



RAMS FACTORY™ OUTPUT

● LIVE DOCUMENT

CDM 2015

MCS

G3 UNVENTED

DECARBONISATION

DRAFT FOR REVIEW

ASHP Decarbonisation

Heating upgrade · live school, two packages.

Two linked work packages delivered consecutively with optional overlap: **Main School** — strip out two existing gas boilers and install **2 × 18 kW high-temperature ASHPs** feeding the retained low-loss header on a heating-only basis, with existing DHW retained; and **Annex / Nursery** — strip out the combi and install **1 × 5 kW ASHP plus 170 L unvented cylinder** for heating and DHW. The school stays open throughout.

CLIENT

Beacon Estates

Ltd · UK

SITE

Oakridge Primary

School · Notts NG12 5BX

CONTRACTOR

Built AI

Principal contractor

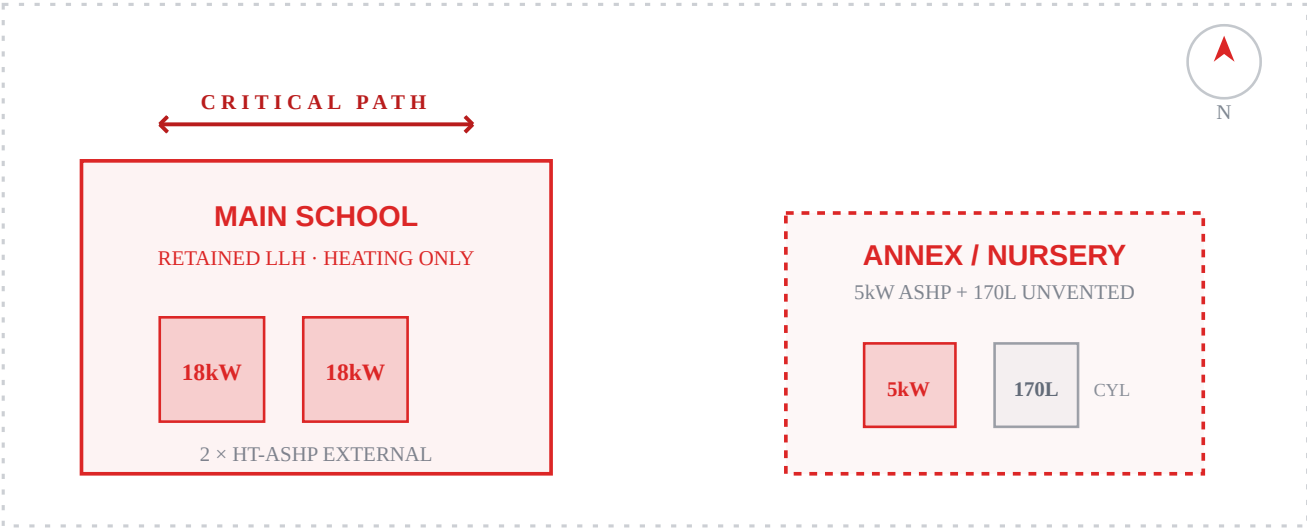
STATUS

Draft for review

Consultant / client facing

Two packages. **One school, still open.** The Main School is the critical path because it carries the electrical-load-monitoring hold point and the retained-LLH integration. The Annex follows — or partly overlaps where labour and supervision allow.

SITE · TWO-PACKAGE ARRANGEMENT · NTS



01

DOCUMENT CONTROL

**A draft,
declared as
such.**

Combined Method
Statement and RAG-

rated Risk Assessment,
prepared by Built AI for
the two-package
decarbonisation heating
upgrade at Oakridge
Primary School. Issued
in draft for consultant
and client review prior
to mobilisation.

PROJECT Decarbonisation Heating Upgrade Works
DOCUMENT TYPE Combined Method Statement + RAG-rated Risk Assessment
SITE Oakridge Primary School, Lavender Lane, Oakridge, Nottinghamshire NG12 5BX
CLIENT Beacon Estates Ltd
OPERATOR Oakridge Primary School (active during works)
PRINCIPAL CONTRACTOR Built AI
DOCUMENT REFERENCE BAI-RAMS-OPS-DECARB-001
REVISION

Draft 01

STATUS

Draft for review and approval

PREPARED BY

Mara Linwood · Built AI

REVIEWED BY

To be signed on issue

APPROVED BY

To be signed on issue

02

ARCHITECTURE

Two packages, linked but distinct.

