



PWYLLGOR IECHYD A DIOGELWCH HEALTH & SAFETY COMMITTEE

DYDDIAD Y CYFARFOD: DATE OF MEETING:	10 September 2024
TEITL YR ADRODDIAD: TITLE OF REPORT:	Reinforced Autoclave Aerated Concrete (RAAC) Planks
CYFARWYDDWR ARWEINIOL: LEAD DIRECTOR:	Andrew Carruthers, Chief Operating Officer
SWYDDOG ADRODD: REPORTING OFFICER:	Simon Chiffi, Head of Operations

**Pwrpas yr Adroddiad (dewiswch fel yn addas)
Purpose of the Report (select as appropriate)**

Er Gwybodaeth/For Information

ADRODDIAD SCAA SBAR REPORT

Sefyllfa / Situation

This report provides an update to this Committee following the previous report presented on the 7 May 2024.

The paper will update on the capital delivery and programme and outline the work ongoing to manage the ongoing risks of Reinforced Autoclave Aerated Concrete (RAAC) to maintain the safety of staff, patients and visitors.

Cefndir / Background

Reinforced Autoclave Aerated Concrete (RAAC) is a material used in construction in many buildings between the 1960s and 1990s. Its presence has been confirmed in a range of National Health Service (NHS) properties across the United Kingdom (UK) and includes several properties in Wales.

All actions now being undertaken by the Hywel Dda University Health Board (HDdUHB) are fully aligned to revised industry guidance which was updated in early 2023.

This new industry guidance is based on more intensive research, which has shown that this material has a far lower structural loading capacity than other generic reinforced concrete products. Due to this fact, there is a risk of structural collapse should the product fail. The condition of RAAC Planks has been shown to deteriorate if water is present due to roof leaks etc, which can compromise the reinforcement bars contained within these planks.

Asesiad / Assessment

Capital Delivery update:

The capital project is progressing well and to delivery programme, for Witybush Hospital (WGH) and Bronglais Hospital (BGH) sites.

The capital delivery and expenditure in 2023/24 was successfully completed and signed off with Welsh Government (WG). The 2024/25 funding is fully agreed with WG as noted in the table below. We meet regularly with WG/NHS Wales Shared Service Partnership (NWSSP) in refining spend profiles as the financial year progresses.

Planned 24/25 spend	£	5,106,839.09
Add 23/24 underspend	£	845,084.13
24/25 revised budget	£	5,951,923.22

Budget 24/25	£	5,951,923.22
Anticipated spend	£	5,951,923.22
Over/Underspend	-£	0.00

We are now commencing with the 2024/25 programme as detailed in Appendix 2.

Operational control measures

A range of control measures have been introduced to manage the ongoing risks of RAAC to maintain the safety of staff, patients and visitors. The Estates and Facilities Bronze Control Group was established in August 2023 as part of the Health Board's Command structure but following the Major Incident being stood down from 26 January 2024, has become the Estates and Facilities Task and Finish Group. The key responsibilities of this Group include:

- Maintain progress on the Health Board's current position and action plan to RAAC through reports to the RAAC Control Group.
- Oversee any Estates and Facilities related risks associated with RAAC.
- Receive detailed assessments following each area surveyed by the specialist structural surveyor, in order to inform details of remediation of work needed.
- Develop a survey and remediation plan for all areas affected by RAAC, to support service leads in any decant arrangements for temporary facilities needed to mitigate any loss of service. This plan will provide clarity on the impact on clinical areas whilst remediation plans continue.
- Develop an appropriate governance plan following remediation to ensure that areas are certified safe for reoccupation following the Health Board's sign off procedures.
- To set out, with clinical team's support, an appropriate, continual survey plan which will identify when areas require further inspections, the associated impact on bed capacity, and the ongoing capital and revenue costs.

Portfolio Surveys:

Welsh Government requested that all health boards undertake a detailed survey to check for the presence of RAAC in the Health Board freehold and leasehold estate. This request included the Primary Care estate, this being arranged by the Primary Care team via their private contractors.

The portfolio survey for Health Board estate has been concluded. Curtins have provided a final report to confirm the final outcome, noting that there is no further RAAC identified in the estate,

apart from WGH and BGH sites, including 4 rogue planks at BGH as previously reported. A formal response has been sent to NWSSP confirming this position.

The Primary Care team as requested by Welsh Government contacted all Primary Care contractors to ask them to confirm their position with regard to RAAC. As the request was not contractually mandated, and there was some concern from the professional bodies. To date, a limited response has been received, so this position has been reported to Welsh Government within the requested timeframe, and a response is awaited.

Reinspection Programme:

In line with the IStructE risk guidance outlined in the table below, on RAAC Investigation and Assessment, has formed the basis of the surveys and will also inform the requirements to regularly re-inspect the planks. It should be noted that the above works and approved funding, will only cover remediation repairs to risk assessed critical and high-risk planks respectively. The amber risk planks and green risk planks will require regular inspection initially every 12 months, but this will be reviewed following the first inspection undertaken and there is scope in the guidance to extend this period, but this will be subject to review following the completion of the surveys. In addition, we need to be mindful that as further national research is undertaken on the management of RAAC Planks, this may require a change to the routine inspection processes.

Assessment category	Risk category	
Red	Critical risk	Requires urgent remedial works which may include taking out of use or temporary propping to allow the safe ongoing use of a building. Depending on the extent, this may be part or all of the building. Combined with awareness campaign for occupants including exclusion zones.
	High risk	Requires remedial action as soon as possible. Combined with awareness campaign for occupants, which may include exclusion zones, signage, loading restrictions and the need to report changes of condition, eg, water leaks, debris, change in loading, etc.
Amber	Medium risk	Requires inspection and assessment on a regular basis, eg, annually. Combined with awareness campaign for occupants, which may include signage, loading restrictions and the need to report changes of condition, eg, water leaks, debris, etc.
Green	Low risk	Requires inspection and assessment occasionally, say three year period depending on condition. Combined with awareness campaign for occupants, which may include signage, loading restrictions and the need to report changes of condition, eg, water leaks, debris, etc.

The programming of the future inspection regime is now underway, with the reinspection of the Ward areas planned for the 2024/25 Financial Year and the ground floor areas in 2025/26. This will reinspect areas completed during the 2023/24 and 2024/25 Financial Years. The reinspection surveys in Wards 9 and 12 are complete with a programme established for the four remaining Wards from November to January 2025. The ground floor surveys are planned to commence later in 2025/26 financial year.

Alongside the works programme the Estates and Facilities Control Group supported several key deliverables. As an example, where we have been able to prop areas safely temporarily, these facilities have also been reopened pending future repair works. The group was responsible for ensuring that robust processes were established to ensure that any

reoccupation was controlled and matters of safety fully covered. A system of prop checks remains in place, with weekly checks arranged by Curtins and contractor to confirm ongoing safety of all props, reported previously through Estates Bronze and currently through the Control Group.

The Estates' function has now also established what changes are necessary to our normal maintenance works undertaken at WGH and BGH sites. The maintenance team have established control measures to restrict and secured access to RAAC roof areas, RAAC risk identified on Planned Performance Maintenance (PPM) and as part of the dynamic risk assessment process, ensures the RAAC risk is identified and managed via permit and officer control in line with the plans and Standard Operating Procedures (SOPs).

These control measures include:

- Development of 3D models of impacts RAAC roofs and SOPs, linked to RAAC risk plans that have identified designated walkways for site operatives and contractors to undertake maintenance activities.
- Where required, arrangements of mechanical lifting equipment to undertake works and avoid the need to walk on RAAC flat roof areas and clean gutters annually. Maintenance team arranging for all drainage gulleys via crane access in August. Future leaks to be monitored following this work. Any future water issues to be monitored via a PPM with an action to log and report any future leaks.
- Updated contractor briefing information to ensure appropriate risk assessments are in place by contractors.
- Ensure all PPM notifications are flagged with a RAAC risk where necessary, so operatives are aware of revised maintenance procedures.
- Arrangement of annual RAAC awareness training for site operatives. A copy of this training session is included in Appendix 3.

Of note, through RAAC and Estates and Facilities Advisory Board (EFAB) funding, the design team are arranging roof replacement scheme to Outpatients A & B roofs, including the installation of designated walkways systems, as part of the Tender 4 scope of works. Control measures to be reviewed following installation of walkways systems to RAAC roofs.

As previously reported, we met with a Health & Safety Executive (HSE) Inspector at WGH who raised a number of standard questions on how the HDdUHB have approached the RAAC challenge. A significant amount of information has been supplied to the HSE and all questions fully responded to. The response from HSE (attached at Appendix 1) did not raise any concerns or additional queries.

The management of RAAC will be an ongoing requirement for the UHB, this will continue to be managed through the Control Group and once this is stood down, through a newly established Operational Estates and Facilities Group to ensure that all matters of safety around RAAC continue to be monitored and controlled for the longer term.

Argymhelliad / Recommendation

The Health and Safety Committee is asked to:

- **NOTE** the support funding from Welsh Government for the 2023/24 and 2024/25 Financial Years and the delivery to programme of these works.
- **NOTE** the operational control measures established to monitor and manage RAAC on an ongoing basis.
- **NOTE** that further updates will be presented at future Health and Safety Committee meetings.

Amcanion: (rhaid cwblhau) Objectives: (must be completed)	
Committee ToR Reference: Cyfeirnod Cylch Gorchwyl y Pwyllgor:	<p>2.4: Provide support to the Board in its role of scrutinising performance and assurance on overall performance and delivery against Health Board plans and objectives, including delivery of key targets, giving early warning on potential performance issues and making recommendations for action to continuously improve the performance of the organisation and, as required, focus in detail on specific issues where performance is showing deterioration or there are issues of concern.</p> <p>2.6: Seek assurance on the management of principal risks within the Board Assurance Framework (BAF) and Corporate Risk Register (CRR) allocated to the Committee and provide assurance to the Board that risks are being managed effectively and report any areas of significant concern e.g. where risk tolerance is exceeded, lack of timely action.</p>
Cyfeirnod Cofrestr Risg Datix a Sgôr Cyfredol: Datix Risk Register Reference and Score:	1382 1699 1707
Galluogwyr Ansawdd: Enablers of Quality: Quality and Engagement Act (sharepoint.com)	Not Applicable 6. All Apply
Parthau Ansawdd: Domains of Quality Quality and Engagement Act (sharepoint.com)	2.1 Managing Risk and Promoting Health and Safety Governance, Leadership & Accountability
Amcanion Strategol y BIP: UHB Strategic Objectives:	4. The best health and wellbeing for our individuals, families and communities
Amcanion Cynllunio Planning Objectives	5a Estates Strategies
Amcanion Llesiant BIP: UHB Well-being Objectives: Hyperlink to HDdUHB Well-being Objectives Annual Report 2021-2022	10. Not Applicable

Gwybodaeth Ychwanegol: Further Information:	
Ar sail tystiolaeth: Evidence Base:	Within the report
Rhestr Termau: Glossary of Terms:	Within the report
Partïon / Pwyllgorau â ymgynhorwyd ymlaen llaw y Pwyllgor Ansawdd Iechyd a Diogelwch: Parties / Committees consulted prior to Health and Safety Committee:	Pwyllgor Datblygu Strategol a Chyflenwi Gweithredol / Strategic Development and Operational Delivery Committee

Effaith: (rhaid cwblhau) Impact: (must be completed)	
Ariannol / Gwerth am Arian: Financial / Service:	Capital funding required to deliver the survey programme.
Ansawdd / Gofal Claf: Quality / Patient Care:	Direct Impact on patient environment. Ward decant being arranged to maintain capacity. Some risk that it will be challenging to maintain capacity dependent on the outcome of the survey findings.
Gweithlu: Workforce:	Staffing impacts being mapped out by operational site teams with full HR support.
Risg: Risk:	The risk is identified on the Corporate Risk Register. Targeted meetings being arranged to manage the programme, to include development of project specific risk register.
Cyfreithiol: Legal:	Not applicable
Enw Da: Reputational:	High potential for media and political interest. Communication team supporting the programme.
Gyfrinachedd: Privacy:	Not applicable
Cydraddoldeb: Equality:	Not applicable



Awdurdod Gweithredol
Iechyd a Diogelwch

Health and Safety
Executive

	IS-ADRAN AROLYGU	INSPECTION
	Phil Nicolle	Phil Nicolle
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	http://www.hse.gov.uk/	http://www.hse.gov.uk/
	Prif Arolygwr Ceri Beynon	Principal Inspector Ceri Beynon

Date 15th May 2024

For the attention of Dr Phil Kloer, CEO

Dear Sir

I visited Withybush General Hospital and Bronglais General Hospital on the 26th and 27th March 2024 to assess Hywel Dda University Health Board's management of RAAC, and to undertake an assessment of the effectiveness of Hywel Dda University Health Board's compliance with their duty to manage asbestos, in these hospitals. These visits were part of an HSE programme to assess the management of RAAC and asbestos in hospital buildings in Great Britain.

In relation to RAAC, I was looking to ensure Hywel Dda University Health Board: had undertaken a survey to identify RAAC within their estate; had the condition of any RAAC components assessed by a competent person; had acted on recommendations for remediation based on the condition assessment; and had a time-bound plan for completion of any outstanding actions.

I found appropriate surveys had been carried out, the condition of the RAAC assessed by competent persons and recommendations for remediation had been/were being implemented.

In relation to the duty to manage asbestos, I looked to the Health Board to explain and evidence how their management arrangements and procedures ensure risks are controlled. This included demonstrating that there are clearly identified and understood roles and responsibilities associated with the asbestos management plan; that there were active arrangements to manage and monitor the condition of asbestos containing materials within buildings; and that there were systems in place to ensure that any work which could disturb the fabric of the building was managed to control the risk of exposure to asbestos.

