

Adroddiad i	Awdurdod Tân ac Achub Gogledd Cymru	
Dyddiad	21 Hydref 2024	
Swyddog Arweiniol	Justin Evans, Prif Swyddog Tân Cynorthwyol	
Swyddog Cyswllt	Sandra Williams, Rheolwr Prosiect y Ganolfan Hyfforddi	
Pwnc	Canolfan Hyfforddi Newydd Arfaethedig ar gyfer Gwasanaeth Tân ac Achub Gogledd Cymru	

PWRPAS YR ADRODDIAD

Mae'r adroddiad hwn yn cyflwyno achos busnes i'r Aelodau ar gyfer datblygu canolfan hyfforddi newydd ar gyfer Gwasanaeth Tân ac Achub Gogledd Cymru (GTAGC). Mae'r achos busnes yn cynnwys adolygiad cynhwysfawr o'r cyfleusterau presennol, gan amlinellu'r risg bresennol, ac mae'n cynnwys gwerthusiad manwl o'r opsiynau gydag argymhelliad i fwrw ymlaen ag opsiwn a ffefrir.

Mae'r achos busnes hefyd yn amlinellu risgiau gweddilliol, pyrth gwneud penderfyniadau, ac ystyriaethau ariannu cyfalaf sy'n angenrheidiol er mwyn cyflawni'r prosiect yn llwyddiannus.

CRYNODEB GWEITHREDOL

Mae Deddf Gwasanaethau Tân ac Achub 2004 yn gosod dyletswydd statudol ar Awdurdod Tân ac Achub Gogledd Cymru i ddarparu hyfforddiant i ddelio â thanau, gwrthdrawiadau traffig ar y ffyrdd, ac argyfyngau rhagnodedig eraill.

Mae GTAGC yn wynebu heriau sylweddol gyda'i gyfleusterau hyfforddi gwasgaredig presennol, sy'n heneiddio, yn aneffeithlon a ddim yn bodloni safonau hyfforddi cyfoes.

Mae achos busnes wedi'i ddatblygu i fynd i'r afael â'r angen dybryd am gyfleusterau hyfforddi modern ac effeithiol sy'n cyd-fynd â'r gofynion a'r risgiau esblygol y mae GTAGC yn eu hwynebu.

Mae angen buddsoddiad er mwyn sicrhau diogelwch ac effeithiolrwydd personél wrth ymateb i argyfyngau, yn ogystal â'r angen i gydymffurfio â rheoliadau amgylcheddol cynyddol a nodau cynaliadwyedd.

Wrth werthuso atebion ar gyfer ei gyfleusterau hyfforddi, archwiliodd GTAGC sawl opsiwn. Yr opsiwn cyntaf yw cadw'r cyfleusterau presennol gyda mân waith adnewyddu. Ni fyddai'n mynd i'r afael ag aneffeithlonrwydd gweithredol sylweddol a phroblemau o ran cydymffurfiaeth amgylcheddol. Yr ail opsiwn yw uwchraddio'r safleoedd presennol. Byddai'n dal i adael llawer o gyfyngiadau heb eu datrys. Y trydydd opsiwn yw datblygu canolfan hyfforddi ganolog newydd, gan addo gwell effeithlonrwydd ac amgylcheddau hyfforddi modern. Yn olaf, ystyriwyd canolfan hyfforddi aml-berygl gynhwysfawr, ond mae ei chostau cychwynnol sylweddol yn golygu bod hyn yn gyfyngol yn ariannol.

Mae'r dadansoddiad yn amlygu'r ffaith bod y trydydd opsiwn yn cynnig y cydbwysedd gorau rhwng gwelliant gweithredol a chyfrifoldeb ariannol, a dyna pam mai dyna'r opsiwn sy'n cael ei argymhell.

Cyflwynwyd yr achos busnes hwn i Weithgor Canolfan Hyfforddi yr Aelodau, Pwyllgor Craffu ar y Gyllideb yr Aelodau a Chynrychiolwyr yr Undebau Llafur, a chafodd yr achos gefnogaeth mewn egwyddor gan yr holl randdeiliaid.

ARGYMHELLIAD

Argymhellir bod yr Aelodau'n:

Cymeradwyo, mewn egwyddor, datblygu canolfan hyfforddi ganolog newydd (Opsiwn 3).

Ymrwymo i gynnal y momentwm o ran datblygu'r cynigion, gan ganolbwyntio ar fforddiadwyedd ac opsiynau ariannu cynaliadwy.

Awdurdodi'r Prif Swyddog Tân i fynd ar drywydd opsiynau ariannu cyfalaf, gan gynnwys hunanariannu, cymorth gan Lywodraeth Cymru, cynhyrchu incwm neu gyfleoedd cydweithredol gyda phartneriaid.

Dirprwyo awdurdod i'r Prif Swyddog Tân i fwrw ymlaen â chymau nesaf y prosiect.