Two parallel installation streams with different system arrangements and different complexity profiles. The Main School is the critical path; the Annex follows or partly overlaps where

labour and supervision
allow.

● PACKAGE 01 · CRITICAL PATH

Main School

Boiler plant replacement, retained LLH, heating-only.

External plant	2 × 18 kW HT-ASHP
Hydraulic interface	Retained LLH · reused
Service offered	Heating only
DHW arrangement	Existing · retained
Primary pipe routes	~25 m flow + 25 m return
Boilers removed	2 × existing gas
Critical hold	Electrical load monitoring

■ Strip-out:

two
gas
boilers,
redundant
flues,
gas
capped
at
appliance
points

■ Install:

external
ASHP
supports,
primary
pipework,

retained
LLH
tie-
in

■ **Electrical:**

supplies,
isolators,
containment,
controls
—
energisation
only
after
validation
hold
point

■ **Commission:**

heating-
only
operation
through
retained
LLH

PACKAGE 02 · SECONDARY

Annex / Nursery

Combi replacement, ASHP + unvented cylinder, heating + DHW.

External plant	1 × 5 kW ASHP
Internal plant	170 L unvented cylinder
Service offered	Heating + DHW
DHW arrangement	New · cylinder
Discharge route	Tundish + termination
Combi removed	1 × existing

■ Strip-out:

existing
combi,
gas
capped
at
appliance
point

■ Install:

external
5
kW
ASHP,
170
L
unvented
cylinder
+
safety
kit,
discharge
pipework

■ Electrical:

local
supply,
isolator,
controls
—
straightforward
connection
basis

■ Commission:

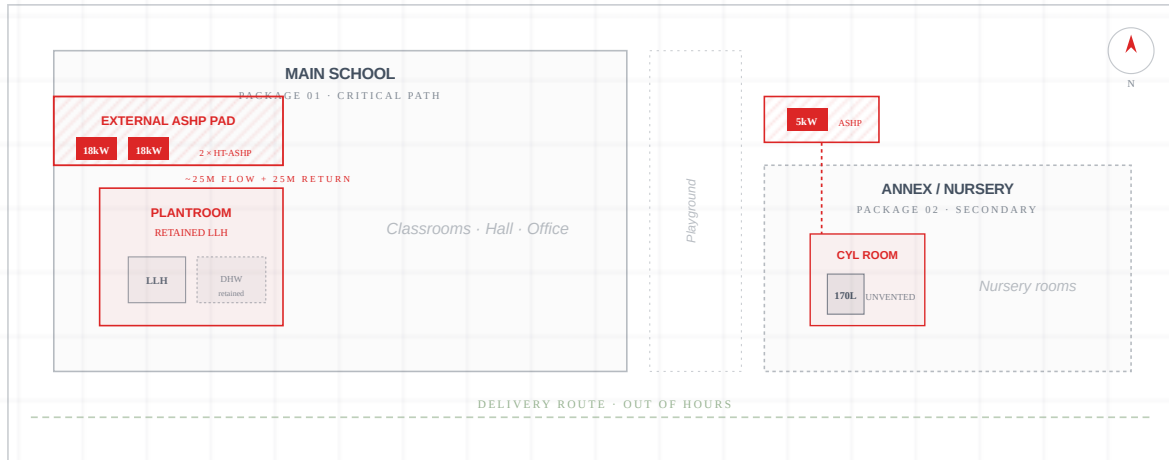
heating
+
DHW
+
unvented
safety
controls
verified

03

SITE PLAN

Two buildings. One school, still open.

External ASHP plant on dedicated pads, primary pipe route into the Main School plantroom, and a separate compact arrangement at the Annex / Nursery. The school operates throughout — segregation, deliveries and noisy works coordinated with Estates.



- MAIN SCHOOL ASHPS (PKG 01)
- ANNEX / NURSERY PLANT (PKG 02)
- EXISTING BUILDINGS
- OUT-OF-HOURS DELIVERY ROUTE

04

CRITICAL DEPENDENCY

One hold point above all others.

Most hold points in this RAMS gate a single phase. One gates the whole project — and it sits at the front of the programme, not the back.



Electrical load monitoring

The Main School supply strategy must be confirmed by formal load monitoring and validation **before final energisation design is signed off**. This is the single critical-path dependency for Package 01. No final energisation, no commissioning, no handover until this hold point is closed.