I found the above criteria were being met, but gave advice in relation to ensuring all appropriate information (e.g. roles and responsibilities of key personnel in relation to asbestos) should be contained within the asbestos management plan and not solely cross referenced to other policies where they could be found.

I also suggested that flow charts showing when asbestos should be considered/authorised within the different routes for the commissioning of building/maintenance work within the hospital would be a useful addition to the asbestos management plan, as the detail and cross compliance with other policies and procedures was vested in the post holders with responsibility for the work, and not clearly set out in the asbestos management plan.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Phil Nicolle', with a horizontal line underneath.

Phil Nicolle

Regulatory Inspector

Cc Mr Tim Harrison, Head of Health, Safety & Security



WGH RAAC: REMEDIAL WORK PROGRAMME

Task Name	Duration	Start	Finish
WGH RAAC: 2023/24 CONSTRUCTION PHASE SUMMARY	190 days	Mon 26/06/23	Fri 15/03/24
POTWASH ADVANCED WORK (COMPLETE)	20 days	Mon 26/06/23	Fri 21/07/23
EMERGENCY PROPPING/ADVANCED WORK (COMPLETE)	143 days	Wed 13/09/23	Fri 29/03/24
WARD 9 (COMPLETE)	50 days	Mon 24/07/23	Fri 29/09/23
WARD 12 (COMPLETE)	50 days	Mon 28/08/23	Fri 03/11/23
TEMP KITCHEN ENABLEMENT WORK (COMPLETE)	15 days	Mon 16/10/23	Fri 03/11/23
TEMP KITCHEN FACILITY (OPERATIONAL)	81 days	Mon 14/08/23	Mon 04/12/23
SPH ADDITIONAL BED CAPACITY (COMPLETE)	45 days	Mon 23/10/23	Fri 22/12/23
WARD 7 (COMPLETE)	50 days	Mon 09/10/23	Fri 15/12/23
WARD 11 (COMPLETE)	45 days	Mon 23/10/23	Fri 22/12/23
WARD 8 (COMPLETE)	50 days	Mon 08/01/24	Fri 15/03/24
WARD 10 (COMPLETE)	50 days	Mon 08/01/24	Fri 15/03/24
MAIN KITCHEN ENABLEMENT (COMPLETE)	35 days	Mon 29/01/24	Fri 15/03/24
WGH RAAC: STRUCTURAL SURVEYS (COMPLETE)	230 days	Mon 15/05/23	Fri 29/03/24
2024/2025 WGH RAAC: RED RAG RATED GF REMEDIAL WORK	250 days	Mon 01/04/24	Fri 14/03/25
OPD A - TENDER 1 (COMPLETE)	95 days	Mon 29/01/24	Fri 07/06/24
MAIN KITCHEN - TENDER 1 (CONSTRUCTION PHASE)	100 days	Mon 01/04/24	Fri 16/08/24
OPD B - TENDER 2 (CONSTRUCTION PHASE)	120 days	Mon 24/06/24	Fri 06/12/24
OTHER G/F AREAS - TENDER 3 (CONSTRUCTION PHASE)	190 days	Mon 24/06/24	Fri 14/03/25
WGH BGH PLANT ROOMS/OPD ROOF - TENDER 4 (TENDER REVIEW)	85 days	Mon 26/08/24	Fri 20/12/24
WGH RAAC: CURTINS RE-SURVEY INSPECTIONS SECOND FLOOR	215 days	Mon 22/04/24	Fri 14/02/25
2023/2024 WGH RAAC: RED RAG RATED REMEDIAL WORK	230 days	Mon 15/05/23	Fri 29/03/24
WGH RAAC: POTWASH ADVANCED WORK (COMPLETE)	50 days	Mon 15/05/23	Fri 21/07/23
Detailed Design & Construction Issue - Structural Package	5 days	Mon 15/05/23	Fri 19/05/23
Tender Stage / HDUHB Lot 2 Framework	5 days	Mon 22/05/23	Fri 26/05/23
Cost Plan & Timeline Review - Post Tender Stage	2 days	Mon 29/05/23	Tue 30/05/23
Approval & Appointment	8 days	Wed 31/05/23	Fri 09/06/23
Mobilisation Period - Project Planning Stage	10 days	Mon 12/06/23	Fri 23/06/23
Construction Phase	20 days	Mon 26/06/23	Fri 21/07/23
WGH RAAC: WARD 9 (COMPLETE)	86 days	Mon 12/06/23	Sun 08/10/23
Structural Engineers Survey Report for Ward 9 (Final Issue)	5 days	Mon 12/06/23	Fri 16/06/23
Project Team Site Meeting - scope of works	1 day	Mon 19/06/23	Mon 19/06/23
Detailed Design & Construction Issue - Structural Package	15 days	Mon 19/06/23	Fri 07/07/23
Tender Stage / HDUHB Lot 4 Framework	5 days	Tue 20/06/23	Mon 26/06/23
Cost Plan & Timeline Review - Post Tender Stage	2 days	Tue 27/06/23	Wed 28/06/23
Approval & Appointment	7 days	Thu 29/06/23	Fri 07/07/23

Mobilisation Period - Project Planning Stage	10 days	Mon 10/07/23	Fri 21/07/23
Construction Phase	50 days	Mon 24/07/23	Fri 29/09/23
Ward Commissioning Stage	7 days	Sat 30/09/23	Sat 07/10/23
Go-Live/Ward Operational	1 day	Sun 08/10/23	Sun 08/10/23
WGH RAAC: WARD 12 (COMPLETE)	91 days	Mon 10/07/23	Sun 12/11/23
Structural Engineers Survey Report for Ward 12 (Final Issue)	5 days	Mon 10/07/23	Fri 14/07/23
Report Review / Project Team Site Meetings	5 days	Mon 17/07/23	Fri 21/07/23
Tender Stage / HDUHB Lot 4 Framework	5 days	Mon 24/07/23	Fri 28/07/23
Cost Plan & Timeline Review - Post Tender Stage	2 days	Mon 31/07/23	Tue 01/08/23
Approval & Appointment	8 days	Wed 02/08/23	Fri 11/08/23
Project Delay Point - Remedial Work	1 day	Fri 11/08/23	Fri 11/08/23
Mobilisation Period - Project Planning Stage	10 days	Mon 14/08/23	Fri 25/08/23
Construction Phase	50 days	Mon 28/08/23	Fri 03/11/23
Ward Commissioning Stage	7 days	Sat 04/11/23	Sat 11/11/23
Go-Live/Operational	1 day	Sun 12/11/23	Sun 12/11/23
WELSH GOVERNMENT APPROVAL	9 days	Thu 17/08/23	Tue 29/08/23
WGH RAAC: WARD 7 (COMPLETE)	86 days	Mon 28/08/23	Sun 24/12/23
Structural Engineers Survey & Reports (Final Issue)	5 days	Mon 28/08/23	Fri 01/09/23
Tender Stage / HDUHB Lot 4 Framework	5 days	Mon 04/09/23	Fri 08/09/23
Cost Plan & Timeline Review - Post Tender Stage	2 days	Mon 11/09/23	Tue 12/09/23
Approval & Appointment	8 days	Wed 13/09/23	Fri 22/09/23
Mobilisation Period - Project Planning Stage	10 days	Mon 25/09/23	Fri 06/10/23
Ward 7 Construction Phase	50 days	Mon 09/10/23	Fri 15/12/23
Ward Commissioning Stage	7 days	Sat 16/12/23	Sat 23/12/23
Go-Live/Operational	1 day	Sun 24/12/23	Sun 24/12/23
WGH RAAC: SPH ADVANCED WORK (COMPLETE)	20 days	Mon 16/10/23	Fri 10/11/23
WGH RAAC: SDEC REMEDIATION WORK (COMPLETE)	20 days	Mon 30/10/23	Fri 24/11/23
WGH RAAC: SPH ADDITIONAL BED CAPACITY (COMPLETE)	45 days	Mon 23/10/23	Fri 22/12/23
WGH RAAC: WARD 11 (COMPLETE)	76 days	Mon 25/09/23	Mon 08/01/24
Structural Engineers Survey & Reports (Final Issue)	5 days	Mon 25/09/23	Fri 29/09/23
Tender Stage / HDUHB Lot 4 Framework	5 days	Mon 02/10/23	Fri 06/10/23
Cost Plan & Timeline Review - Post Tender Stage	1 day	Mon 09/10/23	Mon 09/10/23
Approval & Appointment	4 days	Tue 10/10/23	Fri 13/10/23
Mobilisation Period - Project Planning Stage	5 days	Mon 16/10/23	Fri 20/10/23
Ward 11 Construction Phase	45 days	Mon 23/10/23	Fri 22/12/23
Ward Commissioning Stage	12 days	Sat 23/12/23	Mon 08/01/24
Go-Live/Operational	1 day	Mon 08/01/24	Mon 08/01/24
WGH RAAC: WARDS 8 & 10 (COMPLETE)	161 days	Mon 04/09/23	Mon 15/04/24
Structural Engineers Survey & Reports (Final Issue)	30 days	Mon 04/09/23	Fri 13/10/23
Tender Stage / HDUHB Lot 4 Framework	10 days	Mon 16/10/23	Fri 27/10/23
Cost Plan & Timeline Review - Post Tender Stage	5 days	Mon 30/10/23	Fri 03/11/23
Approval & Appointment	10 days	Mon 06/11/23	Fri 17/11/23
Mobilisation Period - Project Planning Stage	10 days	Mon 20/11/23	Fri 01/12/23

Site Set Up & Enablement	15 days	Mon 04/12/23	Fri 22/12/23
Ward 8 Construction Phase	50 days	Mon 08/01/24	Fri 15/03/24
Ward 10 Construction Phase	50 days	Mon 08/01/24	Fri 15/03/24
Ward Commissioning Stage	12 days	Sat 16/03/24	Sun 31/03/24
Go-Live/Operational	1 day	Mon 01/04/24	Mon 01/04/24
WGH RAAC: PART GROUND FLOOR URGENT AREAS	170 days	Mon 24/07/23	Fri 15/03/24
Structural Engineers Visual Survey for Ground Floor	50 days	Mon 24/07/23	Fri 29/09/23
Emergency Propping	50 days	Mon 24/07/23	Fri 29/09/23
WGH RAAC: TEMP KITCHEN ENABLEMENT (COMPLETE)	40 days	Mon 11/09/23	Fri 03/11/23
Detailed Design/Specifications & Drawings for Tender	10 days	Mon 11/09/23	Fri 22/09/23
Framework/Tender Stage	5 days	Mon 25/09/23	Fri 29/09/23
Tender Review/Approvals & Award	5 days	Mon 02/10/23	Fri 06/10/23
Mobilisation Stage	5 days	Mon 09/10/23	Fri 13/10/23
Construction Phase	15 days	Mon 16/10/23	Fri 03/11/23
Health Board Commissioning	10 days	Mon 20/11/23	Fri 01/12/23
Temp Kitchens Go-live/Operational	1 day	Mon 04/12/23	Mon 04/12/23
WGH RAAC: PKL TEMP KITCHENS FACILITY (COMPLETE)	81 days	Mon 14/08/23	Mon 04/12/23
Emergency Planning/Mobilisation Stage	14 days	Mon 14/08/23	Thu 31/08/23
Temporary Cook Freeze Solution	58 days	Thu 31/08/23	Sun 19/11/23
Project Planning & Approval for Temp Kitchen	5 days	Mon 04/09/23	Fri 08/09/23
Enablement for Temp Kitchens/Adaption Work - Lot 2	15 days	Mon 16/10/23	Fri 03/11/23
PKL Temp Kitchen Mobilisation Stage	40 days	Mon 11/09/23	Fri 03/11/23
Delivery & Craneage of Temp Kitchens	2 days	Sat 04/11/23	Sun 05/11/23
PKL Installation & Commissioning of Temp Kitchens	10 days	Mon 06/11/23	Fri 17/11/23
Health Board Commissioning	10 days	Mon 20/11/23	Fri 01/12/23
Temp Kitchens Go-live/Operational	1 day	Mon 04/12/23	Mon 04/12/23
2024/2025 WGH RAAC: RED RAG RATED GF REMEDIAL WORK	250 days	Mon 01/04/24	Fri 14/03/25
WGH RAAC: MAIN KITCHEN (LOWER GROUND FLOOR - TENDER 1)	145 days	Mon 01/04/24	Fri 18/10/24
Structural Engineers Survey & Reports	10 days	Mon 22/01/24	Fri 02/02/24
Installation of Scaffolding/Decommissioning	14 days	Tue 02/01/24	Fri 19/01/24
Mobilisation Stage - Project Planning for 23/24	15 days	Mon 11/03/24	Fri 29/03/24
Construction Phase - Kitchen Remedial Works for 24/25	105 days	Mon 01/04/24	Fri 23/08/24
Health Board Commissioning Stage	30 days	Mon 26/08/24	Fri 04/10/24
Kitchen Go-live/Operational	1 day	Mon 30/09/24	Mon 30/09/24
Temp Kitchen Hire Period	240 days	Mon 06/11/23	Fri 04/10/24
PKL Removal & Reinstatement	10 days	Mon 07/10/24	Fri 18/10/24
WGH RAAC: OPD A GROUND FLOOR - TENDER 1 (COMPLETE)	191 days	Mon 02/10/23	Mon 24/06/24
Change Request Stage & Approval	10 days	Mon 02/10/23	Fri 13/10/23
Structural Engineers Survey & Reports (Final Issue)	30 days	Mon 16/10/23	Fri 24/11/23
Tender Stage / HDUHB Lot 4 Framework	10 days	Mon 20/11/23	Fri 01/12/23
Cost Plan & Timeline Review - Post Tender Stage	5 days	Mon 04/12/23	Fri 08/12/23
Approval & Appointment	15 days	Mon 11/12/23	Fri 29/12/23
Letter of Intent / Place Order	5 days	Mon 01/01/24	Fri 05/01/24