CEFNDIR

Ar hyn o bryd mae GTAGC yn gweithredu nifer o gyfleusterau hyfforddi gan gynnwys Dolgellau, y Rhyl, Wrecsam, a Glannau Dyfrdwy. Yn hanesyddol, mae'r safleoedd hyn wedi diwallu anghenion hyfforddi'r Gwasanaeth; fodd bynnag, maent bellach yn cyflwyno heriau

gweithredol sylweddol oherwydd eu hoedran, eu cyflwr a'u gwasgariad daearyddol.

Nid oes gan y cyfleusterau presennol y seilwaith angenrheidiol i gefnogi gofynion hyfforddi modern, ac mae hyn wedi arwain at aneffeithlonrwydd gweithredol a chyfyngiadau yn y profiad hyfforddi a ddarperir i bersonél.

Dangosodd adolygiad cynhwysfawr o'r cyfleusterau hyn nad ydynt yn bodloni safonau hyfforddi cyfoes yn ddigonol, yn enwedig o ran sefyllfaoedd hyfforddi realistig, trochol.

Mae materion fel prosesau dihalogi annigonol, dim digon o ystafelloedd dosbarth, a chyfleusterau a rennir gyda gorsafoedd gweithredol yn gwaethygu'r heriau ymhellach.

Yn ogystal, nid yw'r cyfleusterau presennol yn darparu cyfleusterau lles digonol, a phrin yw'r ddarpariaeth cydraddoldeb, amrywiaeth a chynhwysiant. Mae'r safleoedd presennol hefyd yn peri risgiau amgylcheddol, fel y gwelir yn Nolgellau, sydd wedi'i leoli mewn ardal sy'n dueddol o gael llifogydd, ac sydd wedi peri cwynion yn ymwneud ag allyriadau mwg gan drigolion lleol.

Mae'r angen i adolygu'r ddarpariaeth safleoedd hyfforddi yn deillio o'r angen i greu cyfleusterau sydd nid yn unig yn gwella effeithlonrwydd gweithredol ac ansawdd hyfforddiant ond sydd hefyd yn cydymffurfio â rheoliadau amgylcheddol a nodau cynaliadwyedd newydd.

Er mwyn cydnabod y materion pwysig hyn, cynhaliwyd arfarniad opsiynau manwl i werthuso atebion posibl. Roedd y broses hon yn cynnwys ymgynghori â rhanddeiliaid allweddol, gan gynnwys swyddogion GTAGC ac arbenigwyr allanol, i sicrhau dealltwriaeth drylwyr o anghenion y Gwasanaeth ac i sicrhau bod yr atebion a gynigir yn cyd-fynd ag amcanion strategol y Gwasanaeth.

Mae gan yr Awdurdod ystod o ddyletswyddau statudol sy'n orfodol yn sgil deddfwriaeth, ac fe'u hamlinellir yn bennaf yn Neddf Gwasanaethau Tân ac Achub 2004. Mae hyn yn cynnwys sicrhau bod gwasanaethau tân ac achub effeithiol yn cael eu darparu, cynnal parodrwydd yr ochr weithredol, a darparu hyfforddiant cynhwysfawr i bersonél fel y gallant ymateb i amrywiaeth o argyfyngau.

Yn ogystal, rhaid i'r Awdurdod gydymffurfio â rheoliadau a gofynion eraill o ran iechyd a diogelwch, cydraddoldeb, amrywiaeth a chynhwysiant, diogelu'r amgylchedd, a safonau diogelwch y cyhoedd. Mae'r pwyslais ar hyfforddiant yn arbennig o bwysig, gan ei bod yn ofynnol i'r Awdurdod sicrhau bod gan ei ddifoddwyr tân y sgiliau a'r

wybodaeth angenrheidiol i reoli digwyddiadau'n effeithiol, gan gadw at rwymedigaethau cyfreithiol a chanllawiau arfer gorau ar yr un pryd.

Mae datblygu canolfan hyfforddi newydd yn fuddsoddiad strategol yn nyfodol GTAGC, gan sicrhau y gall addasu i risgiau sy'n dod i'r amlwg, cyflawni dyletswyddau statudol a darparu hyfforddiant o ansawdd uchel i'w staff.

GWYBODAETH

Roedd yr achos busnes yn gwerthuso costau a manteision pedwar opsiwn:

- **Opsiwn 1:** Cynnal y cyfleusterau presennol gyda mân waith adnewyddu.
- **Opsiwn 2:** Buddsoddi i uwchraddio'r cyfleusterau presennol.
- **Opsiwn 3:** Datblygu canolfan hyfforddi ganolog newydd i ddiwallu anghenion hyfforddi craidd.
- **Opsiwn 4:** Datblygu canolfan hyfforddi aml-berygl, aml-asantiaeth gynhwysfawr.