HOLD POINT

HP-01

MANDATORY • PKG 01

05

PROGRAMME

Five stages, two parallel tracks.

Pre-construction first, then Main School strip-out and install, then the Annex. Final commissioning and handover close out both packages together.

STAGE 01

Pre-construction & enabling

Survey confirmation, RAMS approval, access agreement, electrical load monitoring, plant location confirmation.

STAGE 02

Main School strip-out

Isolate gas, electrical and heating. Drain. Remove two boilers and redundant flues. Cap gas at appliance points.

STAGE 03

Main School install

External ASHP supports and units. Primary pipework ~25m × 2. LLH tie-in. Electrical first-fix and second-fix.

STAGE 04

Annex strip-out & install

Combi removal. Cap gas. External 5kW ASHP. 170L unvented cylinder with safety kit. Heating + DHW services.

STAGE 05

Final commissioning & handover

Both packages tested, certified, handed over. O&M issued. Estates and operator training delivered.

06

SEQUENCE

**Eight steps
each. Same
logic,**

different scope.

Both packages follow
Isolate → Strip-out →
Install → Connect → Test
→ Commission →
Handover. The detail
differs but the discipline
is identical.

MAIN SCHOOL PKG 01	
01 Isolate	02 Strip-out
03 Penetrations	04 Install ASHPs
05 Primary pipework	06 LLH tie-in
07 Electrical	08 Test + commission
ANNEX PKG 02	
01 Isolate	02 Strip-out
03 ASHP install	04 Cylinder install

05
Heating + DHW

07
Electrical

06
Discharge route

08
Test + commission

07

MATERIALS & PLANT

The kit, listed.

Procurement and practical delivery references for both packages. Final confirmations sit against six dependencies that must be closed before mobilisation.

Main School — major plant

2 × 18 kW high-temperature ASHPs · External support arrangement (plinths, AVMs) · Primary pipework (~25 m × 2) · Mechanical tie-in to retained LLH · Electrical supplies, isolators, controls.

Annex — major plant

1 × 5 kW ASHP (external) · 170 L unvented cylinder (internal) · Safety kit (expansion vessel, PRV, tundish, discharge) · Heating + DHW pipework · Local electrical supply.

Mechanical materials

Primary flow/return pipework · LLH tie-in fittings · Pipe supports + brackets · External UV-protected insulation · Internal lagging · Drains, vents, commissioning points · AVMs · Condensate drainage · Penetration sealing.

Electrical materials

Electrical supply, isolators, containment · Controls wiring · Protective devices · Test instruments and certification · Temporary monitoring kit for load validation · Final connection materials.

Tools & access

Lifting aids · Core drilling kit · Pipe fabrication tools · Electrical test equipment · External access platforms · Temporary barriers + signage · Floor protection · Drain hoses + containers.

Dependencies

Final ASHP location confirmation · Pipe route confirmation · LLH tie-in strategy · Main electrical supply post-validation · Annex discharge route · Local electrical connection points.

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HOLD POINTS

Eight gates. First one is the biggest.

Mandatory quality control gates. HP-01 (load monitoring) sits at the front of the programme; the rest follow the natural sequence of strip-out, install, test, commission, handover.

01

Electrical load monitoring HP-01

Main School supply strategy confirmed by formal load monitoring and validation. No final energisation design until closed.

Signed off by **NICEIC + Built AI**

02

Area release HP-02

Each work zone formally released by the school before works commence. Barriers and signage in place.

Signed off by **School + Built AI**

03

Safe isolation HP-03

Gas, electrical and heating isolations proven before any strip-out begins.

Signed off by **Built AI Supervisor**

04

Gas capping HP-04

Gas safely capped at appliance points before affected areas are left unattended.

Signed off by **Gas Safe Engineer**

05

Pressure testing HP-05

All new pipework pressure-tested and recorded before fill or commissioning.

Signed off by **Built AI Supervisor**

06

Electrical certification HP-06

Electrical inspection, testing and certification complete before energisation.

Signed off by **NICEIC Electrician**

07

G3 unvented compliance HP-07

Annex unvented cylinder safety kit, discharge and commissioning checks complete before handover.

Signed off by **G3-qualified installer**

08

Commissioning sign-off HP-08

Final commissioning complete across both packages before client sign-off.