Mobilisation Period	15 days	Mon 08/01/24	Fri 26/01/24
OPD A Construction Phase	95 days	Mon 29/01/24	Fri 07/06/24
OPD A Commissioning Stage	10 days	Mon 10/06/24	Fri 21/06/24
Go-Live/Operational	1 day	Mon 24/06/24	Mon 24/06/24
WGH RAAC: OPD-B (GROUND FLOOR - TENDER 2) MANAGEMENT/PRE-ASS/PODIATRY/CARDIO/SDEC/MAIN CIRC	341 days	Mon 04/09/23	Mon 23/12/24
Structural Engineers Survey & Reports (Final Issue)	5 days	Mon 26/02/24	Fri 01/03/24
Tender Stage / HDUHB Lot 4 Framework	20 days	Mon 04/03/24	Fri 29/03/24
Cost Plan & Timeline Review - Post Tender Stage	5 days	Mon 01/04/24	Fri 05/04/24
Approval & Appointment	15 days	Mon 08/04/24	Fri 26/04/24
Mobilisation Period - Project Planning Stage	10 days	Mon 27/05/24	Fri 07/06/24
Decant & Commissioning (OPD A)	10 days	Mon 10/06/24	Fri 21/06/24
Construction Phase (OPD-B Management/Pre-Ass/Podiatry/Cardio)	60 days	Mon 24/06/24	Fri 13/09/24
Commissioning Stage (OPD A & OPD B)	15 days	Mon 16/09/24	Fri 04/10/24
Go-Live/Operational (OPD A & OPD B)	1 day	Mon 07/10/24	Mon 07/10/24
Main Entrance Construction Phase	40 days	Mon 12/08/24	Fri 04/10/24
SDEC Construction Phase	45 days	Mon 07/10/24	Fri 06/12/24
SDEC Commissioning Stage	10 days	Mon 09/12/24	Fri 20/12/24
SDEC Go-Live/Operational	1 day	Mon 23/12/24	Mon 23/12/24
WGH RAAC: PHYSIO/NORTH & SOUTH CORRIDORS /PHARMACY (GROUND FLOOR - TENDER 3)	250 days	Mon 01/04/24	Fri 14/03/25
Structural Engineers Survey & Reports (Final Issue)	10 days	Mon 01/04/24	Fri 12/04/24
Tender Stage / HDUHB Lot 4 Framework	20 days	Mon 15/04/24	Fri 10/05/24
Cost Plan & Timeline Review - Post Tender Stage	5 days	Mon 13/05/24	Fri 17/05/24
Approval & Appointment	15 days	Mon 20/05/24	Fri 07/06/24
Mobilisation Period	10 days	Mon 10/06/24	Fri 21/06/24
PHysiotherapy Construction Phase	80 days	Mon 24/06/24	Fri 11/10/24
Physiotherapy Commissioning Stage	10 days	Mon 14/10/24	Fri 25/10/24
Go-Live/Operational	1 day	Mon 28/10/24	Mon 28/10/24
Pharmacy Construction Phase	25 days	Mon 28/10/24	Fri 29/11/24
Pharmacy Commissioning Stage	5 days	Mon 02/12/24	Fri 06/12/24
Go-Live/Operational	1 day	Mon 09/12/24	Mon 09/12/24
South Corridor Construction Phase	25 days	Mon 06/01/25	Fri 07/02/25
North Corridor Construction Phase	25 days	Mon 10/02/25	Fri 14/03/25
WGH RAAC: WGH & BGH PLANT ROOMS/OPD ROOF (TENDER 4)	180 days	Mon 15/04/24	Fri 20/12/24
Detailed Design Stage	40 days	Mon 15/04/24	Fri 07/06/24
Structural Engineers Survey & Reports (Final Issue)	25 days	Mon 06/05/24	Fri 07/06/24
Tender Stage / HDUHB Lot 4 Framework	20 days	Mon 10/06/24	Fri 05/07/24
Cost Plan & Timeline Review - Post Tender Stage	10 days	Mon 08/07/24	Fri 19/07/24
Approval & Appointment	10 days	Mon 22/07/24	Fri 02/08/24
Letter of Intent / Place Order	1 day	Fri 02/08/24	Fri 02/08/24
Mobilisation Period	15 days	Mon 05/08/24	Fri 23/08/24
Construction Phase	85 days	Mon 26/08/24	Fri 20/12/24
WGH RAAC: CURTINS RE-SURVEY INSPECTIONS SECOND FLOOR	215 days	Mon 22/04/24	Fri 14/02/25

Ward 9: Re-survey Inspections	15 days	Mon 22/04/24	Fri 10/05/24
Ward 12: Re-survey Inspections	20 days	Mon 20/05/24	Fri 14/06/24
Ward 7: Re-survey Inspections	15 days	Mon 28/10/24	Fri 15/11/24
Ward 11: Re-survey Inspections	15 days	Mon 18/11/24	Fri 06/12/24
Ward 8: Re-survey Inspections	15 days	Mon 09/12/24	Fri 27/12/24
Ward 10: Re-survey Inspections	15 days	Mon 06/01/25	Fri 24/01/25
Re-survey Inspections Contingency	15 days	Mon 27/01/25	Fri 14/02/25

Reinforced Autoclaved Aerated Concrete (RAAC) 2024

Withybush Hospital
Safe way of working

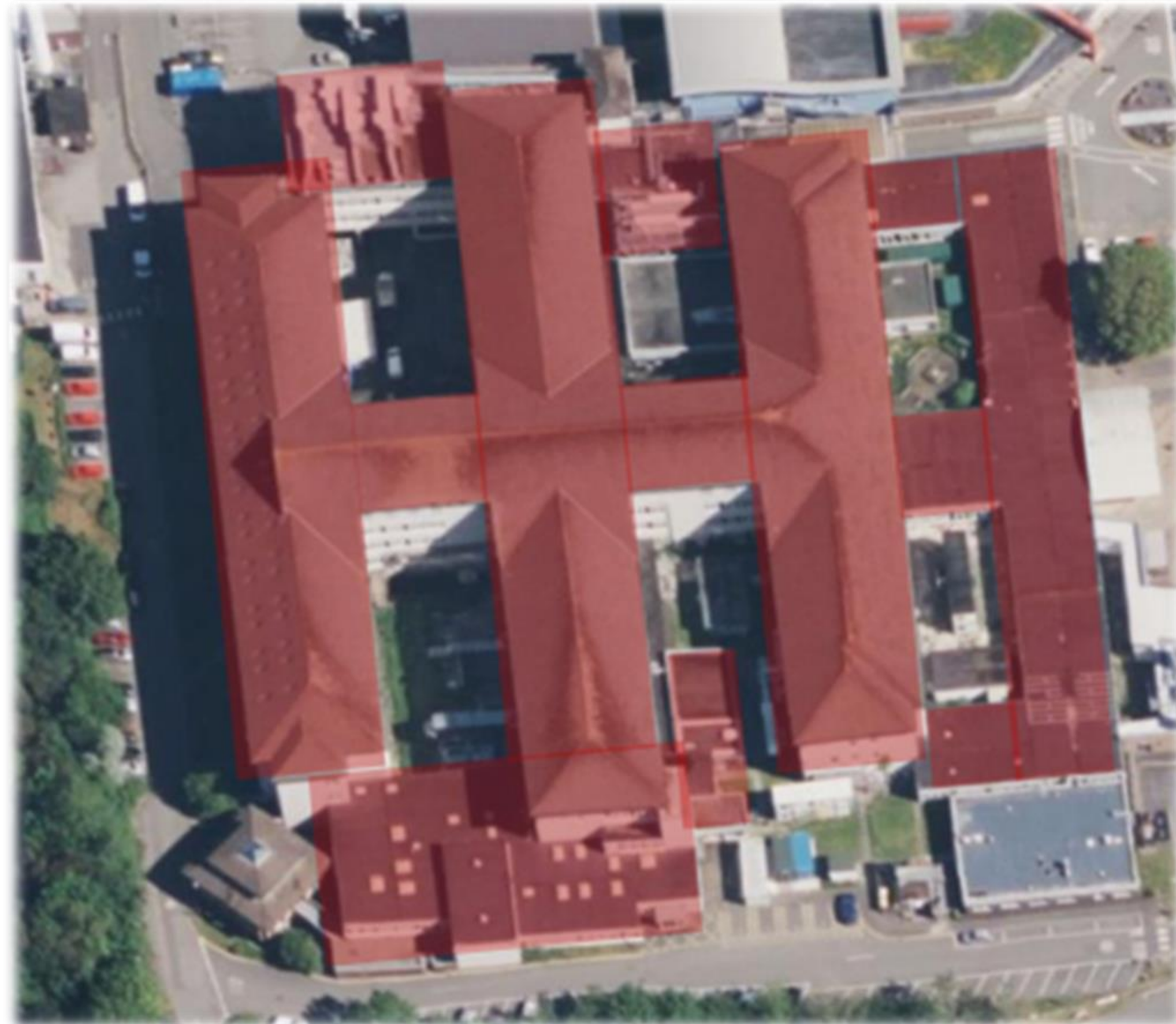
Curtins WE ARE CURTINS

History of Withybush Hospital and RAAC

Curtins Consulting Ltd were instructed by Paul Williams on behalf of Hywel Dda University Health Board to undertake structural surveys and investigations regarding roof slab areas impacted by Reinforced Autoclaved Aerated Concrete (RAAC) at Withybush General Hospital. Following the identification of areas containing RAAC, fast track visual surveys for the ground floor was completed in August. Detailed surveys for the physiotherapy and occupational therapy areas on the ground floor were completed on 28th March 2024.

The methodology for the plank-by-plank survey involved visual inspections followed by deflection and bearing checks. Based on data collected, each plank has been designated as red, amber or green in accordance with the risk category guidance published by the IStructE in April 2023.

Overview of RAAC location



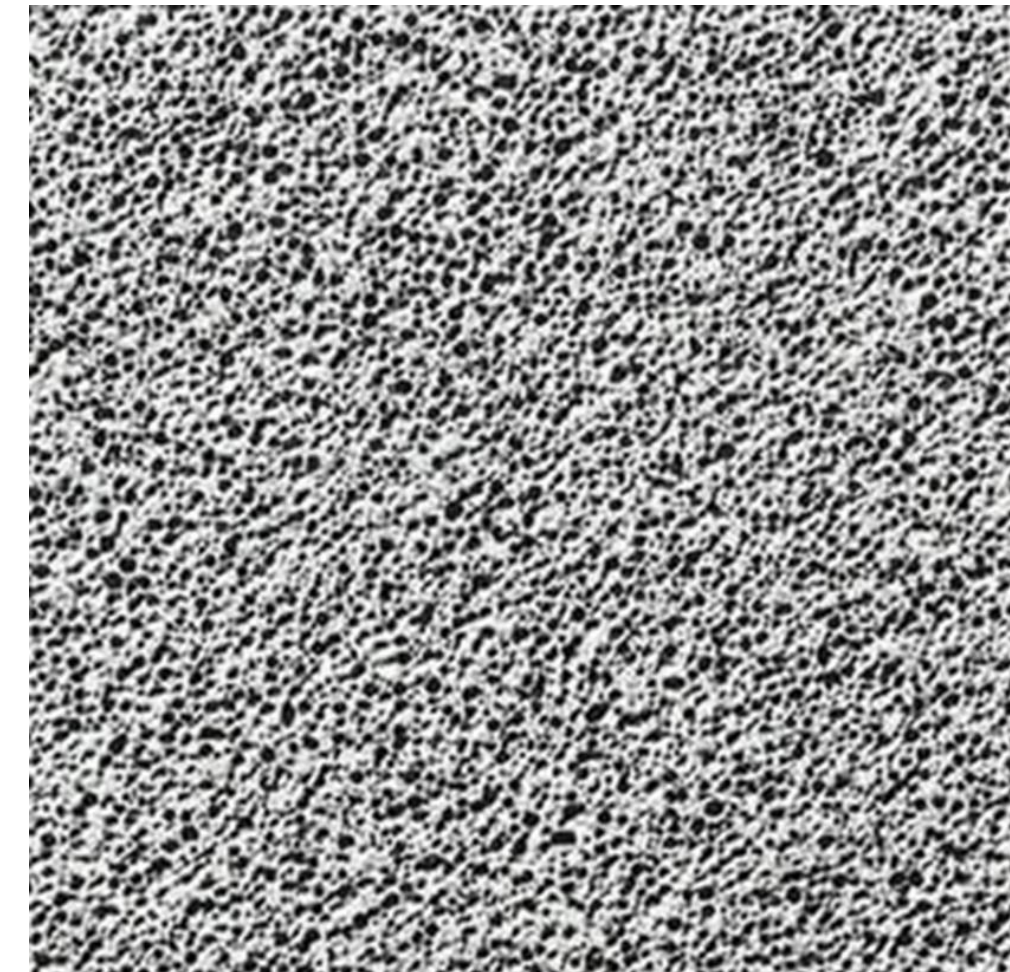
History of RAAC

- Autoclaved aerated concrete (AAC) was developed in Sweden in the 1920s and introduced to the UK in the late 1950s.
- **Reinforced Autoclaved Aerated Concrete (RAAC)** is a 'bubbly' lightweight form of reinforced concrete that is manufactured with extremely fine aggregates meaning it's **structurally** and **physically different** from traditional higher-density concretes
- The planks were cast in blocks and **vertically** saw cut to the required thickness.
- The material is usually **light grey or off-white in colour**, easily broken or damaged with hand tools or sharp implements. **Appearing as a 'bubbly' aerated form of concrete.**
- Sometimes referenced as **DUROX** or **SIPOREX** on historical drawings.