Dechreuodd y dadansoddiad o opsiynau yn yr achos busnes gydag adolygiad trylwyr o anghenion hyfforddi GTAGC ar hyn o bryd a chyfyngiadau'r cyfleusterau presennol. Cafodd pob un o'r pedwar ateb a gynigiwyd eu gwerthuso yn erbyn meini prawf allweddol, gan gynnwys effeithiolrwydd gweithredol, cost, a chydymffurfio â rhwymedigaethau statudol.

Cafwyd asesiadau ansoddol o ansawdd yr hyfforddiant a'r seilwaith, tra bod y dadansoddiad meintiol wedi canolbwyntio ar oblygiadau ariannol a chynaliadwyedd hirdymor pob opsiwn. Cafodd rhanddeiliaid eu cynnwys yn ystod y broses hon, gan sicrhau bod ystod o safbwyntiau yn cael eu hystyried er mwyn llywio gwerthusiad cytbwys, llawn gwybodaeth o'r atebion posibl.

Risgiau Gweddilliol

Agwedd bwysig ar y dadansoddiad opsiynau oedd nodi a gwerthuso'r risgiau gweddilliol oedd yn gysylltiedig â phob ateb a gynigiwyd.

Maent yn cael eu harchwilio'n llawn yn yr achos busnes, ond cânt eu crynhoi yma:

Opsiwn 1: Y risg o ddiffyg cydymffurfio amgylcheddol parhaus, yn enwedig yn Nolgellau, lle gallai'r agosrwydd at at ardaloedd preswyl a'r risg o lifogydd arwain at gau gweithredol. Mae'r cyfleusterau gwasgaredig hefyd yn cyfyngu ar gysondeb hyfforddiant ac yn cynyddu aneffeithlonrwydd gweithredol.

Opsiwn 2: Er y byddai buddsoddiad yn ymestyn hyd oes y cyfleusterau presennol, ni fyddai'n datrys cyfyngiadau sylweddol y safleoedd, fel diffyg lle a seilwaith sydd wedi dyddio. Gallai cyfyngiadau ar ganiatâd cynllunio hefyd rwystro gwaith uwchraddio angenrheidiol, ac mae'r effaith amgylcheddol yn Nolgellau yn parhau.

Opsiwn 3: Mae opsiwn 3 yn lliniaru aneffeithlonrwydd gweithredol a risgiau amgylcheddol yn sylweddol a dyma'r opsiwn mwyaf effeithiol o ran cost. Bydd angen asesiadau ariannol parhaus er mwyn sicrhau bod y prosiect yn aros o fewn y gyllideb ac yn fforddiadwy.

Opsiwn 4: Yr opsiwn cynhwysfawr hwn sydd â'r risgiau gweddilliol isaf ond mae'n golygu gwariant cyfalaf sylweddol, ac felly mae'n llai ymarferol o fewn y cyfyngiadau ariannol presennol.

Yr Opsiwn a Argymhellir

Yr opsiwn sy'n cael ei ffafrio yw Opsiwn 3 i ddatblygu cyfleuster hyfforddi canolog newydd ar y tir ym Mharc Busnes Llanelwy er mwyn diwallu anghenion hyfforddi craidd, a hynny oherwydd ei fod yn cynnig cydbwysedd rhwng cost-efeithiolrwydd, gwelliant gweithredol, a diogelu galluoedd at y dyfodol.

Mae'r opsiwn hwn yn mynd i'r afael â chyfyngiadau'r cyfleusterau hyfforddi gwasgaredig presennol trwy ganoli gweithgareddau hyfforddi. Bydd hyn yn gwella effeithlonrwydd logistaidd, yn lleihau costau gweithredol, ac yn darparu amgylchedd modern, hyblyg ar gyfer darparu hyfforddiant trochi o ansawdd uchel.

Mae Opsiwn 3 yn cynnig yr hyblygrwydd i uwchraddio, gan ganiatáu ar gyfer ehangu yn y dyfodol wrth i anghenion hyfforddi esblygu, ac mae'n cyd-fynd â nodau cynaliadwyedd GTAGC trwy ymgorffori nodweddion carbon isel ac effeithlon o ran ynni.

Mae'r nodweddion allweddol yn cynnwys:

- Canolfan hyfforddi gydag ystafelloedd dosbarth, canolfan rheoli digwyddiadau, a chyfleusterau lles.
- Ysgol offer anadlu gyda chyfleusterau dihalogi a'r gallu i ddarparu cyfleusterau i ddiwallu anghenion ein gweithlu esblygol ac amrywiol.
- Adnoddau hyfforddiant tân realistig, gan gynnwys cyfleusterau carbonaidd a mwg oer sy'n cyd-fynd â newidiadau arfaethedig i Dactegau Diffodd Tân
- Ardaloedd hyfforddi ar gyfer gwrthdrawiadau ar y ffordd.
- Y gallu i gefnogi ymarferion hyfforddi aml-asiantaeth, gan wella galluoedd ymateb ar y cyd.

