.

11. Ladders are 10 or 15 metres long (mostly 15 m) and are supported at each end and in the centre by foundations. The rails rest on plastic (high density polyethylene) shims, which in turn rest upon elastomeric (rubber) bearing pads. These sit directly on a raised upper surface of the foundation pads or pile caps.



Figure 2. Photograph of a part of the guideway during construction, showing a spacer beam, guiderail, shims, bearing pad, and foundation pad.

12. The shims are the only part of the guideway structure that are designed to be removed or added to allow limited vertical movement between the foundations and guideway ladders. The individual shims are of 2mm and 5mm thickness so that small, millimetre scale adjustments can be made to ensure the continuity of bearing between the guideway ladders and the foundations.
13. The elastomeric (rubber) bearing pads are present to provide uniform seating of the beams and to permit the ends of the guiderails to rotate without damage occurring to the concrete. Such rotation occurs when buses pass along the guiderails causing them to move downwards slightly, and also when one foundation of a guiderail moves vertically relative to the next foundation – the design was supposed to allow for 25mm of such differential movement of the supports.
14. BNL's design included for there to be 10mm of shims in place on construction and permitted a maximum of a further 25mm to be placed if necessary. Limited exploratory excavations to examine the bearings and shims along the site, where no previous adjustments have been made, have shown that the depth of shims present is variable where shallow foundations are present. We believe this reflects corrections to the level of the guideway undertaken by BNL prior to handover to the Council. There appears to be no correlation between depth of shims and shallow foundations or ground conditions, the overall shim thicknesses probably being a function of how accurately in level the foundations were installed. The depth of shims occasionally exceeds BNL's design limit of 35mm as can be seen in the photograph below.



Figure 3. Photograph of a foundation pad upon which there are more than 35mm of shims.

15. Alternate joints in the ladders are designated as 'fixed' and the guiderails at these locations are designed as touching end-to-end. At these locations both ladders were 'fixed' by brackets positioned against the spacer beams and bolted to the foundation pads or pile caps. These brackets are intended, according to DDG Rev 6, to provide restraint to longitudinal movement of the ladder units under a longitudinal force of about 24 tonnes.

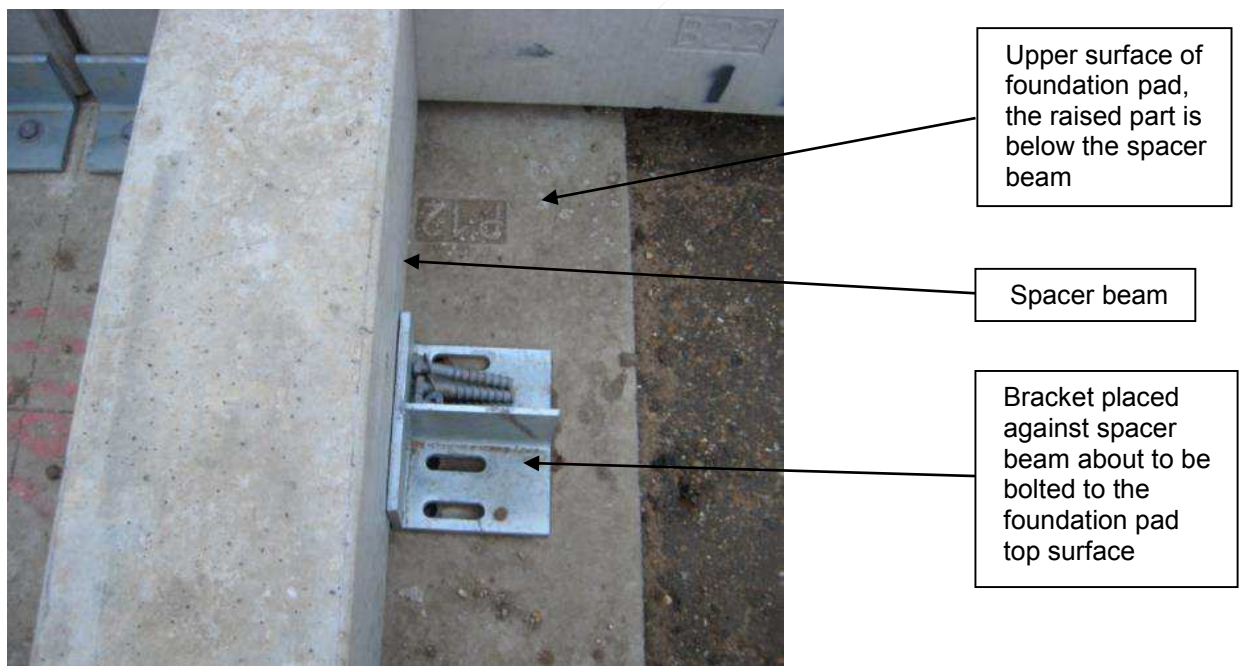


Figure 4. Photograph of a 'fixed' joint longitudinal restraint bracket.

16. The other joints between the fixed joints are not 'fixed'. They were designed to allow longitudinal movement arising from temperature changes which cause expansion and contraction of the ladder units. These joints are called 'free' joints.

17. The beams are designed to be restrained laterally (across the direction of bus travel) by brackets that are placed against the inside of the guiderails at every joint.

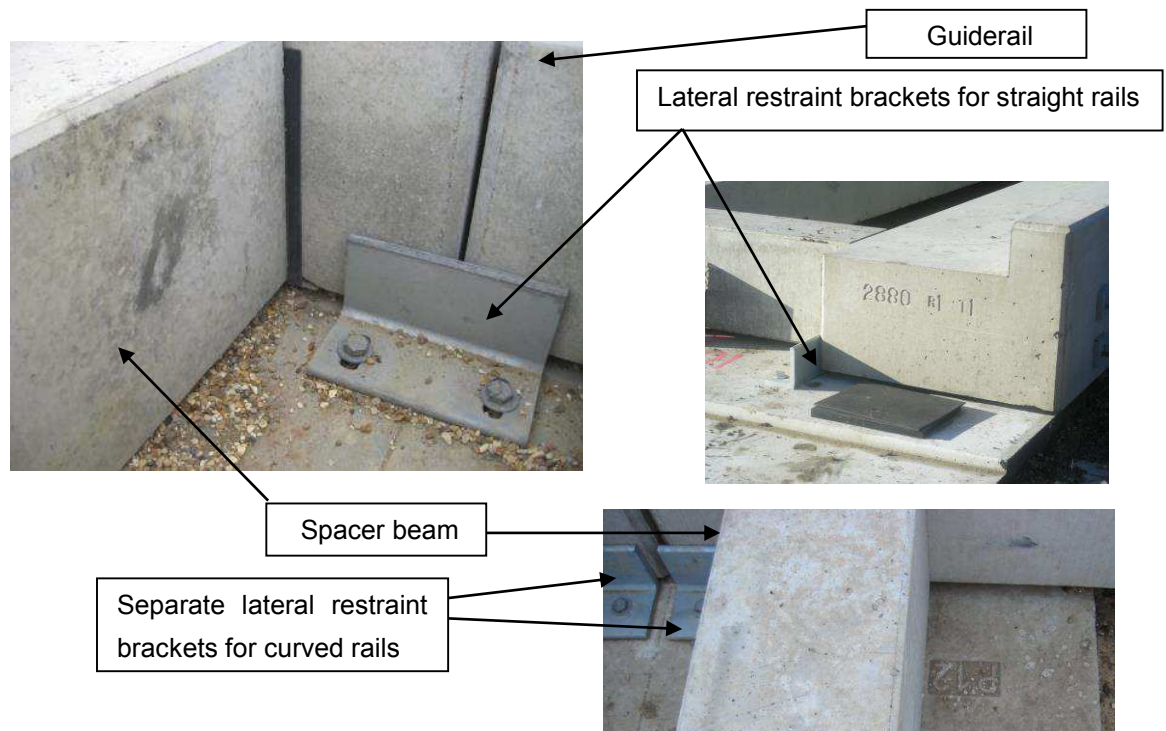


Figure 5. Photographs of lateral restraint brackets.

ADDITIONAL INVESTIGATIONS

18. Investigations were carried out to provide a better understanding of the performance and behaviour of the as-constructed guideway:
 - (i) in relation to its stiffness characteristics and the implications of this;
 - (ii) in providing a definitive record of the extent of alleged steps (longitudinally and transversely), concrete spalling, concrete cracks, spacer movements, and joint widths;
 - (iii) in identifying the frictional properties of the shims and elastomeric pads;
 - (iv) in investigating any bearing/shim movements;
 - (v) in obtaining levels of the guideway at certain locations including foundation level monitoring;
 - (vi) in monitoring thermal expansion/contraction; and
 - (vii) in monitoring the performance of the guideway under braking of a fully-loaded bus.
19. The investigations are described in the following paragraphs:
20. **Investigation A.** This investigation, carried out at three locations, was designed to assess the stiffness characteristics of the guideway ladder assembly i.e. the superstructure. It comprised raising and lowering the structure at various points close to the bearing support positions and loading the guideway with a vehicle of known weight, whilst recording the support reactions and ladder deflections/movements.
21. **Investigation B.** This investigation involved bearing surveys at the January 2014 boroscope¹ photographic survey of bearings at Longstanton (chainages 10946 to 11141 Cambridge-bound track) with associated levelling surveys. The intent was to compare the results with the 2014 bearing surveys.
22. **Investigation C.** This investigation comprised a walkover survey to record visual defects such as vertical and horizontal steps at joints, spacer beam movements, and spalling.
23. **Investigation D.** This investigation consisted of levelling the guideway ladders at various locations to assess any distortion of the structure in terms of out-of-planeness. Each ladder is supposed to be assembled and put in place such that the running surface of the two guiderails form a single plane with no twist or bend in the ladder.
24. **Investigation E.** This investigation involved testing the lateral restraint brackets to assess their resistance to movement, since we considered this to be potentially inadequate. This was carried out by jacking opposite brackets apart, involving four pairs of brackets each with two bolt holes, at two locations. Some included packer plates beneath the brackets. Tests were carried out with one of the brackets fixed with either one bolt or two bolts.

¹ A boroscope is an optical device consisting of a rigid or flexible tube with an eyepiece or camera on one end and an objective lens on the other. It facilitates examination of the otherwise inaccessible bearings/shims.

25. **Investigation F.** This investigation was similar to Investigation B except that the surveys were carried out at 60 discrete beam end chainage locations (105 ladder ends) along the guideway (selected using information from investigation C but with no comparison being undertaken with previous surveys. The primary intent was to assess the reason for the vertical steps between guideway ladders that have been recorded.
26. **Investigation G.** This investigation comprised testing the frictional coefficients of the shims against concrete, elastomeric bearing pads and other shims, and the frictional coefficients of elastomeric bearing pads against concrete. Original and replacement (new) shims were tested. Selected material property testing was undertaken to compare original and new shim properties.
27. **Investigation H.** This investigation is monitoring over time the thermal movements and air/concrete temperatures of the guideway at two separate locations (at the time of writing, this investigation has been in progress since the beginning of 2015 and is ongoing).
28. **Investigation I.** This investigation consisted of brake tests using a fully-loaded double decker bus and was carried out at three locations, two where the superstructure is supported on pad foundations and one at screw pile foundations. This included recording the performance of the guideway from a bus travelling at its maximum speed with the brakes then applied sufficiently hard (as in an emergency) to operate the bus's anti-braking system. This would generate the maximum braking force that would be expected to be applied to the guideway in the operational condition assuming no skidding occurred.
29. **Investigation J.** This investigation consists of monitoring the level of each guiderail's running surface directly above 181 selected foundation pads between chainages 6343 and 19993 where there is a perceived high to very high risk of future foundation movement. A template was used at each location, with the objective of identifying vertical height changes over time due to changes in seasonal weather patterns. BAMN proposed the surveys and selected a number of locations. Capita's expert Mr Sanders also selected a limited number of locations based on the assessment of foundation compliance at the time of the investigation specification. This investigation is currently continuing on a monthly basis.
30. **Investigation K.** This investigation was carried out to assess concrete damage at the bottom of the joints in the guiderails at all locations where excavation had been carried out for Investigations B, E, F and I. In addition, the survey was extended in August 2016 to record the situation at other random locations.

Timing of Investigations.

31. The investigation site operations were carried out on the following dates:

Investigation A

Location 1: 08.11.2015; Location 2.1: 29.11.2015; Location 3: 06.12.2015; Location 2.2: 13.12.2015.

Investigation B

B1 (Photographic survey) First Survey 11.10.2015; Second Survey 15.12.2015.

B2 (Level survey) First Survey 13.10.2015; Second Survey 15.01.2016.

Investigation C

Survey 15.09.2015 to 09.11.2015.

Investigation D

Survey 10.11.2015 to 03.12.2015.

Investigation E

Testing 08.12.2015 to 14.12.2015.

Investigation F

F1 (Photographic survey) 14.12.2015 to 19.12.2015.

F2 (Level survey) 14.12.2015 to 17.12.2015.

Investigation G

Laboratory testing 14.10.2015 to 19.11.2015.

Investigation H

Installation 02.10.2015 to 04.10.2015; On-going information being received since then on daily basis via data logger.

Investigation I

Location 1: 18.10.2015; Location 2: 31.01.2016; Location 3: 17.07.2016.

Investigation J

First Survey including survey station installations: 22.09.2015 to 08.10.2015 (No template used).

Subsequent surveys approximately monthly using a locating template to provide reliable repeat survey comparisons from 21.10.2016 and ongoing at the time of writing.

Investigation K

Inspection survey 02.02.2016 to 04.02.2016.

Additional Inspection Survey 23.08.2016 to 24.08.2016

WHY BEARINGS AND SHIMS ARE COMING OUT – THEORY

In-Plane Guideway Ladder

32. By 'in-plane' we mean that the longitudinal gradient of a ladder is constant over the three pairs of supports and that any difference in level transversely across the two guideways (which is actually supposed to be zero because there should be no superelevation²) is also constant. In other words, the guideways are straight and there is no twist in the ladder.
33. The design intent is clear from the Contract requirements. The Contract Specification 2100 contains a Bearing Schedule (based on BS 5400 Part 9) and states that the type of fixing for the bearings is 'Friction' assuming that the coefficient of friction between bearing and upper or lower surface is a minimum of 0.4 and the coefficient of friction between shims is also a minimum of 0.4. In addition, DDG Rev 6 Appendix A refers to BS 5400 Part 9 as the definitive requirement for the design of bearings. In our opinion, therefore, the contract requires the guideway bearings to be designed to BS 5400 Part 9.1 and the Works Information requires the elastomeric bearings to be tested in accordance with BS 5400 Part 9.2 (see Contract Appendix 1/5).
34. The design intent is also evident from the Maintenance Manual BAM137A/CGB/MM/09 Rev 6 which states at section 3.4.1,

"On the mainline guideway, the beams rest on plain non-laminated elastomeric bearing pads at each support position allowing free rotation and translation. The bearing pads are not fixed to the beam or foundation, friction being adequate to prevent relative movement."

It also states,

"The adjustment shims also rely on the weight of the beams and friction to prevent relative movement between the interfaces. The shims were surface roughened to provide the required coefficient of friction for this element of the design. Bearings and shims are expected to remain in service for the design life of the guideway."

35. The total weight of a 15m long guideway ladder is in the order of 305kN (30.5 tonnes) and the end support reactions³ are approximately 32kN (32 tonnes). A support (or bearing) comprises a combination of elastomeric pad plus several adjustment shims, see paragraph 11 and Figure 2.
36. BS 5400 Part 9.1 Clause 10.1.3(d) states that the design of elastomeric bearings should be such that *"either they do not slip under the applied forces when checked in accordance with 10.11 or they are mechanically fixed to the structure above and below."* Clause 10.11 contains the formulae for determining whether or not friction is adequate. The formulae in Clause 10.11 are independent of the coefficient of friction of

² Superelevation is where there is a slope from one side to the other and is employed on transport infrastructure projects to aid drainage and to ease vehicles traversing a curve in the longitudinal alignment of the project.

³ Reaction force is defined as the force exerted on a structure when it rests on something – this is effectively Newton's Third Law which states, "For every action, there is an equal and opposite reaction." In this case, therefore, the reaction force is equivalent numerically to the load on a bearing.

bearing/shim interfaces etc., and we have calculated that the vertical load at a bearing requires (formula is $V > A_1(1 + b/l)$, where V is for self weight only, A_1 is the area of the bearing pad, and b & l are the dimensions of the pad) to be 205 kN. This shows therefore that there is inadequate friction according to BS 5400 Part 9.1.

37. Investigation H – Temperature Related Movements (see §130 below) shows that daily expansion/contraction of the guideway ladders is typically 2mm to 4mm and frequently greater than 2.5mm.
38. Notwithstanding the requirements of BS5400 Part 9.1, we have calculated that for an 'in-plane' ladder, with end bearing reactions of approximately 32kN (see paragraph 35 above), with coefficient of friction of 0.4, and with bearing pad shear stiffness of 5.4kN/mm (given by Ekspan in its bearing schedule), slippage of a bearing pad/shims can occur for thermal expansion/contraction of a guideway ladders only 2.37mm (see Figure 6 below). Given that thermal expansion/contraction is frequently greater than 2.5mm, the bearing design is flawed irrespective of the stiffness of the guideway superstructure because there is insufficient friction to retain the bearing pads in place even for an 'in-plane' guideway ladder undergoing thermal changes without trafficking of the guideway.

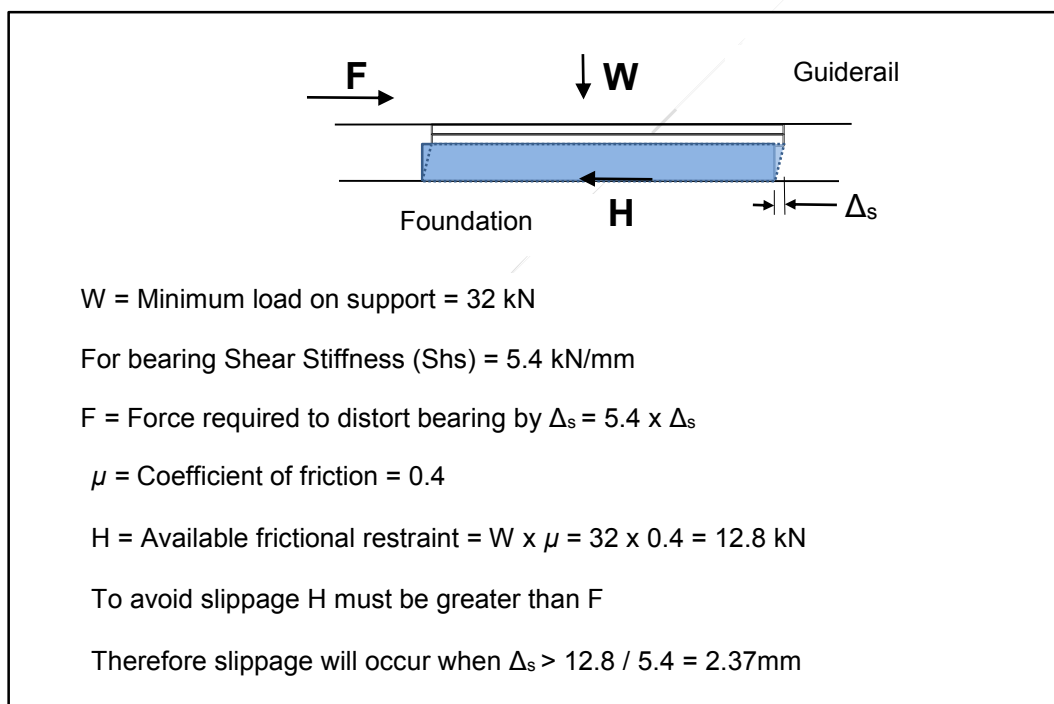


Figure 6. Calculation for Slippage of Bearing Pad and/or Shims.

39. Acceptance of inadequate friction for fixity of the bearings and shims in our opinion constituted a failure to act with the reasonable skill and care to be expected from an ordinarily competent and experienced design engineer.

WHY BEARINGS AND SHIMS ARE COMING OUT – INVESTIGATIONS

Ladder Stiffness and the Design

40. DDG Rev 6 states at Section 5.1:

“The beams will be modelled by a simple line beam analysis taking into account lateral load, induced vertical load and torsion. Grillage analysis of the overall system using Superstress will be used to check the torsional effects applied to the overall ‘ladder beam’ structure.”

We acknowledge that the Works Information does not prescribe beam or ladder stiffness, nor indeed the form of the design and the method of construction. However, in our view, the Works Information does require a stable design where the performances of the superstructure and the substructure meet the needs of each other. In this respect, the provisions of BS 5400 are relevant. Part 1 refers to the objective of BS 5400 as follows:

“The aim of BS 5400 is the achievement of acceptable levels of probability in order that the structure being designed will not become unfit for the use for which it is required, i.e. that it will not reach limit state during its design life. It specifies certain design requirements and a coherent set of partial safety factors for bridges in the UK), which combine to provide what is considered to be an acceptably low probability of attaining the limit states given in Clause 3.

It has been assumed in the drafting of this British Standard that the executions of its provisions will be entrusted to appropriately qualified and experienced people.”

Furthermore, Clause 3.4 of BS 5400 Part 1 states:

“The configuration of the structure and the interaction between the structural members should be such as to ensure a robust and stable design. The structure should be designed to support loads caused by normal function, but there should be a reasonable probability that it will not collapse or suffer disproportionate damage under the effects of misuse or accident.”

- 41. The design therefore needed to be stable and needed to work.
- 42. We have neither found nor been provided with the design calculations to see how or what torsional effects were determined. We understand that these have never been provided to Atkins despite its requests to BAMN.
- 43. DDG Rev 6 also states at Section 5.3:

“Concrete section properties will be calculated in accordance with BS 5400 part 4 clause 4.4.2.1(c), i.e. net transformed sections.”
- 44. BS 5400 Part 4, Clause 4.4.2.1 states:

“General. Elastic methods of analysis should be used to determine internal forces and deformations. The flexural stiffness constants (second moment of area) for sections of discrete members or unit widths of slab elements may be based on any of the following.

a) Concrete section. The entire member cross section, ignoring the presence of reinforcement.

b) Gross transformed section. The entire member cross section including the reinforcement, transformed on the basis of modular ratio.

c) Net transformed section. The area of the cross section which is in compression together with the tensile reinforcement, transformed on the basis of modular ratio.”

45. The stiffness characteristics of the ladder assemblies including the ‘rigidity’ of the spacer to guideway connection was in the control of the designer. The implications of assumed uncracked section (i.e. using the entire member cross section) versus gross transformed section versus net transformed section (BS5400 Part 4 Clause 4.4.2.1) should have been considered.
46. We believe it was acceptable for the analysis of the structure to be based on a ‘net transformed section’. However, we believe that, given the superstructure and the foundation design were interdependent, the sensitivity and implications of the alternative approaches in §44 above should have been examined. If it then proved necessary for the ‘actual’ stiffness, both longitudinally and laterally, to be confirmed, testing a guideway ladder should have been considered. Compatibility of actual superstructure stiffness with behaviour of the foundations would then have been achieved in the design.
47. The problem on the busway is that the ladder is actually behaving more stiffly both longitudinally and laterally than assumed by the designer. As a result, it cannot accommodate, without rocking or see-sawing, the design-specified differential movement between foundations or the design specified lateral tilt of any single foundation. The design is in our opinion flawed in this respect.

Investigation A – Stiffness Characterisation

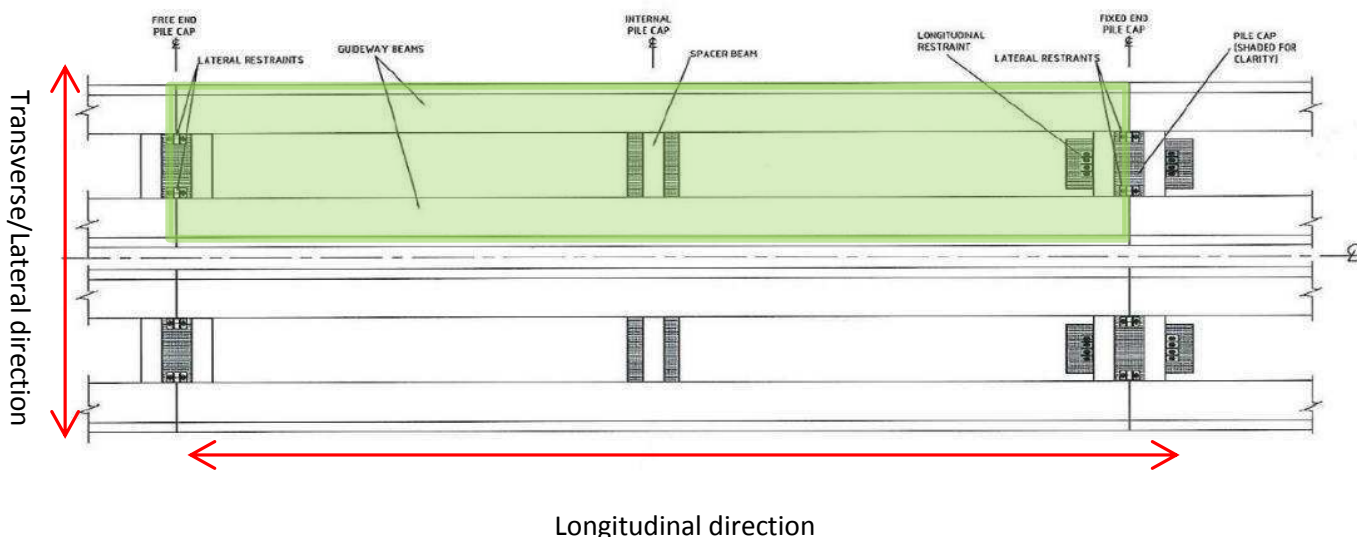


Figure 7. Indicative Plan on Guideway ‘Ladders’ (Single assembly shown highlighted green).

48. Analysis of the test results from Investigation A has indicated that the guideway ladders are behaving in a much more rigid (stiff) way than was thought previously, both longitudinally and transversely. Previously

we had assumed that the guiderails would be performing as a cracked concrete element, in response to settlement or heave or loadings on the guiderail e.g. bus loadings. This was on the basis of BAMN's design statement that the guiderails could deform by up to 25mm longitudinally and 10mm laterally to accommodate foundation settlement.

49. The surface cracking, visible at the top surface of many of the guideway beams, appeared to support this approach. We therefore previously adopted:
 - (i) flexural stiffness properties for the guiderails that reflects a cracked beam element. That is, areas of concrete assumed to be in tension were ignored and replaced with a factored value of the reinforcement area within this tension zone. We then calculated the flexural stiffness using the remaining area of concrete, assumed to be in compression, and this factored area of reinforcement together with the geometric relationship between them. This is referred to as a "*net transformed section*" in BS 5400-4:1990, clause 4.4.2.1 (c). The longitudinal stiffness now assessed from the measured data in the additional investigations indicates the guiderails approximate to the flexural characteristics of an uncracked element. Thus our current analyses utilise the full cross sectional area of the concrete, ignoring the reinforcement, to obtain a value for the flexural stiffness. This is referred to as a "*concrete section*" in BS 5400-4:1990, clause 4.4.2.1 (a).
 - (ii) a reduced modulus of elasticity⁴ to consider the difference in the effects of the long term (permanent) and short term (bus) load effects on the guideway. Table 3 in BS 5400-4: 1990, provides values of the modulus of elasticity (E_c) of concrete under short term loading for various concrete strengths. It is then normal to allow half the tabulated value when considering long term loading to take what engineers refer to as creep into consideration. In adopting this approach, we used a modulus of $\frac{3}{4}E_c$ (equivalent to an average value $[(E_c + \frac{1}{2}E_c)/2]$). The longitudinal stiffness now measured indicates the guiderails approximate more towards the elasticity characteristics for short term loading. Thus our current analyses utilise the full modulus of elasticity for the concrete.
50. The guideway ladder is also stiff in a transverse direction so that it acts like a stiff plate such that the guiderails do not act as two independent elements of the guideway ladder. This means that any tilting/twisting of the guideway ladder and/or its associated foundation in a transverse direction has a marked effect on the vertical reactions (loads) at bearings, and in particular end (corner) bearings. Differential movement between foundations also has an effect on end bearing reactions.
51. A summary of the test results from Investigation A is enclosed in Appendix B.

Effect of 'In-Tolerance' Guideway Ladder Construction

52. By 'in-tolerance' we mean that, the guideway is constructed in accordance with the contract, within the specified tolerances in the Works Information. The tolerances are given at Clauses 21 and 22:

⁴ Modulus of elasticity is defined as the ratio between a stress (i.e. force per unit area) that acts to deform the body and the corresponding fractional deformation (i.e. strain) caused by the stress.

“21. The design levels of the guideway running surface shall be calculated from the design vertical alignment, superelevation and crossfalls. For the level of any point on the constructed surface the absolute variation from the design level shall be ± 6 mm for each guideway.

22. The relative step height between the two running strips on a guideway, measured in the plane of superelevation perpendicular to the design horizontal alignment, at points equidistant from the guideway centreline shall not exceed 2mm as shown on figure 22, both at construction and at handback after 10 years.”

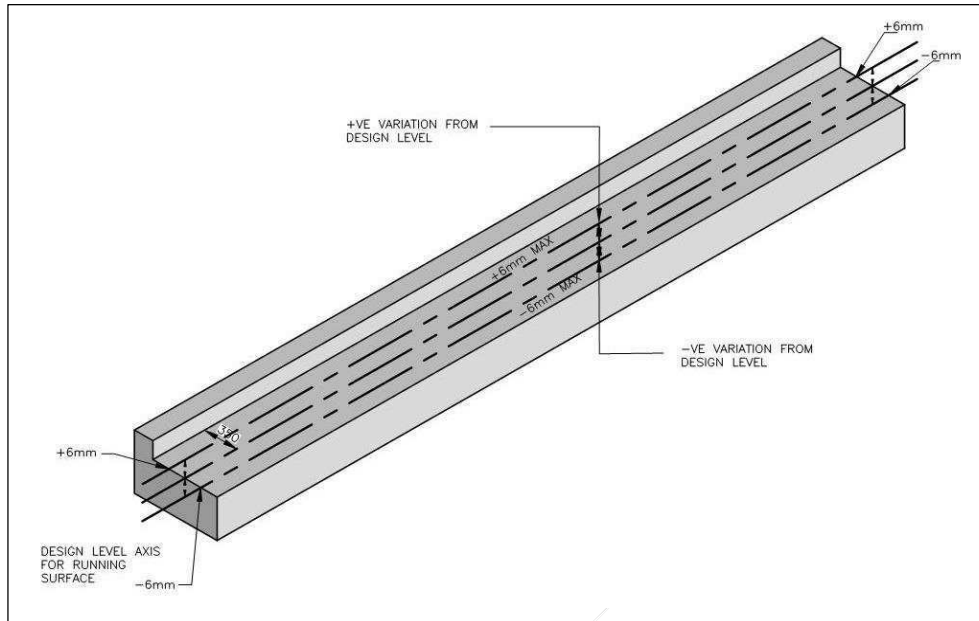


Figure 8. Permitted Variation from Design Level.

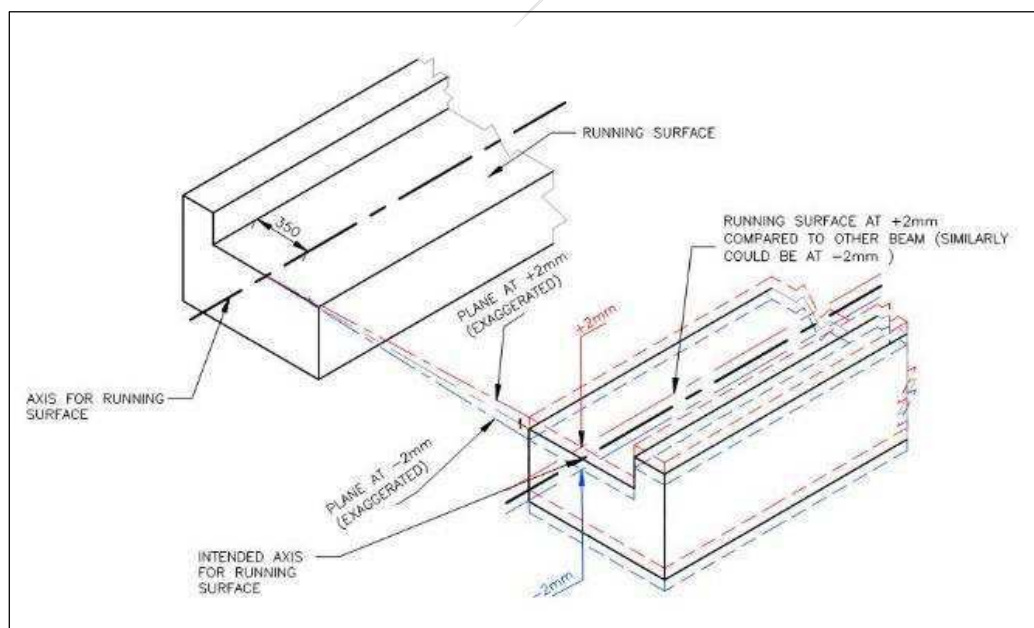


Figure 9. Permitted Variation in Level across Guiderails.

53. Clause 21 is illustrated at Figure 8 and Clause 22 is illustrated at Figure 9.
54. The Design Document for Guideway (DDG Rev 6) provides the same information on tolerances at Clause 4.2.8.
55. These permitted tolerances mean that the guideway can be constructed with non-straight beams and with a twist in the ladder assembly, i.e. the ladder is not then 'in-plane'.
56. We consider it possible, therefore, on the basis of permitted construction tolerances without even considering foundation movement, that shimming of the beams during construction could result in the guideway ladders being constructed out-of-plane with a slight twist built-in. The result of this could be, for construction in accordance with the contract, a reduced reaction at a bearing thereby increasing the risk of bearing and/or shim movement under smaller thermal expansion and contraction movements.
57. In the interpretative results from Investigation A enclosed in Appendix B, the figures in red denote negative numbers, i.e. downward displacements and reductions in load. As indicated above, a 2mm difference in level laterally (i.e. step height difference of running surfaces at points equidistant from guideway centre line) is permitted by the Works Information at paragraph 22 of Appendix 7/1. The results of the Investigation A tests show that a constructed 2mm difference in level laterally can reduce load on a bearing by around 15 kN (i.e. approximately 50%). A mere 4 to 5mm of lateral differential settlement is then sufficient to reduce bearing reactions to near zero, and thus frictional restraint also to near zero. This would mean that shims and/or bearings are then completely unrestrained and the guideway ladders are on the verge of rocking.
58. The Works Information (and the DDG Rev 6) requires a vertical tolerance from one side of the track running surface to the other of $\pm 2\text{mm}$ (i.e. laterally) and longitudinally to $\pm 6\text{mm}$ from the design alignment. On the basis of the findings detailed in §50 and §57 above, these tolerances alone can produce unacceptably low reactions at a corner of a guideway ladder because the guideway ladders are so stiff.
59. Further we have calculated that reactions can reduce to zero if diametrically opposite corners of a ladder are low by 2mm when the centre of the ladder is high by 6mm.
60. In essence, therefore, the guideway has not been designed to accommodate the permitted construction tolerances.

Effect of Foundation Movement

61. The Design Document for the Guideway (DDG) Rev 6 (which is not part of the Works Information) was part of the design prepared by BAMN and accepted by the Project Manager. Thus work not in accordance DDG rev 6, is a Defect. This document states at Clause 4.2.5.8 that the design of the guideway will allow for a maximum differential settlement of 25mm between adjacent supports in the longitudinal direction. It also states that the design of the guideway will allow for a maximum transverse differential settlement across foundation bases of 10mm and that the 10mm transverse differential settlement is not in addition to the 25mm longitudinal differential settlement.
62. For the guideway ladders in their present form, the guideway is behaving too stiffly to accommodate, without bearing pads and/or shims coming out or without rocking or see-sawing of the ladders, the longitudinal and

transverse differential settlement figures of 25mm and 10mm respectively stated in the design document DDG Rev 6.

63. Furthermore, the Maintenance Manual BAM137A/CGB/MM/09 Rev 6 states, *“The design allows for a maximum adjustment due to heave of 10mm. That is, the shims have been initially set at a thickness of at least 10mm.”* Up to 10mm of foundation heave was therefore supposed to be allowed for in the provision of the shims, as the design stipulated (Drg No CGB/GD/B/010Z) that the shims would be initially set at 10mm. These shims could be removed. The design further allowed for up to 35mm of shims to be placed and thus, if 10mm of shims had been installed, the maximum possible upward adjustment of the guideway to accommodate settlement of the foundation would be 25mm.
64. Our analysis shows that movements below the above figures (i.e. 25mm longitudinally and 10mm transversely) can give rise to rocking (side to side) or see-sawing (end to end) of the ladders. Such rocking and see-sawing has been observed in the operation of the guideway. Assessment of the results from Investigation A shows that the guideway ladder is so stiff transversely that even for an in-plane ladder a mere 1mm of differential settlement between end bearings (side to side) for a given support will cause a significant reduction (approximately 25%) in the load reaction at that bearing. We assess therefore that a transverse differential settlement of only 4mm is sufficient to reduce an end bearing reaction to approaching zero, meaning that shims and/or bearings are completely unrestrained and the guideway ladders are on the verge of rocking.
65. Similarly, again assuming there is no out-of-planeness of the constructed ladder the stiffness in the longitudinal direction is such that, on average, around 12mm settlement of four end bearings (i.e. at both ends of a guideway ladder) relative to centre bearings could cause reactions at each of the end bearings to approach zero as a bus travels over the length of the guideway. Consequently the longitudinal differential settlement between both ends of a guideway ladder relative to the central support of about 12mm would also mean that shims and/or bearings are completely unrestrained and the guideway ladders are on the verge of see-sawing.
66. It is evident therefore that differential movement between adjacent foundations and lateral tilting of foundations can severely further affect the vertical reaction at a support/bearing and reduction of this reaction will further increase the likelihood of shims and/or elastomeric pads coming out.
67. An unknown element is the effect of any future foundation movement on the guideway ladders. It is possible this would increase crack depths in the concrete thereby reducing the stiffness of the guideway. We have not considered this aspect.

Effect of Low Coefficient of Friction of Shims and Elastomeric Pads

Investigation G – Coefficient of Friction Tests on Shims and Elastomeric Pads

68. The design intent that friction is adequate to retain the bearing pads in place is given in Contract Specification 2100 and in DDG Rev 6 which refers to BS5400 Part 9 for the design of the bearings – see §33 above. The design intent is also described in the Maintenance Manual BAM137A/CGB/MM/09 Rev 6 at Section 3.4.1 which indicates that the bearing pads are not fixed to the guiderail or foundation and that

friction is adequate to prevent relative movement. Because the bearings and shims are moving and slipping out, we decided that it would be appropriate to ascertain the coefficient of friction between the various interfaces (shim to concrete, shim to shim, shim to bearing pad, and bearing pad to concrete). If the coefficients of friction are low then it would be reasonable to conclude that these are further exacerbating reasons for the shim and bearing pad displacements that have been observed.

69. The purpose therefore of Investigation G was to test the frictional resistance of shims and bearing pads. The results are summarized thus:

Total Shim Tests	Condition	No. Tests	Peak Coefficient of Friction		Res. Coefficient of Friction	
			Range	Ave.	Range	Ave.
			Individual Stage		Individual Stage	
New Shim v New Shim	Dry	3	0.44-0.64	0.55	0.30-0.38	0.33
Used Shim v Used Shim	Dry	3	0.26-0.45	0.36	0.15-0.28	0.22
Used Shim v Used Shim	Wet	3	0.34-0.51	0.40	0.21-0.31	0.26
Used Shim v Bearing	Dry	3	0.37-0.54	0.43	0.28-0.51	0.36
Used Shim v Bearing	Wet	3	0.32-0.41	0.36	0.27-0.44	0.34
Used Shim v Concrete Beam	Dry	3	0.43-0.53	0.48	0.20-0.34	0.27
Used Shim v Concrete Beam	Wet	3	0.40-0.60	0.46	0.19-0.39	0.28
Bearing v Concrete Pad	Dry	3	0.27-0.38	0.31	0.26-0.30	0.28
Bearing v Concrete Pad	Wet	3	0.27-0.37	0.32	0.25-0.34	0.29
			27			

Figure 10. Investigation G coefficient of friction test results.

70. Tests were also carried out on both original (used) and replacement (new) shim materials because we noted they were different in appearance. The tests showed that the used and new shim materials have different frictional characteristics. Our enquiries have indicated that they are of different manufacture. The results of the used shims are of greater relevance to shim stability since these constitute the majority of the constructed guideway.
71. There is an assumed requirement for the bearing pads to also have a coefficient of friction of 0.4 in Contract Specification 2100 (see footnote to the Bearing Schedule), though this was not referred to on the drawings. Commensurate with this, we have found no design requirement for the elastomeric pads to be fixed to the concrete foundations. We note, however, that Ekspan (the bearing pad manufacturer) had stated in its bearing schedule the need to fix the bearing pads to the foundations but this was not specified in the design of the guideway.
72. Investigation G has indicated that the coefficient of friction of the shims is variable. The used shim surfaces and bearing pads have coefficients of friction that vary substantially and many of these are less than 0.4. Minimum values for the coefficient of friction (peak coefficient of friction columns in Figure 10 above) of used shims vary from 0.26 to 0.37. Significantly, the coefficient of friction between elastomeric pads and concrete are generally less than shim to concrete and shim to shim i.e. there is less restraint to the bearing moving under a load than the shims. In our view, this in part explains why pads have often come out, leaving the shims behind – see Figure 11 below. There are several interfaces at a bearing (pad to concrete, pad to shim, shim to shim, shim to concrete). Consequently, whether pads or shims move out depends on the respective coefficient of friction at each interface.

73. Our analysis shows that even a coefficient of friction as high as 0.35 is significant in contributing to loss of bearings and/or shims and thus the recorded coefficients of friction show a significant contribution to the losses.



Figure 11. Bearing pad has 'walked out' from beneath the shims.

74. What is clear from Investigation G is that the risk of bearings and/or shims moving out is further increased because of lower coefficients of friction that are often less than 0.4.