History of RAAC

- From the mid 1950s until the mid 1990s, RAAC planks were often selected for the use of roof decks **in hospital and school buildings** and similar structures; being lightweight, they enabled economies in the design of supporting structures, as well as improved thermal performance.
- RAAC is not the same as reinforced concrete and behaves in a different way, it is relatively weak.
- It has a much higher elastic modulus than reinforced concrete, for instance, meaning that for a given load, **deflection will be about ten times that for an equivalent concrete plank under similar loading conditions.**
- **RAAC is also more vulnerable to corrosion and has a lower compressive strength than reinforced concrete.**



History of RAAC

- In 1982, production of RAAC in the UK stopped amid concerns over its structural performance and life expectancy, which was subsequently predicted by **Building Research Establishment to be around 30 years.**
- Over recent years there have been a number of instances of structural failure highlighting a number of significant structural deficiencies which may exist in some RAAC pre-cast concrete units.
- **In 2019 SCOSS published the safety alert “Failure of Reinforced Autoclaved Aerated Concrete (RAAC) Planks” following the sudden and unexpected collapse of school flat roof in 2018. Fortunately there were no casualties or injuries.**

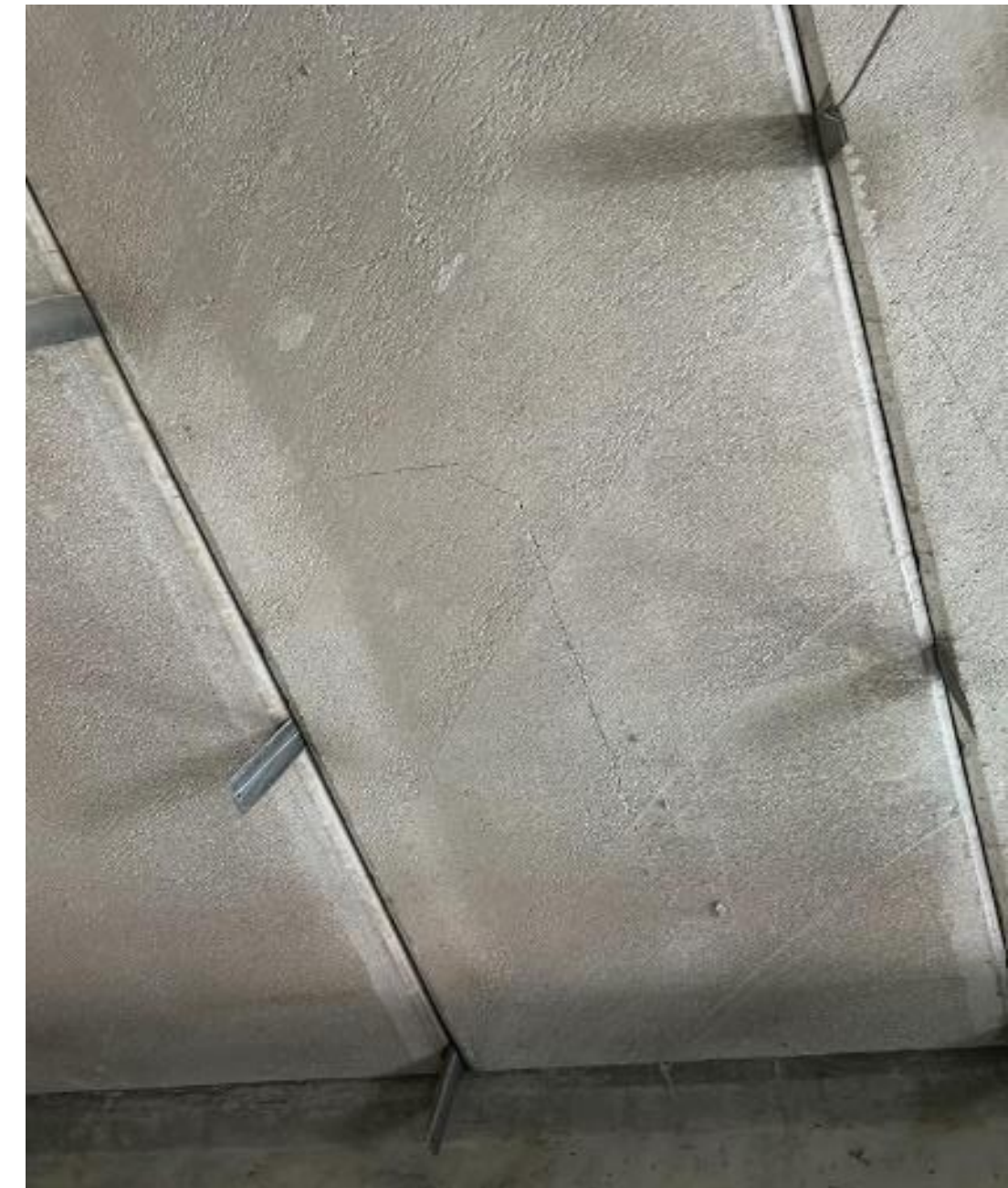
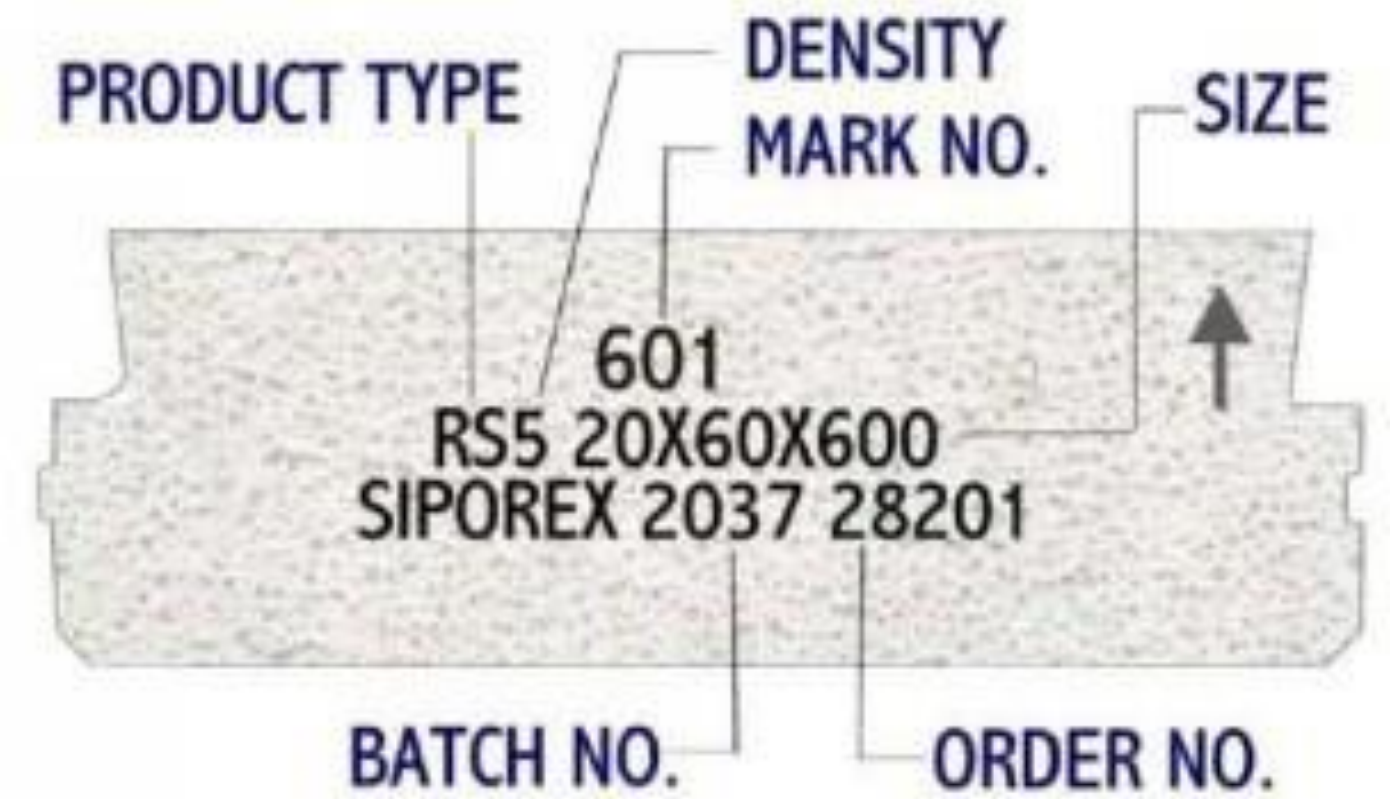
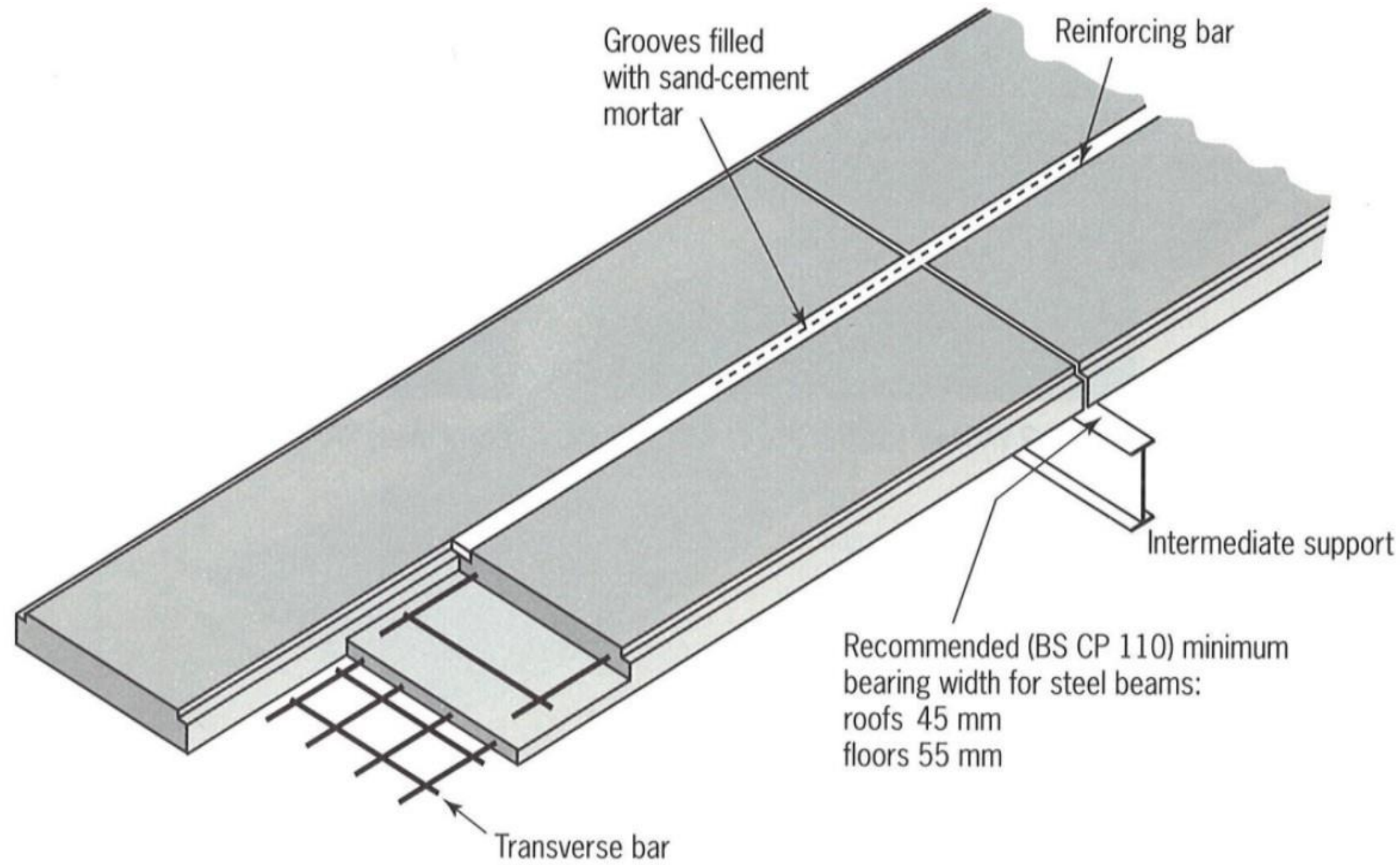


RAAC - What to look for

- RAAC has an open texture and open-sided bubbles can often be seen.
- Surface is soft and crumbly (unless heavily painted or coated) Easy to penetrate/core/ gouge with a screwdriver.
- RAAC panels are usually (but not always) 600mm wide and range in length from 2.4m up to 6.0m long with a slight chamfer on the edge and appear white or pale grey.
- Found on flat roofs generally



RAAC - Structural Arrangement



IStructE Guidance – Assessment of risk

Assessment category	Risk category	
Red	Critical risk	Requires urgent remedial works which may include taking out of use or temporary propping to allow the safe ongoing use of a building. Depending on the extent, this may be part or all of the building. Combined with awareness campaign for occupants including exclusion zones.
	High risk	Requires remedial action as soon as possible. Combined with awareness campaign for occupants, which may include exclusion zones, signage, loading restrictions and the need to report changes of condition, eg, water leaks, debris, change in loading, etc.
Amber	Medium risk	Requires inspection and assessment on a regular basis, eg, annually. Combined with awareness campaign for occupants, which may include signage, loading restrictions and the need to report changes of condition, eg, water leaks, debris, etc.
Green	Low risk	Requires inspection and assessment occasionally, say three year period depending on condition. Combined with awareness campaign for occupants, which may include signage, loading restrictions and the need to report changes of condition, eg, water leaks, debris, etc.