Signed off by **Built AI + Client**

09

LIVE-SCHOOL OVERLAY

School- sector discipline, on top of CDM.

Schools are the most sensitive live-occupied environment we work in. Pupil safeguarding, access control, deliveries, noise, and term-time / holiday timing all sit on top of standard CDM controls.

Live school environment

Works delivered in an active school. Segregated zones, agreed access, no unattended tools or materials in pupil areas. School operations protected.

Pupil safeguarding

Lockable storage. End-of-day security checks. No pupil access to plant, materials, drilling areas, or external ASHP zones during working hours.

Term-time vs holiday

Disruptive works (drilling, deliveries, ASHP placement, cutover) prioritised for school holidays where programme allows. Quieter activity acceptable in term time with school agreement.

Deliveries & unloading

Planned delivery windows. Banksman during reversing. Exclusion zones at offload. Out-of-hours delivery route used where pupil drop-off / collection coincides.

Noise & dust

Time noisy works carefully — avoid morning registration, lunch and home-time. Dust sheets, local extraction, RPE for cutting. Communicate disruptive activity in advance.

Fire & emergency

Fire extinguishers in plantroom and at hot-work zones. Permit for hot works if required. Daily end-of-shift fire check. School muster point known to all operatives.

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METHOD

Eleven procedures, two packages.

Seven steps for the Main School, four for the Annex. Each procedure has an objective, numbered method and gating note. Hold points are referenced inline so progression discipline is unambiguous.

Main School · Area release & protection

4.3.1

Establish work area without disturbing the live school.

- 01 Confirm access to boiler room and external ASHP area.
- 02 Protect floors, doors, circulation routes, finishes.
- 03 Establish a safe zone for boiler removal and new plant installation.
- 04 School-side coordination signed off before tools out.

NOTE — Area release is HP-02 — formal sign-off required.

Main School · Service isolation

4.3.2

Three services isolated, all proven before dismantling.

- 01 Isolate gas supply to existing boilers.
- 02 Isolate electrical supplies; LOTO applied.
- 03 Isolate and drain affected heating circuits.
- 04 Verify isolation by competent persons before dismantling begins.

NOTE — Safe isolation is HP-03 — no strip-out until closed.

Main School · Boiler strip-out

4.3.3

Two existing boilers out, redundant flues removed, gas capped.

- 01 Disconnect and remove 2 existing gas boilers.
- 02 Remove associated redundant flues and local connections.
- 03 Cap gas at appliance points (HP-04).
- 04 Remove redundant materials from work area; segregate waste.

NOTE — Gas capping (HP-04) closes before area is left unattended.

Main School · External ASHP support & install

4.3.4

Two 18 kW HT-ASHPs onto prepared external bases.

- 01 Set out external ASHP positions; install plinths, bases, AVMs.
- 02 Confirm setting out, levels, clearances.
- 03 Lift and position 2 × 18 kW HT-ASHPs onto supports.
- 04 Fix and secure; verify service and maintenance access.

NOTE — Lifting plan in place before any boiler arrives on site.

Main School · Primary pipework & LLH tie-in

4.3.5

Approximately 50 m of pipework, then connection to retained LLH.

- 01 Mark and core drill service penetrations; sleeve and seal.
- 02 Install ~25 m flow + ~25 m return primary pipework.
- 03 External UV-protected insulation; internal lagging where applicable.
- 04 Prepare retained LLH for tie-in; connect primary flow/return.
- 05 Pressure test (HP-05) before insulating or filling.

NOTE — No insulation closure before pressure test passes (HP-05).

Main School • Electrical & controls

4.3.6

Final connections, but energisation gated by HP-01.

- 01 Install final electrical feeds to ASHPs.
- 02 Install local isolators and containment.
- 03 Complete control wiring and interfaces.
- 04 Inspection, test and certify (HP-06).
- 05 Energisation only after HP-01 (load monitoring) closes.

NOTE — HP-01 + HP-06 both required before any energisation.

Main School • Commission & verify

4.3.7

Heating-only operation through retained LLH.

- 01 Fill and vent the system.
- 02 Energise ASHPs following HP-01 closure.
- 03 Commission heating-only operation through retained LLH.
- 04 Verify stable performance, controls response, hydraulic behaviour.
- 05 Record commissioning settings.