Summary

75. The design is inadequate in the restraint of shims and elastomeric pads. Even for an 'in-plane' guideway ladder, the restraint is inadequate in resisting movement caused by thermal expansion and contraction of the guideway ladders. The risk of the shims and elastomeric pads coming out is further exacerbated by each of the following effects:
- (i) Permitted construction tolerances;
 - (ii) Foundation movement; and
 - (iii) Low coefficients of friction.
76. This is the fundamental defect in the design and construction of the Guideway. In our opinion, any remedial scheme needs to address the stability of shims and bearings.

FOUNDATION MOVEMENTS AND SHIM/BEARING PAD MOVEMENTS EVIDENCED BY INVESTIGATIONS B, C, D, F & J

Investigation B1 – Boroscope Bearing Surveys

77. Investigation B1 photographs show, in our judgement, that 11 bearings out of 56 (20%) exhibit shim movement relative to bearing pads between the photographs of January 2014 and December 2015. It is not possible to determine from the photographs whether there is ongoing movement of the pads. No shims or pads have become completely displaced, though one bearing shows shims displaced by an estimated 150mm. Appendix C summarises our interpretation of the shim movements relative to the bearing pads.

Investigation B2 – Level Surveys at Longstanton

78. Investigation B2 shows there is twist in some of the guideway ladders that may be linked to shim movement.
79. Our calculations using the foundation survey information indicates that 7 of the 14 foundation pad top surfaces are out of the horizontal plane by over 2mm the permitted tolerance for the overlying guiderail in DDG Rev 6.

Investigation C – Walkover Survey

80. Investigation C shows that some 3.9% of joints have vertical steps that exceed 2.0mm (which is greater than the permitted construction and handback tolerance of 1mm in DDG Rev 6). In our view vertical steps are the result of bearing/shim loss and/or possible tilting of foundations about a transverse axis.

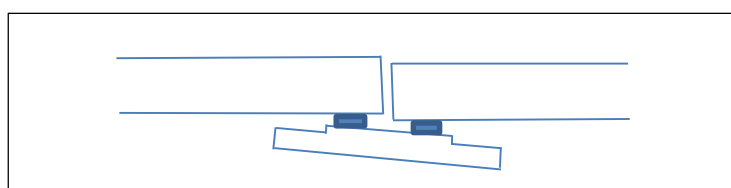


Figure 12. Diagram (exaggerated for clarity) showing how tilting of foundation can result in a step at a joint.

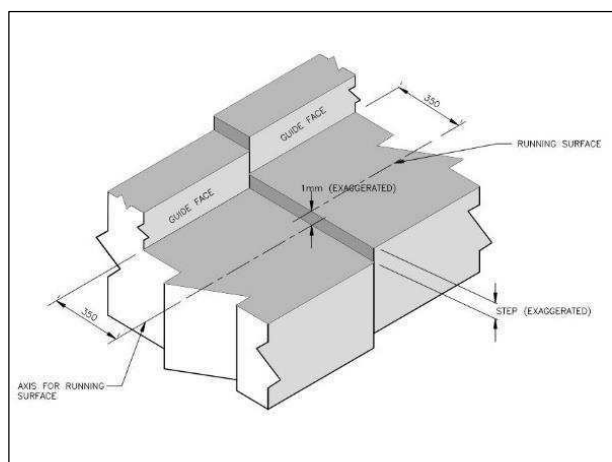


Figure 13. Vertical step tolerance at joint.

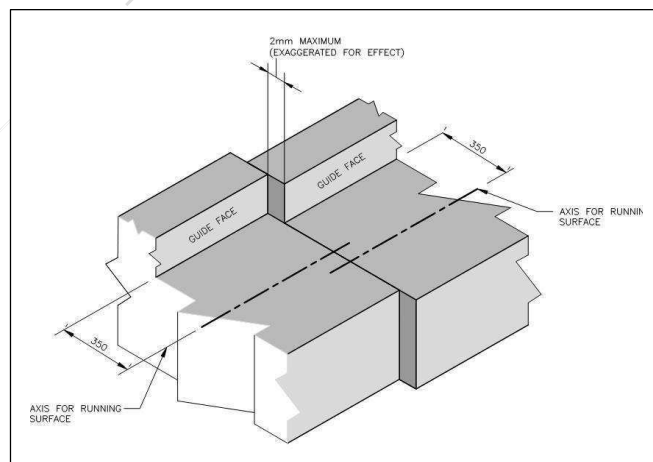


Figure 14. Horizontal step tolerance at guide face.

81. Investigation C records, inter alia, vertical and horizontal steps at joints. Figures 13 and 14 above show the limits of these steps required by the Works Information. We include in Appendix D, summaries prepared by Atkins of the extent of vertical and horizontal joint displacement before the investigations, surveyed from September to November 2015 and since Investigation C (based on a survey by Atkins on 16 May 2016). . Atkins has carried out an assessment of the Investigation results and compared these with the step dimensions in Defect Notice 287 and 288. This led Atkins to carry out a re-survey in May 2016 to resolve certain anomalies in the results. This showed that in some 13 instances the Defect Notice dimensions were incorrect and that in several locations the steps had increased in height. Atkins has reported (see letter to BAMN dated 26 July 2016 included in Appendix D) that there are 343 instances (i.e. 6.1%) of vertical steps at joints greater than 2mm.

Investigation D – Level Surveys at Various Locations (Beam Ends)

82. Investigation D shows that, where there are vertical steps, many of these are accompanied by out-of-plane⁵ guideway ladders. We believe it reasonable to conclude that in such situations, foundation movements, which can result in reduced bearing reactions, are contributing to the bearings and/or shims coming out.
83. Investigation D shows that 812 out of the 942 (about 86%) guideway ladders surveyed are out of plane by amounts that exceed the contractual tolerances and handback tolerances as stated in the Works Information, i.e. paragraphs 21 and 22 of Appendix 7/1 (see §81 above). These tolerances are also referred to in the DDG Rev 6. In addition, there are some 762 guideway ladders (about 81%) containing a twist or longitudinal out-of-planeness that in our opinion is unacceptable (based on reaction reduction discussed in §57 and §65 above) as regards the effect on bearing/shim stability, and has given, or is likely to give, rise to increased bearing/shim loss in the future. Furthermore, from our analysis of the stiffness of the guideway ladders, there are 547 guideway ladders (about 58%) with distortions greater than either 4mm laterally or 24mm (i.e. equivalent to 12mm at both ends) longitudinally. At these locations, there is, in our view, likely to be approaching zero load on the shims and bearing pad(s) resulting in negligible friction to retain them in place, and thereby exacerbating the risk of bearing pad and/or shim loss with thermal expansion/contraction movements ‘walking’ them out and/or the loading/unloading events from vehicle trafficking vibrating them out.
84. If the levels from Investigation D denoting out-of-plane guideway ladders were to be representative of the whole guideway (which we consider to be likely), this would suggest that at least one third of the bearings over 80% of the guideway could be at increased risk of coming out on the basis that two diametrically opposed bearings out of the six per ladder are likely to be affected. However, as indicated above at §32 to §36, even for an ‘in-plane’ guideway ladder, there is a risk of the end bearings coming out which would equate to two thirds of the guideway supports (bearing pads and/or shims).

Investigation F1 – Boroscope Bearing Surveys

85. Investigation F1 photographs are at several locations where vertical steps at joints have been recorded in the Investigation C survey. It appears that many of these are associated with where bearing pads and/or shims have come out.
86. Appendix E summarises the observations we have made from the 209 beam support boroscope survey photographs. We have taken the reasonable assumption (in the absence of a baseline survey at construction) that the bearings and shims were constructed by BAMN in a neat stack and not in a disorderly and irregular stack. Examination of the photographs show that in some locations shim and bearing movements are relative to each other whilst in other locations it appears that the bearings are moving out or have moved out entirely and sometimes with little apparent movement of the shims.

⁵ ‘Out-of-plane’ means that there is a change of gradient longitudinally and/or transversely along the length of the ladder.

Photograph observations	Number of supports
Shim thickness estimate > 35mm	9
Shim thickness estimate < 10mm	65
Shim or bearing movement visible	56

Table 1. Summary of Investigation F1 boroscope survey.

87. Table 2 summarises the number of occasions where the shim thicknesses are greater than and less than provided for by the accepted design. It also indicates the number of investigation F locations where significant shim and/or bearing movement is evident – in our view this comprises 27% of the bearings photographed.
88. Shim estimates greater than 35mm thickness relate to chainages 17226, 17781 and 17896 only.
89. Shim estimates less than 10mm thickness include 10 locations where shims were not visible and could relate to displaced bearing or shims.

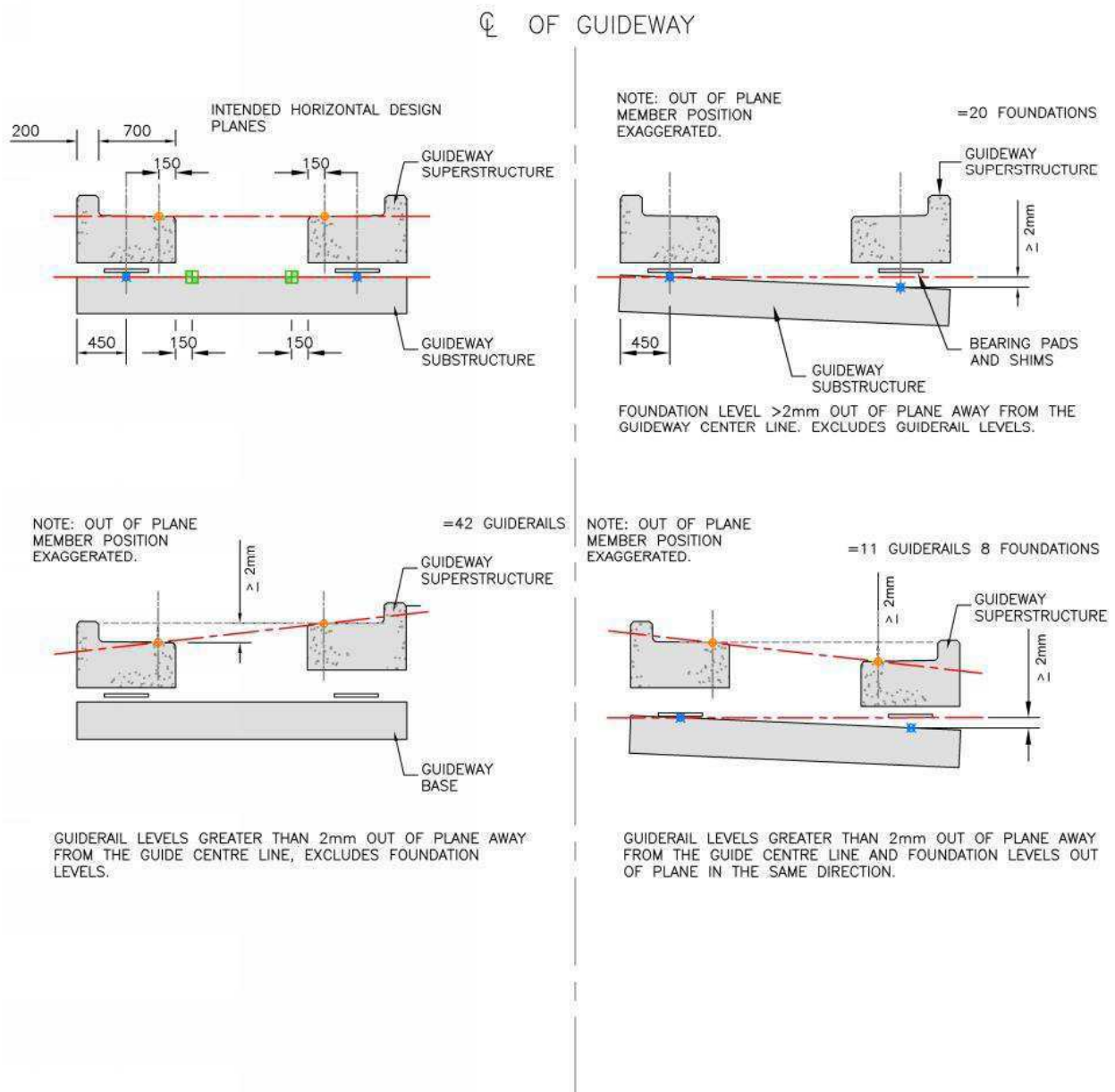
Investigation F2 – Level Surveys at Various Locations

90. Investigation F2 (level survey) was undertaken between 14 and 17 December 2015. Table 2 summarises the results of the level survey in terms foundations and guiderails of out of horizontal plane and relationships with shim or bearing displacement.

Observations	Number of support locations	Number of shims with significant displacements	Number of supports including foundation levels out of plane > 2mm in same direction
No. of guiderail levels > 2mm out of plane away from the guideway centreline	42	26	11
No. of guiderail levels > 2mm out of plane toward the guideway centreline	34	12	15
No. of foundation levels > 2mm out of plane below guiderail centres away from the guideway centreline	20	10	–
No. of foundation levels > 2mm out of plane below guiderail centres toward the guideway centreline	58	26	–

Table 2. Summary of Investigation F2 level survey.

91. Figure 15 below presents diagrams to explain the descriptions in Table 2 above.
92. Of the 26 supports where the guiderails and foundations are out of plane in the same direction with vertical differences of greater than 2mm, 10 of the supports are adjacent to each other on the same foundation which relates to movement of five foundations.



NOTES
TOWARDS THE GUIDEWAY CENTRE LINE IN THE OPPOSITE ORIENTATION TO THOSE SHOWN.

KEY:



GUIDERAIL SURVEY POINT



FOUNDATION SURVEY POINT



FOUNDATION EXTRAPOLATED ASSESSMENT POINT

CAPITA

Property and Infrastructure

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Capita Property and Infrastructure Ltd.

Figure 15. Diagrams to accompany Table 3.

93. Of the 56 bearing and shim displacements observed, 38 relate to the northern section and 18 relate to the southern section. On the northern section 29 are located where guiderails are more than 2mm out-of-plane. It appears that out-of-planeness contributes to bearing/shim loss but is not the only mechanism. Bearings/shims can displace and come out as a result of thermal expansion/contraction alone because there is insufficient friction to retain them in place even for 'in-plane' guideway ladders. We describe the mechanism(s) for this at §107 to §111 below.
94. A summary of Investigation F is enclosed in Appendix E, with a description of the photographed Defects including where shims and bearing pads have come out.

Investigation J – Foundation Level Monitoring at Various Locations

95. Investigation J was proposed by BAMN to identify vertical height changes over time due to changes in seasonal weather conditions. There have been a number of issues relating to the reliability of the datums installed by the survey contractor as a limited number have been shown to have moved relative to stable datums installed at Bridge Road Bridge. The survey contractor has provided ongoing revisions to the data supplied such that the information recorded within this advice note may not be the final agreed data set.
96. Capita proposed additional locations on the basis of those assessed with the potential to indicate relative movement related to tree influence on the underlying clay soils
97. A total of 1108 guiderail support level points relating to 93 end-of-guiderail and 91 mid-span chainages were selected to be monitored monthly. Based on the lateral out-of-planeness tolerances identified from Investigation A (§57), a change of 2mm was selected by us to estimate the number of bearings/shims locations at risk.
98. Table 4 and Table 5 below summarise the results of the monitoring.

	Total No. of adjacent guiderail support locations levelled	No. of levels with > 1mm out-of-planeness away from guideway centreline	No. of levels with > 1mm vertical out-of-planeness toward guideway centreline	Total No. of guiderail points levelled	No. of levels with > 1mm heave difference to previous month	No. of levels with > 1mm settlement difference to previous month	No. of levels with > 1mm heave difference to October 2015	No. of levels with > 1mm settlement difference to October 2015
Oct 2015	558	165	291	1116	N/A	N/A	N/A	N/A
Nov 2015	554	160	295	1108	32	154	32	154
Dec 2015	554	160	294	1108	61	157	33	298
Jan 2016	554	155	294	1108	104	84	49	377
Feb 2016	554	154	299	1108	100	161	55	479
Apr 2016*	554	164	295	1108	376	177	222	420
May 2016	554	157	299	1108	269	265	140	375
June 2016	554	158	298	1108	163	55	173	339
July 2016	554	156	295	1108	75	94	155	351
Aug 2016	554	161	290	1108	204	137	260	361

* We currently believe this to have been surveyed inconsistently and are awaiting a reply by the survey contractor

Table 4. Summary of Investigation J monthly level monitoring showing +/- 1mm vertical variations.

	Total No. of adjacent guiderail support locations levelled	No. of levels with > 2mm vertical out-of-planeness away from guideway	No. of levels with > 2mm vertical out-of-planeness toward guideway centreline	Total No. of guiderail points levelled	No. of levels with > 2mm heave difference to previous month	No. of levels with > 2mm settlement difference to previous month	No. of levels with > 2mm heave difference to October 2015	No. of levels with > 2mm settlement difference to October 2015
Oct 2015	558	117	248	1116	N/A	N/A	N/A	N/A
Nov 2015	554	116	242	1108	9	40	9	40
Dec 2015	554	112	244	1108	15	32	18	61
Jan 2016	554	110	246	1108	21	0	22	74
Feb 2016	554	108	245	1108	37	62	42	177
Apr 2016*	554	119	247	1108	202	66	74	252
May 2016	554	112	247	1108	130	144	70	172
Jun 2016	554	114	246	1108	32	16	90	169
July 2016	554	115	248	1108	25	19	86	196
Aug 2016	554	121	246	1108	99	79	119	173

* updated August 2016

Table 5. Summary of Investigation J monthly level monitoring showing +/- 2mm vertical variations.

99. There may still be some inconsistencies in the data set, relating to adjustments made as the surveyors when they changed to a new datum. This being reviewed by the survey contractor.
100. Defect correction works were reported to be carried out on displaced bearings and shims in January 2016 between chainages 17531 and 17586 on both guideways. The level surveys show an increase in level of the monitoring points on the guideway of between 0.5 and 10.4mm on the Cambridge-bound guideway but no such increase in the St. Ives-bound survey data. The result of Defect correction work is that 16 survey locations show an increase in level to the previous month's level greater than 1mm and 13 survey locations show an increase greater than 2mm.
101. The Investigation J data indicates that there is a significant number of vertical guiderail movements of greater than 1mm each month.

102. A significant number of guiderail ends that were levelled are potentially out of a horizontal plane (over 80% > 1mm and over 60% > 2mm).
103. Inspection of the guiderail surveys between October 2015 and June 2016 indicates that vertical difference between adjacent beams ends (out-of-planeness) has increased between beams by greater than 1mm at up to 92 survey locations.
104. The implications of monthly vertical displacements is that to keep the guideway in plane the guiderail supports would need to be maintained by adding or removing shims on a monthly basis. This is an unacceptable level of maintenance for a design condition particularly when one takes into account a requirement to avoid health and safety risks related to maintenance.

Conclusions from Investigation Evidence

105. The results of the investigations confirm to us that the contractual requirements and the design intent (see §33 & §34 above) have not been realised. Analysis of the investigation results confirm that there is insufficient friction to hold the bearings in place. This is primarily due to the lightweight form of construction that results in inadequate friction at the end bearings of each guideway ladder. The vertical load is far below that required by BS5400 Part 9.1. In addition, the inherent stiffness of the guideway ladders means that they have an inability to deform to accommodate the differential vertical movement (longitudinally and transversely) of the foundations which have occurred or might occur in future. This stiffness means that if there is any significant differential transverse vertical movement, even a mere 2mm, there is or will be a very substantial variation in load on the bearings. As friction is a function of load, where the load is substantially reduced there will be even less friction to prevent the bearings moving. The investigations have shown a substantial number of the guideway ladders were either constructed, or have moved due to the inadequately designed and built shallow foundations, such that the ladders are twisted and loads reduced on the bearings. Notwithstanding this, we have calculated that bearing pad and/or shim movement can occur due to thermal movement alone even on ladders that display no out-of-planeness (see §32 to §37 above), and the probable mechanism for how the bearings/shims can displace and come out is shown diagrammatically in Appendix F.
106. Investigation J suggests that there is a potential for between 21 and 274 interventions on a monthly basis on the monitored section to maintain 2mm changes as identified from the level survey. Table 6 basically suggests the number of potential monthly interventions due to movements in supports of 2mm. We would not consider this a reasonable design condition.

HOW BEARINGS AND SHIMS ARE COMING OUT

107. We have given consideration to probable mechanisms that lie behind the ‘walking out’ of bearings and/or shims. One such mechanism is illustrated in the diagrams in Appendix F. The principle illustrated is that cyclic thermal expansion and contraction of the guideway beams can cause a bearing pad (or shim) to move in one direction only because of a lip forming in the bearing pad gives rise to resistance that is additional to friction alone – see Figure 16 below.

FILENAME	CHAINAGE	PHOTO REF	DATE	DIRECTION	DISPLACEMENT
Investigation F	6723	1	14/12/2015	St Ives	



Figure 16. Uneven compression of Elastomeric Bearing Pad.

108. This results in walking of the bearings. We are aware of research in the USA (papers in Texas and Florida dated October 1995 and March 2007 respectively) that investigate the walking out of bridge bearings due to the bearings being ‘wedge shaped’ in cross section, thereby providing greater resistance in one direction (up slope) than in the other direction (down slope). This is similar in principle to the CGB case which can give rise to greater resistance in one direction than in the other direction. Furthermore, the CGB bearing pads can become slightly wedge-shaped for various reasons – for example non-uniform load being applied, foundations not being parallel to the running surface due to construction details and tolerances (e.g. foundation installed horizontally whilst the beam is installed at a gradient longitudinally), tilting of foundations, differential movement of foundations etc.

109. There is also advice available in the UK on the vulnerability of bearings to ‘walk’. The Network Rail Standard, NR/L3/CIV/140/100GN, “Model Clauses for Civil Engineering Works, Section 100, Bearings” published 5 June 2010 for example. Within the General section, at 100.1, this states:

“Generally, elastomeric bearings should not be glued in place as this will inhibit their maintenance and removal. On the other hand, the vulnerability of the bearings to ‘walk’ (by creeping or ratcheting) shall be considered: this susceptibility can be exacerbated where (a) the top and bottom contact surfaces are not parallel (hence, these surfaces should be parallel with the bedding material) and, (b) the shear stiffness of the bearing is high compared to the frictional forces. Installing stainless steel keep plates on the bearing shelf around the base of the bearing will prevent it from ‘walking’.”

110. In other instances, the displacement of the bearings/shims could be associated with rocking or vibration of the ladders resulting in the bearings being ‘bounced’ out, but we consider this to be a secondary mechanism.
111. There are yet further instances found during the investigations where lateral movement of pads has occurred. This may be caused by the effect of bearings becoming ‘wedge shaped’, through rotation / twisting of a guideway relative to the foundation, as referred to in the USA papers referred to in §107 above. An alternative cause may be differential settlement across a foundation where a tree might take out more water from the soil on the outside of the guideway than towards the centre resulting in increased settlement on the outside of the guideway.
112. Consequently, consideration has been be given to an appropriate remedial solution in relation to:
- (i) the foundations for limiting longitudinal and transverse differential movements, to restrict rocking or see-sawing of the guideway within the constraints of the original contractual design requirements;
 - (ii) the guideway ladder, in restraining the bearings/shims. This is necessary to prevent loss of bearing pads/shims.

LACK OF LATERAL RESTRAINT

Theory – Calculation of possible capacity

113. Prior to development of the investigation proposals, we carried out calculations for the capacity of the lateral restraint brackets based on the manufacturer's literature for the plastic bolt sockets cast into the foundation concrete.
114. We calculated the ultimate capacity of the lateral restraint brackets to be in the order of 15 kN, and it was on this basis that we proposed on-site testing of the brackets as this was below the required capacity, 50kN.

Investigation C – Walkover Survey

115. Investigation C has shown that some 11% of joints have horizontal steps (or displacements) in the guide face that exceed 2 mm (which is the permitted construction and handback tolerance).
116. We include in Appendix D, summaries prepared by Atkins of the extent of horizontal joint displacement before the additional investigations; these were surveyed from September to November 2015 and since Investigation C (based on a survey by Atkins at 16th May 2016).. Atkins has carried out an assessment of the Investigation results and compared these with the horizontal step dimensions in Defect Notice 288. This led Atkins to carry out a re-survey in May 2016 to resolve certain anomalies in the results. Atkins has reported (see letter to BAMN dated 26 July 2016 included in Appendix D) that there are 504 instances (i.e.9%) of horizontal steps at joints in excess of 2mm.

Investigation E - Resistance of Lateral Restraint Brackets to Slip

117. Paragraph 4.4.1.17 of the Works Information includes the requirement, *"The guide kerb and attachments shall be designed to resist without displacement or deformation a sideways force of 50 kN applied at the top of the kerb"*. Investigation E has demonstrated that all 8 lateral restraint brackets (which similarly need to resist the 50kN applied force without displacement) tested have a restraint capacity much lower than the 50 kN requirement. Enclosed in Appendix G are graphs of the load versus displacement for each of the 8 tests. The failure load can be ascertained by examining these graphs; the failure load is when displacement of the brackets occurs. Our interpretation of the approximate capacities is as follows and is based on when movement of the brackets is detected in the tests, for which we have taken 0.1mm as the threshold:

Test No.	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8
Estimated Failure Load	Inconclusive but less than 22 kN	4 kN	13 kN	10 kN	13 kN	8 kN	10 kN	9 kN

Table 7. Investigation E load capacity test interpretation.

118. BAM and the Design JV has suggested to us that WI 4.4.1.17 relates to displacement or deformation relative to the running surface. In our opinion, the clause is written so as to be generic, applying to all forms of construction. For the selected 'ladder construction', it effectively means that the guiderails themselves

must not move under a load of 50kN and therefore relates to the required strength of the restraint brackets and their fixings.

119. Our interpretation of the results is that the brackets have restraint capacity values of between 4kN and 13 kN with an average of 9.5 kN, very substantially below the required capacity. In our view this lack of required lateral restraint is responsible for the significant number of lateral steps. We believe the lateral loadings arise primarily from wind loading on the side of buses. In addition to wind, lurching of the buses due to uneven track levels could give rise to lateral forces on the guiderails.
120. We consider consequently that the horizontal steps or displacements are caused by inadequate lateral restraint.
121. We therefore conclude that any remedial scheme needs to address this inadequacy of lateral restraint.

LACK OF LONGITUDINAL RESTRAINT

Investigation C – Walkover Survey

122. Investigation C shows that the vast majority of the (so-called) fixed joints do not have abutting joints as designed. This means that the guideway is not properly restrained in the longitudinal direction. Where the joints are abutting, there have been instances of spalling, possibly due to rotation of the beams as a result of foundation movement:

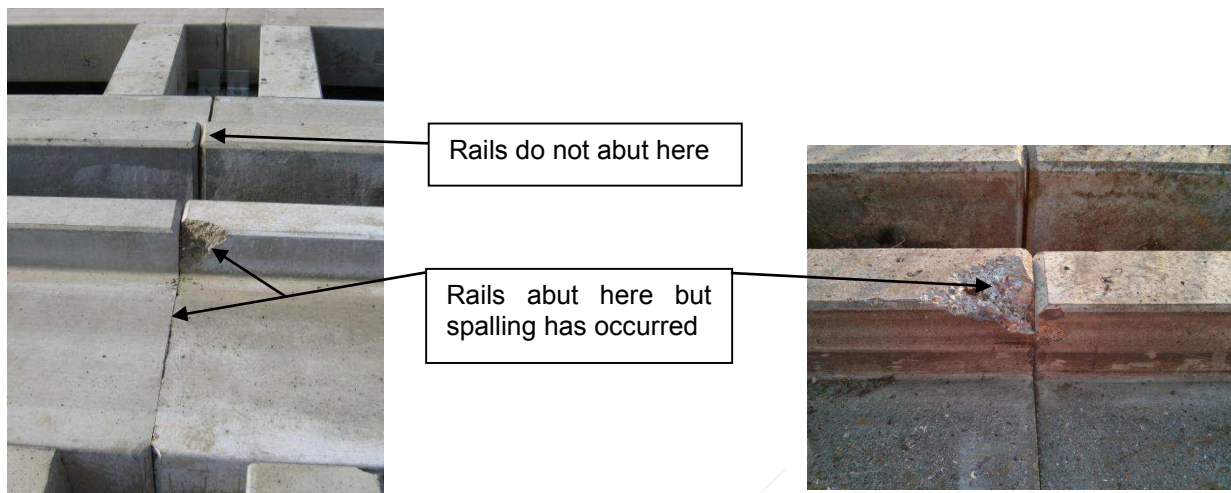


Figure 17. Photograph of guiderails not abutting, and spalling in locations where they do abut.

123. Notwithstanding the above, we have concerns about the stability of the guideway under the current operation of the guideway and normal bus traffic. Investigation C has also recorded many instances where the spacer beams have rotated which is also an indication of lack of longitudinal restraint. This indicates that the guideway ladders are not adequately restrained for normal busway operations (Investigation I was for an abnormal emergency braking circumstance using a fully-loaded double decker bus).



Figure 18. Photographs of rotated spacer beams. The marked sloping surfaces in the two photographs to the left were originally level with the guiderail as shown in the far right photograph.

124. Because the longitudinal restraint bracket rests against the spacer beam at the bottom (see photograph in Figure 18 above), there will be a rotating force (torque) applied to the spacer beam when horizontal forces arise where there is insufficient load on the bearings to resist these forces. This may be from thermal

movement alone. Given that there is insufficient friction at the bearings to resist these horizontal forces, the spacer beams are caused to rotate (torsion⁶) as can be seen in the photographs above.

Investigation I – Braking of a Fully Loaded Bus

125. Investigation I was carried out to measure longitudinal deformations under braking loads. The braking tests were initially carried out at two locations and gave unexpected results. Although there is a lack of longitudinal restraint by virtue of the gaps at the fixed ends, the guideway ladders in each case did not shift permanently under full braking of an ABS equipped, fully-loaded twin axle double decker bus from maximum speed (buses are limited to 56 mph on the guideway). The results indicate that the guideway ladders moved slightly under braking but only temporarily before reverting to their original position. We consider it is likely that there was sufficient frictional restraint caused by the loaded bus for the bearings/shims to resist sliding with the elastomeric bearings distorting under the longitudinal braking force and then reverting to the original state.
126. Braking tests were also carried out at a third location where foundations comprised screw piles and a reinforced concrete pile cap. The location chosen (chainage 12776 St Ives track) was where the ground conditions were assessed as the most adverse. Although movement was greater than with the pad foundations, transient movement recorded during full emergency braking was a maximum of about 1.4mm and residual movement was no more than around 0.1mm.
127. In the locations tested, the so-called fixed joints generally had open joints which meant that alternating guideway ladders were theoretically free to move (i.e. those ladders where the longitudinal restraint brackets were ahead of the moving bus). All the results indicate there was sufficient longitudinal restraint in the overall guideway ladder system for braking forces in those particular tests without relying on the brackets. Investigation I tested the worst traffic loading condition currently in operation on the busway, in terms of braking forces. However, it is possible in the future that triple action double decker buses could be used and these have a maximum weight of 24.4 tonnes compared with 18.0 tonnes for the twin axle bus used for Investigation I.
128. In our opinion, Investigation I did not comprehensively test the adequacy of the longitudinal restraint for several reasons:
 - (i) The tests were done with a fully loaded bus and the vertical load on the bearings was probably sufficient to make the bearings take the braking forces through friction and then in shear on the pads. The evidence is that during Investigation I the ladder moved and then moved back. We consider the ladder moved because of the gap at the fixed end;
 - (ii) Movement of the ladders is potentially possible under the travel of a lightly loaded bus, with less vertical load to generate friction to restrain the bearings and/or shims;

⁶ Torsion is the twisting deformation caused when an object is subjected to a rotating force (torque).

- (iii) the longitudinal brackets have been found to not always abut the spacer beams (see Figure 19 below) and, because of gaps between spacer beams and longitudinal restraint brackets, some of the longitudinal restraint brackets would not take a load;
- (iv) although the longitudinal brackets were not tested, we estimate their capacity to be no more than four times the capacity determined for the lateral brackets (i.e. say around 40kN) since they have four bolts rather than the two bolts, of which only one was primarily tested under Investigation E, that retain the lateral brackets;
- (v) the rotation of the spacer beam can occur if guideways abut at fixed ends and longitudinal restraint brackets abut the spacer beams;
- (vi) there may be friction from the backfilling etc. The adequacy of the longitudinal restraint should, however, ignore this contribution since it cannot be relied upon;
- (vii) the load is in fact being taken, in part, by the bearings, contrary to the design intent; and
- (viii) there would need to be factors of safety applied.



Figure 19. Photograph showing longitudinal bracket not abutting spacer beam.

129. In the light of these reasons, we recommend that either the remedial works are designed to accommodate the maximum loading conditions specified in the contract (using tied joints as referred to in our September 2014 report) or CCC agree to limit its operations to using only twin axle 18.0 tonne buses. For the purposes of this report, we have assumed the former.

NARROW GAPS AT FREE-END JOINTS

Investigation H – Temperature Related Movements

130. The design of joint widths appears to be based on the superstructure being in the open air rather than being buried, which is reasonable given that this is the approach of BS5400 and DMRB and test data for an alternative buried approach is not available. The results of Investigation H include monitoring during July 2016 in which high summer temperatures have been experienced. We have reviewed this data and found that since October 2015 (when movement readings at 15°C were possible), there has been expansion of the guiderails of about 7.5mm at Locations 1 and 2. Given that the design provides for an expansion gap at the free end joints of 10mm at 15°C, the monitoring suggests that the design is barely adequate as regards the provision for expansion of the guideway ladders.
131. The concern we had previously about reduced width of expansion joints (because there are gaps at most of the fixed ends) is therefore borne out given the commentary in §130 above. Given that we are proposing to introduce tied joints at the so-called fixed ends (see Drawing 4 in Appendix H) and to provide longitudinal restraint via the bearings, a 15mm total gap at 15°C at the free ends would be more appropriate in our opinion.
132. This investigation shows that day to night-time expansion/contraction cycle can be at least 1mm, frequently over 2.5mm, and has been recorded at as much as 4mm during July 2016. We consider that a typical range would be 2mm to 4mm. This would be accommodated by distortion of the elastomeric bearings except that in reality, there is insufficient reaction available to retain the bearings/shims in place when subjected to normal thermal expansion and contraction – see §37 below. Consequently, we propose to introduce bearing/shim restraint as shown on Drawings 1 to 3 in Appendix H.
133. Narrow free-end gaps, whilst being Defects in strict terms, are likely to be acceptable because gaps have arisen at so-called fixed ends which also provide for expansion. It is our view, on balance, that it is better to have fixed-end gaps than abutting joints because the latter gives rise to spalling in the surface of the guiderail upstands and in the running surface. This is because abutting guiderail ends restricts rotation caused by live load and/or differential foundation movement. Such spalling on the guiderail surface (see below) adversely affects ride quality.

SPALLING OF CONCRETE

134. We have commented on the spalling that has occurred at fixed joints recorded in Investigation C (see §122 above) which we believe results from an inability of the guiderails to freely rotate when subjected to foundation movement. We consider that this will adversely affect ride quality.

Investigation K – Survey of Spalling at Bottom of Guiderails (Behind Lateral Brackets)

135. Investigation K was carried out to assess concrete damage at the bottom of the joints in the guiderails at all locations where excavation had been carried out for Investigations B, E, F and I. There have been two investigations, one in February 2016 and one in August 2016. In the first survey, out of some 360 beam ends, 48 beam ends had ‘significant’ or ‘severe’ spalling (see §136 and §137 below for defining of these terms), which in our opinion are likely to have given rise to exposure of reinforcement and/or require repair – this constitutes 13.4%. In the second survey, out of 401 beam ends, 54 beam ends had significant or severe spalling – this constitutes 13.5% had ‘significant’ or ‘severe’ spalling. In addition to these, some 12% of beam ends were found to have slight spalling which we consider to be sufficiently small to not warrant repair.



Figure 20. Spalling behind lateral restraint bracket

136. ‘Significant’ damage means that some form of resin or anti-carbonation coating can be applied by jacking up the beams – this only applies where the reinforcement is not exposed and where there is some (albeit small) concrete cover to the steel. We have assessed that, of the 13.5% significant or severe damage, some 7% (i.e. 53 No. out of 761) is ‘significant’.
137. ‘Severe’ damage means that the reinforcement is likely to be exposed. The Contract Specification 1700 (i.e. Appendix 17/1) requires 50mm cover to the guideway beams for a Design Life of 40 years. If the cover to reinforcement is severely reduced and if reinforcement is likely to be exposed, it is liable to corrode and potentially reduce the life of the concrete guiderails. We therefore consider that such spalling constitutes a Defect and that repairs are needed to these areas which would involve lifting and inverting the guideway ladders. We have assessed that, of the 13.5% significant or severe damage, some 6.5% (i.e. 49 No. out of 761) is ‘severe’.

138. We believe that the cause of the spalling is the localised pressure exerted by the lateral restraint brackets on the concrete at the lower corner of the guiderails. In particular, if the bracket is not perfectly aligned against the concrete of the guiderail, there would be a point load contact which would then cause the spalling of the concrete.

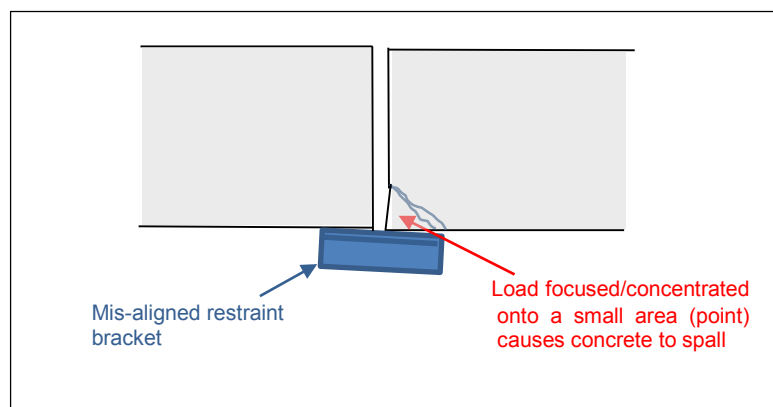


Figure 21. Diagram (Sectional Plan View) showing how spalling can occur

139. This has implications for the remainder of the guideway which has not been investigated. It is relevant that 13.4% of 360 surveyed beam ends in February and 13.5% of 401 surveyed beam ends in August 2016 (randomly selected) together constitute an almost identical picture and gives a good basis for assessing the overall extent of this spalling damage on a proportional basis, i.e. at around 13.4% of all beam ends over the entire guideway. For a total of 761 beam ends surveyed out of 11252 beam ends on the entire guideway (i.e. 6.75%), this means that there will currently be an estimated 1508 spalling repairs.
140. On the basis of the assessed split between significant and severe damage given in §136 and § 137 above), we estimate that, of the 1508 repairs, 782 will involve application of a resin or anti-carbonation coating by jacking up the beams and 726 will involve lifting and turning the guideway ladders over to effect a competent repair including cutting back behind the reinforcement and using a proprietary concrete repair system. We emphasise that these numbers are only estimates and actual quantities can only be determined by a physical inspection of every beam end.
141. The repair of the spalling beams comprises substantive work to repair the guiderails. Details are shown in Drawing 6 in Appendix H. We envisage that this will probably entail dis-assembly of the ladders and inverting the beams to access the damage and carry out a competent repair. We estimate that this could take 3 to 4 days per ladder and would mean closing the guideway.

CRACKING OVER CENTRAL SUPPORTS

142. Calculations based on revised guideway ladder stiffness assessed from Investigation A show that surface crack widths are excessive in the top of the guideway beam, through the central supported area, and in the bottom of the guideway beam through the mid spans between the end and central supports.
143. These cracks will require to be injected at the running surface with resin of appropriate viscosity or similar process. We consider that it will suffice to paint the underside/soffit of the guiderails with bitumen paint.

SUDDEN RAMPS/STEPS AT SLAB INTERFACES

144. A slab interface occurs at the junction of a guideway ladder with an in situ concrete slab. They are located at road crossings and burst throughs where the busway becomes unguided.
145. The levelling surveys carried out in Investigation D identified sudden ramps/steps at slab interfaces some of which are greater than 12mm. Some of these are associated with bearing/shim loss but we believe that others may be related to a construction defect with the in situ guiderail/slab being laid high and then the very end being ramped down to the joint as illustrated in the photograph below.



Figure 22. Step at joint between guiderail and insitu slab

146. We consider this to be a Defect as it is not in accordance with the Works Information in the following respects:
 - (i) Appendix 7/1, paragraph 14, Table 14.2 which permits no surface irregularities greater than 7mm; and
 - (ii) Appendix 7/1, paragraph 21 which requires the vertical alignment to be with $\pm 6\text{mm}$ of the design alignment.
147. Furthermore, paragraph 15 of Appendix 7/1 states, “*At junctions between the busway and public highway, the longitudinal and transverse surface regularity of the busway shall take precedence to ensure the ride quality of the busway is maintained.*” It is our view that the ride quality is not maintained at several slab interfaces.
148. We envisage correction of this Defect will be by scarifying or reconstructing the in-situ concrete slab.

THE NOTIFIED DEFECTS

149. The investigations have provided additional information as to the causes of the Defects, but the Defects remain Defects because either the construction is not in accordance with the Works Information or because it is now known it is not in accordance with the accepted design.
150. The following table summarises the Defects notified together with the implications derived from the investigations:

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DEFECT REFERENCE(S)	DEFECT DESCRIPTION	INVESTIGATION AND/OR APPRAISAL EVIDENCE	CONCLUSION(S)	POSSIBLE REMEDY
DEF 293	Lack of longitudinal restraint from shallow foundations.	<p>Investigation I, braking tests, showed that the guideway ladders do not permanently displace under full emergency braking, from 56 mph to a stop, of an ABS equipped, equivalent fully-loaded double decker bus.</p> <p>There is, however, uncertainty about performance of the guideway in the longer term and with the possibility of heavier buses.</p> <p>There is also evidence that there is a lack of longitudinal restraint such that the ladders are moving with gaps at most of the fixed ends.</p>	<p>Difference between simplistic theoretical assumptions and practice. Design assumptions exclude, for example:</p> <ol style="list-style-type: none"> factors of safety external constraint variables such as: <ul style="list-style-type: none"> soil/drainage media, friction against ladders soil/drainage media, passive pressures (restraint) against ladders and foundations overall ladder interaction, additional bearings contributing along length of the guideway 	<p>Provide longitudinal restraint theoretically capable of accommodating horizontal loads. This includes introducing 'tied joints' in place of the 'fixed' joints.</p>
DEF 290	Lack of longitudinal restraint from screw pile foundations.			
DEF 294 & 294a	Lack of longitudinal restraint from brackets.			
DEF 284	Lack of longitudinal restraint from consecutive free ends.			
DEF 268	Lack of longitudinal restraint from flawed fixed end design and/or construction.			