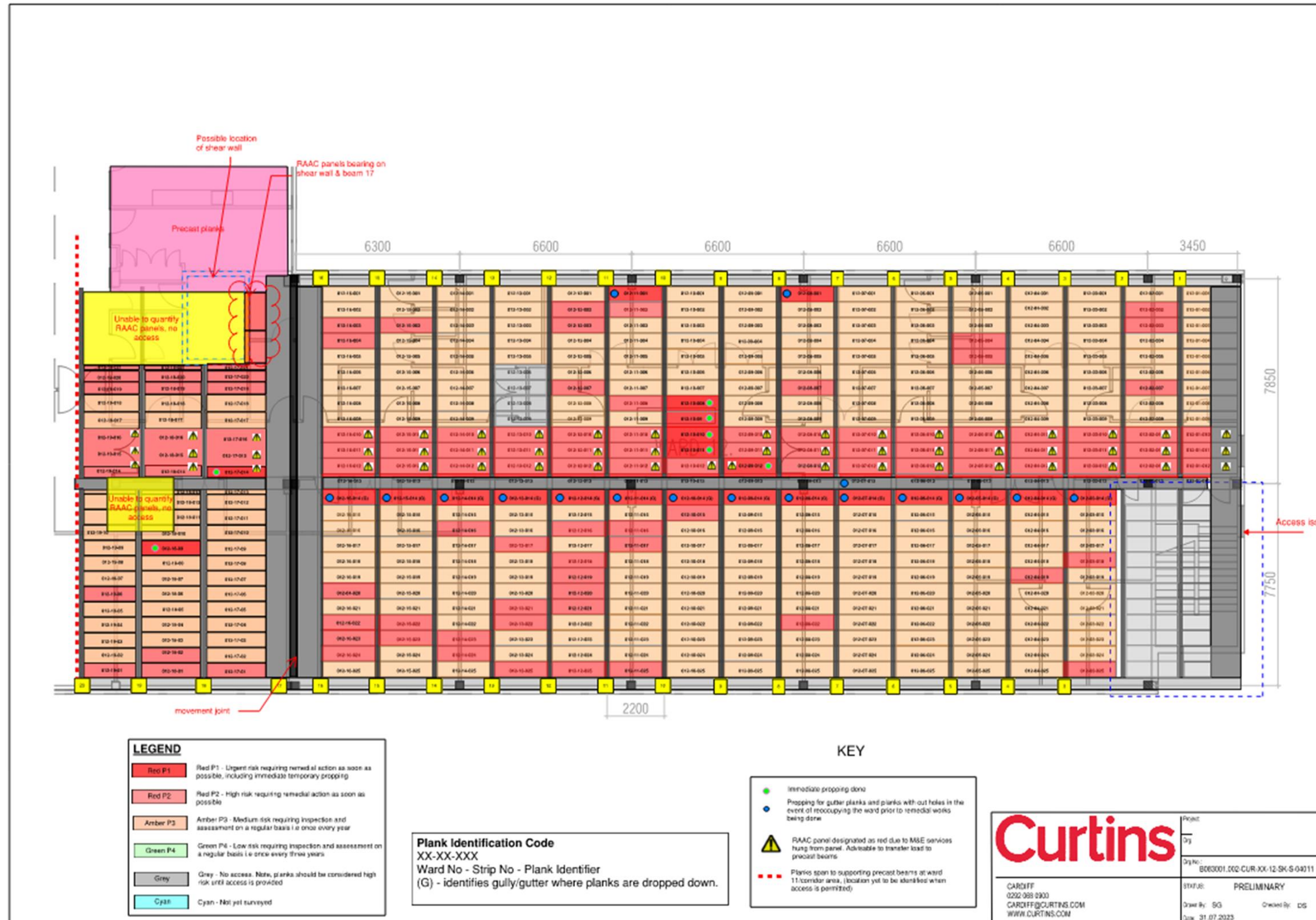
Table 1 – Risk categories

RAAC – risk factors

- Deflection
- Water ingress
- Bearing failure
- Cracking and spalling
- Mechanical damage
- Overloading



Survey and inspection of RAAC



RAAC 2023 SURVEY

WITHYBUSH GENERAL HOSPITAL WARD 12

Curtins Ref: 083001-CUR-00-XX-RP-Z-00002

Revision: P02

Issue Date: 31 July 2023

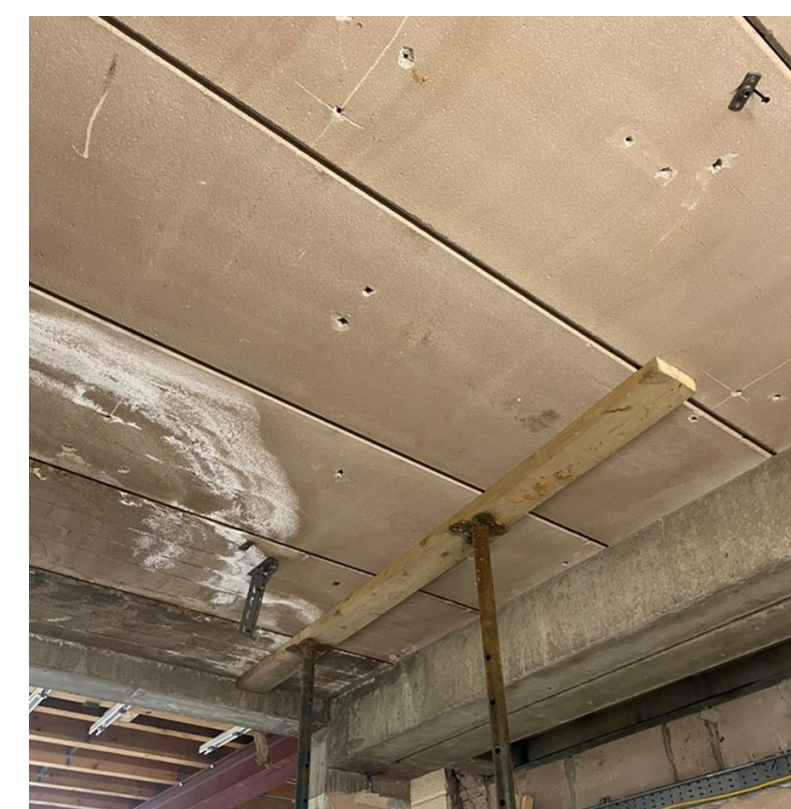
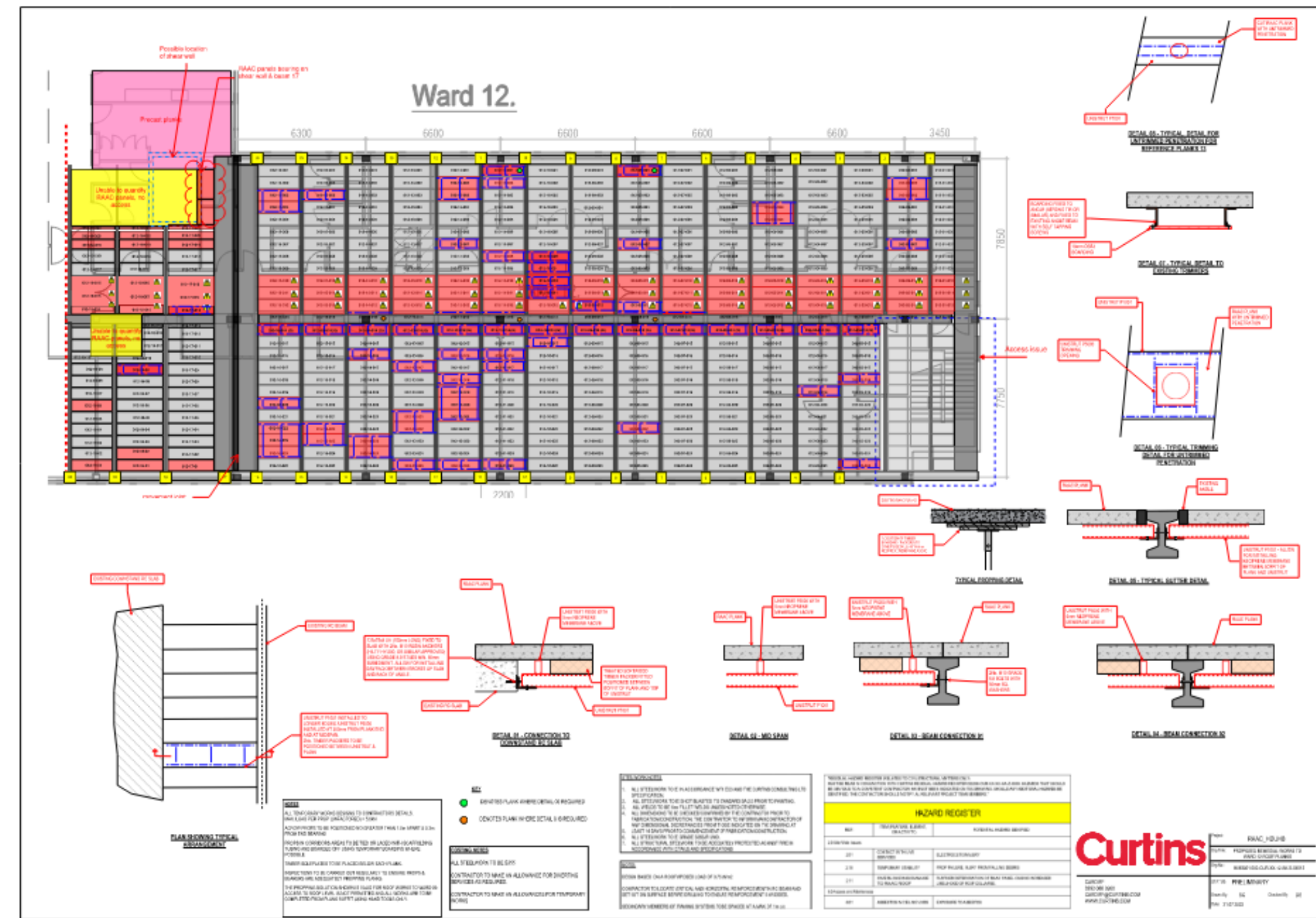
Client Name: Withybush General Hospital – NHS Trust