Agweddau Ariannol Opsiwn 3

Yn y gorffennol, penderfynodd yr Awdurdod fuddsoddi mewn datblygu cynigion dylunio drafft ar gyfer y Ganolfan Hyfforddi a phrynu llain addas o dir ym Mharc Busnes Llanelwy.

Mae cefnogi'r argymhellion yn y papur hwn yn ymrwymiad parhaus i gynnal y momentwm wrth ddatblygu'r cynnig hwn, gyda fforddiadwyedd yn ystyriaeth flaenllaw wrth wneud penderfyniadau.

Cyfanswm cost cyfalaf Opsiwn 3 yw £37.417m. Ni fyddai ymrwymo i'r opsiwn hwn yn golygu bod angen ariannau cyfalaf llawn ar unwaith. Byddai'r llif arian ar gyfer y prosiect yn golygu y byddai costau cychwynnol o tua £0.4m yn 24/25, gyda chostau cyfalaf pellach o £1.27m yn 25/26 ac £1.27m yn 26/27.

Â'r rhan fwyaf o'r gwariant cyfalaf yn cael ei rag-weld ar gyfer 27/28, mae angen gwaith sylweddol dros y ddwy flynedd nesaf ar ariannu'r prosiect hwn, er mwyn dylunio a sicrhau'r model cyllido mwyaf addas.

Bydd GTAGC yn archwilio opsiynau sy'n cynnwys:

Hunanariannu: Adolygu cyllidebau presennol ac ystyried opsiynau ariannu cyfalaf sy'n cyd-fynd â Chynllun Rheoli Trysorlys yr Awdurdod.

Cymorth gan Lywodraeth Cymru: Ymgysylltu â Llywodraeth Cymru i archwilio cyfleoedd am gymorth ariannol, grantiau, neu fentrau ariannu ar y cyd i wrthbwysu'r costau cyfalaf.

Partneriaethau Cydweithredol: Canfod cyfleoedd i weithio gyda sefydliadau eraill yn y sector cyhoeddus neu bartneriaid preifat i rannu costau a manteision y cyfleuster newydd.

Pyrth Gwneud Penderfyniadau

Mae'r prosiect yn cynnwys adolygiadau porth ariannol, y manylir arnynt yn yr achos busnes, i'w cynnal drwy gydol datblygiad y prosiect er mwyn ystyried fforddiadwyedd y prosiect.

Gyda rhagdybiaeth ynghylch dyddiad dechrau'r prosiect, disgwylir i'r adolygiadau hyn gael eu cynnal ym mis Rhagfyr 2025 a mis Rhagfyr 2026.

- Cymeradwyaeth Gychwynnol: Cytundeb mewn egwyddor i fynd ar drywydd Opsiwn 3 ar sail ei gost-effeithiolrwydd a'i fanteision gweithredol.
- Porth Dylunio a Chynllunio: Pan fydd yr opsiynau ariannu cyfalaf yn glir; bydd y porth cyntaf yn golygu sicrhau caniatâd cynllunio a chwblhau'r dyluniad er mwyn bodloni gofynion statudol ac anghenion gweithredol GTAGC.
- Porth Adeiladu a Gweithredu: Bydd y porth terfynol yn golygu rhoi cymeradwyaeth ffurfiol i fwrw ymlaen â'r gwaith adeiladu, yn

amodol ar gwblhau'r camau blaenorol yn llwyddiannus a chadarnhau cymeradwyaeth ariannu a chynllunio.

Bydd y pyrth hyn yn sicrhau'r Awdurdod bod y penderfyniadau ariannu cyfalaf yn cyd-fynd â chynaliadwyedd ariannol hirdymor ac yn ystyried unrhyw oblygiadau ariannol eraill.

GOBLYGIADAU

Amcanion Llesiant	Mae'r prosiect hwn yn cyd-fynd ag amcanion hirdymor GTAGC, gan wella ansawdd hyfforddiant a pharodrwydd gweithredol a hyrwyddo cynaliadwyedd ar yr un pryd.
Cyllideb	Cyfanswm cost cyfalaf Opsiwn 3 yw £37.417m, gyda chostau cylch bywyd o £3.820m dros 25 mlynedd. Er mwyn sicrhau'r cyllid angenrheidiol bydd angen cynllunio ac ystyried yn ofalus dros y ddwy flynedd nesaf, gydag arbedion posibl yn sgil arbedion effeithlonrwydd gweithredol a llai o brydlesi cyfleusterau.
Cyfreithiol	Bydd y cyfleuster newydd yn sicrhau cydymffurfiaeth â gofynion hyfforddiant a gofynion amgylcheddol statudol, gan liniaru'r risgiau cyfreithiol sy'n gysylltiedig â'r safleoedd presennol.
Staffio	Ni ddisgwylir unrhyw ofynion staffio ychwanegol. Bydd y cyfleuster newydd yn gwella amodau hyfforddiant ac yn lleihau'r heriau logistaidd, gan wella'r effeithlonrwydd yn gyffredinol.
Cydraddoldeb/Hawliau Dynol/y Gymraeg	Bydd y cyfleuster yn cael ei ddylunio gyda nodweddion cynhwysol, gan sicrhau lefel uchel o gydymffurfiaeth â safonau cydraddoldeb ac amrywiaeth.
Risgiau	Mae'r risgiau allweddol yn cynnwys sicrhau caniatâd cynllunio a rheoli amserlenni adeiladu. Fodd bynnag, mae'r cyfleuster canolog yn lleihau'r risgiau hirdymor sy'n gysylltiedig â diffyg cydymffurfiaeth amgylcheddol ac aneffeithlonrwydd gweithredol.