DEFECT REFERENCE(S)	DEFECT DESCRIPTION	INVESTIGATION AND/OR APPRAISAL EVIDENCE	CONCLUSION(S)	POSSIBLE REMEDY
DEF 168, 193, 196, 250 to 256, 260, 263, 264, 272, 276, 277, 279, 280, 281, 282 & 287A	Bearing displacement and loss of bearings/shims.	Investigations B and F indicate that shims and/or bearings can come out. Investigation G indicates that the interface friction between concrete, shim and bearing elements can be below the minimum value specified for shim to bearing interface requirements. Analysis shows that there is inadequate frictional resistance to adequately restrain the bearing – fails to comply with BS5400 Part 9.1.	Guideway ladder does not have have and/or retain sufficient minimum permanent loading to shims and bearings, particularly those at the ladder ends. This is exacerbated under transient imposed (bus) loading as well as full design vertical and/or transverse movement allowance. Interface friction between concrete, shim & bearing elements is insufficient in all circumstances, whether there is out-of-planeness in the guideway ladders or not. Displacement of a bearing can occur on a level ladder arrangement due solely to thermal expansion/contraction effects alone.	Fix (bond) bearings to foundations and restrain shims to prevent the shims and/or bearings from displacing / 'walking' and coming out.
DEF 288A	Lack of lateral restraint resulting in excessive lateral steps in upstand guide faces.	Investigation E indicates that the lateral restraint brackets are substantially below the required capacity.	Inadequate design.	Introduce new lateral restraint bracket.
DEF 279, 282 & 283	Foundation Type 1 to Type 2 interface.	Not investigated, but photographed.	The spacer block is unstable, being loosely laid on the precast foundation pad, and cannot transmit the loads adequately.	Bed the spacer block on epoxy mortar to bond it to the pad foundation.
DEF 009	Reduced gap widths at free end joints.	Investigation H suggests that gaps require to be at least 10mm	Preference is to ensure gaps at all so called fixed ends to allow for beam rotation and avoid spalling.	Ensure gap widths at free ends, nominally a minimum of 15mm at 15°C, during remedial works.

DEFECT REFERENCE(S)	DEFECT DESCRIPTION	INVESTIGATION AND/OR APPRAISAL EVIDENCE	CONCLUSION(S)	POSSIBLE REMEDY
DEF 289	Excessive crack widths in guideway beams (>0.25 mm).	Calculations based on revised stiffness assessed from Investigation A show that surface crack widths are excessive in the top of the guideway beam, through the central supported area, and in the bottom of the guideway beam through the mid spans between the end and central supports.	Inadequate design.	Sealing/injection of cracks in running surface with resin and sealing of soffit cracks with bitumen paint.
DEF 292	Non-functioning guideway drainage – not as designed.	Not reviewed by Investigations.	Not in accordance with the accepted design.	Correct drainage with adequate outfall.
DEF 295	Non-functioning guideway drainage – design does not accommodate soils of low permeability at Histon.	Not reviewed by Investigations.	Inadequate design.	Revise drainage arrangements.

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DEFECTS THAT COULD BE NOTIFIED

151. The following table summarises the Defects that could in our opinion be notified:

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NEW POTENTIAL DEFECT	DEFECT DESCRIPTION	INVESTIGATION EVIDENCE	CONCLUSION(S)	POSSIBLE REMEDY
DEF ____	Guideway ladder stiffness does not accommodate 25 mm vertical and 10 mm lateral differential movement stated in the DDG Rev 6 design document.	Investigation A analysis indicates that the guideway beams can only accept equivalent of about 12mm differential settlement (relative to central support) at both ends longitudinally and about 4mm laterally.	Inadequate design.	Reduce potential foundation movements foundations such as pad foundations compliant with NHBC depths. In addition, accept unpredictable amount of re- shimming when there is rocking or see-sawing of guideway ladders.
DEF ____	Spalling located behind restraint brackets.	Investigation K shows that about 6.75% of beam ends have significant or severe spalling.	Loading concentrated locally as a line load or point load at interface between the concrete guideway beams and steel lateral restraint brackets. The resulting stress concentration causes the concrete to locally break off.	Repair areas of significant and severe spalling with proprietary concrete repair material. Insert plastic shims between new lateral restraint bracket and guiderails to remove localised hard points.
DEF ____	Sudden ramps/steps in excess of 2 mm located at slab interfaces.	Investigation C & D demonstrates out-of-tolerance running surface/slab interface levels.	Not in accordance with the Works Information.	Scarify or reconstruct slab.

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REASONS WHY THE DEFECTS REQUIRE TO BE ADDRESSED

Guideway Ladder Defects (GUD)

152. Defects 268, 284, 287, 288, 290, 293, 294 & 294a, with the exception of drainage Defects DEF 292 & 295, have been collectively described as ‘The Grand Unified Defect’ or ‘GUD’ because the design is fundamentally flawed. Proposed remedial measures essentially deal with individual Defects collectively; a solution dealing with one Defect actually deals with several at the same time. The Defects relate primarily to displacement of bearing pads and shims and a lack of longitudinal restraint and lateral restraint. In our opinion, a general lack of longitudinal restraint (a Defect previously notified and having several causes) can only be accommodated with the present articulation/fixity arrangement if CCC decides that buses greater than 18.0 tonnes gross weight will not be used on the busway. In any event, it is necessary for the bearing pads and shims to be prevented from coming out.
153. Remedial measures and/or periodic reactive repairs are required because there are ongoing problems with the guideway and its operation. The fundamental problem is that bearings and shims are coming out resulting in steps in the guideway running surface. These steps require temporary speed restrictions to be imposed on the buses until the bearings/shims have been relocated. The bearing/shim relocation involves jacking up the guideway ladders, and generally has to be carried out at night time. We believe that thermal expansion/contraction is the main cause of shims and bearing pads being displaced due to a lack of the friction required to retain them in position. The mechanism by which thermal expansion/contraction can work the bearings/shims out is shown diagrammatically in Appendix B. Previous maintenance works and Investigation F1 have shown several significantly displaced shims and bearing pads, and that survey B1 indicates that some 20% of the shims have moved significantly relative to the bearing pads since January 2014. In addition, the investigations have revealed that the guideway ladders are much stiffer than was assumed in the design. The design document had indicated that the guideway could accommodate (post-construction) 25mm differential movement between foundations longitudinally and 10mm tilt across a foundation pad transversely. It is now evident that this is incorrect; only significantly lower foundation movements can be accommodated. Slight foundation movements can affect the bearing reactions considerably which in turn exacerbates the bearing and/or shim displacements due to thermal expansion and contraction. We also believe these lower movements have been frequently exceeded such that the ladders can rock or see-saw, possibly causing the shims and bearing pads to be vibrated/bounced out of position.
154. Lateral displacements are also occurring. These give rise to horizontal steps in the guiderail upstands with associated speed restrictions. Investigation E has shown that the lateral restraint brackets have maximum lateral restraint capacities severely below the design capacity of 50kN required by the Works Information. In addition to these issues, there are problems of cracking and spalling of concrete that require to be addressed and we believe this will have a significant impact on the time to carry out the remedial works. Guideway Ladders Remedial Works section commences at §171.

Drainage Defects

155. The drainage Defects in the Histon area have not as yet been addressed and should, in our view, be corrected as soon as possible because of their potential impact on the foundations, i.e. softening of clays and a risk of future further foundation movement.

Foundations – Defect 016 and 016a

156. The Works Information required BAMN to comply with the Highways Agency document BD74/00 Foundations and the associated British Standard BS 8006:1996 Foundations. Annex A of BD74/00 updates the British Standard. This requires the designer to use the National House Building Council ('NHBC') 2006 Standard Chapter 4.2 'Building near Trees', to determine the depth of foundation. This standard is based on extensive records of movement of house foundations in the vicinity of trees.
157. BAMN's February 2011 Geotechnical Report states it did not adopt the NHBC Standard; it chose to adopt for the shallow foundations it constructed what it called "50% NHBC", that is, the foundation depth was to be half way between the NHBC depth if no trees were present and the NHBC depth if there was a tree nearby. For example if the NHBC standard required a depth of a foundation to be 2 m due to a tree and 1 m if the tree was not present, BAMN would have used a depth of 1.5m. In our opinion, this design approach was flawed.
158. The design document had indicated that the guideway could accommodate 25mm differential movement between foundations longitudinally and 10mm tilt across a foundation pad transversely. In our September 2014 report we considered that on the basis of the design document statement on acceptable movements it was reasonable to accept foundation depths slightly shallower than NHBC depth foundations but not "50% NHBC" as the latter would potentially cause greater movements than the maximum 25mm between and 10mm across supports. Thus it still meant a substantial number of foundations were of inadequate depth. The foundation design as stated in BAMN's February 2011 Geotechnical Report did not comply with the Works Information and substantially raised the risk of settlement/heave affecting the foundations and the magnitude of the differential movement between foundations.
159. The results of the investigations have shown the guideway ladders to be significantly stiffer than expected and designed for. This means they can now only tolerate significantly lower foundation movements than previously indicated by BAMN in its design.
160. Given the low tolerances on movement that can be accommodated by the existing guideway ladders, in our opinion, a revised shallow foundation design alone would not correct the Defects as the differential settlement limits are below the value that we believe can be accommodated by the NHBC depth determination, and below that which can be reasonably estimated by calculation due to the number of variables (known and estimated) such as, soil type and properties, tree type and root locations and weather.
161. We consider that if the foundation Defects are left uncorrected, future movements will lead to substantially reduced loads on the some of the bearings under the guiderails that will lead to further displacement of bearing and/or shims.

Determination of extent of defective foundations requiring correction

162. Our previous estimation of the number of shallow foundations requiring remedial works given in the September 2014 report was based on the BAM Nuttall's DDG6 document differential settlement limits.

163. It is our view, from accumulated experience, that NHBC foundation depths generally allow up to 15mm of differential movement. Given the sensitivity of the guideway ladders, in their existing condition, limits on longitudinal and lateral differential settlements will be considerably lower than tolerated by the NHBC depth determinations. In our view without the guideway ladders being made more flexible all foundations on shrinkable ground will need to be piled to avoid potential excessive movement. This would be an expensive and highly disruptive activity.
164. We have thus, in assessing the extent of the foundations requiring correction, assumed that remedial works will be undertaken to the guideway ladders to allow them to tolerate movements in line with either the movements that we consider NHBC foundation depths would allow or the original design intent.
165. We have also since September 2014 undertaken detailed assessment of the ground conditions by examining the various ground investigations and modelling ground conditions for each foundation rather than utilise the zonation of the site as developed by BAMN. We have also further examined the existing tree locations to estimate the number of NHBC compliant and non-compliant foundations over the northern section based on the original centreline ground level. Our current estimate is that this would result in 821 non-compliant foundation locations (i.e. across both tracks) – there are 1795 shallow foundation locations in the northern section (excluding Orchard Park), so just under half have to be deepened. It is our current opinion, that this would be a worst case scenario. A best case scenario is not feasible to determine as the precise root development of existing trees, any management of the trees by third parties, the mortality rate and timing of such mortality and climatic changes are not predictable.
166. It should be noted that remediating the foundations to NHBC compliant depths will not resolve the problems relating to the superstructure. In our view settlement will by this means be limited to up to 15mm at one end only of a guideway ladder and whilst this is likely in our view to avoid much possible future see-sawing of the guideway ladders, the cracking over the central support is likely to increase (we have calculated this to be around 0.3mm), and would necessitate realignment of the guideway by re-shimming. In addition, lateral settlement could also still occur resulting in rocking of the guideway ladders and similarly necessitating realignment of the guideway by re-shimming.
167. If foundations are not remediated to NHBC compliant depths, then frequent development of see-sawing and rocking of the guideway ladders can be expected that will result in the need for more frequent re-adjustment of the guideway levels over the design life of the guideway – shims would have to be added or removed to accommodate seasonal upward and downward movement of the foundations.

TIME RELATED IMPACT OF NON-CORRECTION OF DEFECTS

Guideway Ladders

168. If Defects are not corrected by means of a remedial scheme, then it is highly likely that bearing/shim losses at joints will continue to manifest. In our view, to a large degree this will be associated with foundation movement but this is not always the case, and steps have formed at joints where the guideway ladder is not out-of-plane laterally by more than 1mm to 2mm (e.g. chainages 9673 to 9688 F and 41733 to 41748 T).⁷ We consider that the cause of the latter is the lack of friction to resist horizontal movements due to thermal expansion/contraction. The mechanism for this is shown in Appendix G.
169. We regret that we are unable to provide meaningful prediction of bearing/shim loss in the future if a remedial scheme is not implemented, though we believe it will be widespread. This unpredictability is because there are so many variables and unknowns relating to ground conditions, seasonal variations, tree root growth etc. and, most importantly, very little foundation movement (say 2mm transversely and longitudinally either 12mm differential settlement between guiderail ends relative to the central support, or 6mm heave at guiderail centre) is needed to severely affect bearing/shim stability, reducing reactions by around 50% at one or more supports. In addition, these will impact to varying degrees depending on what twist has already occurred (or was constructed) in the guideway ladders. We would expect, however, given the results of Investigation D, for at least one third of bearings (say two diagonally opposite placed end bearings per ladder) over 95% of the guideway to be affected over the life of the guideway. It could, however, be more than this given the effects of thermal expansion/contraction generally for which there is insufficient vertical load on the supports (even for an 'in-plane' ladder) to develop the required frictional resistance to keep the bearings/shims in place.

Guideway Foundations

170. Our concern is that with no remedial works, even minor localised changes to the groundwater regime may lead to differential foundation movements in excess of those referred to in §169 above. In our view, it is not possible to predict with sufficient reliability where and when that might happen except that it is reasonable to assume that maximum settlement movements are most likely to occur during or towards the end of a long hot summer where vegetation is close by.

⁷ T = towards Cambridge, F = from Cambridge

GUIDEWAY LADDER REMEDIAL WORKS

171. Unless a risk is taken on a reactive approach to ‘make do and mend’ when significant defects, steps etc. arise (which we are unable to quantify on account of the extremely sensitive behaviour of the ladder assemblies to ground movement and thermal effects), there are, in our view, three principal Options available in remedying the superstructure:

- (i) We have commented on the torsional rigidity of the existing ladders at §57 to §64 above. We initially considered the concept of pinning four of the six spacer/guidesail connections and this led to evaluation of this concept, especially in relation to the effect on transverse loading of 50kN applied to the ladders. Whilst the principle of changing the articulation is preferred in permitting the guideway superstructure to better accommodate transverse foundation movement, we have found from further analyses that this induces problems in accommodating the design 50kN lateral load which gives rise to unacceptable forces/moments being taken on a single spacer. We therefore do not propose to change the articulation but this may mean that small foundation movements may necessitate re-shimming by CCC on a possible regular basis to limit rocking of the ladders, though we are unable to quantify the frequency of this. This is due to the unknown level of distortion and tilt of the guideway ladders on construction and subsequent adjustment by BAMN and the inability to reliably predict with any precision such small movements. The small foundation movements that can lead to this issue cannot be definitively prevented by the construction of the foundations to full NHBC depth.

The option is therefore to alter the guideway ladder construction and design by providing restraint to bearings/shims and tying the fixed joints together with a gap to permit rotation and avoid spalling. This would, in allowing a minimum nominal load reaction at guidesail end supports of approaching zero, involve carrying out foundation works to limit differential movement between foundations longitudinally to 15mm settlement at ends of guideway ladders (or 9mm heave in centre of guideway ladders⁸). This approach will require all foundations to comply with the full NHBC depths. We recommend this approach, although some re-shimming to limit rocking of the guideway ladders is still likely to be required to an unpredictable extent. In addition to bearing/shim restraint would be provision of lateral restraint at all guidesail joints.

- (ii) Adopt a reactive approach, such that the remedial works outlined in Option (i) are only carried out when bearing and/or shim loss and/or rocking of guideway ladders occurs and/or lateral steps at joints becomes excessive such that emergency works are thereby required. This would have the disadvantage of CCC implementing an unplannable repair regime which could be expected to be required over most of the remaining 35 year life of the guideway. Given the required works to foundations as detailed in (ii) above, we believe that such an approach would incur an unknown, but inevitably unacceptable number and frequency of disruption events to bus operations.
- (iii) Adopt a reactive approach to the remediation of the guideway ladders outlined in Option (i) but undertake no remedial works to the foundations to minimise disruption to busway operations. Some foundations are anticipated to settle. Consequently, it can be expected that, even after carrying out

⁸ Except between chainages 17531 and 17901 continued heave in excess of 9 mm is not expected to occur.

guideway ladder remedial works, further foundation movement will occur that will necessitate jacking up of guiderail ladders and re-shimming to restore the guideway alignment and ride quality. If settlement of foundations occurs that leads to an excessive overall thickness shims (>35mm as defined at note 10 on Drg No. CGB/GD/B/010Z), it will be necessary to install a concrete pad below the elastomeric bearing pad.

Providing bearing/shim restraint

172. Our current thinking is, having supported the guideway ladder on jacks and removed the bearing/shims, to core a single hole (say 38mm diameter) down through the centre and ends of the guiderail at the centre of each bearing and down into the foundation, a process called dowelling. The shims and elastomeric pad would also be drilled (also 38mm diameter) at their centre. A 20mm (say) stainless steel bar would then be inserted down the hole in the guiderail, through the drilled holes in the replaced shims and bearing pad and into the foundation. The bar does not need to be fixed into the foundation concrete, since its purpose is merely to prevent the bearing pads and/or shims from creeping out. From an operational viewpoint, the bar could be threaded at the top so that the bar can be removed with a threaded socket key should this be necessary to remove or add shims at a later date due to foundation movement. A rubber disk is placed in the hole in the foundation pad would help to prevent the bar from rotating during the removal process. A neoprene plug would then be placed in the hole at the running surface to seal the surface and prevent detritus entering the hole. Details are shown in drawings, Drawings 1 to 3 in Appendix H.

Providing longitudinal restraint

173. Longitudinal restraint is provided by tying two guideway ladders together at the 'fixed' ends such that longitudinal forces are accommodated by 12 bearings. Details of the tied joints are shown on Drawing 4 in Appendix H.

Providing lateral restraint

174. Dowelling of the supports described in §172 above would only provide notional restraint laterally. To positively restrain the guideway ladders laterally and to prevent steps occurring in the guide faces, we recommend installing new restraint brackets bolted to the foundation concrete. Details are shown in Drawing 5 in Appendix H.

Consideration of Construction Trials

175. If a proactive approach is preferred (as opposed to reactive works), consideration could be given to carrying out works to a small section of guideway to test the practicality of construction method(s) as well as effectiveness of the design.

Addressing foundation movement (assuming foundation works are not implemented)

176. If pad foundations are not remedied to control the amount of settlement and/or heave, then significant movement can be expected in certain locations. Where settlement is excessive, re-shimming alone may not be sufficient and consideration may need to be given to inserting a concrete block beneath the bearing pad to limit excessive overall shim thickness, currently specified by BAMN's design as 35mm maximum.

Addressing other Defects

177. There will be other Defects that will require to be addressed such as spalling repairs, filling of cracks, and drainage works, irrespective of which remedial option is recommended.
178. Not carrying out spalling repairs at the running surfaces and guide faces would adversely impact on ride quality, and not carrying out repairs to the larger spalling areas identified in Investigation K behind the lateral restraint brackets is likely to adversely affect durability of the guideway in terms of corroding reinforcement. Suggested details/methodology for carrying out the repairs to the bottom of guiderails are shown in Drawing 6 in Appendix H. We estimate that such repairs (to severe spalling) will be required at some 726 beam ends with repairs to lesser significant spalling involving resin coating at some 782 beam ends.
179. As indicated above, Investigation K has revealed a problem of significant and severe spalling behind some 13.5% of the lateral restraint brackets investigated. We recommend that plastic shims or elastomeric pads are positioned between the new lateral restraint assemblies and the concrete guiderails to lessen the risk of point loads on the concrete and consequential spalling.
180. Drainage works are required because waterlogging/ponding is evident around the foundations in certain locations which adversely affects the performance of the foundations.
181. In the light of the foregoing, we consider that significant future expenditure on the guideway will be necessary for its continued satisfactory operation.

Inspection and maintenance

182. The current design does not allow for inspection of the condition of the restraint brackets and associated spalling or the condition of the bearings and shims without the removal of the shredded tyre drainage media. In our opinion, inspection chambers should be installed to allow the inspection of these components and should have been included within the original works given the inspection regime proposed by BAMN. Consideration should also be given to providing access to facilitate the addition or removal of shims.
183. An inspection regime should be implemented based on the adopted remedial option. In our opinion a walkover survey (checking and measuring steps in guiderails) and an annual condition survey (inspecting the restraint brackets for spalling and for bearing and shim movement) is necessary for all Options.
184. Where foundation movement is expected to result in the need for shims to be added or removed further remedial work will be necessary.

Engineering Methodology for Remedial Options

Restrain bearings and shims and provide longitudinal and lateral restraint, Option (i)

185. This approach will require all foundations to comply with the full NHBC depths and a long term inspection and maintenance regime to manage the risk that bearings and shims could still displace.
186. This option would therefore comprise;
- (i) Detailed design of remedial solution;
 - (ii) Progressive closure of the sections of guided busway to all users (night shift could be utilised for superstructure only works, full closure for foundation works and if spalling repairs are required to the bottom of guiderails);

- (iii) Excavation of the drainage layer;
- (iv) Remediate guideway ladders;
 - a. Raise guideway ladder;
 - b. Turn over or disassemble;
 - c. Repair spalling as in §141 above;
 - d. Reassemble and/or turn over;
- (v) Remediate foundation;
 - a. Removal of shallow foundation pads where not to NHBC depth;
 - b. Excavation to NHBC depth and backfill with selected granular fill;
 - c. Replacement of foundation pad;
- (vi) Lower guideway ladders onto bearings, and level with shims;
- (vii) Drill for shim restraint detail, place rubber disk in bottom of hole;
- (viii) Jack up, bond bearing pad to foundation and level with shims;
- (ix) Install shim restraint detail;
- (x) Install tied joint detail to provide longitudinal restraint;
- (xi) Install lateral restraint detail;
- (xii) Install inspection chambers and backfill drainage media; and
- (xiii) Allow for bi-annual walkover inspection and a low number of shimming interventions mainly relating to lateral foundation movement.

187. In our opinion, this option will incur disruption related to CGB closure to 821 chainage locations where foundation deepening is required, and the locations are given in Appendix G. We consider that this option minimises (but does not eliminate) the risk of rocking and/or see-sawing of guideway ladders from the effects of ground movements and traffic loading. The requirement to implement a regime of bi-annual inspection and maintenance would be in order to identify and install/remove shims to allow for seasonal heave/shrinkage of clays and longer term shrinkage of clays due to tree influence.

Reactive guideway bearings/shims restraint and lateral restraint with foundation remediation, Option (ii)

188. The required works to foundations will still be as detailed in (i) above but we believe that the remediation would incur significant disruption to bus operations whenever bearing and/or shim loss necessitates remedial action. In addition, there will be an unknown but probable substantial number and frequency of disruption events to bus operations in needing to carry out re-shimming of the guideway supports when subsequent rocking and/or see-sawing of guideway ladders occurs. This approach will require all foundations on shrinkable ground to comply with the full NHBC depths and a long term inspection and maintenance regime to manage and limit (but not eliminate) the risk of rocking and/or see-sawing of guideway ladders occurring. This option would therefore comprise;

- (i) Detailed design of remedial solution. Identify optimal scope of works (number of support locations) to be undertaken on identification of remedial requirements;
- (ii) Notification following planned inspection and condition survey or inspection and survey following guideway performance deterioration identification;
- (iii) Reactive closure of the sections of guided busway to all users (night shift could be utilised for guideway ladder only works, full closure for foundation works and if spalling repairs are required to the bottom of guiderails);
- (iv) Excavation of the drainage layer;
- (v) Remediate guideway ladder
 - a. Raise guideway ladder;
 - b. Repair spalling as detailed in §141 above;
- (vi) Concurrently remediate guideway foundation;
- (vii) Removal of shallow foundation pads where not to NHBC depth;
- (viii) Excavation to NHBC depth and backfill with selected granular fill;
- (ix) Replacement of foundation pad;
- (x) Drill for shim restraint detail, place rubber disk in bottom of hole;
- (xi) Jack up, bond bearing pad to foundation and level with shims;
- (xii) Install shim restraint detail;
- (xiii) Install tied joint detail to provide longitudinal restraint;
- (xiv) Install tied joint detail to provide longitudinal restraint;
- (xv) Install lateral restraint detail;
- (xvi) Install inspection chambers and backfill drainage media; and
- (xvii) Allow for quarterly walkover inspection and a low number of shimming interventions mainly relating to lateral foundation movement.

189. In our opinion, this option reduces the disruption related to CGB closure to 821 chainage locations where foundation deepening is required. There will be a requirement to implement an intensive regime of inspection and maintenance in order to identify remedial interventions and to install/remove shims for seasonal heave/shrinkage of clays and longer term shrinkage of clays due to tree influence.

Reactive guideway bearings/shims restraint, no foundation remediation, Option (iii)

190. We expect that, following guideway ladder remedial works, further foundation movement will probably occur necessitating repeat or multiple re-shimming to restore the guideway alignment and ride quality. Further significant settlement of foundations may occur with time, leading to an excessive overall thickness of shims requiring the installation of a fixed concrete (or structural) pad below the elastomeric bearing pad. This option would therefore comprise;

- (i) Detailed design of remedial solution. Identify optimal scope of works (number of locations) to be undertaken on identification of remedial requirements;
- (ii) Notification following planned inspection and condition survey or inspection and survey following guideway performance deterioration identification;
- (iii) Reactive closure of the sections of guided busway to all users (night shift could be utilised for guideway ladder only works, full closure if spalling repairs are required to the bottom of guiderails);
- (iv) Excavation of the drainage layer;
- (v) Remediate guideway ladder;
- (vi) Raise guideway ladder;
- (vii) Repair spalling as detailed in §141 above;
- (viii) Lower guideway ladders onto foundation;
- (ix) Drill for shim restraint detail, place rubber disk in bottom of hole;
- (x) Jack up, bond bearing pad to foundation and level with shims;
- (xi) Install shim restraint detail;
- (xii) Install tied joint detail to provide longitudinal restraint;
- (xiii) Install lateral restraint detail;
- (xiv) Install inspection chambers and backfill drainage media; and
- (xv) Allow for quarterly walkover inspection and a number of shimming interventions relating to foundations not to NHBC depth and/or lateral foundation movement.

191. In our opinion, this option will limit the disruption associated with CGB closure as no foundation deepening is required but there would be significant disruption partly because spalling repairs are required to the bottom of the guiderails. With no foundation remediation, there will be an increased risk of rocking and/or see-sawing of guideway ladders. Consequently, there will be a requirement to implement an intense regime of inspection and maintenance in order to identify remedial interventions and to install/remove shims for seasonal heave/shrinkage of clays and longer term shrinkage of clays due to tree influence.

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APPENDIX A – CURRICULUM VITAE

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CURRICULUM VITAE

Name: Anthony Cort
BSc(Eng), CEng, MICE, MCIHT
Nationality: British
Profession: Civil Engineer
Position in Firm: Associate Director



Key Expertise: Tony has acted as an expert witness/advisor on countless occasions since 1985, has written numerous reports, and has appeared in court to give evidence on several occasions. He has also been instructed several times as a Single Joint Expert.

He has experience in the design and construction of highways and bridges including acting as an expert associated with two guided busway projects. He has key expertise in investigation of curtain wall failures/corrosion, building refurbishments, concrete, steelwork (including repair & refurbishment), steel corrosion and protection, structures, watertight basements, piling, and ground engineering.

Tony has a special interest in carrying out drainage assessments (foul and surface water and highway drainage), and in reporting of drainage problems and appraisal of flooding cases.

Experienced in contract administration and contractual claims.

Tony has investigated and reported on drainage issues in relation to various highway and retail distribution centres and in relation to flexible and concrete pavements in the UK.

Education/ Professional: 1965: BSc(Eng) in Civil Engineering at Queen Mary College, University of London

Qualifications: 1970: Chartered Engineer
 1970: Member of Institution of Civil Engineers
 1981: Member of Chartered Institution of Highways and Transportation

Experience Record:

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June 2008 onwards

Associate Director

Recently provided expert advice and expert evidence on on a major UK highway dispute involving drainage, and also major pavement failures essentially related to drainage issues.

Has been engaged on a wide range of expert appointments including:

- As a party-appointed expert on guided busways involving alignment, drainage and structural issues;
- As a party-appointed expert on several road traffic collisions involving highway conditions/drainage;
- As a party-appointed expert on a hotel development with a structural failure of the basement
- As a party-appointed expert on a major UK highway dispute involving drainage;
- As a party-appointed expert on building defects in various buildings;
- As a party-appointed expert on a new housing development subject to flooding;

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- As a party-appointed expert on numerous cases involving flooding and drainage problems, including highway drainage design and maintenance.

Jacobs UK Ltd

2004 to 2008

Senior Consultant, Technical Director

Expert Witness including legal cases relating to drainage and flooding including road traffic collisions, contractual claims and advice, project design reviews and risk assessments, including advice to householders regarding tunnelling proposals beneath properties. Other cases included investigation of structural failures, scaffolding collapse, roofing failures, water supply disputes, flooding of buildings, drainage defects, highway drainage, concrete slab failures, piling failures, foundation failures, etc.

Acted both as single joint expert and expert to single party.

Design reviews within office including pile design, pile capacities, highway drainage, marine structures.

Contract administration including final accounts and assisting contractors with claims, including multi million high rise buildings. Expert Witness to contractors seeking redress from designers

Babbie Group Ltd

2002 to 2004

Technical Director

Moved to form part of a new team of expert witnesses to develop this new specialism within the group.

Cases involved highway assessments, highway drainage design defects, highway alignments, flooding disputes, drainage problems (foul and surface water), structural failures, scaffolding collapse, waterproofing to basements, disputes involving concrete, drainage, asbestos, cracking in roof cladding, and building and domestic property disputes. Problems also included corrosion of steel curtain walling/cladding and failure of concrete cladding units. Specific cases have included dealing with foul sewer issues with properties.

Maintained significant involvement in major civil engineering construction projects involving project management, claims assessments, project verification, design reviews, and advice to design teams.

Peer review of piling on multi-million ferry terminal extension together with management assessments associated with additional services. Surveys of properties including condition surveys and drainage surveys including condition of pipework and tanks.

1995 to 2002

Responsible for the structural engineering section in the Group's Cardiff Office including business development and bid submissions.

Extensively involved in contract administration and dispute resolution, and expert witness work. Director responsible for marine works (including refurbishment of a Victorian pier, marina sheet piling at Poole, and ferry terminal expansion at Pembroke Dock), involving extensive refurbishment/grit blasting of existing steelwork. Advice on steelwork corrosion and protection.

Advice/project monitor to Millennium Commission for various projects including Millennium Stadium Cardiff, Millennium Coastal Park Llanelli, and Marine Environment Centre, Swansea. Engineer to £45m Main Civil Works Contract for power station including valuation/certification and dispute resolution.

1990 to 1995

Director responsible for the management of Cardiff Office in addition to the structures team. Responsible for cost control, planning, submissions, marketing and client liaison.

Experience includes dealing with the preparation of various capital projects including building and civil engineering structures; marine projects; drainage schemes. Project Director for building structures (including building refurbishments and extensions), building and civil drainage and external works/pavings, sheet pile structures, foundation structures, piled foundations, reinforced concrete design, water retaining structures including building basements and lift shafts, foul sewer storage tunnel in Cardiff.

Structural inspections of buildings together with strengthening of cooling towers, bridge inspections, and condition surveys/refurbishment of marine structures including seaside piers and berthing facilities.

Design of marine structures and refurbishment of buildings including listed buildings. Identification and repair proposals for water ingress and damp problems in properties.

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Dobbie and Partners

1985 to 1990

Associate

Associate responsible for the development of Barry Old Harbour incorporating new lock, breakwater, land reclamation and infrastructure. Foundation strengthening schemes for cooling towers at Ratcliffe-on-Soar and Fiddlers Ferry Power stations.

Miscellaneous foul sewerage schemes including tunnels and pipe jack construction.

The position involved a management role within the office including staff administration, cost control, planning and promotion and liaison with clients. Specific responsibility for structures (civil and building) and for marketing.

Principal Engineer

1977 to 1985

Principal Engineer with responsibility for reports, design work and administration for site investigations, highways, sewerage and flood alleviation projects and building structures for United Kingdom and overseas, including design and construction administration of foundations, design and remedial works to foundations in varying ground conditions. Piled foundation design. Responsible for Kidwelly rail washery project including replacement and realignment of tracks, rail structures and coal washery buildings. Structures design in Middle East included reinforced concrete framed office blocks, mosques and large villas with swimming pools.

Design and build structures projects including supermarket and miscellaneous building structures.

Expert consultancy on hydrological and hydraulic studies, including analysis and regression of local data, rainfall run off estimations both in United Kingdom and Middle East.

Contract administration and claims assessment.

Computer development and usage within firm including development of design software packages for hydraulics, highways and structures. Participation in local computer seminars.

Overseas experience includes nine months in Africa and the Middle East in connection with structures, highways design and office management.

Senior Engineer

1974 to 1977

Team Leader for design of Furnace and Eglwys Fach Bypass including assistance at public inquiry.

Traffic engineering and preliminary reports for approach roads to Aberystwyth including traffic assignment and economic analysis.

Site investigations including general geotechnical appreciation and reporting for various aspects of engineering and housing projects.

Involvement in preparation of trunk foul sewer schemes and associated structures.

Rendel Palmer and Tritton

1969 to 1974

Engineer

Time spent on site as Section Engineer and Deputy Resident Engineer on the Cardiff-Merthyr A470 Trunk Road with experience on the construction of own bridge designs, railway bridge and working adjacent to and over rail tracks.

Design Engineer

1968 to 1969

Design Engineer with Rendel Palmer and Tritton, period spent in the design of bridge structures (including rail), retaining walls and vertical and horizontal alignments for road works.

Trainee Engineer

1965 to 1968

Trainee Engineer with Rendel Palmer and Tritton in bridge design section, becoming responsible for design of various bridge types on Cardiff - Merthyr A470 Trunk Road (7 No. bridges in total).

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expert witness and advisory services

Specialist experience in expert witness and advisory services:

Site supervision, contract administration and claims assessments (including delay evaluation) of major civil engineering contracts including piling and groundworks.

Extensive knowledge of CDM Regulations, reviewing of risk assessments, Planning Supervisor role on contracts. Holder of Manager CSCS card.

Examples of contract administration and claims assessment in last 15 years:

- £3m Foul sewer storage tunnel (lined segmental construction 3 metre diameter) in South Wales
- £10m Flood alleviation contracts on River Ebbw in South Wales
- £2.5m Refurbishment of pleasure pier
- £7m Ferry terminal extension at Pembroke Dock
- £48m main civil works for gas turbine power station

Overseas Experience:

Overseas experience includes nine months in Africa and the Middle East in connection with structures, highways design and contracts, and office management.

Worked extensively in Libya and Oman.

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expert witness and advisory services

CURRICULUM VITAE

Name: Andrew J Hallum
BSc(Hons), CEng, MICE, MStructE, ACI Arb
Nationality: British
Profession: Chartered engineer
Position in Firm: Associate Director



Key expertise:

Andrew is an experienced designer and design manager for both civil and structural projects. He graduated in 1986 and has since acquired expertise in the surveying, appraisal and repair of both recent and historic buildings and structures. He is a chartered civil and structural engineer and also an associate member of the chartered institute of arbitrators.

His knowledge includes masonry, concrete, timber, steel, wrought and cast iron. His broader and practical experience covers car parks, office blocks, schools, hospices and hospitals, housing, commercial, industrial, wastewater treatment projects and bridges. His design office experience, combined with periods on site, provide him an understanding of the need for sensible and practicable design solutions.

He is a past chairman (2004/2005) of the Institution of Structural Engineers Wales Branch, and is currently a serving committee member and the Wales regional group "Professional Review" coordinator.

Andrew now spends much of his time providing expert advice to clients.

Andrew's areas of expertise include:

- Building structures design, from inception to completion, across many construction market sectors.
- Structural surveys and inspections, forensic appraisals including back analysis, and reporting.
- Building conservation, restoration, renovation, refurbishment and remediation.

Qualifications:

- 1986: BSc(Hons) Building Engineering, University of Bath
- 1992: Chartered Engineer (CEng)
- 1992: Member of the Institution of Civil Engineers (MICE)
- 1993: Member of the Institution of Structural Engineers (MStructE)
- 2015: Associate Member of the Chartered Institute of Arbitrators (ACI Arb)

Publications and Awards:

- Structural Faults + Repair-99 – "Aberthaw Power Station: Repairs to Fire & Vibration Damaged Turbo Block", co-author.
- IStructE Branch Prize, 2000-2001, for the presentation "Plas Mawr, Conwy – The Conservation and Restoration of an Elizabethan Town House"
- The Structural Engineer (Volume 84, No 6, 21 March 2006) – "Our Role in Conservation"
- IStructE Clancy Prize, May 2007, for the paper "Our Role in Conservation"

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expert witness and advisory services

Expert Witness and Advisory Services, Project examples:

Cambridgeshire Guided Busway

Supported the instructed experts in investigating and preparing expert advice in a c. £100m dispute over alleged defects in, and delays to, this major infrastructure project. Advice related to findings from research and review of original documentation, including the design intent associated with pre-cast, reinforced concrete guideway beams. This included independent modelling and analysis, for comparative purposes against the original design and details. Subsequent support and assistance, in respect of advice for and attendance at investigations to better understand actual behaviour and "defects" of the guideway. This included additional computer modelling and analysis for comparison of results with the site investigation data collected. Assisted in the development of appropriate, indicative remedial works to rectify the problems and defects identified within the original design, detailing and/or construction.

Waste Management Services Site, South Wales

Appointed expert to inspect and advise upon the construction of a roller compacted, cement bound pavement on the site. The slab has to act as an impermeable barrier to effluent resulting from waste management activities carried out across its surface.

Medical Waste Management Centre, UK

Appointed expert to inspect and advise upon several issues at a medical waste management centre. Included fibre reinforced concrete external paving and internal concrete floor slabs.

Ground and Basement Car Park, Water Ingress Issues, Essex

Appointed expert to look at and advise upon water ingress into the basement of a reinforced concrete car park. Issues include the surfacing at ground level, joints between walls and slabs and cracking through the basement walls and ground floor car park deck.

Swimming Pool Frame, Midlands

Initially provided support to the appointed expert. Subsequently appointed as the expert to investigate excessive deflections to the roof structure over a swimming pool. The roof structure comprises glued laminated timber frames and steel trusses which in turn are supported off a mixture of reinforced concrete or steel framing.

Defective Ply Flooring, London

Appointed expert to carry out a brief site visit and inspect ply flooring boards. Provided initial advice on problems that may have arisen to plywood flooring as a result of "defects" included within the boarding as supplied and installed.

Berth Extension and Refurbishment, South Coast Port

Jointly instructed expert providing advice on alleged design defects. The advice related to potential shortcomings in the design and detailing to reinforced concrete elements. These included coping beams, transition slabs and pavement.

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expert witness and advisory services

Listed Building, Sussex

Drafted an advisory note, as the instructed expert, in respect of brickwork stability issues. This related to a refurbishment project, to bring about a change of use, to an existing Grade II listed building. During the works part of a wall collapsed and other areas of brickwork were identified as being unstable and/or unsafe. Reviewed the information made available and visited the site. Provided my opinion on the probable causes for the collapse and general instability.

High Rise Development, Dubai

Provided support and advice to the appointed expert for this high-rise, 60-storey, reinforced concrete (rc) building. The building structure comprises three blocks, with "bridge links" between two of these at various levels. Investigating:

- Structural behaviour for two of the steel bridging structures between the rc blocks.
- Interaction / interface between steel and concrete components, taking the effects of differential shrinkage and creep into consideration.

Hospital Site, Bury

Instructed to produce an expert's report on potential causes of water damage following refurbishment works. These related to plumbing works, undertaken as part of the refurbishment, within an existing secure hospital site. Following practical completion several leaks, from joints in the new pipe work, were discovered. I was required to consider whether there were any possible, pre-existent, alternative water and/or moisture sources that could have contributed to or caused the damage found, and subsequently rectified, to various parts of the building fabric.

Metro Link, Midlands

Assisted and advised the appointed expert. Looked into potential structural failure mechanisms for:

- Pre-cast, reinforced concrete, cover slabs
- Pre-cast concrete segment walls
- Concrete base

These related to the provision of new enlarged access shafts / chambers above the line of an existing sewer and along the line of a new metro link.

Midlands Shopping Centre Car Parks – Expansion Joint Defects and Leaks

Provided support to the appointed expert. This included advice in the production of drawings and details for the rectification of defective jointing in the upper decks of a multi-storey car park at a large midlands shopping complex. These defects were as a result of refurbishment works undertaken to the car park.



expert witness and advisory services

Flue Gas Desulphurisation (FGD) Seawater Conditioning at Power Station, South Wales

Assisted and supported the instructed expert in preparing expert advice concerning alleged defects to a very large, in-situ, reinforced concrete desulphurisation tank. Issues included design and construction of concrete mix and reinforcement, within a highly corrosive environment (sulphur dioxide), and remediation of cracks, together with some associated corrosion and loss of reinforcement, during a restricted operational window. Primarily based on site advising on the coordination and supervision of testing and investigations at the site. Also regular meeting attendances, together with the taking independent records of observations and operations whilst on site.

Reinforced Concrete Basement, London Hotel

Assisted the instructed expert in investigating and preparing expert advice in a dispute over defects to the appropriateness of remediation to a reinforced concrete basement. Independent review of the original calculations and design intent included modelling and analysis. This was for comparative purposes together with identifying potential failure mechanisms and/or shortcomings in the original design. Enabled an informed review of the design and details for remediation already undertaken.