Site Address: Fishguard Rd, Haverfordwest SA61 2PZ

Curtins
 CARDIFF
 0292 999 0900
 CARDIFF@CURTINS.COM
 WWW.CURTINS.COM

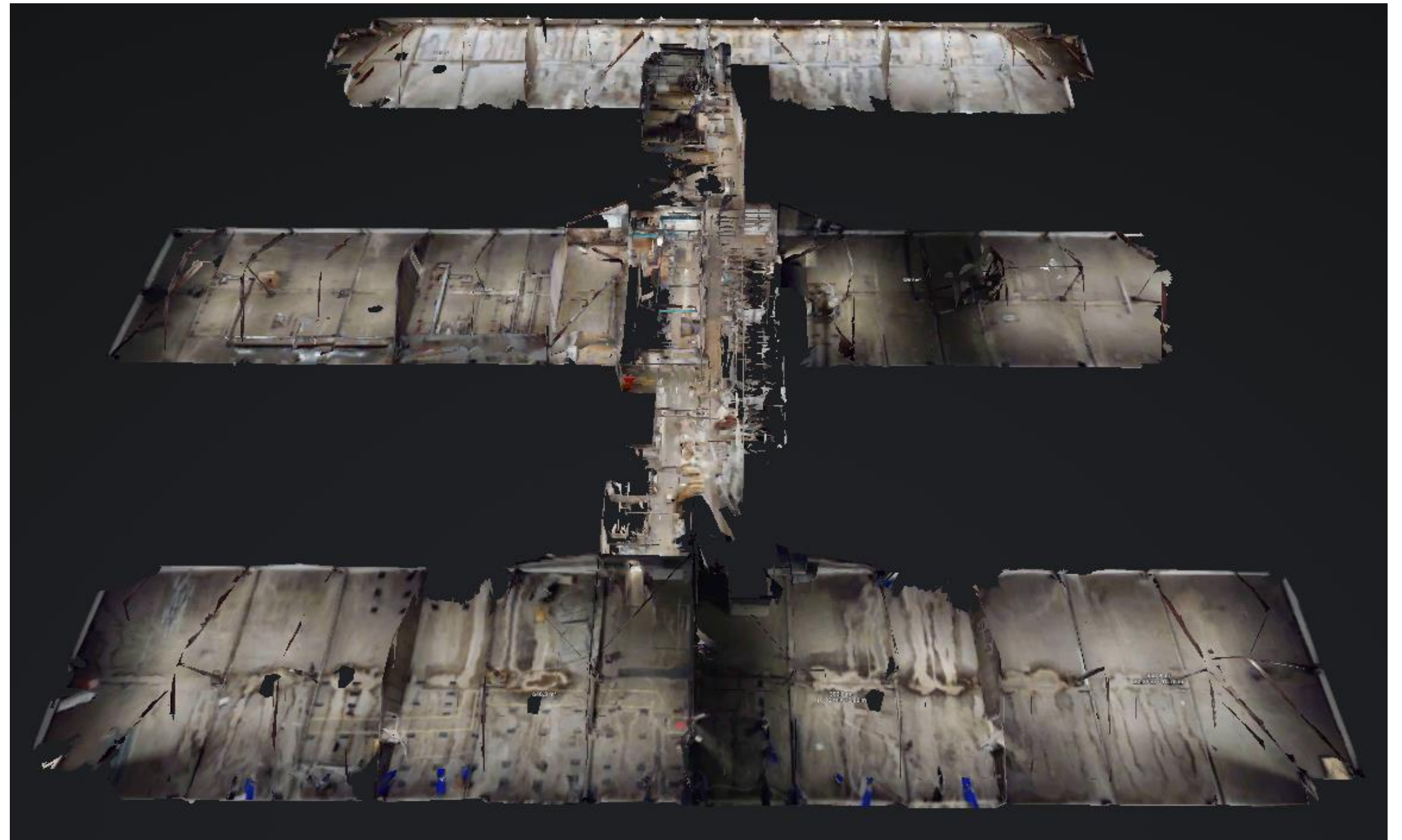
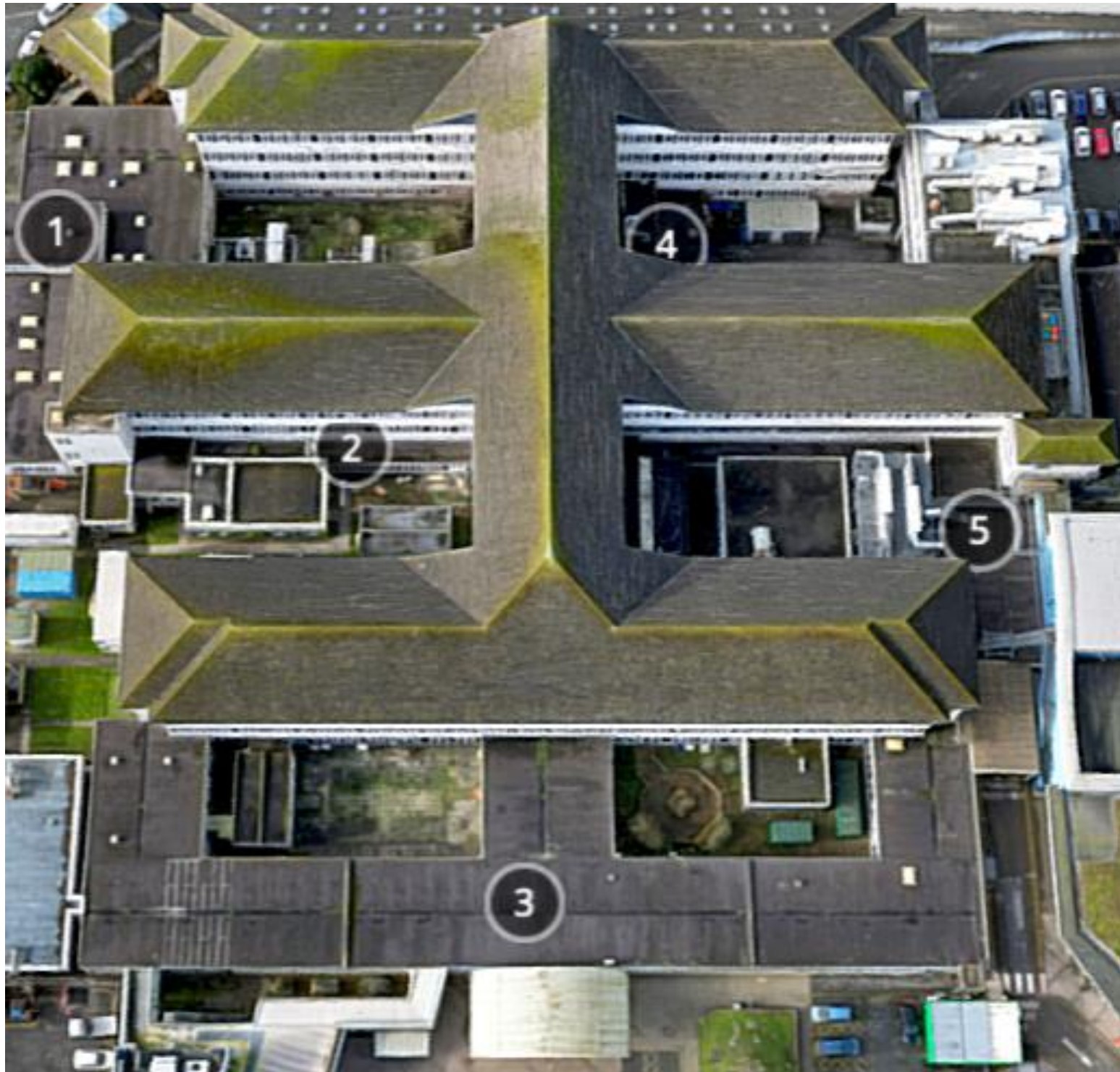
Project: _____
 Site: _____
 Site No: 0063001.502-CUR-XX-12-SK-S-04011
 Status: PRELIMINARY
 Drawn By: SG
 Checked By: DG
 Date: 31.07.2023

Remediation methods



Roof access

- Drone survey – ground floor and external roof areas
- Matterport survey – ward roofs



Roof access - Area 1 - Physiotherapies & surrounding roof



Roof access - Area 2 - North Corridor



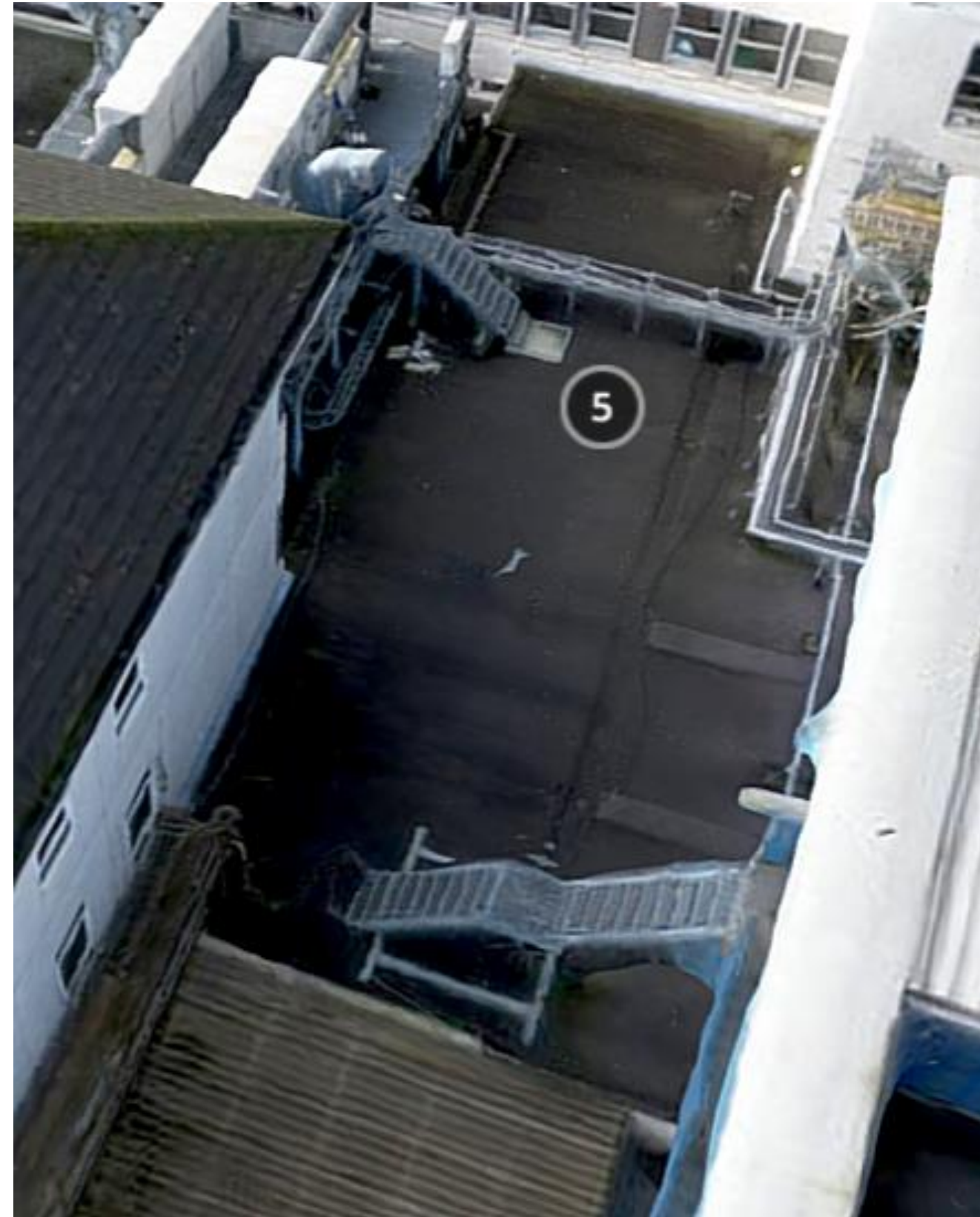
Roof access - Area 3 - OPD



Roof access – Area 4 - Kitchen



Roof access - Area 5 – SDEC



Roof access

Roof Access will require controlled measures:

- Any roof access requests should be discussed and agreed with the Estates team and Curtins.
- There is a document procedure for roof access.

PROCEDURE for Roof Access. Withybush Hospital – Area 1 – Physiotherapies & surrounding roof Green Planks (P3) and Planks with Signed Off Safeguard Strengthening.

Ref: 083951-CUR-XX-XX-TN-S-00001-P01

Date: May 2024

Document Owner:	Dean Saxton Business Unit Director	Document Author:	Jeremy Kent Associate Structural Engineer
Assurance Group:	RAAC	Date Approved:	
Date Issued:	May 2024	Next Review date:	Nov 2024
Target audience:	Estates Maintenance Assistant Surveying RAAC panels	Training requirement to use this SOP	Undertake site induction and sign relevant roof access permit
People authorised to use SOP	RAAC Team, Estates maintenance, contractors (following production of RAAC issue of permit and induction)		
Risks Identified with performing this SOP	Debris, working at heights, trip hazards, slippery surfaces, inclement weather, or strong winds. Damaged RAAC panels, overloading of the roof. Mechanical dynamic actions on the roof. Vibrations and impact loads.		
Risk Counter measures	Appropriate PPE, Barriers and training or induction, carry appropriate contact details in case of emergency, limit load on the roof and limit general activities on the roof. The roof construction type MUST BE known and the condition MUST BE assessed by a competent person to advise safe access can be achieved. If the material and condition has not been established, then NO access will be permitted. Mechanical dynamic actions and vibration and impact loads to be always avoided		
Review	3 Monthly		

SOP REVIEW HISTORY

Version	Review date	Reviewer	Changes made
1			
2			
3			

If printed, this SOP is valid on the day of printing only. Please ensure that you check XXXXX to ensure you are using the current [version](#)

Roof access

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Tyndall Street
Cardiff
CF10 4AZ

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www.curtins.com



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www.curtins.com



Training required to use this procedure; Please read and follow this SOP		
Roof Access Procedure		
When accessing any area of external roof sitewide at Aintree University Hospital - Green Plank and Planks with Signed Off Safeguard Strengthening only.		
No.	Instruction	Action
1	Due to associated risk with RAAC being the primary material of the Hospital building roof, safety measures must be followed when accessing, inspecting, and working on any section of the Hospital roof.	<ul style="list-style-type: none"> First point of contact – A member of the RAAC projects team located <u>Estates</u> department, Withybush hospital. Outline nature of works and location. If no RAAC issues exist in the area, ok to proceed subject to normal risk assessment process. Sign in with estates maintenance and reset system, sign out any keys required with estates maintenance.
2	<p>The Projects team will notify you of the specific requirements and provide the necessary documents / inspection sheets if required.</p> <p>A roof access permit and other permits as required, will be issued, and must be read, <u>understood</u> and signed by all parties accessing the roof. You will also be advised on restricted or areas of concern by referring to the restricted roof access document held by the RAAC projects & estates maintenance teams.</p>	<ul style="list-style-type: none"> Confirm that appropriate training has been undertaken. For external visitors and contractors on their first visit, the relevant induction must be carried out. Once the RAMs have been accepted Carefully read the roof access permit and sign where stated. You may request a copy should you require one.
3	<p>Report any issues of the following nature to the project team at the Estates Office, via mobile or email.</p> <ul style="list-style-type: none"> Ponding water Unusual or additional roof load Debris, unused or discarded items. Known roof leaks. Damaged or missing edge protection Slippery surfaces and abnormal trip hazards Foliage growth Blocked drainage outlets Anything that you consider to be unusual. 	<p>Call project team on <u>mobiles</u>:-</p> <p>Paul Williams - 07772 894926 Phil Astles - 0753 6009891 Malcolm Arnold - 07720785015</p> <p>Report via the Incident Reporting Form XXXXX</p>
4	<p>With any areas of risk highlighted by the RAAC projects team additional measures may need to be undertaken.</p> <p>Note – Submission of a Detailed RAMS for working on any RAAC Roof could take approximately 10 to 20 working days to achieve acceptance.</p>	<p>Task specific RAMS must be developed and reviewed by a Structural Engineer, Principal Designer and Trust (refer to the following planning and guidance notes for limitations on working on RAAC)</p>
5	Should any issues be observed then photos must be taken for each separate issue regardless of any visible/non-visible damage or deterioration.	Email or present photographic evidence to the projects team.
6	Ensure all waste materials and equipment relating to the inspection or work is removed from the roof and disposed of in accordance with the contract or Trust policy.	Any materials or equipment which cannot be removed must be reported to the RAAC projects team or Estates Maintenance team.

7	On completion, report back to Estates RAAC projects team.	Return keys, present any feedback, <u>reports</u> or evidence, and sign off necessary permits.
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Guidance Notes - Safe System of Work for RAAC Roof General Maintenance Activities

- Work on any RAAC roof should only be considered if it is the only reasonable practical way of completing the work and no alternative approach is viable.
- All roof works in RAAC zones must provide RAMS to be reviewed by The Trust and the Principal Designer.

The RAMS should then be sent to the Structural Engineer for comment at least 2 weeks prior to commencement to allow sufficient time to review. The RAMS should only cover that specific element of work and within a specific time frame.

The RAMS should be clear enough so that all parties understand the brief.

The RAMS **MU ST** consider all available current survey data that identifies plank condition, roof light locations, services penetrations, abnormal loading conditions and current occupancy beneath the area being contemplated for access.