NOTE — Commissioning sign-off feeds HP-08 (final acceptance).

Annex • Service isolation & strip-out

4.4.1

Combi out, gas capped, heating drained.

- 01 Isolate gas, electrical and water services.
- 02 Drain the existing combi arrangement.
- 03 Verify safe isolation before removal.
- 04 Remove combi boiler and disconnect redundant services.
- 05 Cap gas supply at appliance point (HP-04).

NOTE — Same isolation discipline as Main School — no shortcuts because package is smaller.

Annex • External ASHP install

4.4.2

One 5 kW ASHP onto external support arrangement.

- 01 Prepare support arrangement for 5 kW ASHP.
- 02 Position and secure external unit.
- 03 Confirm clearances and condensate route.
- 04 Install electrical supply, isolator and controls.

NOTE — Condensate route verified before commissioning.

Annex • 170 L unvented cylinder install

4.4.3

Unvented cylinder + full G3 safety kit + discharge.

- 01 Position and install 170 L unvented cylinder in former combi location.
- 02 Install safety kit: expansion vessel, PRV, tundish, discharge pipework.
- 03 Confirm discharge termination route is acceptable.

04 Install heating, DHW and cold-water connections.

05 Install valves, commissioning points, lagging.

NOTE — G3 compliance is HP-07 — discharge and safety controls verified.

Annex · Test, commission & handover

4 . 4 . 4

Heating + DHW + unvented safety verified.

01 Pressure test all new pipework (HP-05).

02 Check discharge and condensate routes.

03 Electrical inspection, test, certification (HP-06).

04 Fill and vent; commission heating + DHW.

05 Verify unvented safety controls, discharge operation, setpoints (HP-07).

06 User briefing, recorded settings, handover documentation.

NOTE — All four hold points must close before handover.

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RISK METHOD

RAG-rated, 4 × 4.

Severity (1–4) ×
Likelihood (1–4). Score
banded into Green /
Amber / Red. Controls
applied to drive every
initial-rated risk to

ALARP and into the Green band before work begins.

SEVERITY (S)

1	Minor injury / negligible impact
2	First aid / minor disruption
3	Significant injury / major disruption
4	Major / life-changing / fatality

LIKELIHOOD (L)

1	Unlikely
2	Possible
3	Likely
4	Very likely

		L1	L2	L3	L4
	S4	4	8	12	16
	S3	3	6	9	12
	S2	2	4	6	8
	S1	1	2	3	4
		← LIKELIHOOD			

Green

Low risk — acceptable with standard controls.

Score 1–4

Amber

Medium risk — active management and supervision required.

Score 5–8

Red

High risk — strict controls, permits, competent supervision and review.

Score 9–16

Three tabs. Forty-two hazards.

General project risks plus task-specific registers for each package. Initial scores reach Red across many activities; controls drive every residual into the Green band before work commences.

GENERAL 7 HAZARDS		MAIN SCHOOL 21 HAZARDS · PKG 01	ANNEX / NURSERY 14 HAZARDS · PKG 02
HAZARD			
Working in live school environment			
INITIAL			
12			
CONTROLS			
Segregated work zones, barriers, signage, agreed access routes, close coordination with school staff, no unattended tools/materials.			
RESIDUAL			

4

RAG



HAZARD

Unauthorised access by pupils / staff

INITIAL

12

CONTROLS

Restricted access, lockable storage, end-of-day security checks, supervised delivery and unloading zones.

RESIDUAL

4

RAG



HAZARD

Slips, trips and falls from general site activity

INITIAL

9

CONTROLS

Housekeeping, cable management, waste removed progressively, protected walkways.

RESIDUAL

3

RAG



HAZARD

Manual handling of boilers, ASHPs, cylinder, materials

INITIAL

12

CONTROLS

Mechanical lifting aids, team lifts, route planning, manual handling briefing.

RESIDUAL

4

RAG



HAZARD

Deliveries and unloading

INITIAL

12

CONTROLS

Planned delivery windows, banksman, exclusion zones, controlled offloading.

RESIDUAL

4

RAG



HAZARD

Noise, dust and disruption in school environment

INITIAL

8

CONTROLS

Time noisy works carefully, dust sheets, local extraction, communicate disruption in advance.

RESIDUAL

4

RAG



HAZARD

Fire risk from works

INITIAL

8

CONTROLS

Fire extinguishers, hot works permit if required, no uncontrolled ignition sources, end-of-day checks.