Other projects:

Christchurch Hill Overbridge, Caerleon

This reinforced concrete bridge carries the B4236 over the M4 motorway. Carried out an assessment of the existing bridge structure. Determined its actual vehicle load carrying capacity, and ascertained whether a weight restriction needed to be applied.

Hyder Consulting – 1986 to 2000:

H M Prison, Cardiff - New Cell Block Extension

As an Engineer's Representative based full time on site oversaw the sub-structure and superstructure construction packages. The project provided a new five-storey reinforced concrete structure, accommodating cells for an additional two hundred inmates. Responsible for on-site monitoring and overcoming unforeseen problems, including any remedial measures as required.

Swansea WWTW, Sludge Digester Tank

Structural inspection, recording cracking to a reinforced concrete sludge digester tank following an "explosion". The tank had been designed as a pressure vessel and failure of a valve resulted in the vessel becoming sufficiently pressurised to blow off its pre-cast segmental lid. Carried out back analysis, to estimate the potential pressures involved and whether or not failure to any of the reinforcement would then have occurred. Subsequently developed remedial measures.

Plas Mawr, Conwy

Structural survey works, and subsequent conservation works, to this Grade I listed, Elizabethan 1st Town House. Involved detailed site investigations and measurement to enable "back analysis" of remaining timber sections. The project won the 1997 RICS award for building conservation.

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expert witness and advisory services

Aberthaw "B" Power Station, South Wales

Site Supervisor, on behalf of National Power, overseeing reinforced concrete repairs to fire damaged turbine block structure. The works were carried out under the New Engineering Contract, Document E: Cost Reimbursable Contract.

Aberthaw "A" Power Station, South Wales

Part of a team that undertook inspections, for cracking and other concrete defects. These were to many of the ageing, reinforced concrete structures which were both on land and out to sea. Several structures were no longer in use and/or operational, being parts of the redundant Aberthaw "A" Power Station.

Malthouse Road Overbridge, Cwmbran

This bridge, in excess of 100m in length and crossing a cutting of up to 12m in depth, was designed as a cast in-situ, reinforced concrete integral bridge. Undertook a Category 3, independent, design check for the structure.

Royal Close, Penarth

Assistance to the lead engineer. Assessment and development of concrete repairs, together with their specification, associated with the refurbishment of several council housing blocks. This also involved dialogue and meetings with specialist concrete repair contractors. Several site visits to witness and inspect the remedial works being undertaken.

Talbot Green By-pass, Rhondda Cynon Taf, South Wales

Seconded to Mid Glamorgan County Council, direct works department, as a site engineer. Had responsibilities for setting out of approximately a one mile section of the highway and associated structures. The structures included a new footbridge and widening to an existing reinforced concrete road bridge over the new highway. My work included the setting out and overseeing of some large reinforced concrete bases and abutments.

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expert witness and advisory services

CURRICULUM VITAE

Name: Robin Sanders
BSc(Hons), MSc/DIC, CEng, MIMMM, FIHT, FGS

Nationality: British

Profession: Geotechnical, Environmental and Waste Engineer

Position in Firm: Director



Key Expertise: Extensive experience as director on a wide range of geotechnical, geo-environmental, and waste projects, including the co-ordination of multi-disciplinary teams to achieve completion of commissions within target programmes and within budget.

Expert advisor to insurers and expert witness instructed by solicitors on matters involving infrastructure earthworks, tunnel, landfill, coastal and geotechnical engineering claims.

Education/ Professional: 1974: BSc (Hons) in Geology, Sir John Cass College, London
1979: MSc/DIC in Engineering Geology, Imperial College, London

Qualifications: 1975: Fellow of the Geological Society
1980: Member of the Chartered Institution of Highways and Transportation
1984: Member of the Institution of Materials, Minerals and Mining
1984: Chartered Engineer
1990: Fellow of the Chartered Institution of Highways and Transportation

Experience in Forensic Investigations and Expert Witness/Advisor Role:

Forty years experience in engineering geology and soil mechanics including a wide variety of forensic investigation into soil/structure failures and impending failures. Twenty five years experience as an expert witness/advisor including as an expert at adjudications and in the Technology and Construction Court.

Airport and Frontier Access Road Tunnel, Gibraltar

Expert witness in a dispute related to the termination of a contract for the construction of the project. Advice and evidence on the reliability of ground investigation information in weak siltstone/mudstone rock and thereby the foreseeability of encountering ground that could not be excavated with a clamshell grab during the construction of diaphragm walls forming the tunnel side and central support walls. Attendance at expert meetings. Expert evidence given in the Technology and Construction Court.

Ipswich Sewer Tunnel, Suffolk, UK

Examination of repeated failure of the construction of an access shaft and the failed remedial measures. Presentation of evidence at adjudication into failures.

DTSS Contract 6, Singapore

Geotechnical support to external expert witness appointed by Singapore contractor examining causation of a major roof collapse of tunnelling machine launch chamber at 45m depth. Reviewing expert reports produced by experts appointed by client body for arbitration and assisting in formulation of rebuttal report.

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expert witness and advisory services

Railway cut and cover tunnel, Hertfordshire, England

Expert adviser to construction contractor's insurers on a major collapse of the concrete pinned arch tunnel structure over a mainline railway being built to allow development of a superstore and car park over the railway. Advice reports and attendance at expert meeting.

Major 4 lane Highway, Hertfordshire, England

Expert advisor and witness with regard to the sudden development of substantial heave below the highway pavement with lime stabilised clays as the sub-base. Attendance at mediations, expert meeting and preparation of an expert witness report.

Cement Works, Vietnam

Geotechnical advisor for insurers into the review of the claimed slope failure of eighteen metre high earthworks on soft ground causing shearing of the piled foundations to the cement works buildings by lateral displacement. Expert advice report prepared into causation of the damage and the liability of various parties involved in the design and construction of the works.

Port workers dormitory complex and client guesthouse, Oman

Expert advisor and witness with regard to the severe heave damage to the whole complex. Attendance and Powerpoint presentation of issues at arbitration. Arbitration postponed due to counsel's sudden illness. Cross examination awaited.

Sinkhole on residential development, Hertfordshire, England

Expert advise on the cause of the sinkhole development, associated underground mining, planned remedial works and future residual risks.

Major DBFO Highway scheme, North East England

Geotechnical and geological advice to expert advising PII insurers on cause of almost immediate pavement failure on opening of the scheme.

Airport, Scotland

Expert advisor into repeated severe distortion and collapse of runway apron pavements caused by movement of material, within the underlying coastal reclamation earthworks built to extend the runway. Expert report for adjudication, attendance at adjudication hearing for cross examination.

Major Highway, Luton, England

Expert advice to CAR insurers on the stability of earthworks of a widened reinforced soil embankment.

Major DBFO Highway scheme, East of England

One of two expert advisors to CAR insurers on cause of premature pavement failures on the 8 lane highway.

Navigation Point, Castleford, England

Expert advice and report on gasworks waste contamination of a 1337 unit residential development site on alluvial soil adjacent to a major river, including expert meetings and giving expert evidence in the Technology and Construction Court.

Major Excavation, Dubai

Expert advisor and witness in a dispute under DIAC rules with respect to the assessment and foreseeability of rock conditions in a 60m deep earthworks excavation. Expert report prepared and expert meetings attended.

Anerley Road, Penge, London

Expert advisor and witness on a case involving unauthorised removal by a third party of a large lime tree adjacent to a recently extended Victorian property. Expert advice and expert reports prepared reviewing the

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heave behaviour of the ground and property due to the tree removal. Attendance at expert meetings. Expert evidence given in the Technology and Construction Court.

Distribution Centre, Dartford

Expert advisor into the design of specialist ground support for the road pavement following settlement of part of the road pavement. Expert report prepared and attendance at expert meetings.

Freeport, Grand Bahamas – Phase 1

Examination of the design of the pavement and hurricane tie down anchors for ship to shore cranes followed pavement failure and determination of karstic (voided limestone) nature of ground. Supervised the ground investigation to inspect foundations and test the founding strata to the tie down anchors for competency to resist hurricane induced forces. Advice given on remedial measures

Major Petrochemical Plant Extensions, UAE

Expert advice with respect to a dispute over the foreseeability of soft and unsuitable ground conditions during the development of the base platform for a 350Ha extension.

Major Transport Infrastructure Project, East of England

Expert advisor in a multi faceted dispute with regard to the design and construction of the project. Advice given on the susceptibility of just under 2,000 spread foundations to the effects of tree roots induced heave and subsidence over the design life of the project.

Raising and Reclamation of Extensive Sabkha Areas, UAE

Expert advisor to Korean contractor on an EPC contract to review whether existing raising and reclamation of extensive sabkha areas complied with the stated specification requirements.

Deodar Road, Putney, London, England

Expert advice and expert reports into the impending failure of a section of brick and concrete river wall due to extensive ground raising by riparian owners. Reports detailed the historical instability of the wall before ground raising and established ground raising had accelerated substantial lateral and vertical displacement of the river wall. Attendance at expert meetings.

Rammed Earth Walls, London, England

Expert advice and witness reports on the deficiencies in material selection and construction of load bearing unstabilised rammed earth walls constructed as the external walls to a children's nursery for expert determination. Attendance at expert meetings and meetings with expert determiner.

Coastal cliff stability, Fairlight, Sussex, England

Expert geotechnical advisor with coastal engineering colleagues on the limitations and assumptions in the government cost benefit assessment for protecting the rock cliff toe to halt its rapid retreat. Advised on the unreliability of historic retreat rates due to site geology. Presented case to public open meeting with DEFRA consultants giving opposing view. Coastal protection scheme subsequently implemented.

Development site, Great Yarmouth, England

Expert advisor on the failure of surface and foul water sewers due to ground movements on a large residential development on deep soft ground. Review of remedial design measures and advice on the approach to re-design of infrastructure. Expert report and attendance at mediations and expert meetings.

Commercial building, Scarborough, England

Expert advice and report on the failure of a sheet pile retaining wall to retain residential gardens on a major extension of a former museum on a steep valley in Scarborough. Attendance at mediation.

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A12 Capel St Mary, Suffolk, England – Crib Wall Failure

Geotechnical director for the evaluation of the failure mechanism and remedial measures for a major crib wall failure on a large Highways Agency project. The project included an extensive length of concrete crib walling to retain an existing road above a new slip road to the A12. Catastrophic failure of a 20-30m length occurred and investigations indicated extensive internal failure of the crib units. Reports were prepared highlighting causation was related to the weakness of the British Standard Code of Practice in the analysis of such structures. Research into world-wide design codes and papers on crib wall design.

Major Landfill Odour Incident, Essex, England

Expert report for the Environment Agency in contemplation of a criminal prosecution of a major commercial landfill operator under the 1990 Environmental Protection Act for extensive air pollution incidents over a period of many months. The report reviewed the operational management and landfilling practice of the site over its considerable lifetime and in particular in the period leading up to the pollution incidents at one of the United Kingdom's largest former co-disposal landfill.

Warehouse, Tilbury, Essex, England

Expert advisor in relation to severe differential settlement of warehouse floor surrounding pavements, punching failure of piles of former structures through the warehouse floor and effects on these issues on piled foundations to superstructure. Review of design competency, expert advice report on projected future settlement and defects that have, or will occur, with continued settlement including health and safety risks associated with failed gas protection measures. Advice on potential remedial measures.

Grimsby Fish Docks, Lincolnshire, England

Investigation and assessment of the effects of unexpected high settlements on the piles for a new fish market building constructed upon a reclaimed section of the existing dock basin.

Cobbolds Point, Felixstowe, Suffolk, England

Expert witness for catastrophic failure of privately owned timber piled seawall which collapsed into new coastal engineering works after storm. Work included review of design of remedial works and the production of expert advice and expert reports. Attendance at mediation.

Stanley Reservoir, Stafford, England

Investigation of a Victorian dam with a vertical toe masonry wall to evaluate the slope stability under static and quasi-dynamic (earthquake) loading. The dam overtopped in the 1930's and led to near collapse. No record drawing of its construction or remedial measures existed. An investigation of the dam, its masonry toe wall, slope stability and other analyses were undertaken to examine stability with a new spillway structure. Instrumentation examined the response of water levels in and under the dam to changes in reservoir level.

Coastal defence, North Norfolk, England

Expert advisor/witness on a case involving the slope failure of an earth revetment coastal defence structure as a result of wave action. Expert report prepared and attendance at expert meetings.

The Dip, Felixstowe, Suffolk, England

Geotechnical advisor into the catastrophic failure of 150m length of timber piled mass concrete seawall after a major storm. Investigation into the stability of 1.5km of remaining seawall and clay cliffs was undertaken. Reports revealed a history of sea wall failures due to both toe erosion and over-steep coastal cliffs.

Calvert Landfill Site, Buckinghamshire, England

Expert report and giving evidence including cross examination at Planning Inspectorate inquiry into the non determination by the Environment Agency of an application to retain an unlicensed composting facility on a completed landfill cell.

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expert witness and advisory services

Specialist Experience in Tunnelling:

Thirty years experience with extensive involvement in the design, supervision and/or interpretation of ground investigations for micro and large scale tunnels in soft ground and weak rock in the United Kingdom and the Far East.

Singapore MRT East West Line, Contracts 704, 705 and 708

Geotechnical evaluation of ground investigation information for the tender designs of the running tunnels on three contracts for the above project including assessment of the potential variation of design parameters from the client's defined parameters in the tender documents.

Singapore DTSS Tunnels

Preparation of preliminary geotechnical interpretative reports for contracts 1, 2, 3 and 4 tenders outlining the recommended tunnelling methods, rate of tunnelling, shaft and associated works recommended construction methods. Design of additional ground investigation and preparation of final geotechnical interpretative reports for the tunnels and shafts on contract 1, Changi Tunnel. Support geotechnical engineer to external expert witness on claim for unforeseen ground conditions on contract 6.

Jubilee Line Waterloo to London Bridge, London, UK

Geotechnical engineer involved in the interpretation of the ground investigation for the running tunnels directly beneath the Railtrack viaducts between Waterloo East and London Bridge to permit detailed assessment of the potential settlement induced by tunnelling and the design of the tunnel lining.

Crossrail – Farringdon Station, London, UK

Geotechnical engineer in the interpretation of the ground investigation for the running tunnels and a large deep service box excavation underneath the present London Underground station and adjacent buildings. The ground conditions showed substantial variation in the level of strata and ground water conditions indicative of a major geological unconformity. Additional investigation was designed to permit the evaluation of the effect of the unconformity on design of the tunnels.

Coldrife Lake Stream Diversion Tunnel, Northumberland, UK

Design and interpretation of the ground investigation for a 3m diameter stream diversion tunnel through faulted coal measures to provide a water supply to a new lake formed upon opencast backfill with inadequate surface water input.

Burnham on Sea Sewerage Scheme Phase 4C, Somerset, UK.

Project geotechnical engineer for the 1.2m pipejacked microtunnel required to pass diagonally beneath the town centre comprising Victorian buildings built upon thin dune sands over deep soft alluvium. Advanced techniques were utilised to examine deformation characteristics to evaluate potential ground losses and angular distortion induced on buildings by tunnelling. The investigation also examined means of minimising settlement when constructing shafts between properties. Assistance in the design and specification of ground improvement techniques at shafts, drive and reception shafts. Design and specification of the project's ground instrumentation.

Project Orwell, Ipswich, Suffolk, England

Geotechnical project manager for the desk study and design of investigation for 3 major storage tanks and shallow connecting tunnels for phase 1 of the project. Geotechnical director for the desk study, preliminary ground investigation and interpretation of the ground investigation for a 5.5km tunnel up to 55m deep crossing the residential and port area of Ipswich including 12 shafts. Ground conditions comprised weathered and solutioned chalk with infilled, vertically sided, buried channels and locally contaminated ground. Assistance on the NEC Storage Tanks contract in the assessment of variations in ground conditions arising from compensation events varying the line/level of the tanks and connecting tunnels.

Dartford Cable Tunnel, England

Design of geotechnical/geoenvironmental investigation for 3m diameter tunnel running under the River Thames including UXB investigations and geophysical investigations for solution cavities in chalk. Assistance to tunnelling contractors and client organisations on geotechnical aspects of claims for unexpected ground conditions.

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Specialist experience in infrastructure earthworks, slopes, pavements and foundations:

Forty years experience in site investigation, specification and design of earthworks, slopes and pavements foundations for major infrastructure projects in the United Kingdom, North and West Africa, Gulf region and South East Asia including contractual management or advice on investigation and construction contracts.

United Kingdom Highways

Engineering geologist and geotechnical project manager/director for earthworks, slopes and structural foundations advice including site and ground investigations, specification and design on over 20 major highway projects with a combined length in excess of 300km and construction value over £1bn. The investigations included a wide range of techniques, with trial pits and trenches up to 40m long and 7m deep in landslipped ground. The earthworks included design and specification of embankments over former landslips, old landfills, deep recent soft alluvium, made ground and around structures including Armco arch culverts. Cutting design and assessments included the evaluation of acceptability for reuse as natural or stabilised materials, mitigation of gas release in old landfills and stabilisation of existing landslips. Assistance with pavement design in providing input parameters for subgrade and assessment of potential unbound subbase materials. Foundation design included a wide range of piled, raft and spread foundations. Extensive design and reporting on the results of ground instrumentation into ground movements and piling induced vibrations for a wide variety of earthworks and structures undertaken and the preparation of detailed feedback reports on construction. Design included the use of innovative techniques included expanded polystyrene fill on five projects to reduce structural loads and accelerate construction together with preparation of research papers on its design, specification and construction. Investigation and design into widening of M1 Junction 6A-10 and alternative designs for Second Severn Crossing, Avon Approach Roads. Forensic investigation and reporting of a crib wall failure on the A12 Capel St Mary Bypass, Suffolk.

United Kingdom Railways

Geotechnical project director for the investigation and remedial design of existing earthwork slopes and structures for London Underground Limited, Railtrack, Network Rail and private companies. Detailed desk studies, investigation and remedial work outline design were prepared for fifteen sites on Northern, Central, District and Piccadilly lines including the emergency work remedial design for an embankment. Detailed design and design review for various embankment and cutting remedial works including the use of traditional and lime piles for Railtrack. Category 3 check of piled embankment on A120 Dovercourt Bypass and for the UK's first expanded polystyrene railway embankment replacing an existing structure over an infilled river channel. Design input on use of polystyrene fill for emergency rebuilding of a failed railway embankment in Ireland. Review of earthwork issues during the construction of a new rail link to Felixstowe Docks.

Other United Kingdom Earthworks

Design of earthworks and slopes for Thames Flood Bank Raising Contracts 14 and 26, investigation and earthworks design and/or assessment of the reclamation earthworks and slopes for port extensions at Grimsby, Felixstowe and Tilbury and general reclamation at Cattedown, Plymouth. Designs involved extensive use of ground improvement, staged construction and hydraulic filling. Design of earthworks and slopes on peat for the construction of oil interception facilities at BP Llandarcy.

Overseas Highways:

Libya

Geological/geotechnical mapping, ground investigations and earthworks design for new rural roads in coastal sabkha, inland mountain and wadi areas.

Oman

Earthworks design for new cross-country roads within major wadis. Including the design of rock cuttings, reinforced earth walls and the reuse of coarse wadi infill deposits as structural fill.

Nigeria

Ground investigations and earthworks design for new urban roads in Lagos, Nigeria including evaluation of potential imported construction materials.

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Specialist Experience in Ports and Harbours:

Over 25 years experience in geotechnical investigation, design and construction of new and improved port and harbour facilities. Contractual management of on onshore and offshore ground investigation contracts.

Port of Felixstowe, Suffolk, UK – Trinity 3 Terminal

Client's geotechnical advisor for 900m of new quay wall and container stacking facilities on marshland and estuarine mud flats overlying chalk. Geotechnical desk study, assessment and monitoring of construction tenderers' investigation for the works, review of tenderers' outline design proposals, contractor's detailed design proposals and assessment of monitoring data in relation to long term settlement criteria for the works.

Tilbury Riverside Extension, Essex, UK

Site investigation of the tidal flats and river bed for major reclamation to form a new deep water berth and container storage facility. Design advisor and checker for the geotechnical team on the design of the reclamation and monitoring works for the contractor, Amec. Assessment of reclamation monitoring and adviser to Amec on managing and controlling the sub-contractor works during reclamation.

Freeport, Grand Bahamas – Phase 1

Review of design and construction of quay wall, ship to shore crane rail foundations and hurricane tie down anchor blocks for ship to shore cranes after pavement defects in container stacking related to underlying karstic limestone.

Freeport, Grand Bahamas – Phase 2

Review of ground investigation on karstic limestone for the determination of design options for the stabilisation/infilling of karstic features underlying the container stacking areas, crane rail foundations, hurricane tie down anchor blocks including detailed risk assessment of these options and 'do nothing' option. Assessment of effects on quay wall piling and of the piling on the cross island tidal ground water movements.

Grimsby Fish Docks, Lincolnshire, UK

Desk study, ground investigation design, supervision and assessment for new fish quay within existing dock including reclamation of part of the existing dock basin. Geotechnical design of new facility, review of ongoing reclamation works and assessment of post construction settlements against predicted performance.

Port of Felixstowe, Suffolk, UK – Felixstowe South Reconfiguration

Detailed desk study, design and supervision of marine and land ground investigations for scheme to allow design by tendering contractors. Scheme includes 1500m of new deep water quay wall, realigned Harwich Haven navigation channel, reclamation of existing Landguard berths area, demolition of existing berth and other facilities including Victorian basin and chemical storage tank farm. Advice to client on reuse of dredgings and other geotechnical matters for planning inquiry and environmental assessment. Investigation and assessment of major localised anomaly in chalk associated with solutioning of the limestone.

Barry Harbour, Wales, UK

Desk study, design and supervision of marine ground investigation for conversion of harbour into major marina facility. Assessment of ground conditions on engineering requirements to reclaim nearshore beach areas, construction of tidal barrier and lock gate facilities and new buildings on reclaimed areas.

Port of Felixstowe, Suffolk, UK – Landguard Terminal

Site investigation of the pavement area for container stacking and handling equipment and determination of the causes of the pavement deficiencies. Geotechnical design related to remedial works and project management of the remedial works contract.

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Employment history

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May 2007 onwards

Director

Expert advisor/witness for CAR, PII and domestic insurance claims and contractual and technical disputes on construction and building projects in the UK, Europe and Middle East. Review of NEC3 and GCWorks contracts for London Development Agency and Her Majesty's Customs and Excise. Preparation of revised construction contract Benina Airport, Benghazi, Libya. Design reviewer for landfill cells at St Helier, Jersey.

Babtie Group and latterly Jacobs Babtie

1990 - April 2007

Divisional Director,

Director managing up to 200 staff with direct involvement in undertaking a variety of projects worldwide including site investigations, materials assessment, geotechnical design, forensic engineering studies, hydrogeology, mining, geotechnical risk assessment, environmental studies and waste engineering. Particular technical expertise includes ground investigations, earthworks and foundation engineering, slope stability, landfill design. Directed redevelopment of major USAF airbase to form a new village. Contract management on construction contracts in UK and Slovakia. Expert witness/advisor for litigation, insurance, planning appeal cases for structural movements and failures for construction projects including earth build structures, coastal defences and waste projects. Earthworks expertise includes investigation and design of new/remedial earthworks and slopes for highways, railways, tunnels, ports, cliffs and reclamation sites for housing and commercial development on soft ground. Projects include MRT and DTSS tunnels and shafts, Singapore, 2000Ha reclamation Jakarta, Indonesia, earth slopes for London Underground and Network Rail.

Dobbie and Partners

1974 - 1990

Junior Engineer to Associate Partner,

Projects in the UK, West Africa and Middle East including soft ground tunnels, dams, major highway earthworks, slopes and foundations, tidal and non tidal defences, reinforced embankments and ultra lightweight embankments, remedial works for slope and cliff failures, residential, industrial and heavy commercial foundation. Prepared research reports for TRL on A12 Great Yarmouth Western Bypass. Expert witness at arbitration with respect to drainage trench excavations in Norfolk.

Appointments:

East Anglian Branch, Institution of Highways and Transportation
Secretary

1986-1989

Institution of Civil Engineers Site Investigation Steering Group Working Panel Three – Procurement
Member

1991-1993

Committee C12 Earthworks Drainage & Subgrade Permanent International Association of Road
Congresses UK Member

1994-1996

Technical papers:

Co-author and author of seven technical papers including state of the art papers in polystyrene fill design and construction. Some specific papers are detailed below:-

Design of reinforced embankments for Great Yarmouth Bypass (with D Williams) Proc 11th Int.
Conference on Soil Mechanics and Foundation Engineering, San Francisco, USA pp 1811-1814

1985

Geotechnical investigation, design and construction on soft compressible soils. Sino-British
Highways and Urban Conference, Beijing, China pp 171-182

1986

Polystyrene as an ultra lightweight engineered fill. Engineered Fills, Newcastle, UK Thomas Telford
pp 281-301

1993

United Kingdom Design and Construction Experience with EPS, Tokyo, Japan. EPS Tokyo '96
EDO Japan pp 236-246

1996

APPENDIX B – INVESTIGATION A TABLES

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Investigation A, Stiffness Characterisation Summary of Approximate Permissible Foundation Movements to Maintain a Minimum 20kN Reaction at the End Bearings						
Location	Test	Represents	Average Load/mm reduction to end jacks [kN/mm]	$\delta_{\text{permissible}}$ to maintain 20kN reaction (Assuming 33kN reaction at start) from site tests [mm]	$\delta_{\text{permissible}}$ to maintain 20kN reaction (Assuming 33kN reaction at start) from Robot computer analysis model [mm]	Comment
2_1	Jacks 3 and 4 Raised in unison	Heave at middle foundation	3.0	4.3	2.0	Site test had no vehicle present. Computer model includes mass of bus. Site measured values should therefore be reduced (because of lower initial reactions at one end and the effects of movement being focussed at this end).
3	Jacks 3 and 4 Raised in unison		3.0	4.3		
3	Jacks 3 and 4 Raised in unison, repeat		2.3	5.7		
2_2	Jacks 1 and 2 raised, following lowering, in unison (gritter)	Settlement of end foundation	2.0	6.5	4.0	Guideway appears to be less stiff (some cracking) than that allowed for within computer model. Model has adopted the maximum code value of E_c (34kN/mm ²) for the 50N/mm ² concrete specified. Full uncracked I value also taken (8.7x10 ⁹ mm ⁴)
3	Jacks 1 and 2 raised, following lowering, in unison (gritter)		2.1	6.2		
2_1	End Jacks 1, 2, 5 and 6 Raised in turn	Transverse differential foundation settlement	7.1	1.8	0.8	Spacer beam connected to guideway beam with full fixity (no allowance for rotation to occur) in computer model. Some movement / rotation probably occurring in reality.
3	End Jacks 1, 2, 5 and 6 Raised in turn		5.8	2.2		
2_1	Central Jacks 3 and 4 Raised in turn	Heave / transverse differential foundation movement at middle foundation	7.0	1.9		Site values comparable with computer analyses for symmetrical heave.
3	Central Jacks 3 and 4 Raised in turn		5.4	2.4		

CGB, Investigation A, Location 2_1 - Displacements / Deflections (Symmetric, No gritter)																		
Comments	Actual Jack Displacements						Reactions (Jack Loads and Changes)						Differences from Datum					
	Jack 1	Jack 2	Jack 3	Jack 4	Jack 5	Jack 6												
	LLH20111	LLH200201	LLH20114	LLH201114 (To 01:00hrs) LLH201123 (From 01:00 hrs)	LLH20113	LH20115		Jack 1	Jack 2	Jack 3	Jack 4	Jack 5	Jack 6	Jack at which change is being considered	Differential displacement between loaded jack and opposite, adjacent jack when at ends or loaded jack when at centre.	Change in load on jack(s) being considered	Change in load per mm at jack being considered.	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[kN]	[kN]	[kN]	[kN]	[kN]	[kN]		[mm]	[kN]	[kN/mm]	
Strainstall advise jacks and sensors brought back down to 0mm. Used as datum.	0.00	0.00	0.00	0.00	0.00	0.00		31.5	17.2	97.0	89.4	15.9	52.4					
Jacks 1 & 2, raised towards 7.2mm	7.18	7.10	1.22	1.23	-0.31	-0.44	Recorded	41.5	27.8	81.6	73.4	18.5	55.4	Jack 1	7.18	10.0	1.4	Jack 1 with respect to Jack 1 and relative to Jack 1
							Change	10.0	10.6	-15.4	-16.0	2.6	3.0	Jack 2	7.10	10.6	1.5	Jack 2 with respect to Jack 2 and relative to Jack 2.
Jacks 3 & 4, raised towards 3.5mm	0.66	1.01	3.14	3.48	0.57	0.72	Recorded	24.1	10.0	114.0	116.2	12.6	39.7	Jack 1	-2.48	-7.4	3.0	Jack 1 with respect to Jack 3 and relative to Jack 3.
														Jack 2	-2.48	-7.2	2.9	Jack 2 with respect to Jack 4 and relative to Jack 4.
							Change	-7.4	-7.2	17.0	26.7	-3.3	-12.7	Jack 5	-2.57	-3.3	1.3	Jack 5 with respect to Jack 3 and relative to Jack 3.
														Jack 6	-2.76	-12.7	4.6	Jack 6 with respect to Jack 4 and relative to Jack 4.
Jacks 5 & 6, raised towards 17mm	-1.71	-2.21	1.96	0.86	17.08	15.53	Recorded	43.3	40.3	59.5	57.2	45.4	62.4	Jack 5	17.08	29.5	1.7	Jack 5 with respect to Jack 5 and relative to Jack 5.
							Change	11.8	23.1	-37.6	-32.2	29.5	10.0	Jack 6	15.53	10.0	0.6	Jack 6 with repsect to Jack 6 and relative to Jack 6.

CGB, Investigation A, Location 2_1 - Displacements / Deflections (Asymmetric, No gritter)																	
Comments	"Actual" Jack Displacements [mm]						Reactions						Differences from datum				
	Jack 1	Jack 2	Jack 3	Jack 4	Jack 5	Jack 6		Jack 1	Jack 2	Jack 3	Jack 4	Jack 5	Jack 6	Jack at which change is being considered.	Differential displacement between loaded jack and opposite, adjacent jack at ends or loaded jack when at centre.	Change in load at jack(s) being considered.	Change in load per mm at jack being considered.
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[kN]	[kN]	[kN]	[kN]	[kN]	[kN]		[mm]	[kN]	[kN/mm]
Used as datum	0.00	0.00	0.00	0.00	0.00	0.00	Datum	31.5	17.2	97.0	89.4	15.9	52.4				
Jack 1 raised to around +6.49mm.	6.49	4.62	1.32	0.87	0.11	-0.47	Recorded	60.6	1.4	68.4	99.1	19.7	55.9	Jack 2	-1.86	-15.8	8.5 Jack 2 with respect to Jack 1 and relative to Jack 1.
							Change	29.1	-15.8	-28.6	9.7	3.8	3.5				
Jack 2 raised to around +6.27mm.	3.36	6.27	0.27	1.98	0.19	0.64	Recorded	10.3	53.3	95.9	70.0	25.4	35.6	Jack 1	-2.91	-21.3	7.3 Jack 1 with respect to Jack 2 and relative to Jack 2.
							Change	-21.3	36.1	-1.1	-19.4	9.5	-16.9				
Jack 3 raised to around +6.66mm.	2.56	0.09	6.66	3.11	3.94	1.18	Recorded	6.2	25.8	150.6	83.1	1.5	47.2	Jack 1	-4.10	-25.4	6.2 Jack 1 with respect to Jack 3 and relative to Jack 3.
							Change	-25.4	8.6	53.6	-6.3	-14.4	-5.2				
Jack 4(b) raised to around +8.24mm.	1.65	5.57	3.21	8.24	1.38	3.50	Recorded	31.5	0.0	71.1	152.1	18.7	3.9	Jack 2	-2.67	-17.2	6.5 Jack 2 with respect to Jack 4 and relative to Jack 4.
							Change	0.0	-17.2	-25.9	62.6	2.8	-48.5				
Jack 5 raised to around +9.8mm.	-0.51	-1.30	1.49	0.62	9.80	5.21	Recorded	27.9	35.0	56.2	109.1	66.5	11.7	Jack 6	-4.59	-40.8	8.9 Jack 6 with respect to Jack 5 and relative to Jack 5.
							Change	-3.6	17.8	-40.8	19.7	50.6	-40.8				
Jack 6 raised to around +6.94mm.	-1.25	0.18	-0.18	1.74	3.73	6.94	Recorded	45.1	11.9	96.2	72.6	3.6	74.3	Jack 5	-3.21	-12.3	3.8 Jack 5 with respect to Jack 6 and relative to Jack 6.
							Change	13.6	-5.3	-0.8	-16.9	-12.3	21.9				

CGB, Investigation A, Location 2_2 - Displacements / Deflections (Symmetric, Static Gritter)																							
Comments	Actual Jack Displacements				Reactions (Jack Loads and Changes)												Differences from Datum						
	Jack 1	Jack 2	Jack 5	Jack 6 (NB These readings are suspect, Jack possibly at bottom of travel)	Jack-01			Jack-02			Jack-05			Jack-06			Jack at which change is being considered	Displacement at loaded jack.	Change in load on jack(s) being considered.	Change in load per mm at jack being considered.			
					LLH20115			LLH20113			LLH200201			LLH20114 (NB These readings are suspect, jack seems to reach bottom of travel)									
					Recorded	Change		Recorded	Change		Recorded	Change		Recorded	Change							Recorded	Change
					[mm]	[mm]	[mm]	[mm]	[Bar]	[kN]	[kN]	[Bar]	[kN]	[kN]	[Bar]	[kN]						[kN]	[Bar]
USED AS DATUM	0.00	0.00	0.00	0.00	79.27	21.94	0.00	160.92	41.03	0.00	142.58	39.44	0.00	109.58	29.46	0.00							
Gritter static / parked on guideway	0.33	0.30	-1.83	-1.54	68.24	18.89	-3.06	147.56	37.69	-3.33	217.63	60.28	20.83	167.71	45.14	15.68							
Symmetric Jacks 1 & 2 lowered towards -8.0mm NB These results are suspect. Both Jacks 1 and 2 may have "bottomed out".	-6.26	-7.79	-1.38	-1.36	-0.28	0.00	-21.94	-0.28	0.00	-41.03	192.25	53.33	13.89	165.47	44.59	15.14	Jack 1	-6.26	-21.94	3.51	Jack 1 with respect to Jack 1 and relative to Jack 1.		
																	Jack 2	-7.79	-41.03	5.27	Jack 2 with respect to Jack 2 and relative to Jack 2.		
Symmetric Jacks 1 & 2 lowered towards -5.0mm	-4.66	-4.90	-1.53	-1.44	48.80	13.33	-8.61	118.11	30.26	-10.77	201.46	55.83	16.39	165.46	44.59	15.14	Jack 1	-4.66	-8.61	1.85	Jack 1 with respect to Jack 1 and relative to Jack 1.		
																	Jack 2	-4.90	-10.77	2.20	Jack 2 with respect to Jack 2 and relative to Jack 2.		
Symmetric Jacks 1 & 2 raised towards +3.75mm	3.59	3.42	-2.02	-1.59	95.02	26.39	4.44	305.32	79.73	38.70	224.20	62.22	22.78	166.14	44.86	15.41	Jack 1	3.59	4.44	1.24	Jack 1 with respect to Jack 1 and relative to Jack 1.		
																	Jack 2	3.42	38.70	11.31	Jack 2 with respect to Jack 2 and relative to Jack 2.		
Symmetric Jacks 1 & 2 raised towards +8.0mm	6.96	6.76	-2.31	-1.67	118.09	32.78	10.83	271.00	70.54	29.51	234.65	65.00	25.56	165.64	44.59	15.14	Jack 1	6.96	10.83	1.56	Jack 1 with respect to Jack 1 and relative to Jack 1.		
																	Jack 2	6.76	29.51	4.37	Jack 2 with respect to Jack 2 and relative to Jack 2.		

CGB, Investigation A, Location 3 - Displacements / Deflections (Symmetric, Gritter present)																		
Comments	Actual Jack Displacement						Reactions (Jack Loads and Changes)						Differences from Datum					
	Jack 1	Jack 2	Elastomeric Bearings		Jack 5	Jack 6		Jack 1	Jack 2	Elastomeric Bearings		Jack 5	Jack 6	Jack at which change is being considered	Vertical displacement at jack(s) being raised	Change in load on jack(s) being considered	Change in load per mm at jack being considered	
	LLH20114	LLH20111			LLH201123	LLH200201		LLH20114	LLH20111			LLH201123	LLH200201					
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[mm]					
Datum	0.00	0.00	0.00	0.00	0.00	0.00		20.54	31.79			16.56	43.61					
Jacks 1 & 2 @ nom +7.3mm Including gritter	7.38	7.31	-0.10	-0.10	-2.44	-2.18	Recorded	29.73	38.72			41.88	66.11	Jack 1	7.38	9.19	1.2	Jack 1 with respect to Jack 1
							Change	9.19	6.92			25.31	22.50	Jack 2	7.31	6.92	0.9	Jack 2 with respect to Jack 2
Jacks 1 & 2 @ nom -2.5mm Including gritter NB May not be robust data, jacks 1 and 2 possibly in excess of stroke.	-2.47	-2.88	-0.26	-0.08	-2.03	-1.95	Recorded	5.41	14.36			34.38	64.44	Jack 1	-2.47	-15.14	6.1	Jack 1 with respect to Jack 1
							Change	-15.14	-17.44			17.81	20.83	Jack 2	-2.88	-17.44	6.1	Jack 2 with respect to Jack 2
Jacks 1 & 2 @ nom -1.5 Including gritter NB Re-distribution of load on jacks 1 and 2, following lowering and reaching bottom of stroke, results in redistribution of load as jacks are re-raised.	-1.31	-1.93	-0.28	-0.06	-2.03	-1.95	Recorded	23.51	19.23			34.38	64.44	Jack 1	-1.31	2.97	-2.3	Jack 1 with respect to Jack 1
							Change	2.97	-12.56			17.81	20.83	Jack 2	-1.93	-12.56	6.5	Jack 2 with respect to Jack 2

CGB, Investigation A, Location 3 - Displacements / Deflections (Symmetric, No Gritter)																
Comments	Actual Jack Displacement						Reactions (Jack Loads and Changes)					Differences from Datum				
	Jack 1	Jack 2	Jack3	Jack 4	Jack 5	Jack 6										
								Jack 1	Jack 2	Jack 5	Jack 6	Jack at which change is being considered	Differential displacement between loaded jack and opposite, adjacent jack at ends or loaded jack when at centre.	Change in load on jack(s) being considered.	Change in load per mm at jack being considered.	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[kN]	[kN]	[kN]	[kN]		[mm]	[kN]	[kN/mm]	
Taken as datum for start of symmetric testing	0.00	0.00	0.00	0.00	0.00	0.00	Datum	27.6	22.8	23.1	40.6					
Jacks 1 & 2 (End) raised towards +7.5mm	7.44	7.55	0.65	0.71	-0.72	-0.73	Recorded	36.2	35.1	32.2	48.3	Jack 1	7.44	8.6	1.2	Jack 1 with respect to Jack 1 and relative to Jack 1.
							Change	8.6	12.3	9.1	7.8	Jack 2	7.55	12.3	1.6	Jack 2with respect to Jack 2 and relative to Jack 2.
Jacks 3 & 4 ("Centre") raised towards +5.5mm, "peak"	1.62	1.82	5.32	5.57	1.25	1.21	Recorded	12.4	12.1	13.8	29.2	Jack 1	-3.70	-15.1	4.1	Jack 1 with respect to Jack 3 and relative to Jack 3.
												Jack 2	-3.75	-10.8	2.9	Jack 2 with respect to Jack 4 and relative to Jack 4.
							Change	-15.1	-10.8	-9.4	-11.4	Jack5	-4.07	-9.4	2.3	Jack 5 with respect to Jack 3 and relative to Jack 3.
												Jack 6	-4.37	-11.4	2.6	Jack 6 with respect to Jack 4 and relative to Jack 4.
Jacks 5 & 6 (End) raised towards +5.9mm	-0.60	-0.60	0.81	0.45	5.84	5.89	Recorded	29.2	30.3	31.3	48.6	Jack 5	5.84	8.1	1.4	Jack 5 with respect to Jack 5 and relative to Jack 5.
							Change	1.6	7.4	8.1	8.1	Jack 6	5.89	8.1	1.4	Jack 6 with respect to Jack 6 and relative to Jack 6.