- Curtins approach to commenting will be:
 - Initial desktop review of available information to perform a gap analysis. A supplementary visual survey may be required to gather any further information required.
 - Comments provided on RAMS, along with any potential constraints established i.e., load limits, exclusion zones, temporary works etc.

➤ It should be noted that the RAAC specific elements are supplementary to the main RAMS that should cover all elements of the works, including roof access, carrying out the activity etc.

➤ All contractors must read and be familiar with latest StructE guidance on RAAC – copy attached.

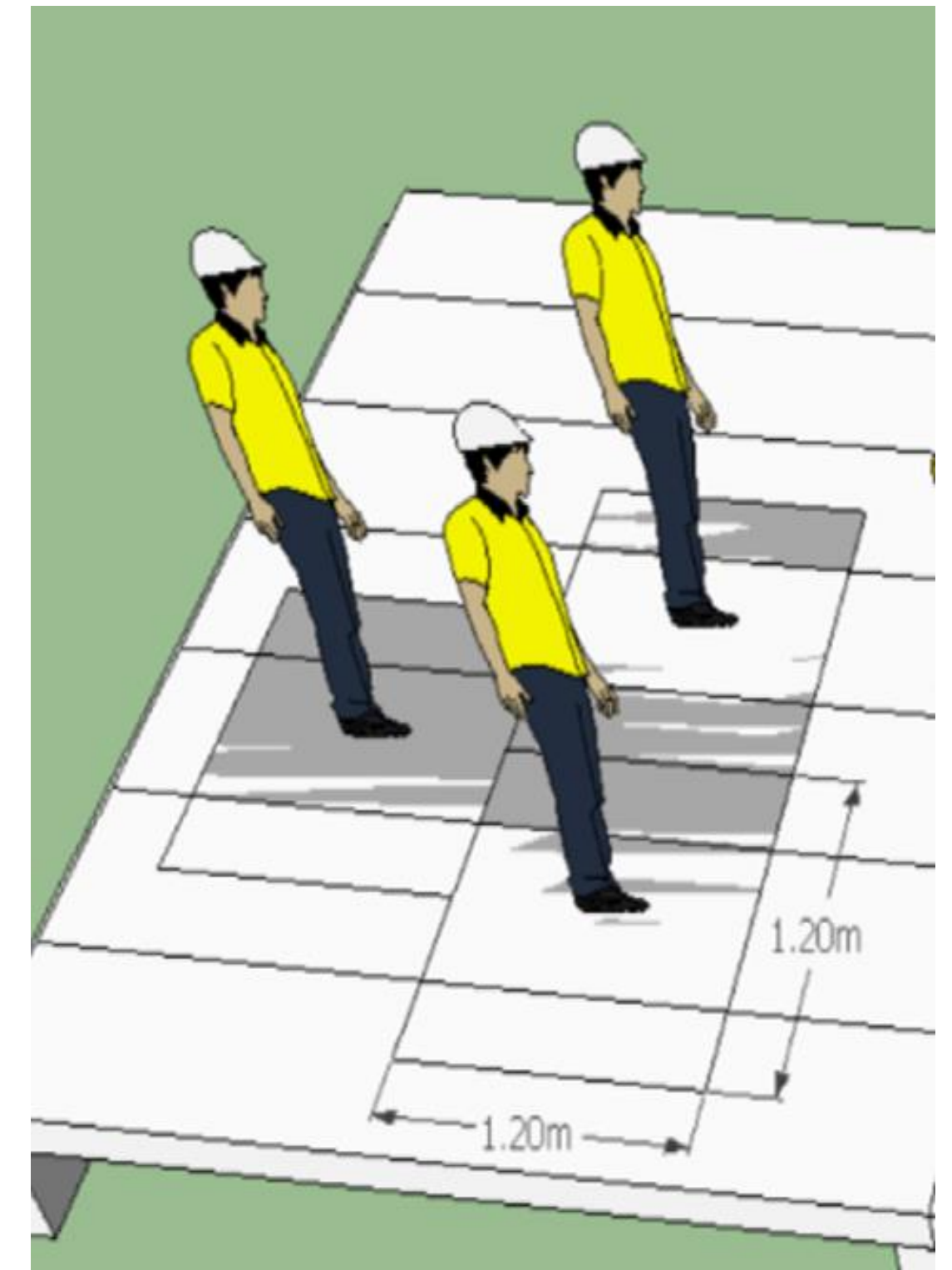
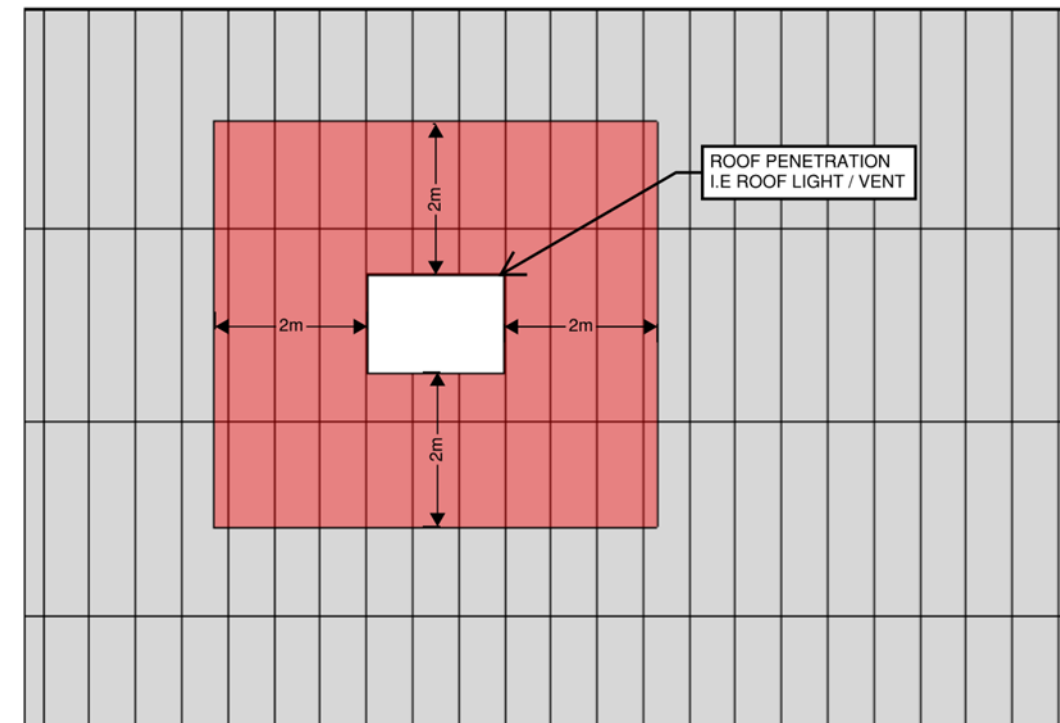
General rules for working on a RAAC roof:

- Only authorised competent personnel with suitable training are allowed access to the roof unsupervised. RAAC Awareness training to be provided where operatives are not aware of RAAC.
- Lone working is NOT permitted unless agreed and managed in the RAMS.
- Workers should always keep a minimum of 2m apart and carry no more than hand tools.
- Access within 2m of a roof penetration is NOT permitted i.e., skylight, vent etc. Without further detailed consideration and advice from Curtins as generally indicated within Figure 1

Maximum applied roof load

For areas of roof that have been inspected and assessed by a competent person (Structural Engineer) and tasks controlled by detailed method statement and risk assessment prepared by a competent party (Contractor or Facilities Management):

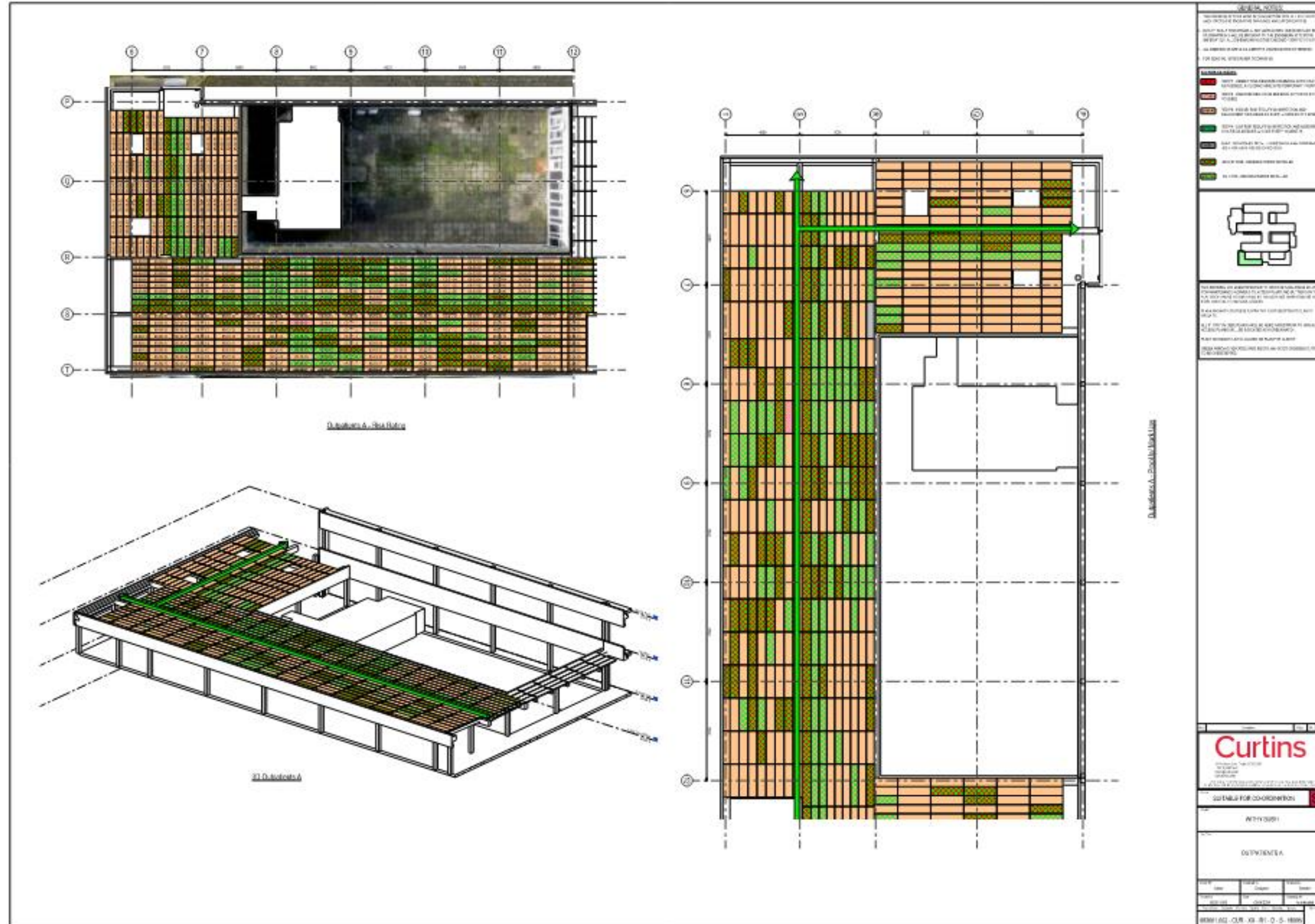
- A uniformly distributed load of approximately **60kg/m²**
- A point load in the range of **90kg to 120kg** (Average weight of a person in the UK is around 85kg)
- Ensure distancing measures are implemented and managed