RESIDUAL

4

RAG



Red residual risks

0

None remaining once controls are in place.

Amber residual risks

0

None remaining once controls are in place.

Green residual risks

All

All residual risks reduced to Green / low-risk working level.

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ENHANCED CONTROL

Seven activities, enhanced supervision.

Activities where the consequence of failure justifies stricter control than the standard supervisory regime.

Each one carries a named hold point or a competent-person requirement.

Electrical load monitoring & DB works

Critical-path dependency. HP-01 must close before final energisation design. Competent NICEIC engineer only.

Gas isolation & capping

Each package starts with gas isolation; ends with gas capped at appliance points. Gas Safe operative for any modification or recommissioning.

Boiler strip-out

Two existing boilers (Main School) plus one combi (Annex). Manual handling and exposed-services exposure during removal.

ASHP lifting & positioning

Mechanical aids for the 18 kW units; controlled lift for the 5 kW. Exclusion zones throughout.

Retained LLH integration

Hydraulic interface of the new system. Tie-in points confirmed before cutting; staged installation.

Unvented cylinder safety

G3-qualified installer. Full safety kit, discharge route verification, commissioning of all safety controls.

Live school environment

Pupil safeguarding, segregated routes, term-time vs holiday programming, deliveries co-ordinated with school.

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PPE & EMERGENCY

Equipped, prepared.

Minimum PPE for the works plus the supplementary safety equipment held on site. Emergency arrangements confirmed at induction and reviewed if site conditions change.



Minimum PPE

- Safety boots
- Task-appropriate gloves
- Eye protection
- Hi-vis where required
- Hearing protection for drilling and cutting
- Dust masks / RPE for drilling and dusty work



Additional safety equipment

- Spill kits
- Fire extinguishers
- Lock-off kits
- Barriers and warning signage
- Lifting aids
- Suitable access equipment



Emergency arrangements

- First aid arrangements confirmed at induction
- Fire assembly point identified with school
- Emergency contacts displayed in welfare
- Gas emergency procedure briefed
- Electrical isolation points known
- Spill response procedure briefed
- Accident / near-miss reporting route confirmed

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SIGN-OFF

Briefed.
Reviewed.

Signed.

No operative starts work without attending the briefing, agreeing the safe system of work and signing this record. This document is currently in draft status — final approval signatures from the consultant and client follow review.

Confirmation by operative

- I have attended the RAMS briefing for this project.
- The Method Statement and RAG-rated Risk Assessment have been explained to me.
- I understand the two-package delivery: Main School (Pkg 01, critical path) and Annex / Nursery (Pkg 02).
- I understand the eight hold points, including HP-01 (electrical load monitoring) and HP-07 (G3 unvented compliance).
- I understand the live-school overlay: pupil safeguarding, segregation, term-time programming.
- I understand the isolation discipline and the requirement to prove dead before any strip-out.
- I will use the required PPE at all times and report unsafe conditions immediately.
- I understand that this is a draft document subject to review and approval before mobilisation.
- I understand that failure to comply may result in removal from site.

NAME (PRINT)

COMPANY

ROLE

SIGNATURE

DATE

Declaration by Built AI

This RAMS briefing was delivered in full and all operatives confirmed understanding of the content.

SITE SUPERVISOR SIGNATURE

DATE

Witnessed by school

Oakridge Primary School representative — area release and area-by-area sign-off.

SCHOOL REPRESENTATIVE SIGNATURE

DATE

Approval note — This risk assessment is to be read in conjunction with the Oakridge Primary School Method Statement and all supporting manufacturer installation guidance, permits and safe isolation procedures.

ABOUT THIS DOCUMENT

Combined Method Statement and RAG-rated Risk Assessment, prepared by Built AI for the two-package decarbonisation heating upgrade at Oakridge Primary School. Issued in draft for consultant and client review prior to mobilisation. To be read with the approved technical submission, programme and ASHP / unvented cylinder manufacturer installation guidance.

DOCUMENT CONTROL

Reference · BAI-RAMS-OPS-DECARB-001

Revision · Draft 01

Status · For review

Author · Mara Linwood

STANDARDS

CDM 2015

MCS guidance (heat pumps)

G3 (unvented hot water)

BS 7671 (electrical)

Manufacturer guidance

GENERATED WITH

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