CGB, Investigation A, Location 3 - Displacements / Deflections (Asymmetric, no gritter)														
Comments	Actual Jack Displacements						Reactions (Jack Loads and Changes)				Differences			
	Jack 1	Jack 2	Jack 3	Jack 4	Jack 5	Jack 6		Jack 1	Jack 2	Jack 5	Jack 6	Jack at which change is being considered	Differential displacement between loaded jack and opposite, adjacent jack at ends or loaded jack when at centre	Change in load on jack(s) being considered
	LLH20114	LLH20111	LLH20113	LLH20114	LLH201123	LLH20201								
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[kN]	[kN]	[kN]	[kN]		[mm]	[kN]
														[kN/mm]
Used as datum	0.00	0.00	0.00	0.00	0.00	0.00		23.2	23.6	17.5	45.3			
Jack 1 lowered to around -1.88mm. Not a formal test, obtained from recorded data during preparation for raising Jack 1.	-1.88	-1.01	-0.20	-0.12	0.03	0.10	Recorded	7.0	30.8	19.1	42.8	Jack 1	-0.87	-15.2
							Change	-16.2	7.2	1.6	-2.5			18.67 Jack 1 with respect to Jack 1 and relative to Jack 2.
Jack 1 raised to around +7.8mm	7.80	3.90	0.63	0.37	-0.53	-0.94	Recorded	73.8	5.4	17.8	59.2	Jack 2	-3.01	-18.2
							Change	50.5	-18.2	0.3	13.9			4.66 Jack 2 with respect to Jack 1 and relative to Jack 1.
Jack 2 lowered to around -2.55mm. Not a formal test, obtained from recorded data during preparation for raising Jack 2.	-1.22	-2.55	-0.24	-0.33	0.21	0.00	Recorded	32.4	4.1	14.4	45.8	Jack 2	-1.33	-19.5
							Change	9.2	-19.5	-3.1	0.6			14.68 Jack 2 with respect to Jack 2 and relative to Jack 1.
Jack 2 raised to around +7.25mm.	3.95	7.25	0.58	0.94	-0.77	-0.31	Recorded	4.9	58.5	32.8	43.9	Jack 1	-3.30	-18.4
							Change	-18.4	35.0	15.3	-1.4			5.57 Jack 1 with respect to Jack 2 and relative to Jack 2.
Jack 3 lowered to around -4.30mm. Not a formal test, obtained from recorded data during preparation for raising Jack 3.	-1.06	0.23	-4.30	-1.06	-1.27	-0.12	Recorded	39.5	20.0	36.9	40.3	Jack 3	-4.30	Unknown
							Change	16.2	-3.6	19.4	-5.0			
Jack 3 raised to around +2.45mm.	1.11	0.32	2.45	0.68	0.81	0.02	Recorded	14.6	26.9	10.6	47.8	Jack 1	-1.35	-8.6
							Change	-8.6	3.3	-6.9	2.5	Jack 5	-1.64	-6.9
Jack 4 lowered to around -2.26mm. Not a formal test, obtained from recorded data during preparation for raising Jack 4.	0.13	-0.52	-0.62	-2.26	-0.01	-0.60	Recorded	22.2	33.6	17.2	53.9	Jack 4	-2.26	Unknown
							Change	-1.1	10.0	-0.3	8.6			
Jack 4 raised to around +6.6mm.	0.85	3.24	1.43	6.60	-0.02	1.87	Recorded	27.8	3.8	29.7	20.6	Jack 2	-3.35	-19.7
							Change	4.6	-19.7	12.2	-24.7	Jack 6	-4.72	-24.7
Jack 5 lowered to around -2.88mm. Not a formal test, obtained from recorded data during preparation for raising Jack 5.	0.37	0.75	-0.28	-0.08	-2.88	-1.46	Recorded	24.6	19.7	0.9	55.3	Jack 5	-1.42	-16.6
							Change	1.4	-3.8	-16.6	10.0			11.67 Jack 5 with respect to Jack 5 and relative to Jack 6.
Jack 5 raised to around +5.34mm.	-0.64	-0.49	0.18	0.16	5.34	2.62	Recorded	22.4	36.2	52.2	25.0	Jack 6	-2.72	-20.3
							Change	-0.8	12.6	34.7	-20.3			7.47 Jack 6 with respect to Jack 5 and relative to Jack 5.
Jack 6 lowered to around -1.90mm. Not a formal test, obtained from recorded data during preparation for raising Jack 6.	0.39	0.25	-0.19	-0.14	-0.92	-1.00	Recorded	20.8	25.9	26.3	31.9	Jack 6	-0.98	-13.3
							Change	-2.4	2.3	8.8	-13.3			13.67 Jack 6 with respect to Jack 6 and relative to Jack 5.
Jack 6 raised to around +6.49mm.	-0.56	0.01	0.12	0.39	3.51	6.49	Recorded	35.7	23.8	1.6	76.7	Jack 5	-2.99	-15.9
							Change	12.4	0.3	-15.9	31.4			5.34 Jack 5 with respect to Jack 6 and relative to Jack 6.

CGB, Investigation A, Location 3 - Displacements / Deflections (Repeat of Symmetric, No gritter)															
Comments	"Actual" Jack Displacements						Reactions (Jack Loads and Changes)					Differences from Datum			
	Jack 1	Jack 2	Jack 3	Jack 4	Jack 5	Jack 6		Jack 1	Jack 2	Jack 5	Jack 6	Jack at which chnage is being considered	Differential vertical displacement at jack(s) being considered	Change in load on jack(s) being considered	Change in load per mm at jack being considered
	LLH20114	LLH20111	LLH20113	LLH20114	LLH201123	LLH200201									
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[kN]	[kN]	[kN]	[kN]		[mm]	[kN]	[kN/mm]
Datum							Datum	23.8	25.1	20.6	46.9				
Jacks 1&2 (end) towards +24mm	22.10	22.28	2.37	2.56	-2.05	-1.92	Recorded	53.0	59.3	44.7	70.6	Jack 1	22.10	29.2	1.3 Jack 1 with respect to Jack 1 and relative to Jack 1.
							Change	29.2	34.2	24.1	23.6	Jack 2	22.28	34.2	1.5 Jack 2 with respect to Jack 2 and relative to Jack 2.
Jacks 3 & 4 ("centre") towards +9mm & +12mm respectively	3.24	4.04	8.85	12.08	2.41	2.91	Recorded	10.0	5.9	9.1	25.0	Jack 1	-5.60	-13.8	2.5 Jack 1 with respect to Jack 3 and relative to Jack 3.
												Jack 2	-8.04	-19.2	2.4 Jack 2 with respect to Jack 4 and relative to Jack 4.
							Change	-13.8	-19.2	-11.6	-21.9	Jack 5	-6.43	-11.6	1.8 Jack 5 with respect to Jack 3 and relative to Jack 3.
												Jack 6	-9.16	-21.9	2.4 Jack 6 with respect to Jack 4 and relative to Jack 4.

APPENDIX C – SHIM DISAPPLACEMENT FROM INVESTIGATION B1 PHOTOGRAPHS

Blank for double-sided printing

INVESTIGATION B1 - SHIM MOVEMENT RELATIVE TO BEARING PAD

	Bearing N°	mm	Bearing N°	mm	Bearing N°	mm	Bearing N°	mm	Bearing N°	mm	Comments
10946	1	0	2	0							Jan'14 photo incorrect for bearing 2
10946 - 10961	3	*	4	0	1	0	2	0			* Very large displacement - cannot estimate
10961 - 10976	3	*	4	15	1	0	2	0			* No shim at bearing 3
10976 - 10991	3	5	4	0	1	*	2	0			* Very large displacement - cannot estimate
10991 - 11006	3	0	4	0	1	2	2	0			cf alternate ends
11006 - 11021	3	0	4	3	1	0	2	0			
11021 - 11036	3	0	4	4	1	0	2	0			
11036 - 11051	3	0	4	0	1	0	2	0			Jan'14 photo incorrect for bearing 2
11051 - 11066	3	0	4	0	1	0	2	0			11.10.2015 photos for 3 and 4 should be transposed
11066 - 11081	3	0	4	2	1	0	2	2			
11081 - 11096	3	0	4	0	1	0	2	0			
11096 - 11111	3	6	4	0	1	2	2	2			
11111 - 11126	3	0	4	3 *	1	0	2	0			* Very large displacement - cannot estimate easily
11126 - 11141	3	0	4	0	1	0	2	0			

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APPENDIX D – JOINT DISPLACEMENT SUMMARIES BY ATKINS

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Atkins Limited

Your Ref:

Our Ref: 5047709/808/IH/L19762

BAM Nuttall Ltd
Cambridgeshire Guided Busway
4th Floor
80 New Bond Street
London
W1S 1SB

For the attention of Mr S Whalley, Project Manager

26 July 2016

Dear Sirs

Cambridgeshire Guided Busway

Defect Notification 287A - Bearing Displacements and Consequential Guideway Vertical Displacement

We write further to Defect 287A issued on 25 April 2014 to advise an increase in the number of non-compliant horizontal displacements since the issue of our original Defect Notice 287 on 16 October 2013.

Subsequent to the undertaking of Investigation C by Survey Solutions Ltd under the 'Guided Busway Testing and Investigative Contract' initiative between BAM and Cambridgeshire County Council, we were provided with a copy of those measurements and asked by the Employer to comment on apparent discrepancies between these measurements and the non-compliances list in our Defect Notice.

As a result of this request the Supervisor has undertaken a further survey, checking both the inner and the outer beams at each location identified in the Investigation C survey as exhibiting a beam displacement non-compliance in addition to undertaking a further check at each location identified in the 'Figure 1' attachment to the Defect 287A notification.

Our report in response to the Employer's request has been passed directly to Cambridgeshire County Council and its legal advisors.

The results of our check survey indicates a marked increase in the number of beam displacement non-compliances since the results of our July 2013 survey were reported in the original Defect Notice in 2013.

Defect 287 reported 109 non-compliances (at 106 separate chainages) measurements which exceeded the 2.0mm maximum vertical step tolerance. Our recent check survey has identified 343 such occurrences in excess of 2.0mm, those 343 not taking into account five locations counted in the original 287 notice where bearings have been subsequently reset and consequently not identified in later surveys.

Contd...

The results of the survey and audit are attached.

Yours faithfully

For and on behalf of Atkins Ltd

A handwritten signature in blue ink, appearing to read 'Ian A. Hodgkin', with a horizontal line extending to the right.

Ian Hodgkin
Supervisor

Enc Results of recent check survey

Cc Mr R Menzies – Cambridgeshire County Council – Service Director – Strategy and
Development

DEFECT 287 VERTICAL GUIDE/BEAM DISPLACEMENT

Chainage	T - to Camb	Physical measurements										SS DEFECT		ADDITIONAL		Comments
	F - from Camb	Survey Solutions Investigation C (mm)		DEF287 (Apr 2014)		12/05/2016										
	S - single	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)					
1978	F		2.9				2.7		1	1						
2068	F	2.51					2.8		1							
2088	T	2.55					2.8		1							
2533	F	2.5							1							
2548	F	3							1							
2758	F		2.8					3.3		1						
3178	T					3		1.7								
3268	T	2.8					2.9		1							
3493	F		3.1					2.9		1						
3553	F		2.8					3.1		1						
3898	F					2	2.4	3.1			1	1				
3973	F	3					3.7		1							
4033	F	2	2.5				2.1	2.9	1	1						
4063	F	2.5					3		1							
4183	F		3.3					3.1		1						
4213	F		2.5					2.7		1						
4303	T	16.32	2.19	4			16.2	2.1	1	1						
4438	F	2.1	3				2.1	3.7	1	1						
4498	F		3.5					3.4		1						
5128	T				4	1.5	3.4					1				
5653	F		2.4				2.3			1						
5708	F	3.1					3.2	0	1							
5708	T	4.6	2.1				13.1	1.7	1	0						
5718	F	3.41	6.31		5				1	1						
5863	T		2.7					3.2		1						
5968	F				2	1.3	0									
5983	T	3.6	2.13	4					1	1						
5998	F		3.3					3.5		1						
6163	F		2.9					2.6		1						
6178	F		2.1					2.6		1						
6328	F	3.3	2.6				3.1	3	1	1						
6343	T	2.4	2.8		5	2.5	3.1	1	1							
6358	T			3		2.7					1					
6373	F		2.5					2.5		1						
6583	F		2.4					2.5		1						
6713	F	4.9	1	4					1							
6723	F			7		0										
6793	F	2.3				2.9			1							
6808	F		2.9					3.1			1					
6823	F		3					3			1					
6868	T		3					2.9			1					
7183	F	2.8	4.6				2.6	5	1	1						
7228	F		2.8					2.8		1						
7348	T		6.8					1.2		1						
7453	T	1.63	3.59		4					1						
7588	F		13.7					17		1						
7663	T		6.7					8.4		1						
7693	T		4					2.2		1						
7768	F	3				3			1							
7783	F		3.8					3.5		1						
7873	F	2.8				2.9	2.2	1				1				
7948	T	6.5				6.9		1								
7948	T		2.7				2.8			1						
7963	F	3.5					3.8		1							
7963	T	2.03					2.7		1							
7993	F				4	2.3	0					1				
7993	T	3.7				3.5			1							
8008	T	3.5				3.1			1							
8008	T		2.6					2.4			1					
8023	F		3					2.8			1					
8048	T	2.43		6		2.3			1							
8048	T		9.98		6		11			1						
8578	F	3.51	1.43	3					1							
8713	T	2.5					<2		0							
8728	F	2.4				2.4			1							
8728	F		2.5					2.9			1					
8863	F	0.11	1.14		4			<2								
8998	F				4			0								
9133	F		2.9					3.6			1					
9343	F		5.3					5.8			1					
9673	F		2.9					2.6			1					
9733	T				3		2.5					1				
9918														Longstanton junction		
9996	F						2.9	4.1			1	1				
10015	F - HFS		7.3					8.7			1					
10030	T	2.3					3.4		1							
10045	T			3			3.3				1					
10120	F		3.2					3.3			1					
10195	F		3.5					3.5			1					
10240	T		2.1					2.6			1					
10255	F	2.2					2.7		1							
10270	T	4.6					4.8		1					Longstanton P&R		
10465	F	3.7	2.8				5.2	4.3	1	1						

Chainage	T - to Camb F - from Camb	Physical measurements								SS DEFECT		ADDITIONAL		Comments
	S - single	Survey Solutions Investigation C (mm)		DEF287 (Apr 2014)		12/05/2016		A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	
		A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)							
10495	T		9.7				10.3			1	1			
11065	F	2.11	7.58		6					1	1			
11275	F				6		0							
11290	F		2.7				2.9				1			
11320	F	0.05	5.26			5		5.6			1			
11695	T	4.3					3.9			1				
11710	T				7		1.4							
11770	T	2.1					2.6			1				
11785	F	6.06	3.86			7	7.2	3	1	1				
11800	F		4.9					4.9			1			
11800	T	3.2					3.2			1				
11815	T	11.3	3.56	10			10.9	3.6	1	1				
11830	T		2.4					2.4			1			
11845	T	0.19		8			0							
11845	T		7.1			8		7.3			1			
11875	T		2.6					2.6			1			
11950	F		3.3					2.7			1			
12055	T		2.7					2.6			1			
12070	F	5.01	0.29	5						1				
12085	T	3.9					4.7			1				
12445	F	3.46	0.35	3						1				
12640	T			3			3.2	0				1		
12640	T		3.3				3.2	0			0		1	SS identified incorrect beam
12700	? T	2.2	2.9				<2	2.1	0	1				
12700	? F						<2	<2						
12745	? T	2.6	3.3				2.6	<2	1	0				
12745	? F						<2	<2						
13420	T		2.1					2.6			1			
13525	F	6.5	1.04	5						1				
13525	F		4.9				6.8	<2		0		1		SS identified incorrect beam
13635	T		3.7					6.6			1			
13635	F		3.7				3.8	4.1						Northstowe junction
13726	F	6.7	3.1				1.7	2.9	1	1				
13726	T	3.1					4.4			1				
13741	F	3.2					3.7			1				
13771	T	0.39	4.31		5		0	4.1			1			
13861	F		2.9					2.9			1			
13916	T	2.9					3.4			1				Oakington junction
14014	F - HFS						4.6	4.2				1	1	
14184	T		3					3.2			1			
14241	T				9		1.6	2.7					1	
14289	T				5		2.6	2.3				1	1	
14304	T		2.5					2.2			1			
14319	T	3.59	2.12	3					1	1				
14334	T				7			0						
14529	T				3			2.15					1	
14589	F	0.19	3.33	4			0	3.2			1			
14614	T	2.1	2.2				2.2	2.9	1	1				
14869	T	3.2					3.7			1				
14989	T	2.7					2.9			1				
15199	T	2.6					3.8			1				
15494	F	3.6					2.3							Park Lane, Histon
15586	T	8.1					7.8			1				
15586	F							9.9					1	
15796	T	2.4					3.4			1				
16051	T	7.2	2.9				1.5	4.5	0		1			
16051	F	7.9	7.8				8.4	6.4	1		1			Histon ped xing (insitu)
16061	T		4.4				4.2	2.7			1	1		
16061	F	11.3	3.5				12	3.1	1		1			
16136	F	6.6					2.7		1					
16211	T	3.1					0	3.9	0				1	SS identified incorrect beam
16316	T	3.4					1.1			0				
16376	T	2.2					2.7			1				
16391	F		8.6					8.8			1			
16406	F			3				2.3					1	
16421	T	2.3	2.2				2.9	2.8	1		1			
16451	T	2.1	2.6				2	2.2	1		1			
16496	T		5					5.7			1			
16511	F	3.1					3.7			1				
16556	F	3.4					4.2			1				
16751	F	2.1					2.7			1				
16766	T	4.3					4.3			1				
17006	T		2.4					3.4				1		
17081	T	4.8	2.1				5	2.8	1		1			
17096	T	3.5	2.3				3.2	2.9	1		1			
17181	T	8.79	1.04	13			10	1.8	1					
17196	T	3.02	0.9	5			3.1	1.1	1					
17226	F		11					11.3				1		
17226	T		3.6					4				1		
17241	T	2.1	3.4				1.5	3.8	0		1			
17321	T	0.21	5.27		5						1			
17321	F			5			4.5					1		
17341	T				4			2.8					1	
17376	T	2.6	3.4				2.7	4.2	1		1			
17391	T		2.4					2.8			1			

Chainage	T - to Camb F - from Camb	Physical measurements								SS DEFECT		ADDITIONAL		Comments
	S - single	Survey Solutions Investigation C (mm)		DEF287 (Apr 2014)		12/05/2016		A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	
		A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)							
17431	F	2.9				6.4	1.4	1						Station Road, Histon
17531	F - HFS	7.3				9.1	4.5	1				1		
17531	T	3.4	9.2			1.4	6.8	0	1					
17571	T		5.5				4.3		1					
17586	T		2.1				2.9		1					
17631	F	6.52			6	7.2		1						
17631	F		10.02				10.9		1					
17661	T				3	2.9	2					1	1	
17691	F		2.3			2.4	2.1		1			1		
17691	T		3.8			3.4	2.3		1			1		
17721	F		2.7				3		1					
17736	T	2.7				2.6		1						
17751	T	2.6				2.8		1						
17781	F		2.4				3.6		1					
17781	T	3.8	7.3			5	20	1	1					
17796	T					15	2.6					1	1	
17811	T		3.3			1.1	5.6		1					
17826	T	0.37	2.56		3	1.2	3.3		1					
17841	T	2.86				3.6		1						
17886	T	4.01	5.8			2.8	6.2	1	1					
18111	F	2.8				3.1		1						
18186	F				3	2.6	1.9					1		
18261	F				13	1.7	0.9							
18291	T				2	0	0							
18321	F				2	1.7	1.3							
18366	F	0.32	3.36				3.2			1				
18441	F				2	0	1							
18456	T	3.86	2.41		4			1	1					
18486	F				4	3.1						1		
18501	F	2.5				2.8		1						
18516	T					0.6	1.8							
18516	F				4	1.9	1.9							
18561	T						0							
18576	T					1.6	1.8							
18621	T		3.4				3.4			1				
18681	T	0.38	2.52			4	1.5	3		1				
18681	F				4	2.1						1		
18696	T					2	2.2						1	
18711	T	3.5	1.27		4			1						
18741	T					3	2.5						1	
18741	F	2.96	0.33		4	3.5	1	1						
18756	T				4	2.4	2.3					1	1	
18771	T				3	2.1						1		
18801	T					2	2						1	
18801	F					3	1.7							
18816	T	0.7	2.68			3				1				
18816	F				3	2.5	0.8					1		
18876	T	2.88	1.3		3			1						
18906	F	5.8	3			9.1	5.6	1	1					
18906	T - HFS	6	8.9			7.4	8	1	1					Orchard Park Junction
19011	F - HFS	2.8	7.1			2.8	5.7	1	1					
19041	T						1.8							
19131	T	2.77	1.57		5	2.3	1.4	1						
19301														CRC Junction
19415														
19425	T	4.4				0		0						Reset May 2016
19435	T	5.8				0		0						Reset May 2016
19465	F	6.6	3.6			7.1	5	1	1					
19465	T - HFS	7.2				5.9	3	1						CRC ped xing (insitu)
19475	F - HFS					2.5	1.8					1	1	
19475	T					3.5	3.3					1	1	
19625	F	3.1				3.4		1						
19640	F	1.66	6.65				7			1				
19685	F	2.6				2.5		1						
19685	T	3				2.5		1						
19835	T		2.5				2.8			1				
19910	F		2.8				2.5			1				
19985	F	0.31	3.33				3.3			1				
20030	F	0.95	4.15			1.3	4.4			1				
20270	F		2			0	3.6			1				
20270	T - HFS	5.5				8.6	4.1	1				1		Milton Rd ped xing (insitu)
20280	F - HFS	3.9	2.2			4.5	2.8	1	1					
20280	T	6.6	2			10	5.2	1	1					
20355														Milton Road
97 114 24 23														
Trumpington														
40538	F	2.2	2.6			2.2	3.1	1	1					
40568	F				4	2	2.1					1	1	
40658	F	4.88	0.02		7	5.7	0	1						
40718	F				6	1.3	1.8							
40808	T	2.1				2.5		1						
40853	F				6	1.9	1.3							
40988	T				2	1.5	0							
41118	T	0.84	2.17		4	3.1	1.4			1				SS identified incorrect beam
41373	T					2.1	1.5					1		

	T - to Camb F - from Camb	Physical measurements												
		Survey Solutions Investigation C (mm)		DEF287 (Apr 2014)		12/05/2016		SS DEFECT		ADDITIONAL				
Chainage	S - single	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	Comments		
41463	F	2.4				1.8		0						
41703 to 41718												HILLS ROAD BRIDGE		
41748	T	2.4				2.7		1						
41838	F				6	0	0							
41868	T	2.41	2.32	6		2.8	2.2	1	1					
41943	T			8		3.4	2			1	1			
42018	T			6		2.4	1.6			1				
42018	F				3	0	1.3							
42078	T			6		2.4	1.3			1				
42123	T			2		1.1	0							
42168	F	1.39	2.66		5	1.2	2.7		1					
42213	T				2	1.6	0							
42243	F				3	0	1.1							
42243	T	2.3				2.5		1						
42273	T			6		2.4	1.3			1				
42288	T	4	3			6.7	5.2	1	1					
42513	F - HFS	2.9				0	4.1	0			1	SS identified incorrect beam		
42588	T - HFS	5.1	2.3			5.2	2.2	1	1			ADDENBROOKES LINK		
42633	T			3		2.4	1.3			1				
42728	T	5.3	5.7			8.7	6.6	1	1			FOOTWAY - INSITU		
42738	F	2.5				2.6		1						
42738	T - HFS	5.6				4		1						
42903	F - HFS		2.2				3		1					
42903	T	3.7	3.9			7.1	4.7	1	1			END DUAL GUIDEWAY		
42982	S	4				3		1				START SINGLE GUIDEWAY		
42997	S				5	0	2				1			
43072	S				7	0	1.3							
43087	S		2.6			2.6	1.3		0	1		SS identified incorrect beam		
43132	S			7		0	1.4							
43152	S		2.2			2.4	0		0	1		SS identified incorrect beam		
43202	S		2.6			2.9	1.6		0	1		SS identified incorrect beam		
43212	S	3	2.4			2.4	3.1	1	1					
43222	S	2.3				2.3	3	1			1			
43232	S	2.7	2.1			2.2	3.1	1	1					
43242	S	4.1				1.5	4.7	0			1	SS identified incorrect beam		
43302	S	2.2				1	3	0			1	SS identified incorrect beam		
43312	S	4.8				6	1.7	1						
43442	S	2.89	2.07			3	2.3	1	1					
43492	S		2.7			2.5	3		1	1				
43502	S	2.25	1.52			2.4	1.9	1						
43532	S	2.9				3.9	1	1				END GUIDEWAY		
								20	13	12	7			

Addenbrookes Link														
60052	F		4.2			5.4	6.8		1		1			START ADDENBROOKES LINK
60052	T	5.9				2	2.1	1					1	
60112	T				3	0	1.5							
60232	F		6.1			2.6	9.8			1	1			
60262	F	4.46	0.12	3				1						
60272	T		3.3			5	6.7		1		1			
60272	F	4.44	3.52		6	1.6	6.4	0	1					
60292	F	1.3	3.22		4				1					
60332	F	3.1				1	3.6	0					1	SS identified incorrect beam
60342	F	0.42	1.2		3	1.6	3.6						1	
60402	F		2				4.2			1				
60427	F	1.08	3.87		3					1				
60427	T		2.6				4.5			1				
60447	F	3.8				2.1	1.6	1						
60497	F	3.6	3.9			2.8	2.1	1	1					
60512	T	11.7	4.3			14	3.8	1	1					
60512	F	6.4	8.9			5.5	3.8	1	1					END ADDENBROOKES LINK
										6	11	3	3	

Orchard Park														
80135	F		2.2						1					
80125	F	2.3							1					
80445	F	15.1	4.2						1	1				
81257	F	2.2	2.8						1	1				
81272	F	4.5	3.2						1	1				
81272	T	3.7	4.6						1	1				
										5	5	0	0	

SUMMARY	Identified by SS		Additional identified by Supervisor	
	A (Outer)	B (Inner)	A (Outer)	B (Inner)
North section	97	114	24	23
Trumpington	20	13	12	7
Addenbrookes Link	6	11	3	3
Orchard Park	5	5	0	0
TOTAL	128	143	39	33

343



Atkins Limited

Your Ref:

Our Ref: 5047709/808/IH/L19763

BAM Nuttall Ltd
Cambridgeshire Guided Busway
4th Floor
80 New Bond Street
London
W1S 1SB

For the attention of Mr S Whalley, Project Manager

26 July 2016

Dear Sirs

Cambridgeshire Guided Busway

Defect Notification 288A - Beam Joint Relative Horizontal Displacement Defects

We write further to Defect 288A issued on 1 May 2014 to advise an increase in the number of non-compliant horizontal displacements since the issue of our original Defect Notice 288 on 18 October 2013.

Subsequent to the undertaking of Investigation C by Survey Solutions Ltd under the 'Guided Busway Testing and Investigative Contract' initiative between BAM and Cambridgeshire County Council, we were provided with a copy of those measurements and asked by the Employer to comment on apparent discrepancies between these measurements and the non-compliances list in our Defect Notice.

As a result of this request the Supervisor has undertaken a further survey, checking both the inner and the outer beams at each location identified in the Investigation C survey as exhibiting a non-conformance in addition to a further check at each location identified in our Defect 288A Notification

Our report in response to the Employer's request has been passed directly to Cambridgeshire County Council and its legal advisors.

The results of our check survey indicates a marked increase in the number of non-conformances since our July 2013 survey reported in the issue of the original Defect Notice.

Defect 288 reported 229 non-compliances (at 219 separate chainages) which exceeded the 2.0mm maximum horizontal step tolerance. The latest survey and audit has identified 504 such occurrences in excess of 2.0mm.

The results of the survey and audit are attached.

Yours faithfully
For and on behalf of Atkins Ltd

Ian Hodgkin
Supervisor

Enc Results of Atkins' re-survey
Cc Mr R Menzies – Cambridgeshire County Council – Service Director – Strategy and Development

DEFECT 288 HORIZONTAL GUIDE BEAM DISPLACEMENT

Chainage	T - to Camb	Survey Solutions		Physical measurements				SS DEFECT		ADDITIONAL		Comments
	F - from Camb	Investigation C (mm)		DEF288		12/05/2016		A (Outer)	B (Inner)	A (Outer)	B (Inner)	
	S - single	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)					
1708	T	3				3	0	1				
2068	F		2.5			2.6	2.9		1	1		
2098	T		2.5		3				1			
2128	F	2.5				2.1	0	1				
2293	T		3			3.1	2.7		1	1		
2323	F	3.5	2.2	4		3.9	2.9	1	1			
2398	T	3	3			3.3	2.9	1	1			
2533	F	2.5				2.1	1.8	1				
2548	F	3		4				1				
2623	T			4		3.3	2.2			1	1	
2638	T	3	3	3		3.2	3.2	1	1			
2713	F		2.5						1			
2758	F			3	3	0	0					
2788	F			3		2.9	0			1		
2833	F			3	3	1.9	3.6				1	
2848	F		4		4				1			
2908	F		4		4				1			
2923	F	2.5				3.8	0	1				
2923	T	2.2	3			2.6	3.9	1	1			
2983	F		3		3		2.4		1			
3013	F				3	1.8	2.2				1	
3028	F	2.5		3	3	2.6	2.6	1			1	
3088	T		2.5			0	1.9		0			
3238	T	4	4		4	3.2	4.8	1	1			
3253	F	3		3				1				
3433	T	2.5	2.5			3.2	2.6	1	1			
3523	T		2.5			3	3.7		1		1	
3673	F	4.2	3.5	3		4.2	3.2	1	1			
3778	F	2.5	2.5	4		3.3	2.8	1	1			
3853	F				3	2.4	2.4			1	1	
3928	F				3	2.3	2.4			1	1	
3988	T		3			0	3		1			
4018	F		2.5			0	2.4		1			
4083	F		3			0	3.8		1			
4098	F	3	3		4	3.1	3	1	1			
4138	T	2.2	3	3		2.5	3.6	1	1			
4168	T	2.2	3		3	2.4	3.5	1	1			
4288	T				4	0	2.9				1	
4528	F		4		4				1			
4558	T		2.5			0	2.2		1			
4588	T		2.5			2.2	3.6		1		1	
4708	F	3				3.2	0	1				
4708	T	2.5				2.4	0	1				
4723	T	3				2.7	0	1				
4798	F			4		3	0				1	
4843	T	4		4				1				
4888	F			3		2.4	3.1			1	1	
4903	T	3.5			3	4.2	2.7	1				1
5023	T	3		3				1				
5093	T				3	0	1.7					
5103	F			3		2.2	0				1	
5413	T			3		2.5	2.1			1	1	
5443	T		2.5		3				1			
5718	T	4		4				1				
5753	T		3		4				1			
5768	F	3		3				1				
5778	T			3		2.9	1.6			1		
5788	T	3		3				1				
5803	F	3		3				1				
5848	T	2.2	3	3		2.7	3.8	1	1			
5878	T				3	0	4					1
5998	F	3	3	3		3.7	2.9	1	1			
6103	T	2.5	2.5	3		3.8	4.5	1	1			
6163	F		3		3				1			
6298	T	3	2.5		3	4.3	3.8	1	1			
6358	F		2.2			2.2	2.8		1		1	
6388	F	4	4		3	4.9	3.8	1	1			
6418	T		2.5			0	4		1			
6478	T		3			0	2.7		1			
6523	F	2.2		4		3.2	0	1				
6743	F		2.2			0	2.9		1			
6763	F	3		3				1				
6868	F		4		3				1			
7123	T			3		3.2	1.3				1	
7183	F	5	2	4		5.5	3.7	1	1			
7198	F	3				3	2	1				1
7333	F			4		3.2	1.3				1	

Chainage	T - to Camb	Physical measurements								SS DEFECT		ADDITIONAL		Comments
	F - from Camb	Survey Solutions Investigation C (mm)		DEF288		12/05/2016		A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	
	S - single	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)							
7393	T				4	4	0	3.4					1	
7408	T		5	4	4		5.9	5.2	1	1				
7423	F					3	0	2.4					1	
7498	F		2.5				2.9	0	1					
7528	T			3.5			2.6	3.3		1		1		
7543	T					3	2.4	2.6				1	1	
7543	F		2.5	6	3		2.8	5.9	1	1				
7558	T			4			2.6	4.5		1		1		
7618	T					3	0	1.8						
7693	F				4		3.5	3.1				1	1	
7708	T				3		3.1	0				1		
7723	T				3		3.4	0				1		
7828	F		4				2	4.4	1				1	
7843	T			3			0	3.2		1				
7873	F		2.2		4		3.2	1.2	1					
7903	T		8	8	4		8.2	8.1	1	1				
7903	F		2.5	5		6	3.4	5.9	1	1				
7948	F			4	3		4.2	1.5		0		1		SS identified incorrect beam
7978	F			3.5			0	3.7		1				
8008	f			2.2			0	2.8		1				
8008	T			3		4				1				
8023	F		6	4	4		6.3	4.1	1	1				
8048	T			2.5			0	3.1		1				
8158	F			2.2			0	2.7		1				
8218	T				3		2.4	1.4				1		
8248	F			4.5		6				1				
8353	F				5		2.3	2.5				1	1	
8428	F		3				3.4	0	1					
8488	T				3		2.2	0				1		
8503	F		2.5				2.8	<2	1					
8503	T					3	0	0.8						
8578	T					3	2.3	2.5				1	1	
8608	T					3	0	2.1					1	
8608	F		3	2.5	3		3.6	2.5	1	1				
8638	T				3		1.7	2.2					1	
8638	F		3		4		3.3	0	1					
8698	T				4		2.3	0				1		
8713	F		5	4	4		6.8	5.4	1	1				
8728	T		4		4		2.7	0	1					
8728	F		2.5	2.5		3	2.9	3.2	1	1				
8773	F			3			0	3.2		1				
8818	T		4.5		5				1					
8818	F		3	5		3	3.4	5.9	1	1				
8833	F		5	2	4		5.5	2.1	1	1				
8848	F				4		2.3	2				1	1	
8893	F		5	6	5		6	7.5	1	1				
8968	F		5	2			6.3	3.7	1	1				
8998	F			2.2			0	2.8		1				
9013	T				3		2.4	0				1		
9028	F		5.2	5.2	5		7.4	5.7	1	1				
9103	F		2.2	4		4	2.7	4.2	1	1				
9148	F		4	4			3.7	3.8	1	1				
9163	F			2			1.8	2.5		1				
9178	F			2.5			2	2.7		1		1		
9238	F		2				2.8	1.8	1					
9298	F		3.2	3	4		4.4	2.7	1	1				
9313	F		2	2			2.1	2.1	1	1				
9313	T			3.2			<2	3.1		1				
9328	T		2.2		3				1					
9343	F		2.2				<2	3.3	0				1	SS identified incorrect beam
9358	T			4			0	2.3		1				
9388	F		3.8	2.5		3	3.5	3.2	1	1				
9403	F			3			<2	3.3		1				
9433	F			2			0	2.3		1				
9523	F		3.2		3				1					
9538	T		3.2		4				1					
9583	F		2.5		3				1					
9628	T			3		3				1				
9688	T		3.2	3.2	5		4.3	4.4	1	1				
9703	F		3.2	3.2		4	4.7	3.5	1	1				
9718	F			2			0	2.4		1				
9763	F			2.5			1.1	2.3		1				
9793	F			2.5			1.6	2.6		1				
9838	F			2.5			0	2.8		1				
9868	F		2				2	0	1					
9868	T		2	2		5	2.8	2	1	1				
9883	T		2	2.4		6	2.2	2.7	1	1				
9898	T		2.4	3.9			2.8	4.1	1	1				
9908	F		2.5				1	1.9	0					

Chainage	T-to Camb	Physical measurements												Comments
	F - from Camb	Survey Solutions		DEF288		12/05/2016		SS DEFECT		ADDITIONAL				
	S - single	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)			
10005	F	4	4		5	5.2	4.8	1	1					
10165	T		2.5			<2	3.1		1					
10255	F		2.5			2.1	3.4		1		1			
10255	T	5	5	3		5.6	5.8	1	1					
10480	T	4	4.5			4	4.6	1	1					
10540	T	3				3.1	0	1						
10585	F	3		3				1						
10585	T	3	2.5			2.9	2.6	1	1					
10600	T	3				2.7	0	1						
10630	T		2.5			0	3.2		1					
10675	T		3			<2	2.8		1					
10720	T		2.5			1.9	3.3		1					
10750	T	3	4			2.9	4.3	1	1					
10810	F				4	1.5	3.1					1		
10825	F			3		3.7	1.8				1			
10855	T	3	3.5		4	3.9	4.2	1	1					
10945	F	3				3.7	1.8	1						
10975	T	3	3			3.7	2.3	1	1					
11035	F		3.8			0	0.9		0				SS identified incorrect track	
11035	T					0	4.1					1		
11065	T			3		2.8	2.4				1	1		
11095	T	3.5	4.5	3		3.3	4.5	1	1					
11110	T		4		4	4.5	5.6		1		1			
11140	T	6	6		6	6.7	7.5	1	1					
11215	T	3	3			2.8	4	1	1					
11245	T	3	4		3	4.7	6.2	1	1					
11290	T	5	5	5		4.9	4.7	1	1					
11320	F		3			2.5	3.4		1		1			
11335	T	2.5				2.3	2.2	1				1		
11365	F	2.5	2.5			2.3	2.3	1	1					
11365	T	3				3.1	<2	1						
11380	F		3	5		2.9	3.5		1		1			
11425	T	6	6	5		5.4	5.8	1	1					
11500	T	3.5	4.5	4		3.3	4.4	1	1					
11515	T		2.5			0	2.8		1					
11530	T	4	3	4		5	3.6	1	1					
11530	F		3.5		3	1.8	3.8		1					
11590	F				3	2.7	2.3				1	1		
11590	T		2.5			2.8	3.4		1		1			
11620	T	3	3		3	3	2.9	1	1					
11710	F	3	4			4	4.2	1	1					
11755	F		4			0	4.2		1					
11755	T		2.5			0	3.2		1					
11785	F				3	0	2.8						1	
11800	T	2.5				3.9	2.7	1					1	
11800	F	4	6			3.4	4	1	1					
11815	T	4	5			5.4	4.6	1	1					
11890	T	5	6	6	6			1	1					
11905	T		3			0	3.2		1					
11980	T	2.5	3			2.9	3.3	1	1					
11995	T		3			0	3		1					
12025	F			3		2.2	0				1			
12220	T	3		3				1						
12370	F	2.5				3.6	2.1	1					1	
12490	T	5	5		4	6.2	6.8	1	1					
12520	T	4.5		4				1						
12565	T	3.5				3.3		1						
12595	T			3		0	2.3						1	
12670	T			3		2.1	0				1			
12685	T	3				3.5	2.7	1					1	
12700	T	2.5		4		2.9	1.3	1						
12730	F		3.5		3				1					
12745	T			4		2.3	0				1			
12790	T	2.2	4.5			2.9	4	1	1					
12910	T		3			0	2.8		1					
13060	T		3	3		2.9	3.1		1		1			
13120	T	2.5		4				1						
13165	T		3			0	2.9		1					
13255	F		3			<2	3.4		1					
13315	T	3	3		5	3.2	3.7	1	1					
13360	F			4		3.4	0				1			
13390	T	3				2.6	0	1						
13435	T	4				4.4	0	1						
13560	T	3	4	3		4.8	4.7	1	1					
13590	T				3	3	2.1				1		1	
13741	F	3		3				1						
13741	T	3				4	0	1						
13756	T		2.5			2.1	3		1		1			
13786	T	3	3	3		3.7	3.1	1	1					

Chainage	T-to Camb	Physical measurements								SS DEFECT		ADDITIONAL		Comments
	F- from Camb	Survey Solutions Investigation C (mm)		DEF288		12/05/2016								
	S- single	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)			
13801	T	3.8	3	4		4.2	3.7	1	1					
13801	F		3			0	3.1		1					
13831	T		4			2.8	4.2		1	1				
13861	T	3.5				3.1	0	1						
13891	T				3	3.3	3.3			1	1			
13906	T			3	3	1.8	3.4				1			
14024	T	5	3			5.1	4.8	1	1					
14024	F		4			2.8	4.4		1	1				
14034	T		3		3				1					
14079	F		4		4				1					
14154	T	3.8	3.8		4	4.3	4.2	1	1					
14214	F	4	5		5	4	7	1	1					
14244	F	3	4		4	3.7	5.9	1	1					
14274	F			4		2.9	1.8			1				
14289	T	3	3			2.9	3.1	1	1					
14364	T		2.2			1.8	2.8		1					
14424	F		3			0	3		1					
14409	T				3	2.4	2.9			1	1			
14424	F		3		3				1					
14514	F		3		3				1					
14544	T	2.5				2.8	1.8	1						
14574	F	3				4.1	1.8	1						
14599	T	4				4.2	1.6	1						
14644	T	2.5				3.5	0	1						
14794	T	2.2				2.9	0	1						
14839	F			4		2.6	0			1				
15064	F		2.5	3		2.9	2.8		1	1				
15409	T	2.5				2.7	1.6	1						
15469	T	2.5	2.2			3.1	2.4	1	1					
15616	F				3	2.4	1.8			1				
15661	F		3		4				1					
15691	F	2.5				1.9	0	0						
15721	F				3	1.2	2.2				1			
15871	T			4		3.4	0			1				
15946	T	2.2		3				1						
15976	T		5		6				1					
16121	T		2.3			0	2.9		1					
16361	T	3	2.5		3	3.4	2.9	1	1					
16391	F	3		3				1						
16406	F	2.5	3.5	3		2.7	3.9	1	1					
16421	T	3	3.5	4		3.8	3.5	1	1					
16466	T	2.2				3	0	1						
16556	T	4		5				1						
16571	F	2.5		4				1						
16781	T	3.5			4	4.1	3	1			1			
16826	F		4		5				1					
16916	T				5	2.9	2.4			1	1			
17151	T	4	3.5	5		4.7	4.2	1	1					
17181	T	4				5.2	4.3	1			1			
17241	T	2			3	3.5	0	1						
17271	T				3	3.3	0			1				
17286	T	5			4	6	4.2	1			1			
17406	T	2.5		3				1						
17541	F	6	5			3	1.5	1	0					
17556	T		3.5			3.4	4.4		1	1				
17571	F		3			1	4.1		1					
17586	T	6	4			3.2	1.4	1	0					
17601	T	4		3				1						
17631	F			6	6	7.4	7.3			1	1			
17646	F	7.5	4	7		7.6	4.5	1	1					
17676	F			4		3	1.8			1				
17691	T	6	9	6		4.3	3.6	1	1					
17691	F			3		0	0							
17706	T			3	3	6.8	3.3			1	1			
17706	F	5				1	0.9	0						
17721	F				5	1	3.6				1			
17736	T			4		0	0							
17751	F		3			1.4	2.9		1					
17766	F		2.5			3.1	3		1	1				
17781	T	6	10		7	3.7	7.5	1	1					
17781	F	7	7.5	4		8.3	9	1	1					
17796	T		3.5			1.2	1.1		0					
17796	F	2.5	3.5			4.9	5.8	1	1					
17811	T	4	3.5		5	3.3	2.7	1	1					
17826	T	2.5				1.6	0	0						
17841	F			4		1.2	3.2				1			
17856	T	7	5	4		7.2	6.6	1	1					
17886	T	3				2.8	2.5	1			1			
17886	F	3	3			3.3	3.4	1	1					