Canolfan Hyfforddi Newydd Arfaethedig i'r Gwasanaeth Tân

Gwasanaeth Tân ac Achub Gogledd Cymru

12 Medi 2024

Paratowyd gan

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A Swyddogion Gwasanaeth Tân ac Achub Gogledd
Cymru

Ar ran
Prif Swyddog Tân Cynorthwyol,
Justin Evans

o

Wasanaeth Tân ac Achub Gogledd Cymru

gan
Iain Gammack BSc MRICS
a
Sandra Williams – Rheolwr Ardal GTAGC



Dalen Rheoli Dogfen

Teitl y Prosiect Gwasanaeth Tân ac Achub Gogledd Cymru

Teitl yr Adroddiad Canolfan Hyfforddi Newydd Arfaethedig - Achos Busnes

Adolygiad 01

Statws Cynigion Cysyniad

Dyddiad Rheoli 12 Medi 2024

Cofnod Cyhoeddi

Rhifyn	Statws	Awdur	Dyddiad	Gwirio	Dyddiad	Wedi'i Awdurdodi	Dyddiad
01	Cysyniad	I Gammack	12/09/24	S Williams	12/09/24	I Gammack	12/09/24

Dosbarthiad

Sefydliad	Cyswllt	Copïau
GTAGC	Justin Evans - PSTC	Copi Electronig
Ffeil Sicrhau Ansawdd Electronig		



Cynnwys

Crynodeb Gweithredol ac Argymhelliad

Adran 1:	Cyflwyniad a Chefnidir
Adran 2:	Arfarniad Opsiynau - Dadansoddiad Ansoddol
Adran 3:	Arfarniad Opsiynau - Dadansoddiad Meintiol
Adran 4:	Cysoni Gwerth Cost ac Argymhelliad
Adran 5:	Dadansoddiad o'r Opsiwn a Ddewiswyd
Adran 6:	Atodiad A: Cyllidebau (Costau Cyfalaf a Rhedeg)
	Atodiad B: Opsiwn 3 - Cynllun Safle
	Atodiad C: Opsiwn 4 - Cynllun Safle
	Atodiad D: Cynlluniau - Adeilad Pencadlys a Hwb
	Atodiad E: Cynlluniau - Ysgol Offer Anadlu
	Atodiad F: Cynlluniau - Garej Peiriannau
	Atodiad G: Cynlluniau - Adeilad Gwrthdrawiad ar y Ffordd
	Atodiad H: Cynlluniau - Tŷ Tân
	Atodiad I: Cynlluniau - Canopi FBT
	Atodiad J: Cynlluniau - Adeilad Mwg Oer Offer Anadlu
	Atodiad K: Llun Safle Hanesyddol
	Atodiad L: Trosolwg Dyluniad Sifil a Strwythurol
	Atodiad M: Trosolwg Dyluniad Gwasanaethau MEP
	Atodiad N: Strategaeth Carbon Isel / Di-garbon
	Atodiad O: Adroddiadau ar gyfer Prawf Cymalog a Marchnata
	Atodiad P: Rhestr o Arolygon a Gynhaliwyd
	Atodiad Q: Cyn-Asesiad BREEAM
	Atodiad R: Rhaglen Prosiect



Crynodeb Gweithredol ac Argymhelliad

Crynodeb o'r Adroddiad

Wyneba Gwasanaeth Tân ac Achub Gogledd Cymru (GTAGC) heriau sylweddol yn ymwneud â'i gyfleusterau hyfforddi presennol. Golyga'r cyfleusterau ar wasgar hyn, sydd wedi'u lledaenu ar draws sawl lleoliad, gyfyngiadau ar alluoedd hyfforddi, gan gyflwyno aneffeithlonrwydd gweithredol, nad ydynt yn bodloni safonau hyfforddi cyfoes. Wrth gydnabod yr angen taer am newid gweddnewidiol yn yr isadeiledd hyfforddi, cynhaliodd GTAGC arfarniad opsiynau cynhwysfawr, gan ystyried pedwar cynnig gwahanol, y mae eu manylion yn yr adroddiad hwn, i fynd i'r afael â'r heriau hyn. Yn sgil newidiadau diweddar i gyfraith amgylcheddol mae lleoliad y cyfleuster hyfforddi presennol yn golygu bod y Gwasanaeth yn agored i risg cyfreithiol sylweddol.