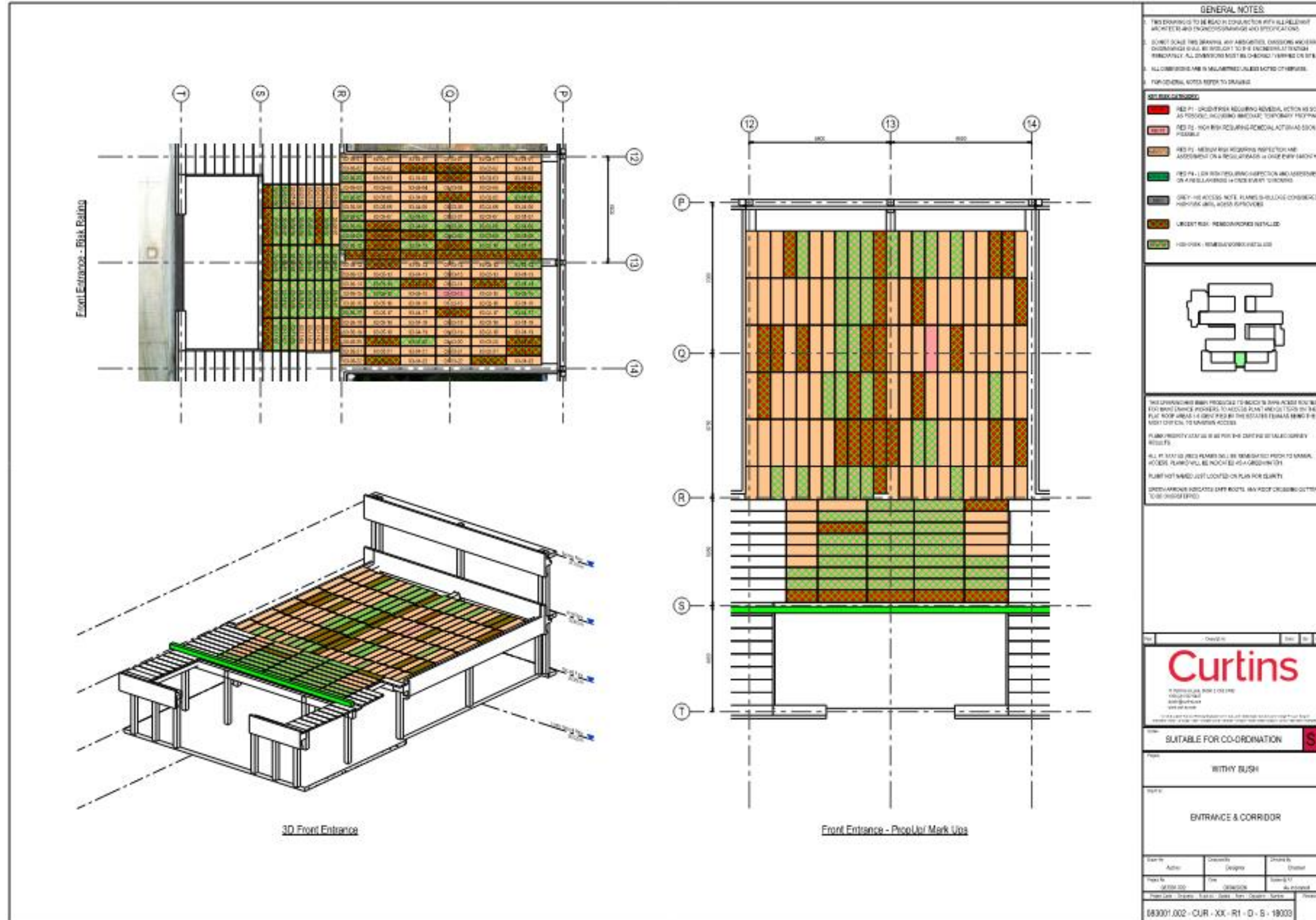
Maximum applied roof load

- RAAC Roofs must be treated as **High Risk Areas** until informed otherwise by a Competent Party
- You must remain vigilant and report anything you consider to be unusual (both above the roof and beneath the roof)
- Roof leaks must be reported to the Estates Team Immediately
- Permission is needed and access routes to be agreed
- Appropriate Risk Assessment and a Method Statement is required for all work activities and to be agreed with the Trust Estates Team and the where necessary, the Structural Engineer
- Loads must be controlled and limited as set out in the risk assessment and method statement
- Storage of materials is not permitted
- Working methods must limit the time spent and load on the roof in accordance with the Roof Access Procedures.
- **If you are not sure or are not working under RAMs STOP and seek guidance**

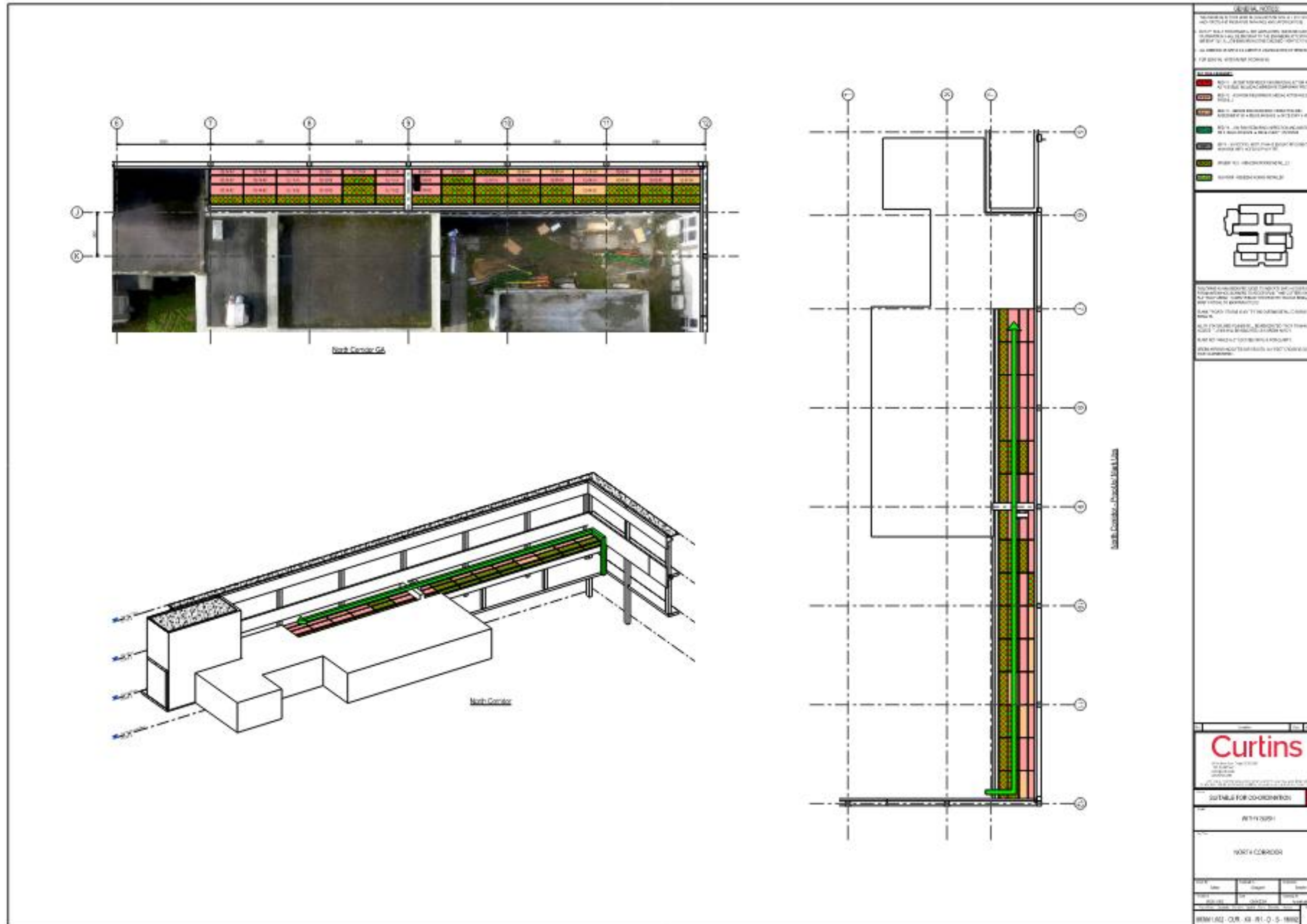
Safe access routes – OPD A



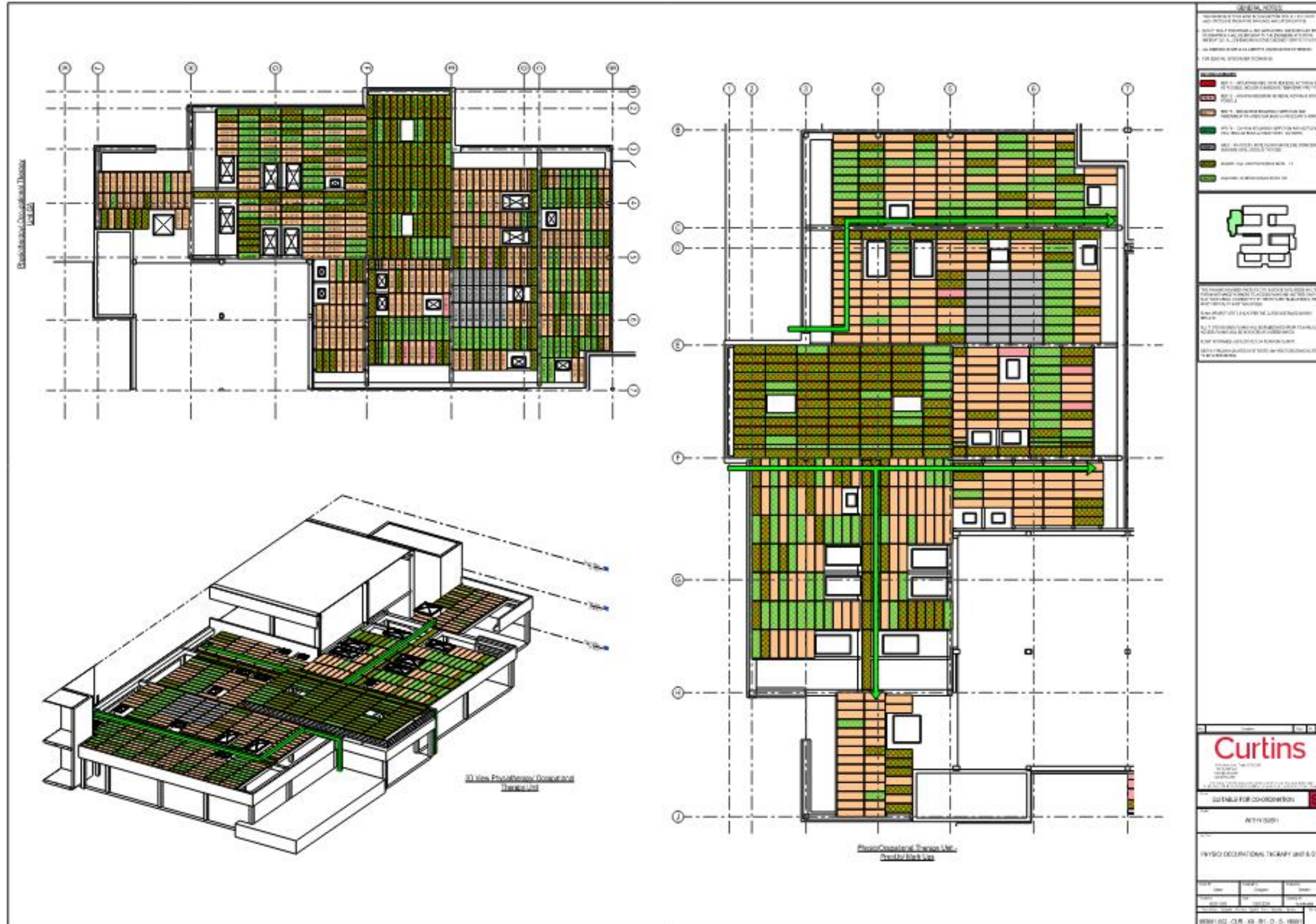
Safe access routes – Entrance



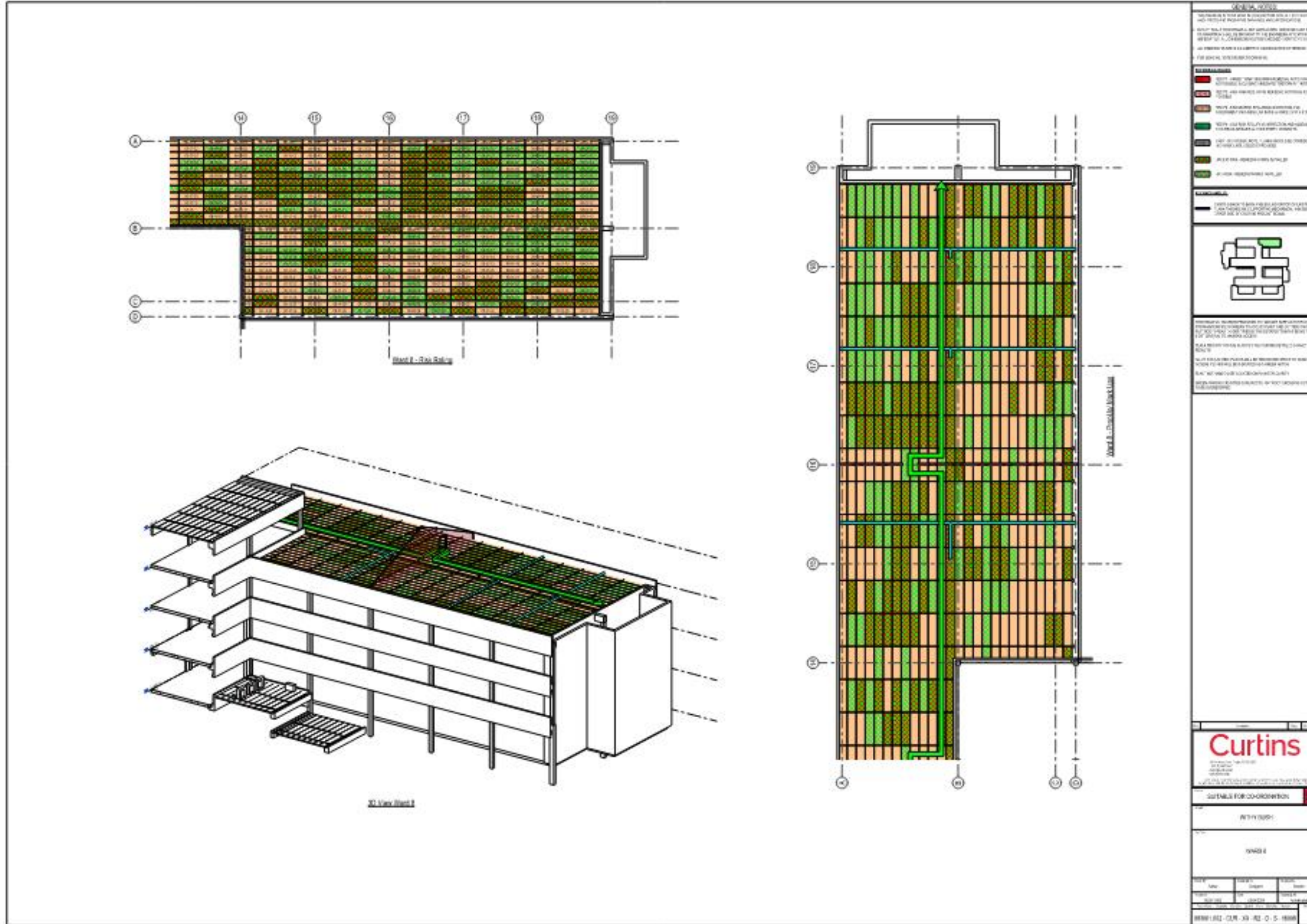
Safe access routes – North Corridor



Safe access routes – Physiotherapies



Safe access routes – Ward 8



Thank **you**