Chainage	T-to Camb F- from Camb	Physical measurements								SS DEFECT		ADDITIONAL		Comments
	S- single	Survey Solutions Investigation C(mm)		DEF288		12/05/2016		A (Outer)	B (Inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)	
		A (Outer)	B (inner)	A (Outer)	B (Inner)	A (Outer)	B (Inner)							
17946	F			3		1.9	0							
18171	F	3.5		4				1						
18186	T				3	1.5	3					1		
18216	T		2.5			1.6	3		1					
18321	T				3	2.9	3.8			1		1		
18336	F			3		2.6	0				1			
18351	T	2.5				4	2.5	1				1		
18471	T		2.5		4	1.1	3		1					
18501	T		2.5		5	0	3.3		1					
18666	T				3	0	2.4					1		
18726	T				3	2.1	2.7				1	1		
18891	T			3		2.7	0				1			
19056	T		3.5		6	0	3.7		1					
19146	T			3		2.2	1.7				1			
19251	F				4	2	3.3				1	1		
19535	F			4		2.9	1.2				1			
19625	F	3				3.9	0	1						
19685	T	5	4	5	5			1	1					
19820	T	4		4				1						
19835	T	3	3	4		4.8	4.4	1	1					
19925	F				4	1	2.5					1		
19970	T		2.5			0	3		1					
20210	T	2.2	3			2.4	2.4	1	1					
20255	T			3		2.4	1.7				1			

166 177 70 54

Trumpington																		
40808	F	2.5				3.2	<2					1						
40838	T		3		5	3.3	3.3						1		1			
41003	F	2.5				3.3	1.3					1						
41343	F			4		2.2	1								1			
41373	F		2.5			0	2.8						1					
41418	F			3		1.8	1.5											
41448	F	4		5								1						
41463	F			3		2.4	1.6								1			
41793	T		2.5		3								1					
41808	T		3.5			2.6	3.5						1		1			
41838	F		3		6	2.2	3.3						1		1			
41868	T			6		1.7	0											
41928	T	3				3.2	1.9					1						
42198	F	3		4								1						
42243	F				3	1	3										1	
42258	F		3			2.4	2.8						1		1			
42258	T	4				4.4	0					1						
42603	F				3	2	2.9								1		1	
42618	F				3		3										1	
42708	T			3		1.7	0											
42798	T		3			2.1	2.7						1		1			
42813	T		3			1.7	3.1						1					
43172	S	3.5	3.5			3.6	4.1					1	1					
43212	S	3				3.7	1.5					1						
43482	S		4			0.9	4.3						1					

8 10 8 3

Addenbrookes Link																		
60302	F	3																
60332	F		3			1.5	4.9						1					
60417	T	5	3	4	4							1	1					
60427	T	2.5				2.1	0					1						

2 2 0 0

Orchard Park																		
80115	F	3.5											1					
80105	F	3.5											1					
80075	F		2.5											1				
80065	F	3											1					

3 1 0 0

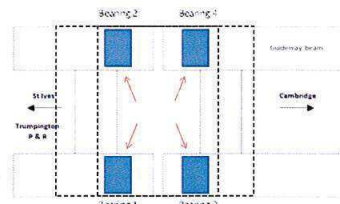
SUMMARY	identified by SS		Additional identified by Supervisor	
	A (Outer)	B (Inner)	A (Outer)	B (Inner)
North section	166	177	70	54
Trumpington	8	10	8	3
Addenbrookes Link	2	2	0	0
Orchard Park	3	1	0	0
TOTAL	179	190	78	57

504

APPENDIX E – INVESTIGATION F SUMMARY

Blank for double-sided printing

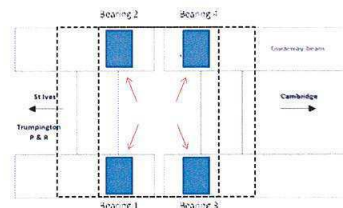
INVESTIGATION F SUMMARY



File name of photograph takes the form ch[chainage]_[Direction]_[Bearing Number].jpg

Chainage	Date	TO/ FROM	Steps 6-5 mm Outer To Camb	Steps 8-7 mm Inner To Camb	Steps 6-5 mm Inner From Camb	Steps 8-7 mm Outer From Camb	Inv C mm Outer	Inv C mm Inner	Comments on F1 Photographs
									2-4 is Outer Beam; 1-3 is Inner Beam to Cambridge 2-4 is Inner Beam; 1-3 is Outer Beam from Cambridge
4303	42352	T	15.12	1.54			16.3	2.1	1: shims and/or bearing coming out, probably in excess of 100mm relative movement. Bearing looks to have moved towards the beam end / joint. 2: Bearing & bottom shim coming out, both projecting forward of the bearing shelf edge. Other shims displaced relative to bearing (see also photo for bearing 4) 3: Some relative movement between bearing and shims but obscured by bearing which has come out. 4: Step, damage / spalling to bottom edge at end of dropped beam! Bearing and shims not visible, bearing out?
4318	42352	T	1.83	2.78					1: Shims slightly displaced relative to bearing 2: Shims slightly displaced relative to, and overhanging, bearing 3: Shims slightly displaced relative to, and overhanging, bearing 4: Shims slightly displaced relative to, and overhanging, bearing. Twist in spacer beam evident.
5708	42352	F			1.28	3.07	3.1		1: Shims slightly displaced relative to bearing 2: Shims slightly displaced relative to bearing 3: Top shim displaced relative to other shims and bearing 4: Shims slightly displaced relative to bearing
5718	42352	F			4.57	2.85	3.4	6.3	1: Shims parting, beam lifting? Shadow gaps at interfaces evident. 2: Shims rotated and displaced relative to bearing. Bearing pad displaced laterally towards centre of guideway ladder. 3: Shims slightly displaced relative to bearing. 4: Shims slightly displaced relative to bearing.
5983	42352	F			3.26	2.11			1: Bearing out? Shims displaced over bearing 2: Top shim slightly displaced relative to other shims and bearing 3: Bearing and shims overhanging edge of bearing shelf 4: Bearing and shims displaced? Overhanging edge of bearing shelf.
5998	42352	F			3.08	0.06		3.3	1: Shims parting and displaced relative to bearing 2: Shims slightly displaced relative to bearing 3: Shims slightly displaced relative to bearing 4: Shims slightly displaced relative to bearing
6713	42352	F			0.62	3.24	4.9	1	1: Shims parting, beam lifting? 2: Shims slightly displaced relative to bearing. 3: Shims slightly displaced relative to bearing. 4: Shims slightly displaced relative to bearing.
6723	42352	F			2.15	0.14			1: Top shim displaced relative to lower shims and bearing pad. 2: Shims slightly displaced relative to bearing 3: Beam lifting off? Shadow gap at interface of guideway and top shim. 4: Bearing pad displaced beyond edge of bearing shelf. Shims displaced relative to bearing.
7588	42352	F			10.7	3.04		13.7	1: Shims slightly displaced relative to bearing. 2: Bearing / shims slightly displaced relative to each other. 3: Bearing / shims look to be aligned, no obvious or discernible displacement. 4: Step, end of guideway beam dropped relative to bearing 2. Bearing pad and/or shims not evident in photo!
7603	42352	F			1.55	2.57			1: Bearing / shims slightly displaced relative to each other. 2: Bearing / shims slightly displaced relative to each other. Localised distortion to shims evident? 3: Bearing / shims slightly displaced relative to each other. Some gaps / distortion in shims? Localised shadow gaps at interfaces may, however, also be as a result of lateral movements. 4: Insufficient access - No photo
8048	42352	T	0.89	6.73			2.4	9.9	1: Bearing / shims displacing relative to each other. Both longitudinal and transverse displacements evident. 2: Bearing / shims displacing relative to each other. 3: Bearing squeezed out. Shims displaced relative to each other. 4: Bearing / shims displacing relative to each other.
8058		T	3.36	4.13					1: Bearing / shims displacing relative to each other. 2: Bearing / shims displacing relative to each other. 3: Bearing / shims displacing relative to each other. Both longitudinal and transverse displacements evident. 4: Bearing / shims displacing relative to each other.
9343	42353	F			2.37	0.05		5.3	1: Bearing / shims, minor displacements relative to each other. 2: Bearing almost out. Longitudinal movements, pad hanging over edge of bearing shelf, evident. Lateral movements evident from bearing / shims displacing relative to each other. 3: Bearing / shims, minor displacements relative to each other. 4: Bearing / shims look to be aligned, no obvious or discernible displacement.
10016	42352	F			5.45	1.12		7.3	1: Bearing / shims, minor displacements relative to each other. 2: No bearing visible, shims coming out. Gaps between shim to shim and shim to concrete interfaces. 3: Bearing / shims, minor displacements relative to each other.

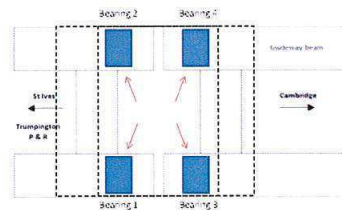
INVESTIGATION F SUMMARY



File name of photograph takes the form ch(chainage)_[Direction]_[Bearing Number].jpg

Chainage	Date	TO/ FROM	Steps 6-5 mm Outer To Camb	Steps 8-7 mm Inner To Camb	Steps 6-5 mm Inner From Camb	Steps 8-7 mm Outer From Camb	Inv C mm Outer	Inv C mm Inner	Comments on F1 Photographs
									2-4 is Outer Beam; 1-3 is Inner Beam to Cambridge 2-4 is Inner Beam; 1-3 is Outer Beam from Cambridge
10495	42352	T	1.92	9.91			9.7		1: Bearing / shims, minor displacements relative to each other. 2: Bearing / shims, minor displacements relative to each other. 3: Bearing "nearly" out, displaced longitudinally off bearing shelf and transversely towards the outside of the ladder assembly. 4: Bearing / shims displacing relative to each other.
10510	42352	T	0.47	1.53					1: Bearing / shims displacing relative to each other. Both longitudinal and transverse displacements evident. 2: Bearing / shims displacing relative to each other. 3: Bearing / shims displacing relative to each other. 4: Bearing / shims displacing relative to each other.
11051	42353	F			2.03	1.15			1: Bearing / shims displacing relative to each other. 2: Bearing / shims displacing relative to each other. 3: Bearing / shims displacing relative to each other. 4: Bearing / shims displacing relative to each other.
11066	42353	F			6.83	0.58	2.1	7.6	1: Shims coming out relative to bearing. Bearing moved back from edge of bearing shelf? 2: Bearing almost out. Longitudinal movements, pad hanging over edge of bearing shelf, evident. Lateral movements evident from bearing / shims displacing relative to each other. 3: Bearing / shims look to be aligned, no obvious or discernible displacement. 4: Bearing / shims displacing relative to each other.
11276	42353	F			1.39	1.06			1: Bearing / shims displacing relative to each other. Both longitudinal and transverse displacements evident. 2: Bearing / shims displacing relative to each other. 3: Bearing at edge of bearing shelf? Bearing / shims displacing relative to each other. 4: Bearing out of position both longitudinally (edge should be 50mm back from centre of joint, estimate to be around 10mm in photograph) and laterally (edge should be around 250mm from inside edge of beam, seems to be at back of lateral restraint bracket, that is at beam edge, in photograph). Second photograph shows edge of bearing more or less at inside edge of beam. Spacer beam looks to be twisted?
11291	42353	F			3.69	2.1		2.7	1: Bearing / shims displacing relative to each other. 2: Bearing / shims displacing relative to each other. 3: Bearing / shims displacing relative to each other. 4: Bearing / shims displacing relative to each other.
11816	42353	T	9.66	3.35			11.3	3.5	1: Bearing / shims displacing relative to each other. 2: Bearing / shims displacing relative to each other. 3: Bearing / shims displacing relative to each other. 4: Bearing and/or shims coming out. Bearing moved out laterally and projecting beyond internal face of guideway beam. Guideway beam dropped in level relative to spacer beam.
11831	42353	T	0.61	1.54				2.4	1: Bearing / shims displaced laterally and coming out. Bearing rotating about edge of lateral restraint bracket and coming out beneath spacer beam. 2: Bearing / shims look to be aligned, no obvious or discernible displacement. 3: Bearing / shims displacing relative to each other. Both longitudinal (approx. 60mm) and transverse displacements evident. 4: Bearing / shims displacing relative to each other.
13526	42353	F			0.31	4.85	6.5		1: Bearing / shims displacing relative to each other. 2: Bearing / shims displacing relative to each other. 3: Bearing and shims almost out. Pad bearing hanging over edge of bearing shelf? 4: Bearing / shims look to be more or less aligned, no obvious displacements.
14319	42353	T	3.22	1.28			3.5	2.1	1: Bearing / shims displacing relative to each other. Both longitudinal and transverse displacements evident. 2: Bearing / shims look to be aligned, no obvious or discernible displacement. 3: Bearing / shims displacing relative to each other. 4: Bearing / shims displacing relative to each other.
15586	42353	T	7.7	1.31			8.1		1: No photo (Slab Interface) 2: No photo (Slab Interface) 3: Bearing / shims coming out relative to each other 4: Bearing / shims coming out relative to each other
15601	42353	T	2.04	0.3					1: Bearing / shims slightly displaced relative to each other. 2: Bearing / shims slightly displaced relative to each other. 3: Bearing / shims slightly displaced relative to each other. 4: Bearing / shims slightly displaced relative to each other.
16051	42354	F			7.2	11.26	7.9	7.8	1: Bearing / shims displacing relative to each other. 2: Bearing / shims displacing relative to each other. 3: No photo (Slab Interface) 4: No photo (Slab Interface)
16051	42354	T	7.47	6.24			7.2	2.9	1: Bearing / shims displacing relative to each other. Both longitudinal and transverse displacements evident. 2: Bearing / shims displacing relative to each other. 3: No photo (Slab Interface) 4: No photo (Slab Interface)
16061	42354	F			8.4	8.36	11.3	3.5	1: No photo (Slab Interface) 2: No photo (Slab Interface) 3: Bearing / shims look to be aligned, no obvious or discernible displacement. 4: Bearing / shims displaced relative to each other. Shims / bearing coming out?

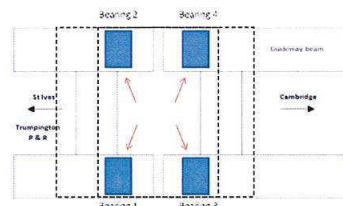
INVESTIGATION F SUMMARY



File name of photograph takes the form ch[chainage]_[Direction]_[Bearing Number].jpg

Chainage	Date	TO/ FROM	Steps 6-5 mm Outer To Camb	Steps 8-7 mm Inner To Camb	Steps 6-5 mm Inner From Camb	Steps 8-7 mm Outer From Camb	Inv C mm Outer	Inv C mm Inner	Comments on F1 Photographs
									2-4 is Outer Beam; 1-3 is Inner Beam to Cambridge 2-4 is Inner Beam; 1-3 is Outer Beam from Cambridge
16061	42354	T	4.65	2.41				4.4	1: No photo (Slab Interface) 2: No photo (Slab Interface) 3: Bearing / shims slightly displaced relative to each other. 4: Bearing / shims slightly displaced relative to each other.
16076	42354	F			0.68	0.45			1: Bearing / shims slightly displaced relative to each other. 2: Bearing / shims look to be aligned, no obvious or discernible displacement. 3: Bearing / shims slightly displaced relative to each other. 4: Bearing / shims look to be aligned, no obvious or discernible displacement.
16391	42353	F			8.65	1.92		8.6	1: Bearing / shims displaced relative to each other. 2: Bearing pad and shims completely displaced relative to each other. Shims and bearing beside each other. 3: Bearing / shims displacing relative to each other. 4: Bearing / shims slightly displaced relative to each other.
17181	42353	T	6.92	0.05				8.8	1: Bearing / shims slightly displaced relative to each other. 2: Bearing / shims slightly displaced relative to each other. 3: Bearing / shims displacing relative to each other. 4: Bearing and/or shims out?
17196	42353	T	0.84	0.62				3	1: Bearing / shims slightly displaced relative to each other. 2: Bearing / shims slightly displaced relative to each other. 3: Bearing / shims look to be aligned, no obvious or discernible displacement. 4: Shims parting, beam lifting?
17226	42353	F			8.76	0.99		11	1: Bearing / shims look to be aligned, no obvious or discernible displacement. 2: Bearing / shims look to be aligned but all out of position and just over edge of bearing shelf. 3: Bearing / shims look to be aligned, no obvious or discernible displacement. 4: Bearing almost out, hanging over edge of bearing shelf.
17241	42353	F			2.29	0.3			1: Bearing / shims look to be aligned, no obvious or discernible displacement. 2: Bearing / shims look to be aligned, no obvious or discernible displacement. 3: Bearing / shims slightly displaced relative to each other. 4: Bearing / shims slightly displaced relative to each other.
17531	42354	F			5.66	8.06		7.3	1: No photo (Slab Interface) 2: No photo (Slab Interface) 3: Displaced shims which are twisted relative to bearing 4: Possibly no shims or 1 No. 2mm aligned shim
17531	42354	T	5.72	18.5			3.4	9.2	1: No photo (Slab Interface) 2: No photo (Slab Interface) 3: Bearing and shims out, displaced out longitudinally and off of bearing shelf. Photo aligns with readings. 4: Bearing displaced, overhanging edge of bearing shelf. Photo aligns with readings.
17541	42354	F			1.08	0.9			1: Bearing / shims displaced relative to each other. 2: Bearing / shims slightly displaced relative to each other. 3: Bearing only visible - shims out? 4: Bearing only visible, no shims evident.
17541	42354	T	2.3	2.06					1: Shims displaced and/or gap at top of bearing, beam "lifting"? 2: No bearing, shims displaced, gap? 3: No shims visible 4: No shims visible
17616	42353	F			0.02	1.23			1: Bearing / shims displacing relative to each other. 2: Bearing / shims displacing relative to each other. Top shim projecting out towards edge of bearing shelf. 3: Bearing / shims displacing relative to each other. Top shims projecting out towards bearing shelf? 4: Bearing / shims displacing relative to each other.
17631	42353	F			10.04	6.36		10	1: No bearing pad visible, bearing out? Shims displaced relative to each other. 2: Bearing out and shims displaced relative to each other. Gap between shims and beam? 3: Bearing / shims displaced relative to each other. 4: Bearing / shims slightly displaced relative to each other.
17781	42354	T	2.62	15.02			3.8	15.3	1: Bearing / shims displaced relative to each other. 2: Bearing / shims slightly displaced relative to each other, excessive shims. 3: Bearing out, shims displaced relative to each other, over edge of bearing shelf, excessive shims. 4: Bearing / shims slightly displaced relative to each other, excessive shims
17796	42354	T	0.98	0.44					1: Bearing / shims displacing relative to each other. Excessive shims. 2: Bearing / shims displaced relative to each other. Bearing and/or shims coming out. Excessive shims. 3: Bearing / shims slightly displaced relative to each other. Assembly looks to be out of position, too close to edge of bearing shelf? Excessive shims. 4: Bearing / shims slightly displaced relative to each other. Assembly looks to be out of position, too close to edge of bearing shelf? Excessive shims.
18906	42354	F			10.55	10.62	5.8	3	1: Bearing / shims look to be aligned, no obvious or discernible displacement. 2: Bearing / shims slightly displaced relative to each other. 3: No photo (Slab Interface) 4: No photo (Slab Interface)

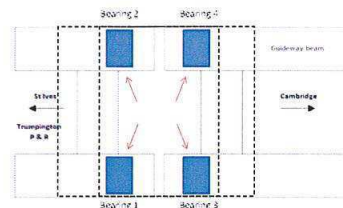
INVESTIGATION F SUMMARY



File name of photograph takes the form ch(chainage)_[Direction]_(Bearing Number).jpg

Chainage	Date	TO/ FROM	Steps 6-5 mm Outer To Camb	Steps 8-7 mm Inner To Camb	Steps 6-5 mm Inner From Camb	Steps 8-7 mm Outer From Camb	Inv C mm Outer	Inv C mm Inner	Comments on F1 Photographs
2-4 is Outer Beam; 1-3 is Inner Beam to Cambridge 2-4 is Inner Beam; 1-3 is Outer Beam from Cambridge									
18906	42354	T	8.59	14.71			6	8.9	1: Bearing / shims slightly displaced relative to each other. 2: Bearing / shims slightly displaced relative to each other. 3: No photo (Slab Interface) 4: No photo (Slab Interface)
20280	42354	T	10.74	5.07			6.6	2	1: No photo (Slab Interface) 2: No photo (Slab Interface) 3: Bearing / shims slightly displaced relative to each other. 4: Bearing / shims look to be aligned, no obvious or discernable displacement.
SOUTHERN SECTION									
40658	42354	F			0.38	6.33	4.9		1: Bearing and shims out? 2: Bearing / shims look to be aligned, no obvious or discernable displacement. 3: Bearing / shims displaced relative to each other. 4: Bearing / shims displaced relative to each other.
42588	42354	T	5.66	0.24			5.1	2.3	1: Bearing / shims slightly displaced, possibly rotated/twisted relative to each other. 2: Bearing / shims slightly displaced relative to each other. 3: No photo (Slab Interface). 4: No photo (Slab Interface).
43232	42354		1.63	2.73			2.7	2.1	1: Bearing / shims possibly twisted. Partly obscured and poor photograph. Material "poured" around bearing to hold/fix in place? 2: Material "poured" around bearing to hold/fix in place? 3: Bearing partly obscured and poor photograph. Material "poured" around bearing to hold/fix in place? 4: Material "poured" around bearing to hold/fix in place?
43242	42354		0.8	3.9			4.1		1: Bearing / shims displaced relative to each other. Longitudinal movement, edge of bearing and shims at or approaching extent of bearing shelf? 2: No shims? 3: Bearing partly obscured and poor photograph. Material "poured" around bearing to hold/fix in place? 4: Bearing partly obscured and poor photograph. Material "poured" around bearing to hold/fix in place? No shims?
43252	42354		0.72	1					1: No shims? 2: Bearing / shims look to be aligned, no obvious or discernable displacement. Material "poured" around bearing to hold/fix in place? 3: Bearing / shims displaced relative to each other. Both longitudinal and transverse displacements evident. 4: Bearing / shims slightly displaced relative to each other?
43312	42354		4.42	0.9			4.8		1: Bearing / shims slightly displaced relative to each other. 2: Bearing almost out. Longitudinal movements, pad hanging over edge of bearing shelf, evident. Lateral movements evident from bearing / shims displacing and rotating relative to each other. 3: Bearing / shims slightly displaced relative to each other. 4: Bearing / shims displaced relative to each other. Bearing looks to be displaced longitudinally with edge around extent of bearing shelf.
60052	42355	F			12.21	7.93		4.2	1: Bearing / shims displaced relative to each other. 2: Bearing / shims displaced relative to each other. 3: No photo (Slab Interface). 4: No photo (Slab Interface).
60052	42355	T	4.98	4.21			5.9		1: Bearing / shims slightly displaced relative to each other. 2: Bearing / shims displaced relative to each other. 3: No photo (Slab Interface). 4: No photo (Slab Interface).
60262	42355	F			22.8	19.42	4.5		1: Bearing and/or shims coming out. Bearing has displaced laterally to inner face of guideway beam / back of lateral restraint bracket. 2: Bearing / shims slightly displaced relative to each other. 3: Bearing / shims slightly displaced relative to each other. 4: Bearing / shims slightly displaced relative to each other.
60272	42355	F			19.33	26.84		3.3	1: Bearing / shims displaced relative to each other. 2: Bearing/shims displaced significantly relative to each other (circa 200mm or more) 3: Bearing and shims displaced relative to each other. Edge of bearing slightly projecting over edge of bearing shelf. 4: Bearing and shims reasonably aligned, little relative displacement. Whole assembly seems to be at edge of bearing shelf.

INVESTIGATION F SUMMARY



File name of photograph takes the form ch(chainage)_[Direction]_[Bearing Number].jpg

Chainage	Date	TO/ FROM	Steps 6-5 mm Outer To Camb	Steps 8-7 mm Inner To Camb	Steps 6-5 mm Inner From Camb	Steps 8-7 mm Outer From Camb	Inv C mm Outer	Inv C mm Inner	Comments on F1 Photographs
60292	42355	F			20.21	24.52		3.3	2-4 is Outer Beam; 1-3 is Inner Beam to Cambridge 2-4 is Inner Beam; 1-3 is Outer Beam from Cambridge 1: Bearing / shims displaced relative to each other. 2: Shims and bearing significantly displaced relative to each other. Movement looks to be laterally. 3: Bearing / shims look to be aligned, no obvious or discernable displacement. Whole arrangement looks to be at edge of bearing shelf. 4: Bearing / shims slightly displaced relative to each other. Shims and bearing oversailing edge of bearing shelf.
60512	42355	F			35.28	26.59	6.4	8.9	1: No photo (Slab Interface) 2: No photo (Slab Interface) 3: Bearing / shims slightly displaced relative to each other. 4: Bearing / shims slightly displaced relative to each other. Bearings and shims look to be out of position longitudinally towards edge of bearing shelf.
60512	42355	T	14.55	27.59			11.7	4.3	1: No photo (Slab Interface) 2: No photo (Slab Interface) 3: Bearing / shims slightly displaced relative to each other. 4: No shims?

Blank for double-sided printing

APPENDIX F – PROBABLE MECHANISM FOR ‘WALKING’ OF BEARINGS

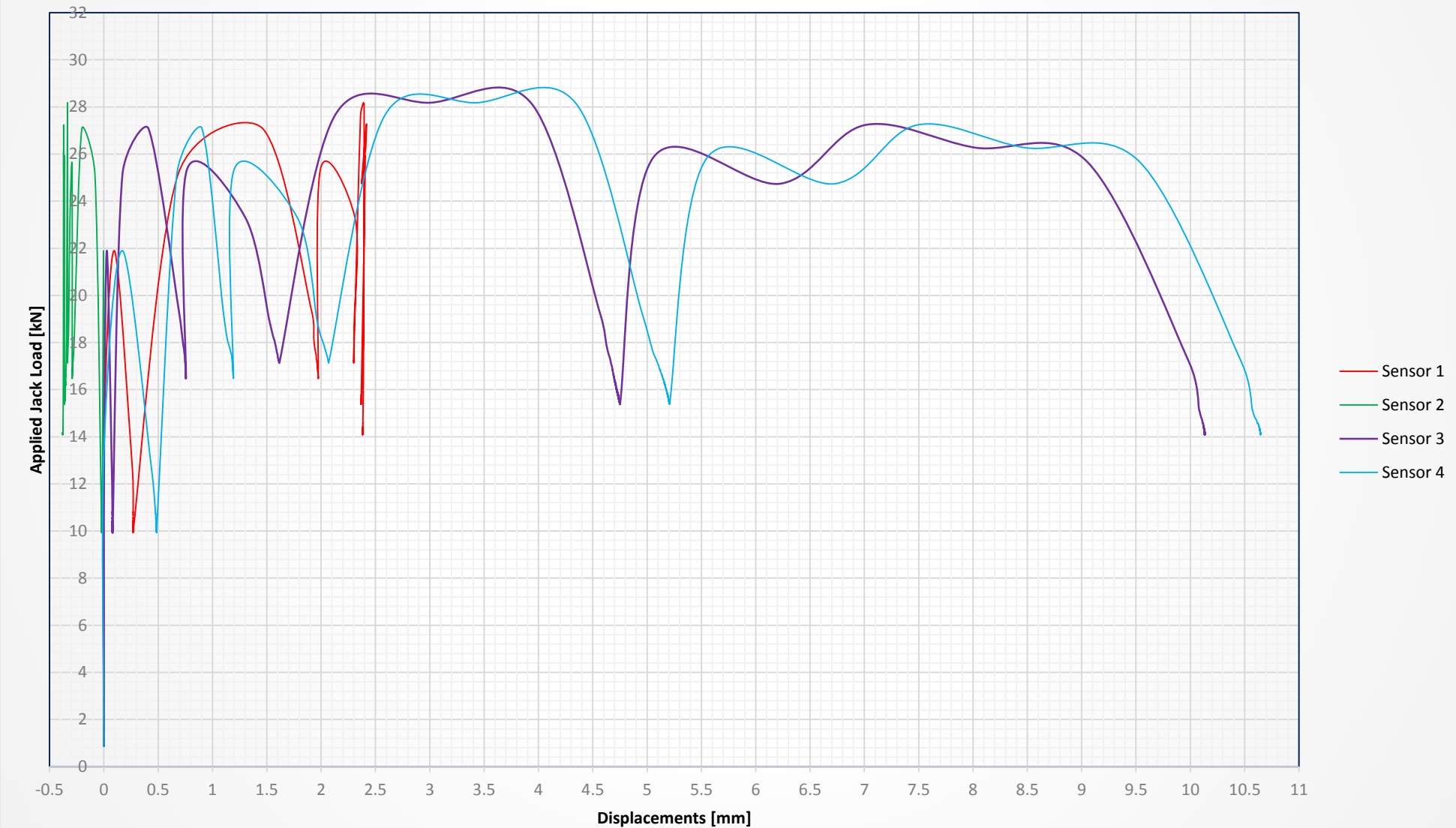
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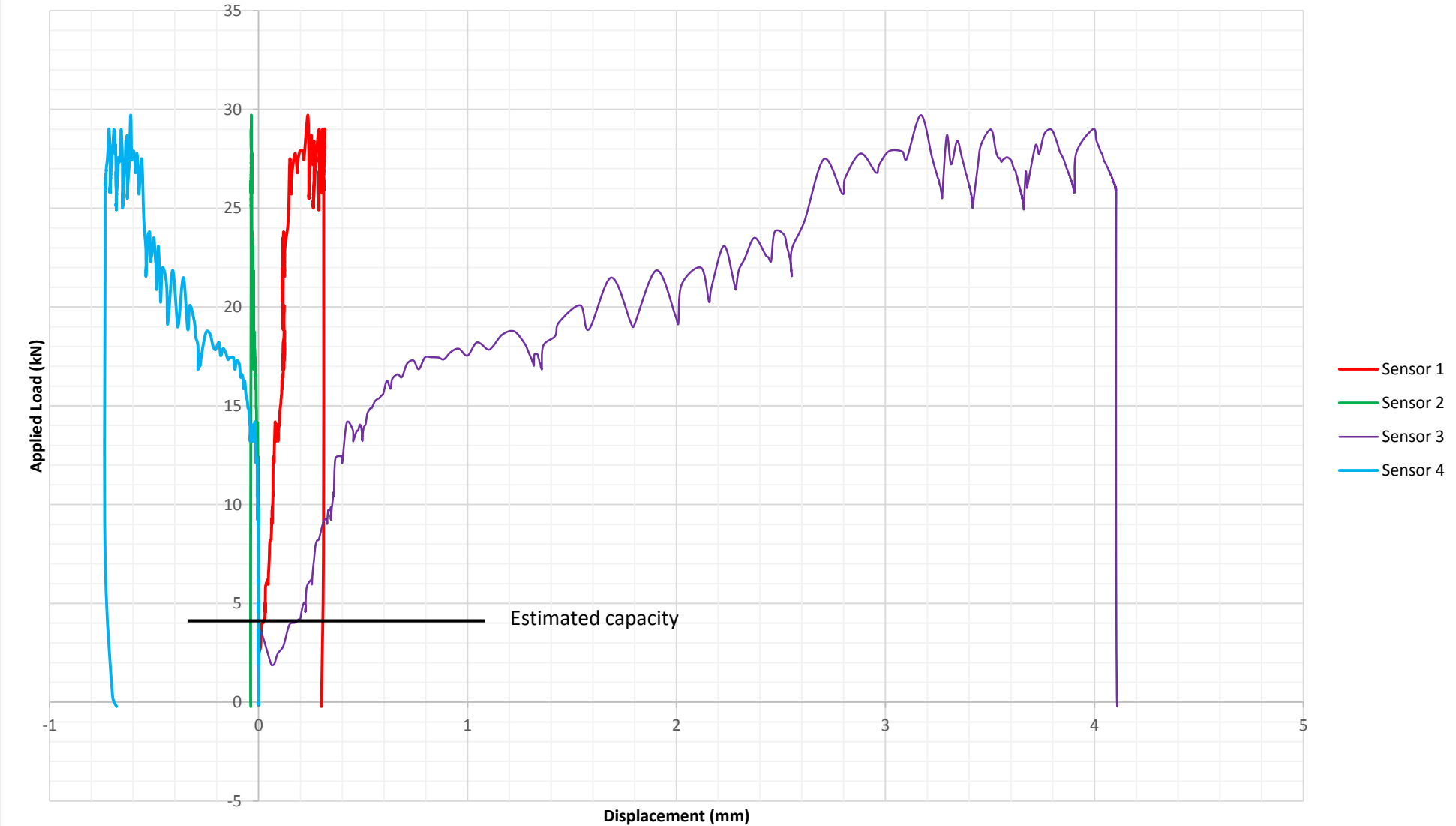
APPENDIX G – INVESTIGATION E CHARTS

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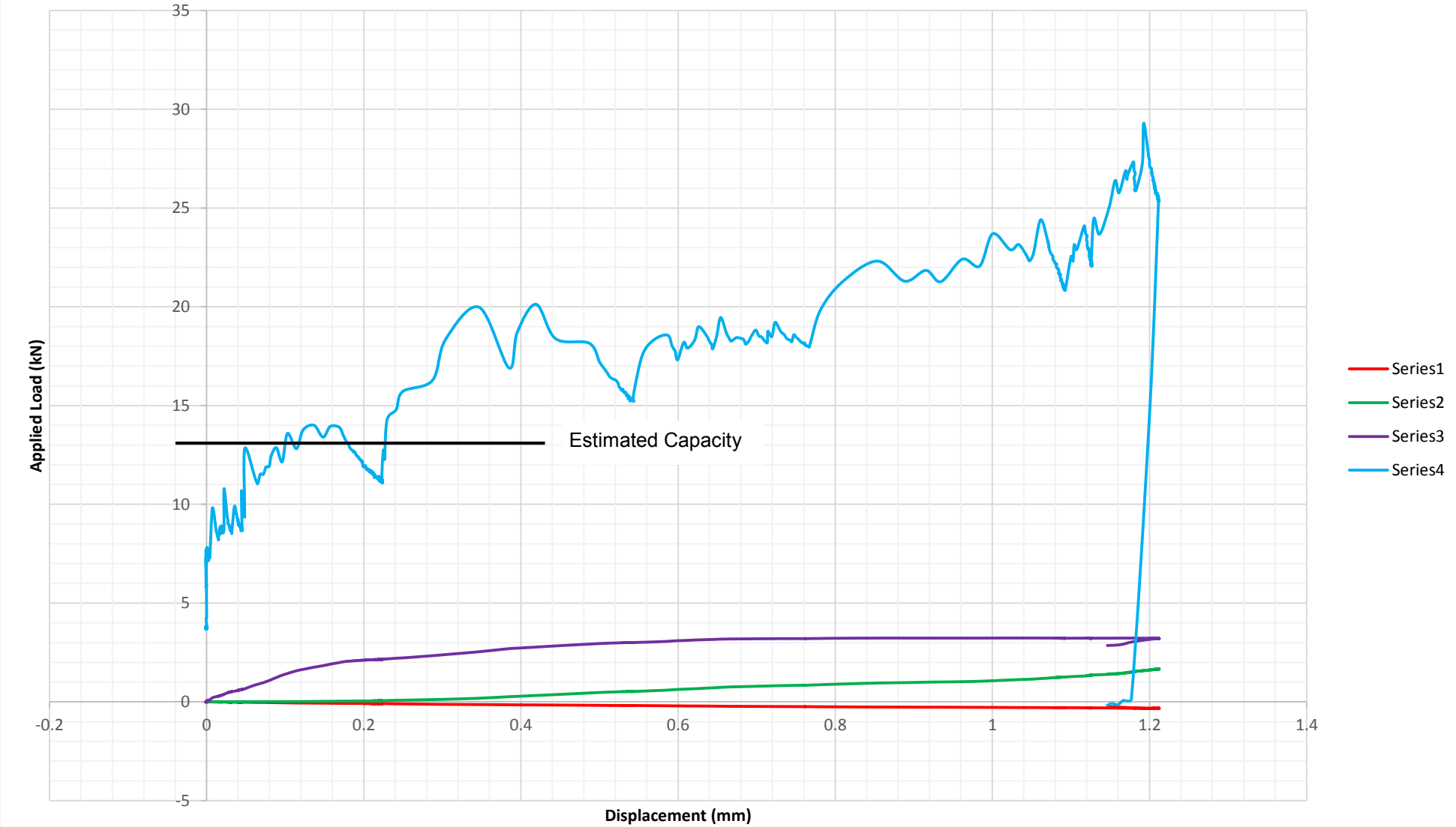
Investigation E Test 1a
09/12/2015 (02.59 to 03.09)



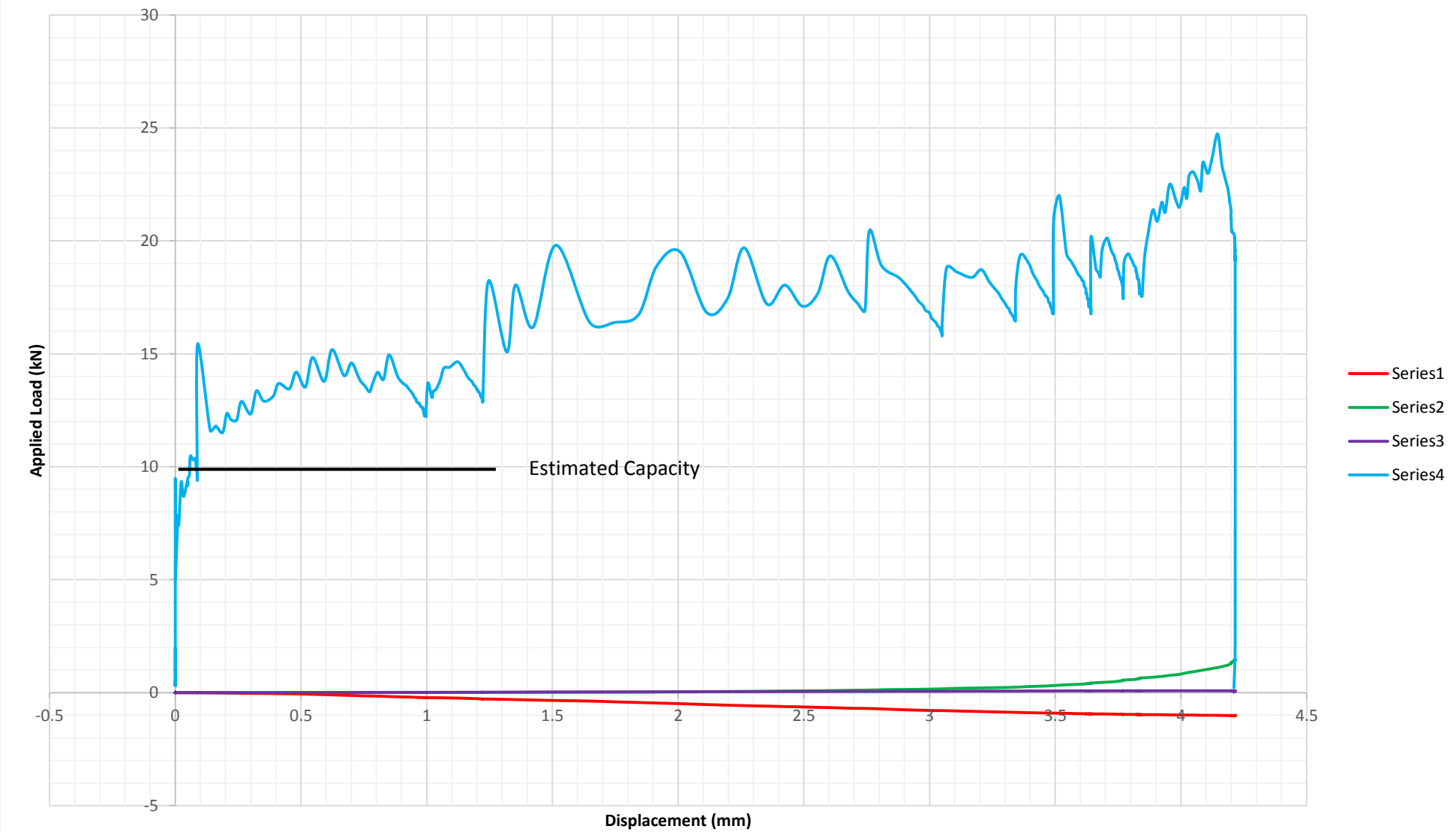
Investigation E Test 2
14/12/2015 (00:48 to 00:58)

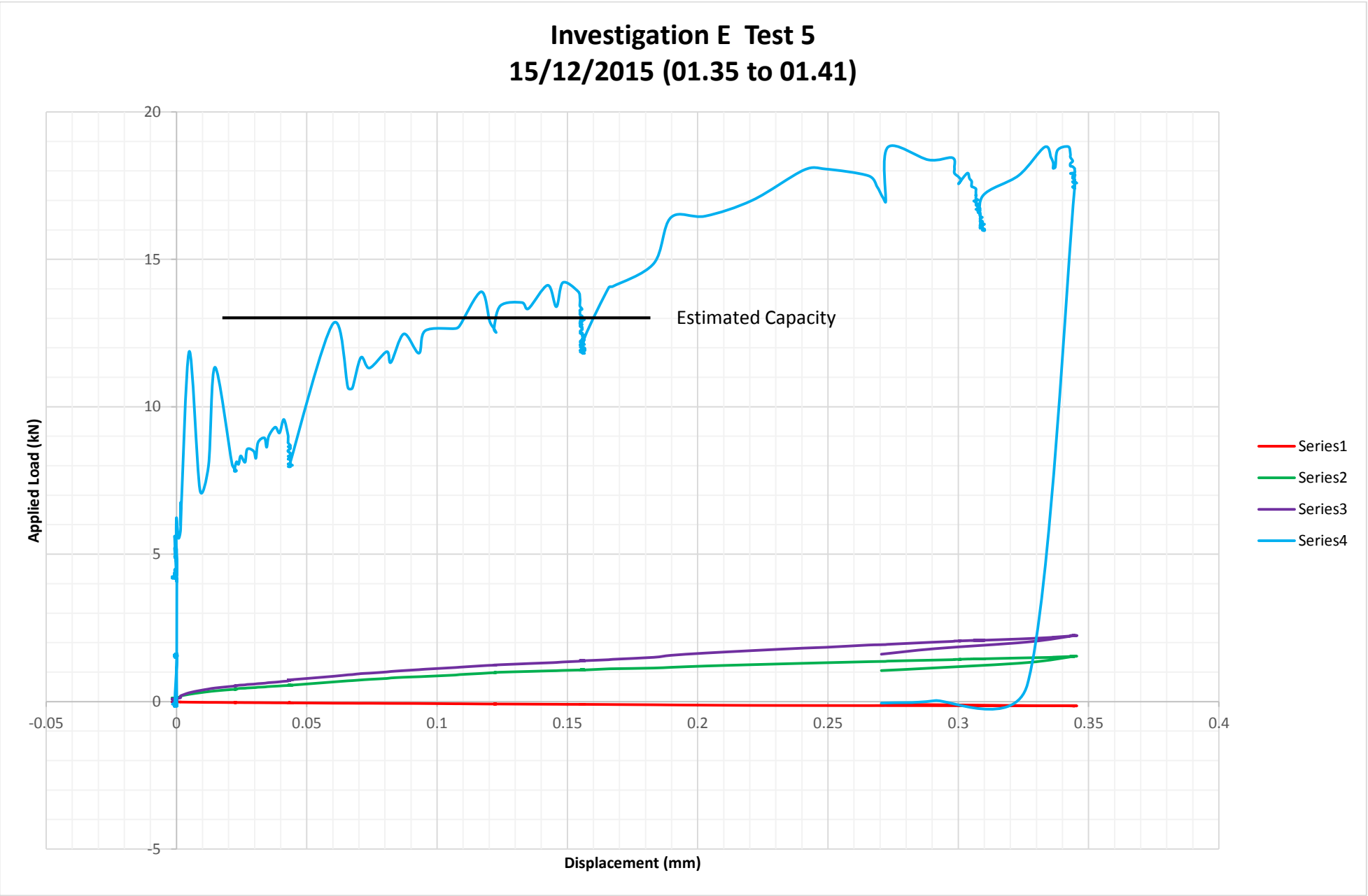


Investigation E Test 3
14/12/2015 (02.28 to 02.42)