Mae gan Opsiwn 1, sy'n golygu cynnal y cyfleusterau presennol gyda mân waith adnewyddu, risgiau cynhenid megis perygl amgylcheddol, llifogydd, diffygion i'r seilwaith, aflonyddwch i'r ochr weithredol, cyfyngiadau hygyrchedd, pryderon iechyd a diogelwch ac amodau hyfforddi is-optimaid.

Ceisio Opsiwn 2, sy'n canolbwyntio ar gyfoethogi cyfleusterau presennol, ehangu eu hoes weithredol a mynd i'r afael â diffygion penodol. Serch hynny, mae'n parhau yn agored i gyfyngiadau parhaus i'r cyfleusterau, pryderon iechyd a diogelwch, parcio annigonol, materion llifogydd, a chynnydd cyfyngedig o ran darpariaethau cydraddoldeb, amrywiaeth a chynhwysiant.

Mae Opsiwn 3, sy'n eirioli dros ddatblygu canolfan hyfforddi canolog newydd, yn ymddangos fel dewis cryf o'i gymharu ag Opsiynau 1 a 2. Mae'r opsiwn hwn yn addo amgylchedd hyfforddi hyblyg a chyfoethocach: sy'n naid gweddnewidiol yn ansawdd yr hyfforddiant, gan gynnig senarios trochi, realistig. Mae hyn mewn cyferbyniad llwyr â'r cyfyngiadau cynhenid yng nghyfleusterau hyfforddi ar wasgar presennol GTAGC, fel yr amlinellir yn Opsiynau 1 a 2.

Trwy ganoli gweithgareddau hyfforddi i gynnig dull model 'prif ganolfan a lloerennau' i hyfforddi staff, mae Opsiwn 3 yn mynd i'r afael yn effeithiol ag aneffeithlonrwydd logisteg, gan symleiddio cludo staff, offer, ac adnoddau i leoliadau lluosog. Mae hyn yn



GTAGC – Canolfan Hyfforddi Newydd Arfaethedig Achos Busnes

cyfoethogi effeithlonrwydd cyflenwi hyfforddiant o'i gymharu â chymhlethdodau parhaus Opsiynau 1 a 2.

Sicrha Opsiwn 3 gysondeb a safoni gydag ymagwedd unfurf ac wedi'i safoni tuag at hyfforddi ar draws GTAGC, gan gael gwared ar fethodoleg hyfforddi a chyflenwi cynnwys tameidiog a fanylir yn Opsiynau 1 a 2.

Arbedion Cost: Er y gallai Opsiynau 1 a 2 ofyn am fuddsoddiadau sylweddol yn y cyfleusterau presennol, cynigia Opsiwn 3 ddatrysiad cost-efeithiol. Mae'n osgoi gwariant diangen ar adnewyddu a allai olygu y byddai GTAGC yn parhau â chyfleusterau hyfforddi annigonol am flynyddoedd lawer i ddod.

Mae Opsiwn 4, sy'n cynnig datblygu Canolfan Hyfforddi amlasiantaethol, aml-berygl, yn gynhwysfawr. Fodd bynnag, rhaid ei ystyried o fewn cyd-destun cyfyngiadau ariannol presennol, gan gynnwys costau sylweddol ymlaen llaw ac ymrwymïadau cynnal a chadw parhaus.

Argymhelliad

Wrth ystyried buddion Opsiwn 3 dros Opsiynau 1 a 2, ac wrth gydnabod y cyfyngiadau ariannol sy'n gysylltiedig ag Opsiwn 4, argymhellir bod GTAGC yn ceisio Opsiwn 3, sef datblygu Canolfan Hyfforddi newydd. Mae'r opsiwn hwn yn taro cydbwysedd rhwng gwella ansawdd hyfforddiant a mynd i'r afael â chyfrifoldebau cyllidebol GTAGC. Bodlona'r opsiwn hwn ofynion hyfforddi craidd gwasanaeth tân ac achub modern wrth gynnig hyblygrwydd a darpariaeth ar gyfer ehangu a datblygu'r cyfleusterau yn y dyfodol.

Mae Opsiwn 3 yn cyd-fynd ag angen GTAGC ar gyfer cyfleusterau hyfforddi hyblyg, modern wedi'u canoli a chynigia ddatrysiad effeithlon wrth gyfyngu ar ymrwymïad ariannol llawn Opsiwn 4. Mae'n sicrhau y gall GTAGC gyfoethogi ansawdd hyfforddi, cynnal effeithlonrwydd cost, a dyrannu adnoddau yn synhwyrol, gan ddiogelu cynaliadwyedd hirdymor y sefydliad ac yn bwysicach, iechyd a diogelwch diffoddwyr tân.



