

WRITTEN TECHNICAL REPORT

Weighting: 70%

Module: ACMA4039 – Engineering Applications & Study Skills

Assessment: Root Cause Analysis – Technical Report

Student: Harvey Selway

Student ID: 2505924

Engagement with Literature Skills (15 marks)

Mark awarded: 14 / 15

Harvey demonstrated very strong engagement with relevant academic, professional, and regulatory literature. The report draws on peer-reviewed journal articles, recognised standards, and legislation, including PAS 9980, the Health and Safety at Work Act, and the IMechE Code of Conduct.

The literature is well integrated into the discussion and is clearly used to support arguments around risk management tools, ethical responsibility, and the Grenfell Tower case study. The inclusion of advanced tools such as DSS and GERT also shows wider reading beyond core RCA material.

What was done well

- Excellent range of academic and professional sources.
- Clear linkage between literature, legislation, and the RCA case study.
- Good balance between theory and real-world application.

What could be improved

- Some sections could synthesise sources more explicitly rather than discussing them sequentially.
- A small number of references could be more closely linked back to the manufacturing context.

Suggested enhancement

- Add a summary comparison table linking *RCA*, *FMEA*, *DSS*, and *GERT* to their strengths, limitations, and suitability for different risk scenarios.

Knowledge and Understanding Skills (25 marks)

Mark awarded: 23 / 25

The report shows a very high level of understanding of risk management principles and RCA methodology. Harvey clearly explains severity, occurrence, detection, and RPN scoring, and applies these accurately to the Grenfell Tower case study.

The discussion demonstrates strong understanding of fire dynamics, material behaviour, evacuation strategy, and the regulatory changes introduced after Grenfell, including PAS 9980.

What was done well

- Clear and accurate explanation of RCA and RPN calculation.
- Strong understanding of fire safety systems and external wall risks.
- Effective explanation of how regulatory change affects risk management practice.

What could be improved

- The manufacturing relevance could be reinforced more explicitly earlier in the report.
- A brief comparison with alternative RCA tools (e.g. Fishbone, Bow-Tie) would add breadth.

Suggested enhancement

- Include a system diagram of an external wall build-up showing cladding, insulation, cavity barriers, and fire spread paths.

Cognitive and Intellectual Skills (20 marks)

Mark awarded: 18 / 20

Harvey demonstrated strong analytical thinking when justifying severity, occurrence, and detection ratings. The reasoning behind prioritising ACM cladding, insulation, and cavity barriers is logical, well explained, and supported by evidence.

The evaluation of evacuation strategy and stair-core design shows good appreciation of how multiple failures interact rather than acting in isolation.

What was done well

- Clear and well-reasoned justification of rankings.
- Strong evaluation of interacting system failures.
- Logical prioritisation of risks based on RPN.

What could be improved

- Residual risk after mitigation could be discussed more explicitly.
- Some evaluation could be supported with clearer numerical comparison post-mitigation.

Suggested enhancement

- Add a before-and-after RPN bar chart highlighting the highest-risk issues and the impact of mitigation.

Practical Application Skills (20 marks)

Mark awarded: 18 / 20

The RCA application is detailed, realistic, and well structured. The use of the Grenfell Tower fire as a case study is handled sensitively and professionally, with clear translation of findings into actionable mitigation measures.

The proposed actions are technically sound and aligned with current fire safety engineering practice.

What was done well

- Realistic and detailed RCA table.
- Clear linkage between causes, effects, and mitigation.
- Appropriate prioritisation of life-safety-critical risks.

What could be improved

- Brief discussion of implementation challenges (cost, disruption, programme length) would strengthen realism.
- Detection controls could be expanded further.

Suggested enhancement

- Include an annotated façade schematic showing where mitigation measures (non-combustible materials, cavity barriers) would be implemented.

Transferable Skills for Life & Professional Practice (20 marks)

Mark awarded: 18 / 20

The report is clearly structured, professionally written, and well presented. Headings follow a logical sequence aligned with the brief, and figures are appropriately referenced. The technical writing style is suitable for both academic and professional audiences.

What was done well

- Clear structure and strong technical communication.
- Professional tone consistent with industry reporting.
- Effective use of figures to support discussion.

What could be improved

- Minor conciseness improvements in some sections.
- Some figures could be referenced more explicitly in the main text.

Suggested enhancement

- Add a final summary flowchart showing *risk identified* → *RCA* → *mitigation* → *reduced risk*.

Written Report Mark Summary (70%)

Criterion	Mark
Engagement with Literature	14 / 15
Knowledge & Understanding	23 / 25
Cognitive & Intellectual Skills	18 / 20
Practical Application Skills	18 / 20
Transferable Skills	18 / 20
Total (Written Report)	91 / 100

Weighted Contribution to Module (70%):
63.7 / 70