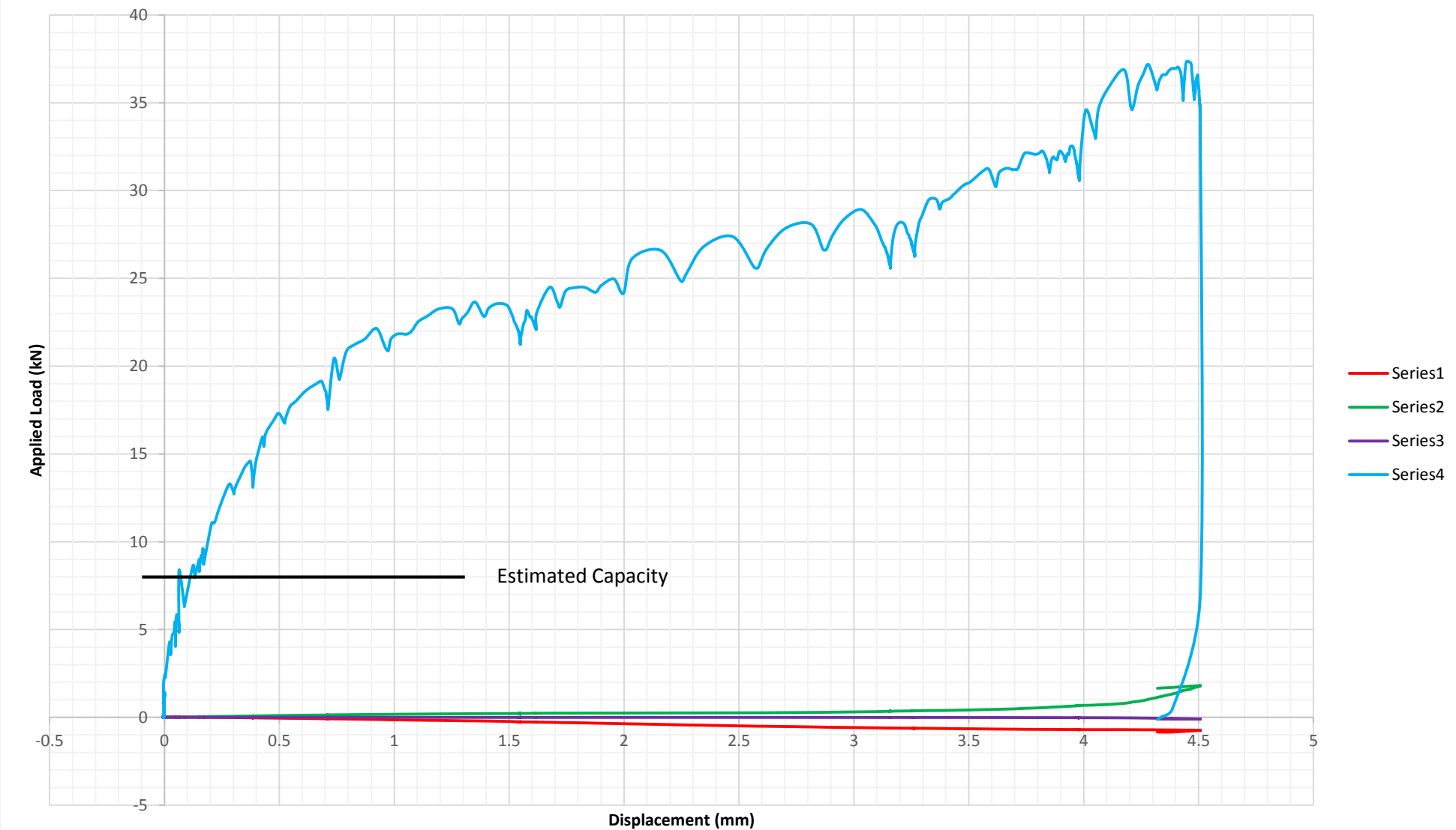


Investigation E Test 4
14/12/2015 (03.59 - 04.08)

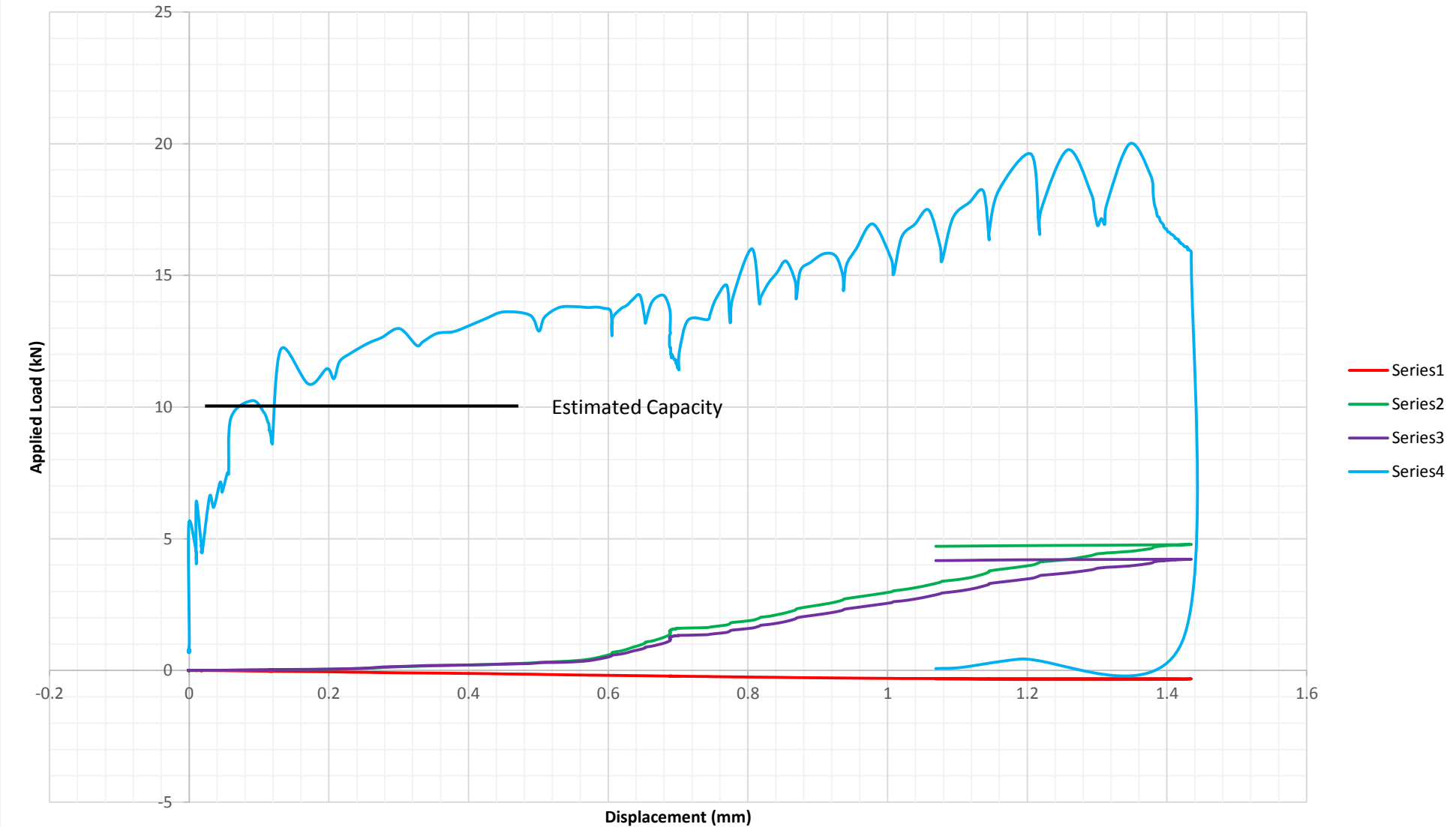




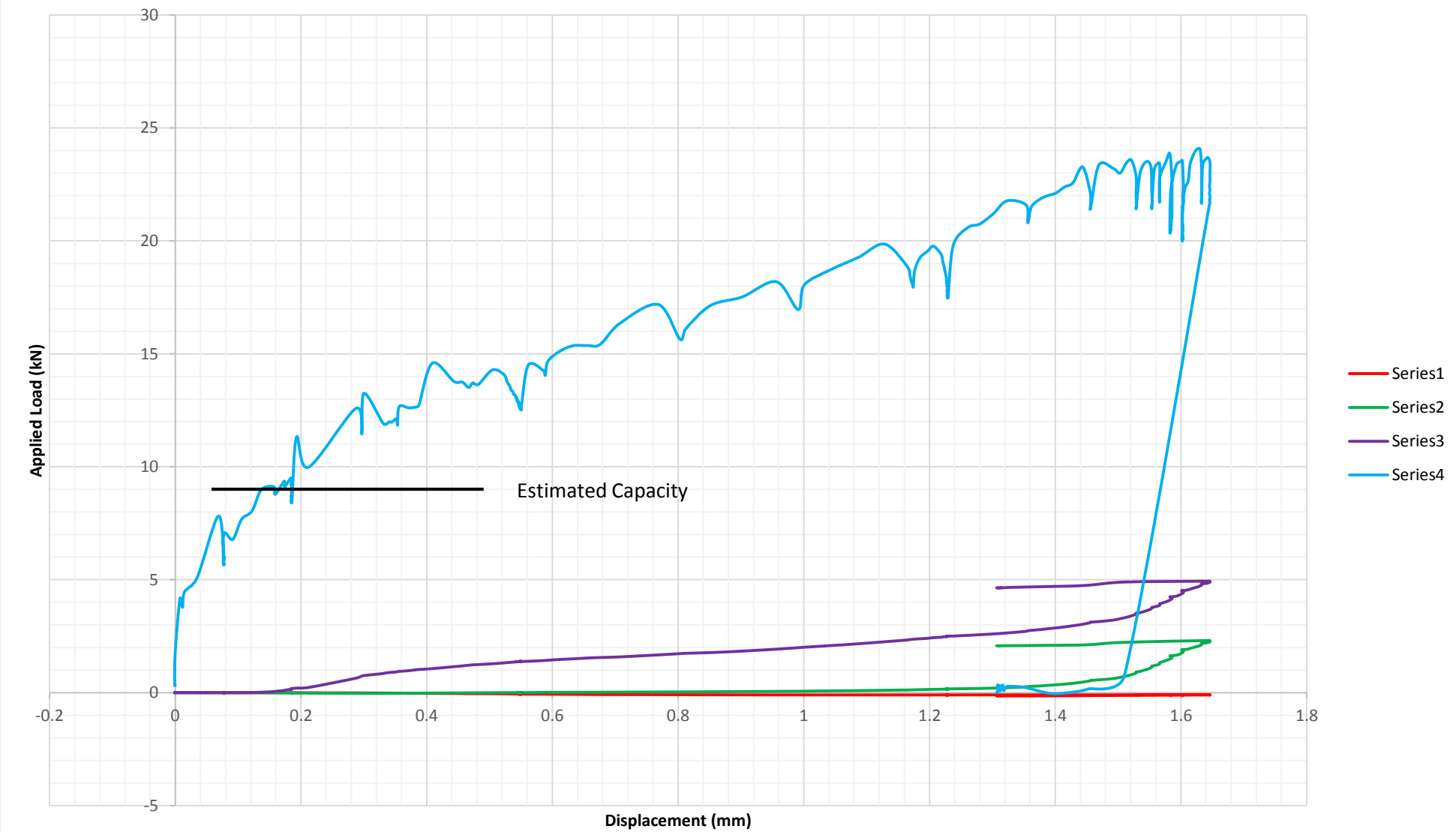
Investigation E Test 6
15/12/2015 (02.19 to 02.32)



Investigation E Test 7
15/12/2016 (03.22 to 03.27)



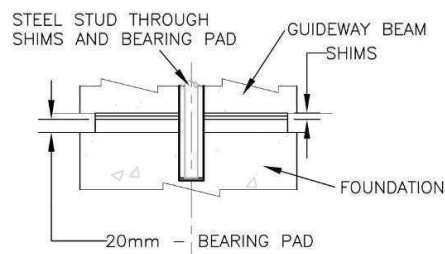
Investigation E Test 8
15/12/2015 (04.05 to 04.13)



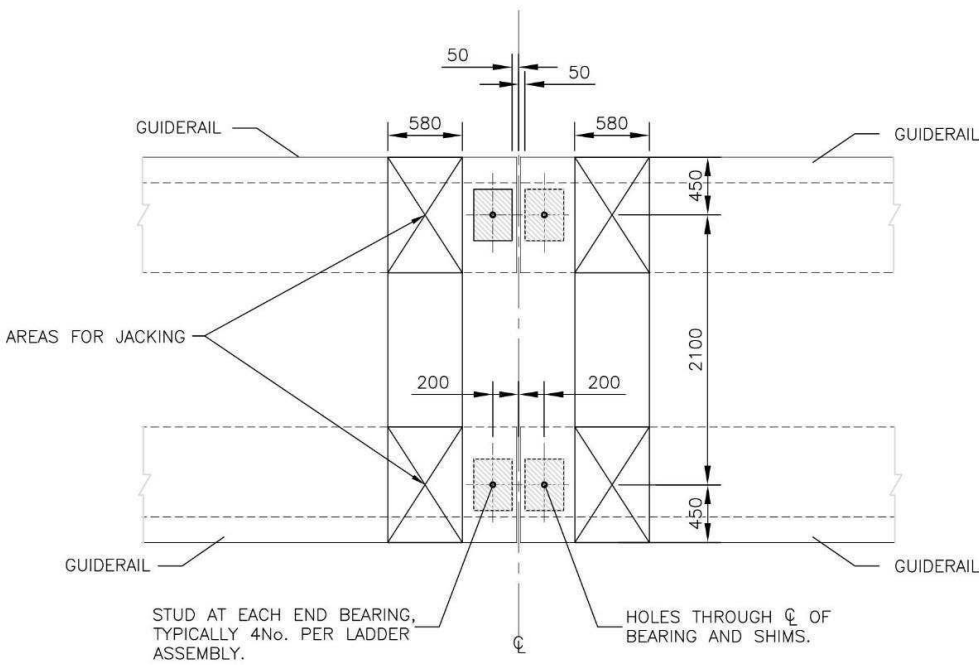
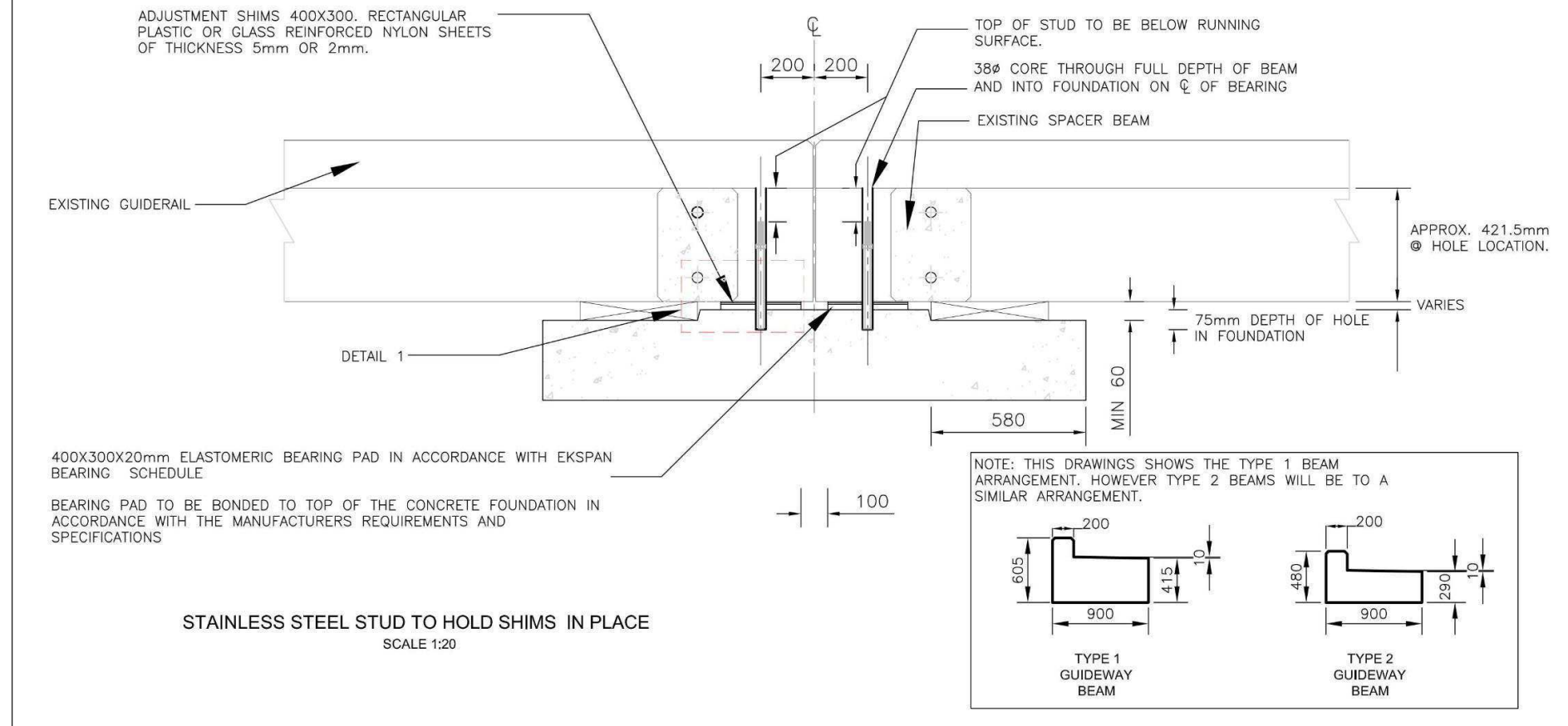
APPENDIX H – INDICATIVE REMEDIAL MEASURES

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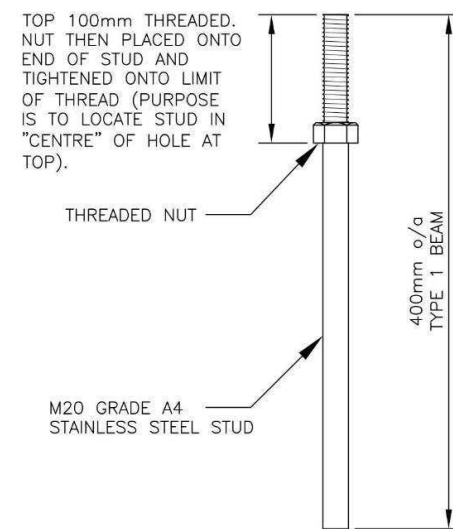
1. WHOLE OF LADDER ASSEMBLY TO BE FULLY EXCAVATED SUCH THAT ALL THE STRUCTURE, BRACKETS ETC ARE FULLY EXPOSED. THIS MAY ALSO REQUIRE REMOVAL OF CONCRETE KERBING WHERE ADJACENT TO PLATFORMS AND/OR MAINTENANCE TRACK. ALL MATERIALS TO BE SET ASIDE FOR RE-USE UNLESS AGREED OTHERWISE IN ADVANCE.
2. LADDER TO BE RAISED SUCH THAT:
A. ACCESS TO ALL BEARINGS AND SHIMS IS PROVIDED
B. ACCESS TO ALL THE TENSIONED BOLTS CAN BE MADE TO ENABLE THE LADDER TO BE TAKEN APART AND SUBSEQUENTLY RE-ASSEMBLED.
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4. THE TENSION IS TO BE CAREFULLY RELEASED, THE SPACERBEAMS REMOVED, AND ALL ITEMS SET ASIDE FOR RE-USE. ANY DAMAGED ITEMS SHOULD BE MADE GOOD OR REPLACED.
5. TOP OF CONCRETE AND UNDERSIDE OF GUIDE BEAMS, AT ALL BEARING POSITIONS TO BE CLEANED SUCH THAT ALL LOOSE DEBRIS AND DETRITUS IS REMOVED AND CLEAN CONCRETE SURFACES ARE PRESENTED. CONSIDERATION TO BE GIVEN TO ROUGHENING CONCRETE CONTACT SURFACE ON THE BOTTOM OF THE BEAM TO IMPROVE FRICTION
6. HOLES TO BE CORED ,TOP TO BOTTOM, THROUGH EACH END OF THE GUIDE BEAMS ON EACH SIDE, FOUR NUMBER HOLES PER LADDER ASSEMBLY, CORE TO CONTINUE 75MM INTO TOP OF FOUNDATION AT CENTRE OF INTENDED BEARING LOCATION.
7. EACH SHIM AND BEARING PAD TO ALSO HAVE HOLE CAREFULLY DRILLED THROUGH IT AT CENTRE, IN ACCORDANCE WITH ANY MANUFACTURERS RESTRICTIONS AND REQUIREMENTS.
8. STUD TO BE LOWERED DOWN THROUGH HOLES, USING "T-BAR" OR SIMILAR , AND THREADED COUPLER TO FACILITATE. APPROPRIATE LEVELLING SHIMS AND ELASTOMERIC BEARING TO BE ALIGNED SUCH THAT STUD PASSES THROUGH CENTRAL HOLE AND DOWN INTO HOLE FORMED IN TOP OF FOUNDATION.
9. ELASTOMERIC PAD TO BE BONDED TO TOP OF CONCRETE FOUNDATION IN ACCORDANCE WITH THE MANUFACTURER REQUIREMENTS AND SPECIFICATION.
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11. ONCE LEVELLED, BUNG HOLES IN RUNNING SURFACE.
12. THE FINAL ORDER OF OPERATIONS TO BE DISCUSSED AND AGREED WITH CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORKS.



DETAIL 1
SCALE 1:10



PLAN ON BEARINGS
SCALE 1:50



TYPICAL STAINLESS STEEL STUD ARRANGEMENT

SCALE 1:5

STUD INTO FOUNDATION - REQUIRED AT ALL END BEARINGS , THAT IS BOTH "FIXED" AND "FREE" JOINT LOCATIONS

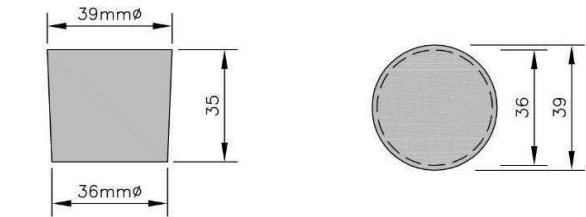
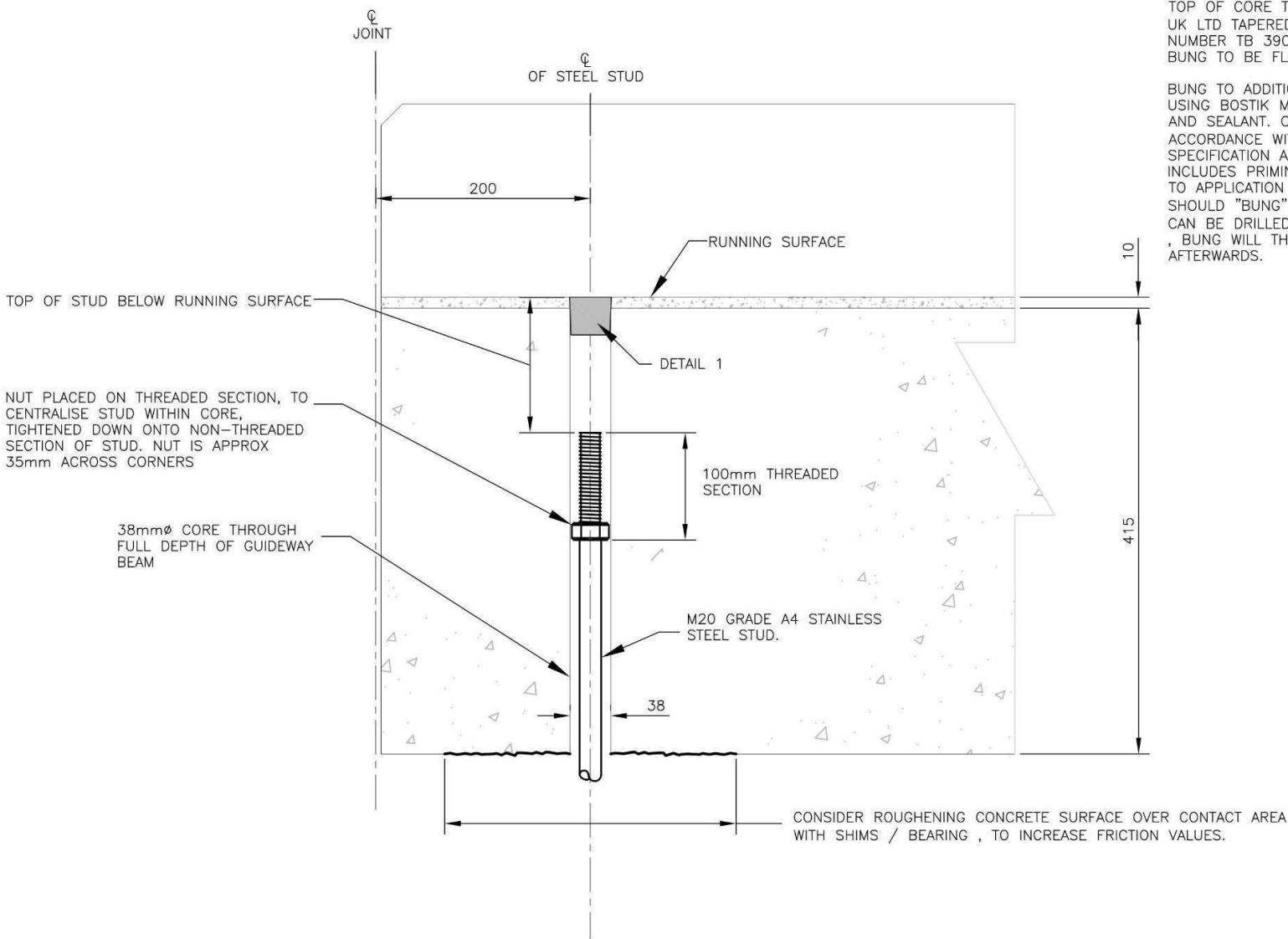
TYPE 1 BEAMS
(TYPE 2 BEAMS SIMILAR)
DRAWING 1 - PROVIDING BEARING/SHIM RESTRAINT - SHEET 1 OF 3
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1. WHOLE OF LADDER ASSEMBLY TO BE FULLY EXCAVATED SUCH THAT ALL THE STRUCTURE, BRACKETS ETC ARE FULLY EXPOSED. THIS MAY ALSO REQUIRE REMOVAL OF CONCRETE KERBING WHERE ADJACENT TO PLATFORMS AND/OR MAINTENANCE TRACK. ALL MATERIALS TO BE SET ASIDE FOR RE-USE UNLESS AGREED OTHERWISE IN ADVANCE.
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6. HOLES TO BE CORED ,TOP TO BOTTOM, THROUGH EACH END OF THE GUIDE BEAMS ON EACH SIDE, FOUR NUMBER HOLES PER LADDER ASSEMBLY, CORE TO CONTINUE 75MM INTO TOP OF FOUNDATION AT CENTRE OF INTENDED BEARING LOCATION.
7. EACH SHIM AND BEARING PAD TO ALSO HAVE HOLE CAREFULLY DRILLED THROUGH IT AT CENTRE, IN ACCORDANCE WITH ANY MANUFACTURERS RESTRICTIONS AND REQUIREMENTS.
8. STUD TO BE LOWERED DOWN THROUGH HOLES, USING "T-BAR" OR SIMILAR , AND THREADED COUPLER TO FACILITATE. APPROPRIATE LEVELLING SHIMS AND ELASTOMERIC BEARING TO BE ALIGNED SUCH THAT STUD PASSES THROUGH CENTRAL HOLE AND DOWN INTO HOLE FORMED IN TOP OF FOUNDATION.
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11. ONCE LEVELLED, BUNG HOLES IN RUNNING SURFACE.
12. THE FINAL ORDER OF OPERATIONS TO BE DISCUSSED AND AGREED WITH CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORKS.



TOP OF DRILLED CORE TO BE PLUGGED WITH GROMMETS UK LTD TAPERED RUBBER BUNG(G11), PART NUMBER TB 390-360-350 OR SIMILAR.

DETAIL 1
SCALE: 1:2

STUD THROUGH GUIDEWAY BEAMS
TYPE 1 BEAMS
(TYPE 2 BEAMS SIMILAR)

DRAWING 2 - PROVIDING BEARING/SHIM RESTRAINT - SHEET 2 OF 3
FOR BUDGET PRICING PURPOSES ONLY

TOP OF CORE TO BE PLUGGED USING GROMMETS UK LTD TAPERED RUBBER BUNG(G11), PART NUMBER TB 390-360-350 OR SIMILAR. TOP OF BUNG TO BE FLUSH WITH RUNNING SURFACE.

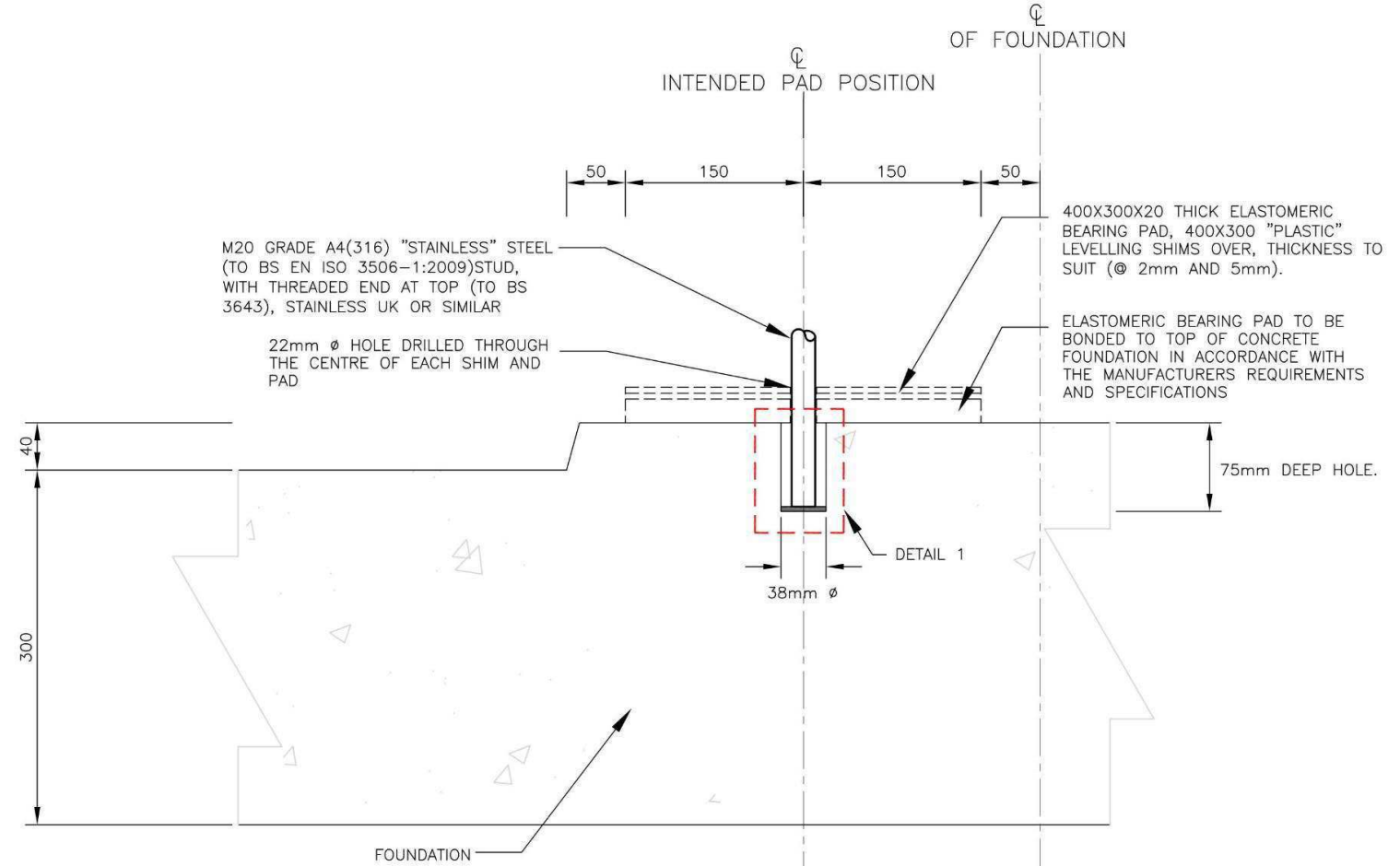
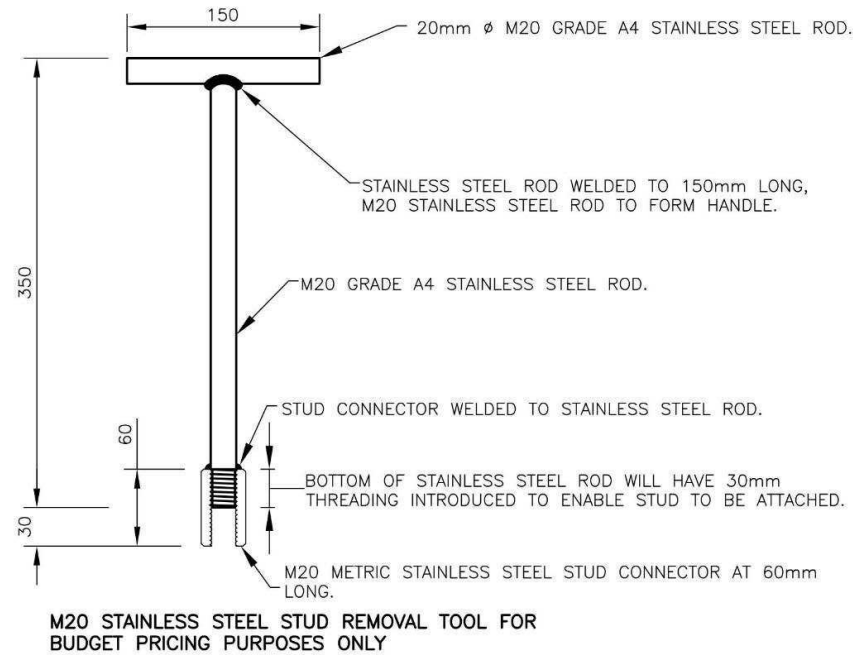
BUNG TO ADDITIONALLY BE BUNDED IN PLACE USING BOSTIK MAX, OR SIMILAR, FILLING ADHESIVE AND SEALANT. CONCRETE TO BE PREPARED IN ACCORDANCE WITH THE MANUFACTURE'S SPECIFICATION AND REQUIREMENTS WHICH INCLUDES PRIMING WITH SIMSON PREP M PRIOR TO APPLICATION OF BOSTIK MAX. SHOULD "BUNG" NEED SUBSEQUENT REMOVAL IT CAN BE DRILLED AND "HOOKED" / "PULLED" OUT , BUNG WILL THEN NEED REPLACEMENT WITH NEW AFTERWARDS.

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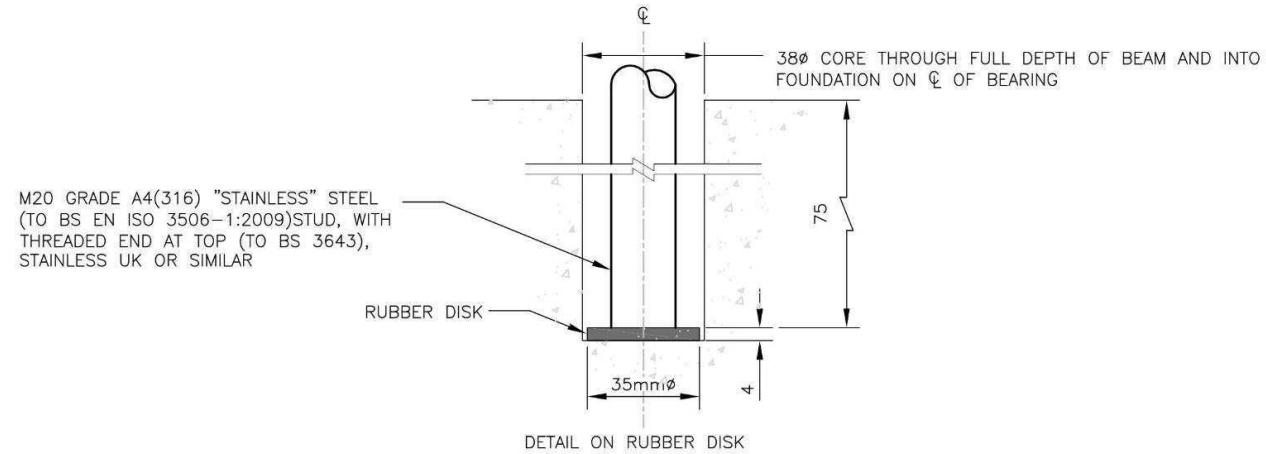
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1. WHOLE OF LADDER ASSEMBLY TO BE FULLY EXCAVATED SUCH THAT ALL THE STRUCTURE, BRACKETS ETC ARE FULLY EXPOSED. THIS MAY ALSO REQUIRE REMOVAL OF CONCRETE KERBING WHERE ADJACENT TO PLATFORMS AND/OR MAINTENANCE TRACK. ALL MATERIALS TO BE SET ASIDE FOR RE-USE UNLESS AGREED OTHERWISE IN ADVANCE.
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7. EACH SHIM AND BEARING PAD TO ALSO HAVE HOLE CAREFULLY DRILLED THROUGH IT AT CENTRE, IN ACCORDANCE WITH ANY MANUFACTURERS RESTRICTIONS AND REQUIREMENTS.
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11. ONCE LEVELLED, BUNG HOLES IN RUNNING SURFACE.
12. THE FINAL ORDER OF OPERATIONS TO BE DISCUSSED AND AGREED WITH CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORKS.