1.0 Cyflwyniad a Chefndir

1.1 Gweledigaeth y Prosiect ac Amlinelliad o'r Angen

1.1.1 Gweledigaeth y Prosiect

Mae'r weledigaeth ar gyfer y ganolfan hyfforddi newydd ar gyfer GTAGC wedi'i gwreiddio yn yr ymrwymiad i ragoriaeth ac arloesedd yn hyfforddiant a datblygu gweithredol. Mae GTAGC yn dychmygu dyfodol lle mae'i ddiffoddwyr tân wedi'u cyfarparu â'r wybodaeth a'r sgiliau gorau i alluogi iddynt ymateb yn ddiogel ac yn effeithiol i heriau esblygol tanau ac argyfyngau yn ein cymunedau.

1.1.2 Amlinelliad o'r Angen

Nid oes lleoliad hyfforddi cynhwysfawr yn gwasanaethu GTAGC, yn hytrach ceir nifer o leoliadau datgysylltiedig ar draws ystâd GTAGC a ddefnyddir ar gyfer gweithgareddau hyfforddi penodol. Mae'r cyfleusterau hyn yn bodoli ers amser maith, ac fe'u datblygwyd ar adeg pan oedd dull symlach yn bodoli o ran datblygu diffoddwyr tân, pan oedd y risgiau o fewn ein cymunedau yn wahanol i'r rhai a wynebir heddiw. I'r perwyl hwn, mae'r cyfleusterau hyfforddi presennol yng Ngorsafoedd Tân Dolgellau a'r Rhyl wedi gwasanaethu GTAGC yn effeithiol, gan fodloni galwadau hyfforddi'r gorffennol. Serch hynny, wrth i'r gwasanaeth gynllunio i'r dyfodol, mae'n amlwg bod angen buddsoddi yn y cyfleusterau hyfforddi i fynd i'r afael ag anghenion hyfforddi presennol ac sydd i ddod sefydliad sy'n delio â thirlun risg sy'n esblygu. Deillia hyn nid yn unig o'r angen i gynnal safonau hyfforddiant gweithredol a rheoli presennol, ond hefyd i'w cyfoethogi.

Mae'r ganolfan hyfforddiant a datblygu a ddychmygir wedi'i dylunio fel cyfleuster trochi ymarferol a modern, gan gyfarparu diffoddwyr tân GTAGC â phrofiad ymarferol sy'n hanfodol ar gyfer heriau eu rolau sy'n holl bwysig o ran risgiau. Trwy ail-greu arae amrywiol o senarios argyfwng sy'n adlewyrchu digwyddiadau bywyd go iawn o fewn ein cymunedau, bydd y ganolfan yn galluogi diffoddwyr tân i ymateb yn ddiogel, yn hyderus ac yn gymwys.



Mae egwyddorion pensaernïol canolfan hyfforddi modern, datblygedig yn rhai sy'n mabwysiadu dull thematig, gan sefydlu ardaloedd annibynnol sy'n adlewyrchu risgiau presennol ac a ragwelir yng Ngogledd Cymru. Bydd y sectorau un pwrpas hyn yn cael eu rhyng-gysylltu yn ystyriol, gan ganiatáu i efelychiadau o senarios argyfwng cymhleth ddatblygu o fewn parth hyfforddi diogel. Sicrha'r dull cynhwysfawr hwn bod pob aelod o dîm GTAGC yn elwa o hyfforddiant trylwyr, ymarferol, a realistig.

Mae'r prosiect hefyd yn cydnabod cyfrifoldebau GTAGC y tu hwnt i ddiffodd tân, gan gynnwys gweithgareddau megis gweithrediadau ystafell rheoli tân, ymchwiliad tân, atal a diogelu tân, deunyddiau peryglus, ymateb trawma meddygol, a chydweithio gyda gwasanaethau brys eraill a phartneriaid y trydydd sector.

Gosoda dyluniad cyfleuster hyfforddiant a datblygu modern breimiwm ar lesiant yr hyfforddeion a'r hyfforddwyr. Mae gofod helaeth ar gyfer ystafelloedd dosbarth a phropiau efelychu hyfforddiant yn sicrhau gallu'r cyfleuster i fodloni gofynion addysgiadol ei bersonél. Yn ychwanegol, mae'r prosiect yn integreiddio datrysiadau ar gyfer rheoli halogiad yn effeithiol, gan dynnu ar fewnwelediadau o grŵp halogyddion GTAGC ac ymchwil academiaidd yn ymwneud â halogyddion tân.

Mae datblygu safle hyfforddiant a datblygu un pwrpas yn brawf o ymrwymiad GTAGC i godi sgiliau, parodrwydd, a hyblygrwydd ei ddiffoddwyr tân. Mae'r weledigaeth hon yn manteisio ar realaeth, arloesedd, a diogelwch, gan roi modd i GTAGC wasanaethu cymuned Gogledd Cymru â'r lefelau uchaf o gymhwysedd a phroffesiynoldeb.