LONG SECTION ALONG FOUNDATION (PILE CAPS SIMILAR)

SCALE: 1:5



DETAIL 1

SCALE: 1:2

STUD TO "HOLD" SHIMS AND BEARING IN PLACE

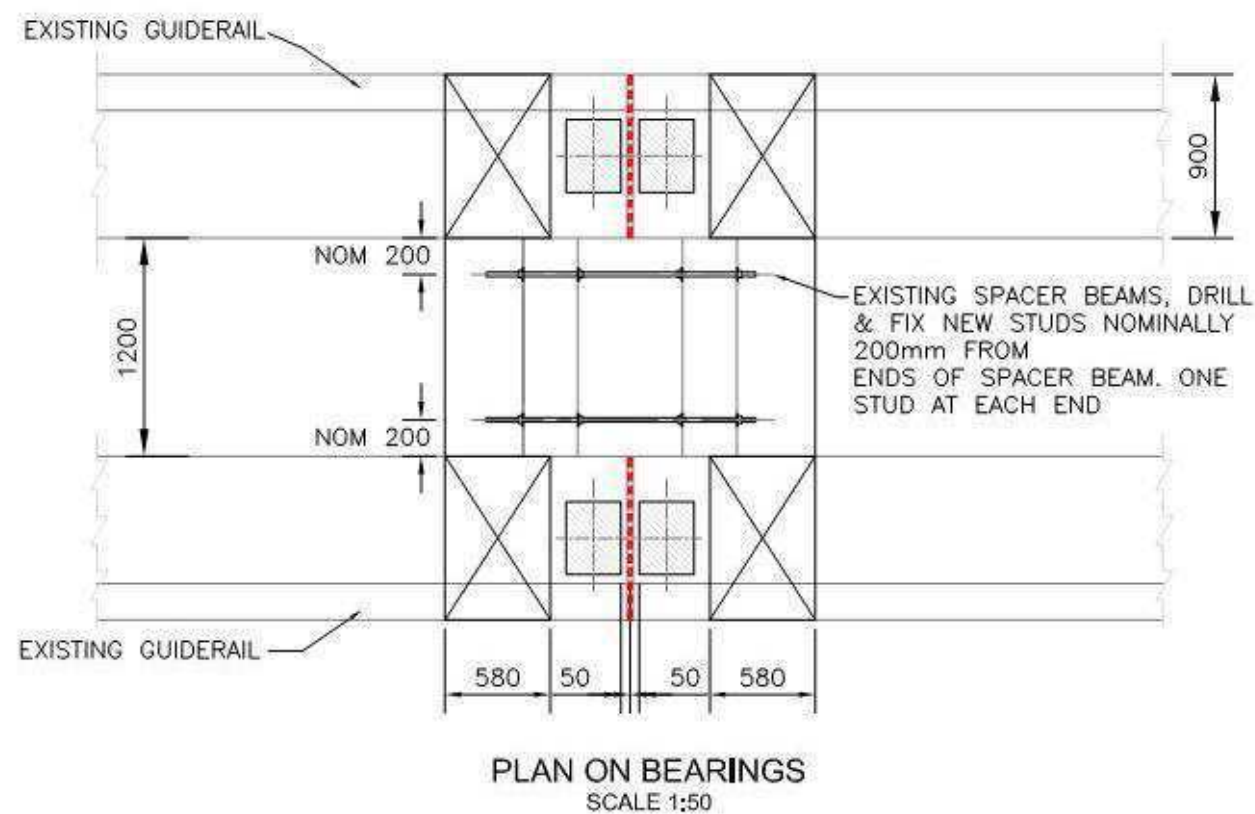
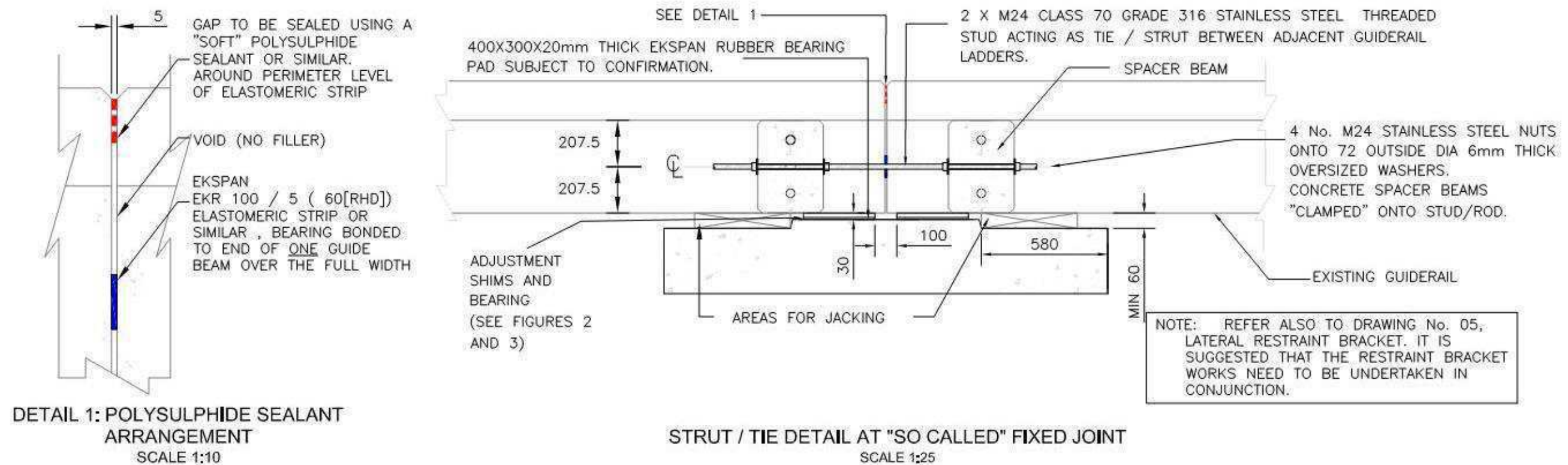
TYPE 1 BEAMS
(TYPE 2 BEAMS SIMILAR)

DRAWING 3 - PROVIDING BEARING/SHIM RESTRAINT - SHEET 3 OF 3
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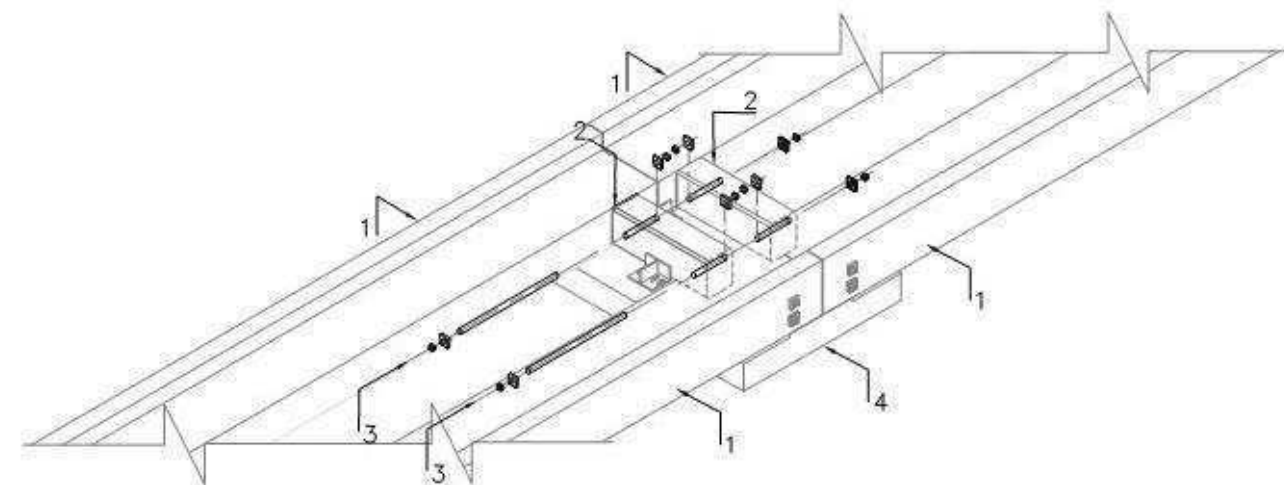
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DRAWING 4: TIED JOINT DETAIL - STRUT/ TIE AT ALTERNATE JOINTS

FOR BUDGET PRICING PURPOSES ONLY

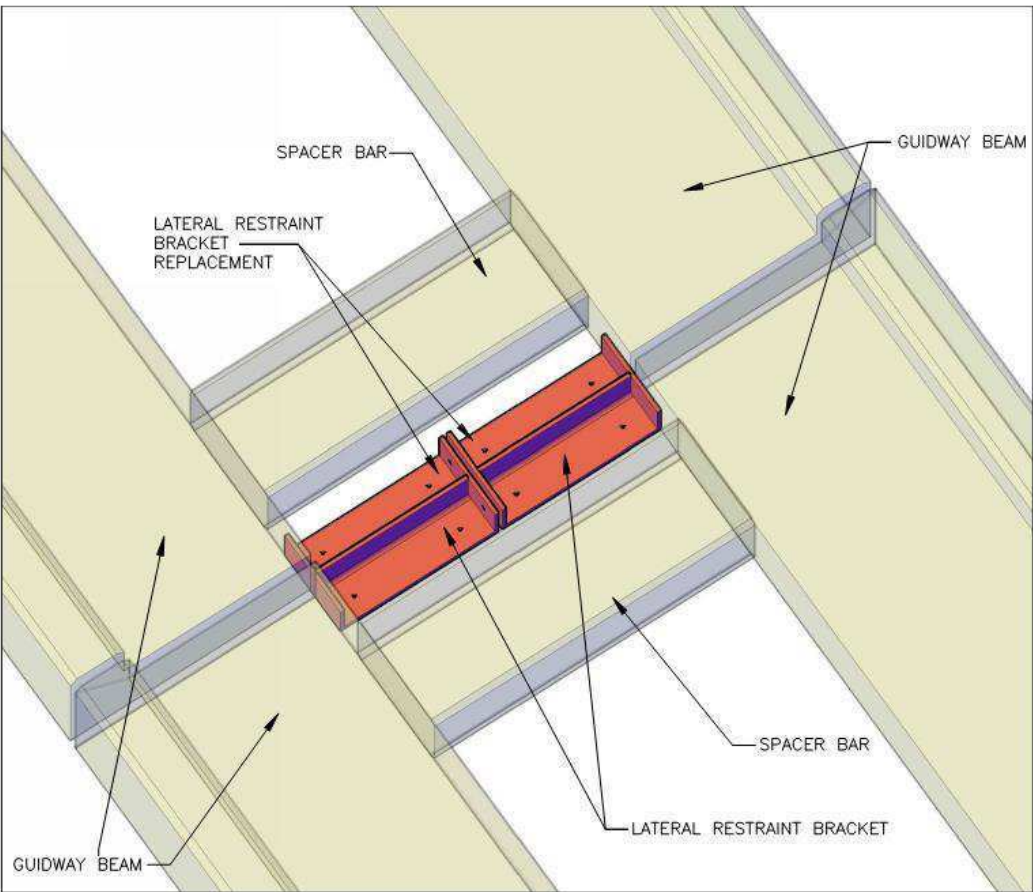
EXPLODED ISOMETRIC VIEW
AT "SO CALLED" FIXED
JOINT**ITEM KEY**

- 1: GUIDERAIL (EXISTING)
- 2: SPACER BEAMS (EXISTING)
- 3: THREADED STUD ACTING AS TIE/ STRUT BETWEEN ADJACENT GUIDERAIL LADDERS. (NEW)
- 4: FOUNDATION BASES (PILE CAPS SIMILAR) (EXISTING)

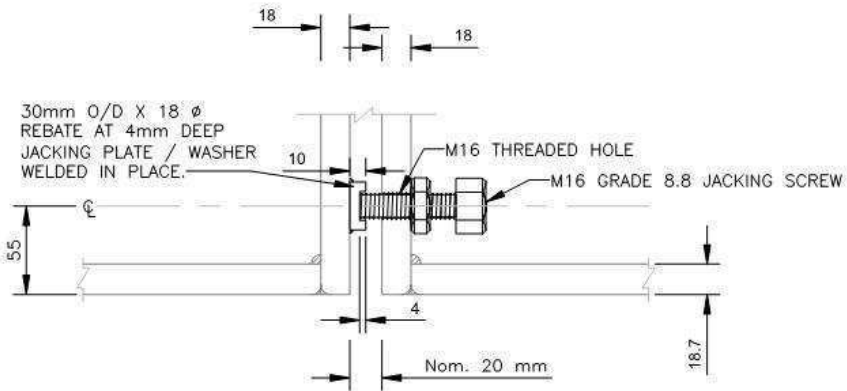
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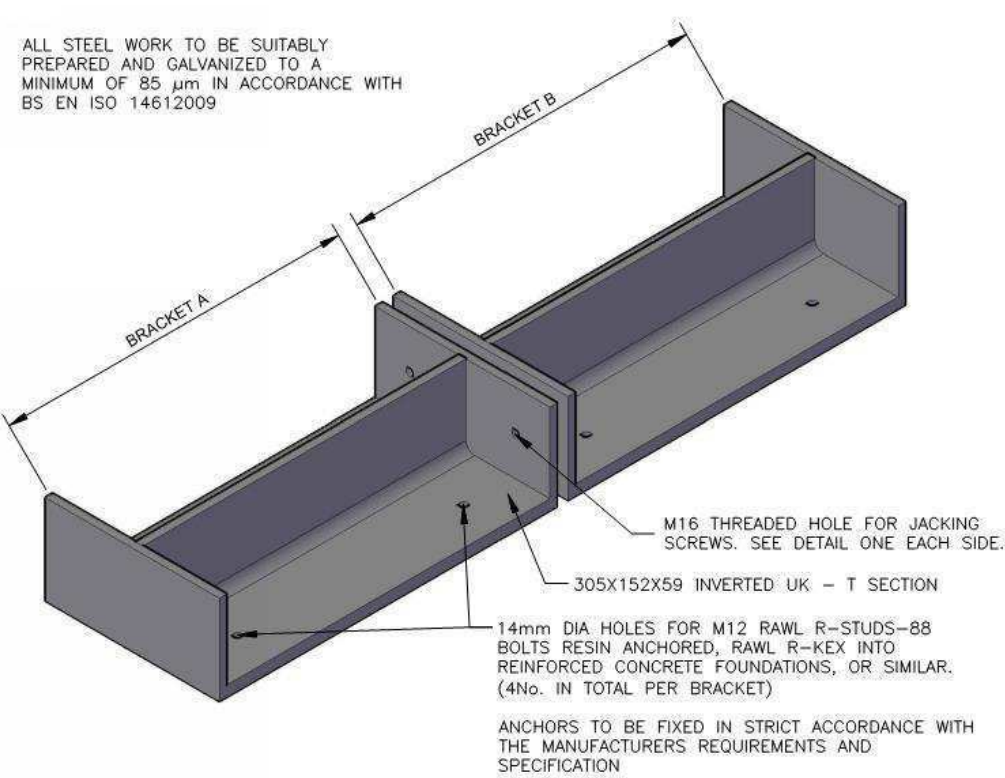
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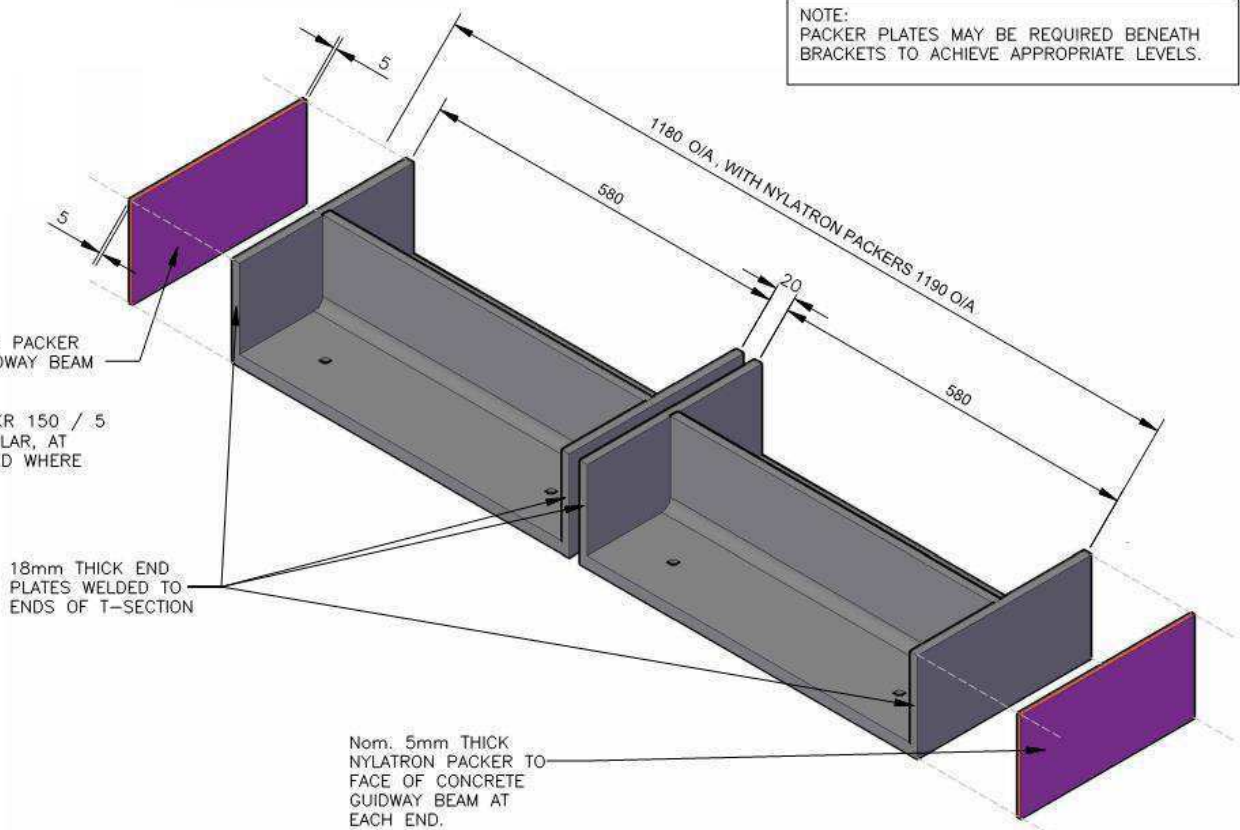
INDICATIVE LOCATION OF LATERAL RESTRAINT BRACKET.
NOT TO SCALE



DETAIL 1 : JACKING SCREW AT "GAP"
NOT TO SCALE



NOTE:
PACKER PLATES MAY BE REQUIRED BENEATH
BRACKETS TO ACHIEVE APPROPRIATE LEVELS.



DRAWING 5
LATERAL RESTRAINT BRACKET REPLACEMENT

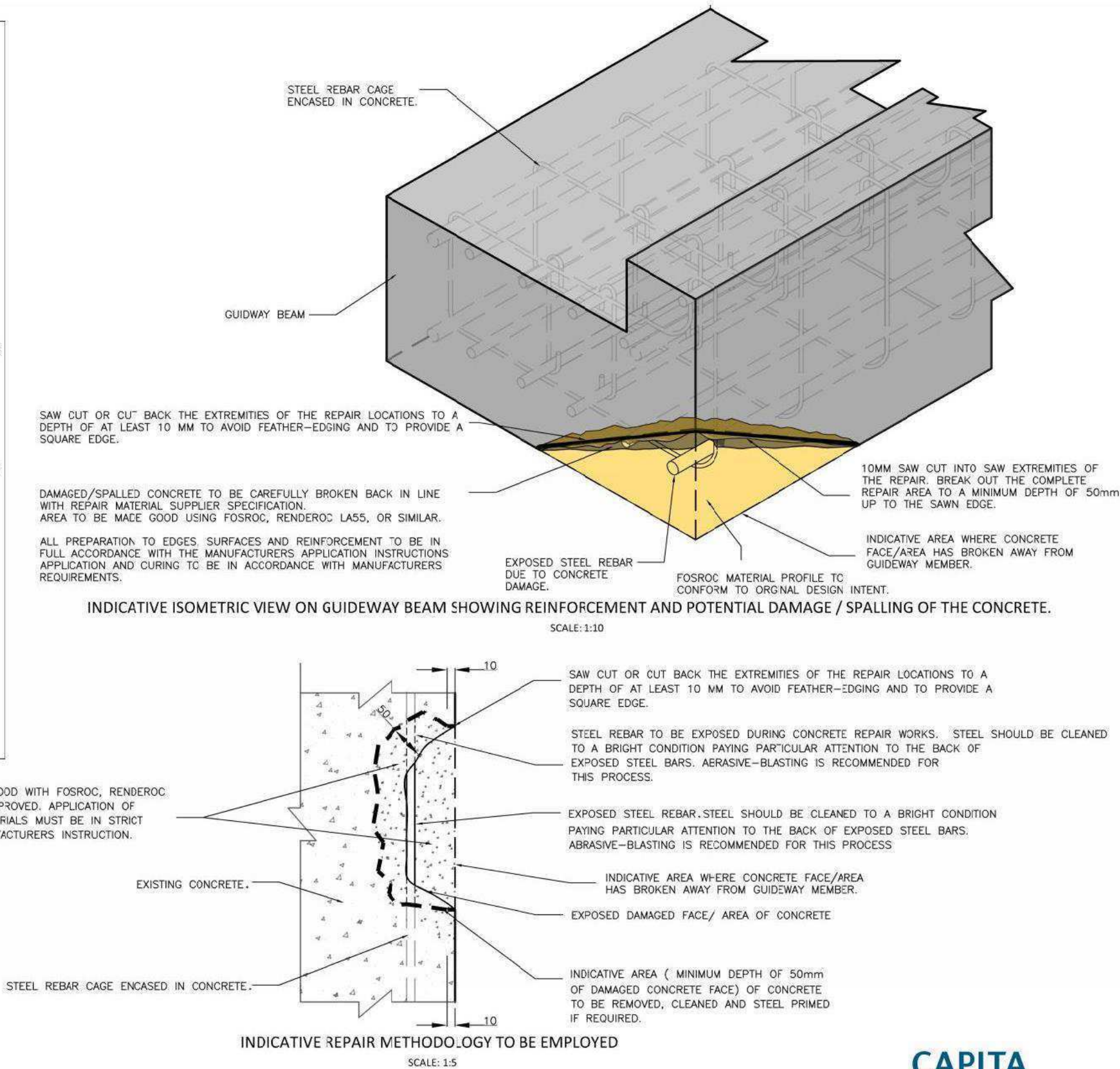
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GENERAL NOTES

1. ALL REPAIRS TO BE IN ACCORDANCE WITH BS EN 1504-3 CLASS R4.
2. UNRESTRAINED SURFACE AREA OF THE REPAIR MUST BE KEPT TO A MINIMUM.
3. DAMAGED/SPALLED CONCRETE TO BE CAREFULLY BROKEN BACK IN LINE WITH REPAIR MATERIAL SUPPLIER SPECIFICATION. AREA TO BE MADE GOOD USING FOSROC, RENDEROC LA55, OR SIMILAR.
4. CONTRACTOR IS TO SAW CUT OR CUT BACK THE EXTREMITIES OF THE REPAIR LOCATIONS TO A DEPTH OF AT LEAST 10mm TO AVOID FEATHER-EDGEING AND TO PROVIDE A SQUARE EDGE. BREAK OUT THE COMPLETE REPAIR AREA TO A MINIMUM DEPTH OF 50mm UP TO THE SAWN EDGE.
5. ENSURE AREA OF REPAIR IS CLEAN AND FREE OF DUST, UNSOUND OR CONTAMINATED MATERIAL, OIL, GREASE, CORROSION DEPOSITS.
6. PREPARATION AND PRIMING OF STEEL REINFORCEMENT
 - 6.1. ANY CORRODED STEEL WITHIN THE REPAIR AREA IS TO BE FULLY EXPOSED AND REMOVE ALL LOOSE SCALE AND CORROSION DEPOSITS. STEEL TO BE CLEANED TO A BRIGHT CONDITION PAYING PARTICULAR ATTENTION TO THE BACK OF THE EXPOSED BARS ABRASIVE- BLASTING IS RECOMMENDED.

THE CONTRACTOR MUST ENSURE THAT CONSTRUCTION DUST IS KEPT TO A MINIMUM DURING THE REPAIR WORK AND MUST CONFORM TO HSE REGULATIONS REGARDING CONTROL AND EXPOSURE OF CONSTRUCTION DUST.
 - 6.2. EXPOSED STEEL IS TO BE PRIMED USING ONE FULL COAT OF NITOPRIME ZINCRIK PLUS, OR SIMILAR, AND ALLOWED TO DRY AS PER THE MANUFACTURERS INSTRUCTION. A SECOND FULL COAT SHOULD BE APPLIED IF AREA'S OF THE EXPOSED STEEL REMAIN UNPRIMED AFTER THE FIRST APPLICATION.
7. SUBSTRATE PRIMING
 - 7.1. CONCRETE FACES/EDGES WITHIN THE REPAIR AREA IS TO BE CLEAN AND CLEAR OF DUST, GREASE, LOOSE, UNSOUND OR CONTAMINATED MATERIALS.
 - 7.2. SUBSTRATE PRIMING AND APPLICATION OF THE CONCRETE REPAIR PRODUCT MUST BE IN STRICT ADHERENCE OF THE MANUFACTURERS INSTRUCTIONS.
8. FORMWORK SHOULD BE LEFT IN PLACE UNTIL THE MINIMUM COMPRESSIVE STRENGTH STIPULATED BY THE SUPPLIER IS ACHIEVED.
9. IMMEDIATELY AFTER STRIKING THE FORMWORK, ALL EXPOSED FACES OF THE REPAIR SHOULD BE THOROUGHLY SOAKED WITH CLEAN WATER AND THEN SPRAYED WITH A LIQUID CURING MEMBRANE SUCH AS FOSROC CONCURE WB, OR SIMILAR APPROVED.

AREA TO BE MADE GOOD WITH FOSROC, RENDEROC LA55, OR SIMILAR APPROVED. APPLICATION OF CHOSEN REPAIR MATERIALS MUST BE IN STRICT OBEYANCE OF MANUFACTURERS INSTRUCTION.



DRAWING 6- REPAIRS TO DAMAGED / SPALLED CONCRETE AT LATERALS.

SCALE: AS STATED

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APPENDIX I – FOUNDATIONS

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Ground conditions based on Capita interpretation of ground investigation data.

Non-compliance related to as-built as dug levels relative to original ground levels from long sections

Ground conditions encountered at foundation excavation from BAM000120015.pdf datasheets.

Foundation locations relate to those encountering sand and gravel in excavation and for NHBC depth assessment based on exploratory holes.

Chainage of 200 foundations underlain by sand and gravel for NHBC foundation depth assessment						
Nature Reserve	Swavesey to Longstanton	Longstanton to Oakington	Oakington to Histon	Histon to Arbury	Arbury to CRC	CRC to Milton
3051 to 3763	6283 to 10271	10465 to 13916	14013 to 17431	17530 to 18906	19011 to 19301	19415 to 20355
	7558	13249	14514	18591		20030
	7566	13264	14521	18636		20038
	7573	13271	14529	18643		20098
	7581	13279	14536	18651		20105
	7588	13286	14544	18658		20113
	7596	13294	14551	18666		
	7603	13301	14559	18673		
	7611	13309	14566	18681		
	7618	13316	14574	18688		
	7626	13324	14581	18696		
	7633	13339	14589	18703		
	7641	13346	14594	18711		
	7648	13376	14644	18718		
	7656	13384	14651	18726		
	7663	13391	14659	18733		
	7716	13421	14666	18741		
	7723	13436	14689	18748		
	7731	13444	14704	18756		
	7738	13459	14711	18763		
	7746	13474	14876	18771		
	7918	13481	14884	18778		
	7926	13489	14891	18838		
	7933	13504	15236	18846		
	7941	13511	15289	18853		
	7948	13519	15296			
	7956	13526	15319			
	7963	13536	15416			
	7971	13541	15469			
	7978	13546	15476			
	7986	13554	15601			
	7993	13561	15669			
	8106	13569	15714			
	8113	13576	15954			
	8128	13584	15969			
	8151	13591	15976			
	8158	13599	16279			
	8241	13606	16294			
	8248	13614	16301			
	8256	13756	16316			
	8263	13764	16324			
	8383	13771	16331			
	8391		16339			
	8398		16384			
	8443		16391			
	8451		16399			
	8458		16421			
	8466		16429			
	8473		16541			
	8481		16549			
	8488		16556			
	8496		16564			
	8503		16571			
	8511		16579			
	8518		16594			
	8526		16661			
	8533		16669			
	8541		16676			
	8548		16684			
	9561		16691			
	9576		16699			
	9711					
	9718					
	9726					
	9733					
	9741					
	9748					
	9756					
	9763					
	9771					
	9778					

Ground conditions based on Capita interpretation of ground investigation data.
 Non-compliance related to as-built as dug levels relative to original ground levels from long sections
 Non-compliance related to full NHBC depth requirements

Chainage of foundations assessed to be non-compliant to NHBC depth 1 of 2						
Nature Reserve	Swavesey to Longstanton					Longstanton to Oakington
3051 to 3763	6283 to 10271					10466 to 13916
3051	6336	6823	8076	8713	9516	11703
3058	6343	6831	8083	8721	9523	11756
3066	6351	6838	8091	8736	9531	11763
3073	6358	6846	8098	8743	9538	11996
3081	6366	6853	8106	8751	9546	12018
3088	6373	6861	8113	8758	9553	12026
3096	6381	6868	8121	8766	9568	12078
3103	6388	6876	8128	8773	9563	12086
3111	6396	6883	8136	8781	9591	12093
3118	6403	6891	8143	8788	9598	12101
3126	6411	6898	8151	8796	9606	12261
3156	6418	6906	8158	8803	9613	12288
3163	6426	6913	8166	8811	9621	12296
3171	6433	6921	8173	8863	9628	12303
3178	6441	6928	8181	8871	9636	12821
3186	6448	6936	8188	8878	9766	12829
3193	6456	6943	8196	8886	9793	12836
3201	6463	6951	8203	8893	9801	12844
3216	6471	6958	8211	8901	9808	12904
3223	6478	6966	8218	8938	9816	12911
3231	6486	6973	8226	8946	9823	12919
3328	6493	6981	8233	8953	9831	12934
3336	6501	6988	8241	8961	9838	13009
3343	6508	6996	8248	8968	9846	13016
3351	6516	7003	8256	8976	9891	13024
3358	6523	7011	8263	8983	9898	13031
3366	6531	7018	8271	9006	10016	13039
3373	6538	7026	8278	9013	10083	13046
3381	6546	7048	8286	9021	10091	13054
3388	6553	7551	8293	9028	10098	13861
3396	6561	7753	8301	9036	10121	13869
3403	6568	7761	8308	9043	10128	13891
3411	6573	7768	8316	9051	10136	13899
3418	6576	7776	8323	9058	10143	
3426	6583	7783	8331	9066	10151	
3433	6591	7791	8338	9073	10158	
3441	6598	7798	8346	9081	10166	
3448	6606	7806	8353	9088	10173	
3456	6613	7813	8361	9096	10181	
3463	6621	7821	8368	9103	10188	
3471	6628	7836	8376	9111	10196	
3478	6636	7843	8383	9118	10203	
3486	6643	7851	8391	9126	10218	
3493	6651	7858	8398	9133	10226	
3501	6658	7866	8406	9141	10233	
3508	6666	7873	8413	9148	10241	
3516	6673	7881	8421	9156	10256	
3523	6681	7888	8428	9163	10263	
3531	6688	7896	8436	9171	10271	
3538	6696	7903	8443	9178		
3546	6703	7911	8451	9186		
3553	6708	7918	8458	9193		
3561	6713	7926	8466	9201		
3568	6718	7933	8473	9208		
3576	6723	7941	8481	9216		
3583	6728	7948	8488	9223		
3591	6733	7956	8496	9231		
3598	6738	7963	8506	9238		
3606	6743	8001	8563	9246		
3613	6748	8008	8571	9253		
3621	6753	8016	8578	9261		
3628	6758	8023	8601	9268		
3636	6763	8031	8616	9276		
3658	6771	8038	8661	9463		
3703	6778	8043	8668	9471		
3733	6786	8048	8676	9478		
3741	6793	8053	8683	9486		
3748	6801	8058	8691	9493		
	6808	8063	8698	9501		
	6816	8068	8706	9508		

3 highlighted foundations identified in the Geotechnical Feedback Report as pile

Ground conditions based on Capita interpretation of ground investigation data.
 Non-compliance related to as-built as dug levels relative to original ground levels from long sections
 Non-compliance related to full NHBC depth requirements
 Risk related to and assessment of depth short of full NHBC depth and soil plasticity.

Chainage of foundations assessed to be non-compliant to NHBC depth 2 of 2							
Oakington to Histon			Histon to Arbury			Arbury to CRC	CRC to Milton
14014 to 17431			17531 to 18906			19011 to 19301	19415 to 20355
14014	15846	17271	17531	18118	18906	19011	19425
14019	15861	17279	17536	18126		19019	19470
14024	15884	17286	17541	18133		19026	19483
14029	15891	17294	17548	18141		19034	19498
14034	15899	17311	17556	18148		19041	19505
14049	16006	17326	17563	18156		19049	19513
14064	16014	17331	17571	18163		19056	19520
14079	16029	17336	17578	18171		19064	19528
14086	16036	17341	17586	18178		19071	19580
14094	16044	17346	17593	18186		19079	19588
14101	16051	17351	17601	18193		19086	19595
14109	16056	17356	17608	18201		19094	19603
14124	16061	17361	17616	18208		19101	19610
14236	16069	17369	17623	18216		19109	19625
14244	16076	17376	17631	18223		19116	19648
14266	16091	17426	17638	18231		19124	19670
14274	16099	17431	17646	18238		19131	19700
14296	16106		17721	18246		19139	19708
14304	16121		17728	18253		19146	19730
14311	16129		17736	18261		19154	19745
14319	16136		17743	18268		19161	19775
14326	16144		17751	18276		19169	19798
14341	16151		17758	18283		19176	19805
14356	16159		17766	18291		19184	19813
14364	16166		17773	18298		19191	19820
14379	16174		17781	18306		19199	19828
14386	16181		17788	18313		19206	19835
14394	16189		17796	18321		19214	19850
14401	16196		17803	18328		19221	19858
14409	16204		17811	18343		19229	19880
14416	16406		17818	18351		19236	19888
14424	16414		17826	18358		19244	19895
14431	16436		17833	18366		19251	19903
15484	16444		17841	18373		19259	19910
15489	16451		17848	18381		19266	19918
15494	16459		17856	18388		19274	19925
15586	16466		17863	18396		19281	19933
15594	16474		17871	18403		19286	19940
15609	16481		17878	18411		19291	19948
15616	16489		17886	18418		19296	19955
15624	16496		17893	18426		19301	19963
15631	16504		17901	18433			19970
15639	16511		17908	18441			19978
15654	16601		17916	18448			19985
15661	16609		17923	18456			19993
15676	16616		17931	18463			20000
15691	16624		17938	18471			20008
15706	16631		17946	18478			20210
15721	16639		17953	18486			20240
15729	16736		17961	18493			20248
15744	16744		17968	18523			20275
15751	16819		17976	18531			20355
15766	16826		17983	18546			
15774	16834		17991	18553			
15781	16841		17998	18561			
15789	16849		18006	18576			
15796	16856		18013	18583			
15804	16864		18021	18598			
15811	16871		18028	18606			
15819	16946		18036	18613			
15826	16954		18043	18621			
15834	17044		18051	18628			
15841	17051		18058	18808			
15864	17059		18066	18816			
15901	17066		18073	18823			
15909	17074		18081	18831			
15916	17081		18088	18876			
15924	17089		18096	18883			
15931	17101		18103	18891			
15939	17264		18111	18898			



**Cambridge Guided Busway
Preliminary Advice on Quantum based on
Capita Advisory Report October 2016**

PRIVILEGED AND CONFIDENTIAL

1. Introduction

- 1.1 I was instructed by Bircham Dyson Bell LLP to provide an opinion on quantum arising out of the defects identified by the Capita Report dated 11 September 2014 (“the First Capita Report”). My report dated 16 September 2014 advised on the comparative costs potentially arising from the adoption of one or other of the alternatives then presented.
- 1.2 Since that time, Capita has continued with its investigations and has now provided a further report dated 6 October 2016 (“the Capita Report”). This report develops Capita’s previously described options as a result of those additional investigations. The Capita Report relates to specific notified defects on the guided busway superstructure and notified defects to the foundations on the northern section.
- 1.3 This Advice Note is intended to update my earlier advice and considers quantum related to the revised or further options for defects rectification now described by the Capita Report.

2. Overview of the Remedial Schemes

- 2.1 The nature of the defects is set out in some detail in the Capita Report and is not repeated here. The options for remedial works are described at paragraph 164 of the Capita Report. Briefly, they are as follows:
- (a) Option 1: To alter the guideway ladder construction and design by providing restraint to bearings/shims and tying the fixed joints together with a gap to permit rotations and avoid spalling. This approach will require all foundations

to comply with the full NHBC depths. Further, some shimming to limit rocking of the guideway ladders is likely to be required to an unpredictable extent. Lateral restraint at all guiderail joints would be required in addition to the bearing/shim restraint. The nature of these works is indicated in Capita's Drawing Nos 1 to 6 appended to the Capita Report. This is Capita's recommended approach.

- (b) Option 2: Adopt a reactive approach such that the remedial works outlined in Option 1 are only carried out when bearing and/or shim loss and/or rocking of the guideway ladders occurs and/or lateral steps at joints becomes excessive such that emergency works are thereby required.
- (c) Option 3: Adopt a reactive approach to the remediation of the guideway ladders outlined in Option 1 but undertake no remedial works to the foundations (in order to minimise disruption to busway operations). If required, due to settlement of the foundations, a concrete block may need to be installed between the elastomeric bearing pad and the foundation.

- 2.2 As stated at paragraph 170 of the Capita Report, there will be other defects that will require to be addressed irrespective of which remedial option is adopted. This includes repairs to concrete spalling, filling of cracks and drainage work. These further remedial works have been assumed as necessary, and that they will be required for each Option.
- 2.3 Capita also recommends that an inspection regime be implemented based on the adopted remedial option. Inspection would be carried out twice per annum for Option 1 and four times per annum for Options 2 and 3.
- 2.4 Costing of the remedial works has therefore been considered in terms of establishing the costs of Option 1 as a base cost, to which is added the cost of the other defects mentioned above (spalling, cracks, drainage, etc.,) and the costs of the inspection regime. This addresses what is known as the "Grand Unified Defect" ("GUD").
- 2.5 The costs produced in respect of Option 1 have then been utilised to provide a basis for establishing the likely costs of Options 2 and 3. This has been done by factoring requirements for low, medium or high repair intensity against the Option 1 costs given

Capita's inability to predict the precise requirements and incidence, and therefore the sequence, in which works would need to be carried out.

3. Sources of Information

- 3.1 I have been provided with a copy of the calculations previously prepared by Faithful and Gould (F&G) on each of the GUD defects. Their work is based in part on actual costs produced by Ekspan when carrying out emergency maintenance work. This therefore provides a reasonably reliable basis for consideration of the further costs of rectification.
- 3.2 F&G has also considered the sequencing of the rectification work and has identified associated productivity levels.
- 3.3 Whilst F&G's calculations do not correlate exactly with the Capita Report, I have, where appropriate, utilised those calculations as the starting point for my own view of the defects rectification costs.

4. Assumptions

- 4.1 I have assumed that replacement of existing shims and bearings, as described by the Capita Report, are rectified once done, and that any further replacement due to wear and tear is to be regarded as continuing maintenance that would always have been required. The cost of such maintenance work does not therefore form part of the figures I have prepared.
- 4.2 As discussed in my 2014 report, I have assumed that inflation will continue to outstrip credit interest.
- 4.3 My previous advice was to treat the estimate of construction inflation applied to the principal or capital sum arrived at as a net rate. This is because interest rates continue to remain at very low levels and they are probably unlikely to rise significantly in the near future. I continue to recommend that the Council treats costs as not subject to any substantial discount for net present value (NPV) and to allow for the full sums stated under Options 1, 2 and 3.

5. **Option 1**

5.1 This option is described at paragraph 164(i) of the Capita Report. As stated this represents the GUD because it addresses in one operation many of the defects identified in the guided busway. In summary these comprise:

- (a) Defect 267: Guideway joints narrower than design.
- (b) Defect 269 Gaps at Guideway fixed joints (addresses generally by defect 294).
- (c) Defect 279: Displaced beam at Chainage 2308.
- (d) Defects 282 & 283: Step detail between type 1 & 2 beams.
- (e) Defect 284: beams installed with consecutive free ends and without alternative longitudinal restraint.
- (f) Defect 287A: Bearing displacements and consequential guideway vertical displacement.
- (g) Defect 288: Beam joint relative horizontal displacement defects.
- (h) Defect 289: Guideway beam/upstand cracking and guideway durability.
- (i) Defect 290: Horizontal load capacity of Screwfast piles.
- (j) Defect 293: Longitudinal restraint (included in Defect 294).
- (k) Defect 294: Horizontal load of support bracket.
- (l) Defect 295: Non-functioning infiltration drains at Bridge Road Bridge.
- (m) Defect 016A: Guideway shallow foundations.

(n) The Capita Report identifies 833 locations at which foundations are to be remediated. This is substantially more than previous estimates and the costs have been allowed for accordingly.

(o) Additionally the costs for this Option include the estimated costs of rectification of guide rail spalling, the costs of which were not previously provided for by any of the above defects.

5.2 I have assumed for the purposes of Option 1 that closure of each section of the guided busway will be required for up to six months at a time while work is carried out, with an overall programme lasting approximately 4 years commencing in 2018 for three years after completion of necessary design and procurement activities. It will be a matter of judgement for the Council whether and to what extent this is more or less disruptive to the travelling public as a whole than Options 2 or 3.

5.3 My estimated cost of Option 1, including an allowance of 4% per annum construction inflation over the period from now to likely completion, based on discussions with Capita and Faithful & Gould, is approximately £36,500,000.

6. Option 2

6.1 This Option is described at paragraph 164(ii) of the Capita Report. It involves carrying out GUD works described by Option 1 on a reactive basis but only when emergency works are required. It provides for an unplannable repair regime which could be expected to occur over most of the remaining 35-year life of the guideway.

6.2 I have therefore developed three levels of “repair intensity” which I have described as low, medium and high. Low intensity repairs assumes that groups or batches of repairs can be carried out together and provides for the least disruption in working and passenger inconvenience. Medium intensity allows for the works to be carried out in a more fragmented manner, whereas high intensity represents the most fragmented manner of working.

6.3 It will be appreciated that any estimate of the costs involved is sensitive (and vulnerable) not only to the incidence of future failure, but also to construction inflation.

-
- 6.4 My estimated cost for Option 2 including an allowance of 4% per annum construction inflation to the mid-point of the programme is approximately £102m to £128m in respect of low and medium intensity respectively, but it might be as high as £164.5m in the event that work is carried out under high intensity conditions.

7. **Option 3**

- 7.1 This Option is described at paragraph 164(iii) of the Capita Report. It too involves carrying out GUD works described by Option 1 on a reactive basis, but only when emergency works are required. However, no remedial works to the foundations would be undertaken under this Option in order to minimise disruption to busway operations. It also again provides for an unplannable repair regime which could be expected to occur over most of the remaining 35-year life of the guideway.
- 7.2 I have computed the costs of this Option in the same manner as for Option 2, using low, medium and high intensity conditions.
- 7.3 As for Option 2, it will be appreciated that any estimate of the costs involved is sensitive (and vulnerable) to not only the incidence of future failure but also to construction inflation.
- 7.4 My estimated cost for Option 3 including an allowance of 4% per annum construction inflation to the mid-point of the programme is approximately £74m to £91m in respect of low and medium intensity respectively but it might be as high as £119m in the event that work is carried out under high intensity conditions.

8. Summary

8.1 The comparative costs of each Option are set out in the table below.

Option	Estimated Cost (£)
Option 1	£36,500,000
Option 2 – Low Intensity	£102,000,000
Option 2 – Medium Intensity	£128,000,000
Option 2 – High Intensity	£164,500,000
Option 3 – Low Intensity	£74,000,000
Option 3 – Medium Intensity	£91,000,000
Option 3 – High Intensity	£119,000,000

8.2 I would emphasise the preliminary nature of this advice and the many variables involved. Whilst there is a degree of contingency and allowance for risk included in the estimates, there can be no warranty or reliance attached to these figures, particularly for those involving the "if and when" solutions provided by Options 2 and 3.

8.3 The technical proposals now provided in the Capita Report together with the work undertaken by Faithful & Gould should provide increased confidence in the estimate of likely costs for Option 1.

Christopher Ennis MSc FRICS FCI Arb

Time | Quantum Expert Forensics Ltd.

15 October 2016