1.2 Canolfan Ragoriaeth ar gyfer Ymateb Aml-asantiaethol Cymru

Yn ychwanegol at gyfoethogi sgiliau personél GTAGC, cynigia'r ganolfan hyfforddiant a datblygu gyfle unigryw i ddatblygu ymdrechion hyfforddiant a datblygu cydweithredol ymhlith gweithwyr proffesiynol gwasanaethau brys.

Bydd amryw ardaloedd digwyddiadau a chyfarpar efelychu yn y cyfleuster yn ail-greu'n agos y risgiau a'r heriau y mae gweithwyr gwasanaethau brys yn eu hwynebu mewn amgylcheddau adeiledig. Mae'r lleoliad hwn yn cynnig llwyfan delfrydol ar gyfer mentrau hyfforddi ar y cyd, lle gall diffoddwyr tân hyfforddi ochr yn ochr â'u cymheiriaid o wasanaethau brys eraill.

Ar gyfer risgiau newydd a'r rhai na ellir eu hefelychu yn yr amgylchedd adeiledig, bydd y ganolfan yn sefydlu Ystafell Hyfforddiant Rheoli Digwyddiadau. Bydd yr ystafell yn ailddiffinio'r



ffordd y mae Penaethiaid Digwyddiadau yn GTAGC yn datblygu eu harbenigedd a'u profiad rheoli.

Bydd yr ystafell reoli yn gwasanaethu fel hwb ar gyfer dysgu ac arloesedd gweithredol, gan ddefnyddio technoleg a senarios rhyngweithiol i gynnig llwyfan ar gyfer hyfforddiant Rhaglen Rhyngweithredu'r Gwasanaethau Brys ar y Cyd (JESIP). Mae hyn yn caniatáu i bersonél brys gyfoethogi eu sgiliau, eu cydlyniant, a'u penderfyniadau mewn amgylchedd trochi, diogel.

Mae'r ganolfan yn dychmygu uno ymdrechion trwy wahodd partneriaid o Fforwm Lleol Cymru Gydnerth Gogledd Cymru i ymgysylltu â hyfforddiant a chydweithio amlasiantaethol. Anela'r integreiddiad hwn at hyrwyddo synergedd ymhlith gwahanol ymatebwyr brys a sefydlu fframwaith ar gyfer gweithredu egwyddorion JESIP yn effeithiol. Mae'r cydweithrediad hwn yn cyd-fynd â thirlun esblygol ymateb brys, gan bwysleisio ymdrechion ar y cyd i sicrhau diogelwch y cyhoedd a rheoli argyfwng yn effeithiol.

Mae gan y ganolfan hyfforddiant a datblygu arfaethedig potensial sylweddol ar gyfer datblygu mentrau hyfforddi Cymru gyfan a meithrin cydweithredu gyda phartneriaid o bob cwr o Gymru. Gyda'i lleoliad strategol a'i chyfleusterau, mae ganddi'r capasiti i ddod yn hwb canolog ar gyfer cydlynu rhaglenni hyfforddi cynhwysfawr.

Mae'r weledigaeth yn golygu sefydlu llwyfan sy'n cryfhau ymdrechion ar y cyd ymhlith ymatebwyr brys ar draws Cymru ac yn estyn llaw cydweithredu i'n holl gydweithwyr ar draws sawl sefydliad. Trwy hwyluso ymarferion hyfforddi ar y cyd, anela'r ganolfan at gyfoethogi parodrwydd a chydlyniant personél ymateb brys. Byddai'r rhaglenni hyfforddi yn cael eu dylunio i fynd i'r afael â heriau rhanbarthol a thrawsffiniol, gan sicrhau ymateb cytûn i ddigwyddiadau mawr.

Mae cyhoeddi adroddiad Grenfell Tower Phase 2 yn ailddatgan pwysigrwydd addysg a hyfforddiant i safonau a gymeradwyir yn genedlaethol. Bydd datblygu'r ganolfan hyfforddi newydd hon yn sicrhau bod GTAGC yn y sefyllfa orau i gyflenwi hyfforddiant ymarferol a datblygu penaethiaid digwyddiadau cymwys i sicrhau ymateb effeithiol er diogelwch diffoddwyr tân a'r cyhoedd.

1.3 Ffeithiau Allweddol: Ystyriaethau ac Anghenion Hyfforddi Gweithredol

1.3.1 Tirlun Gwasanaethau Tân ac Achub sy'n newid yn barhaus:



Yn nhirlun gwasanaethau tân ac achub modern sy'n esblygu, mae newidiadau sylweddol wedi'u gweld dros y ddegawd ddiwethaf. Un newid nodedig yw'r dirywiad mewn digwyddiadau gweithredol. Gellir priodoli'r dirywiad hwn yn bennaf i lwyddiant ysgubol mesurau ataliol o fewn cymunedau. Serch hynny, mae'r gostyngiad hwn yn effeithio'n sylweddol ar yr amrywiaeth eang o risgiau y daw diffoddwyr tân ar eu traws sy'n hanfodol ar gyfer datblygu cymwyseddau gweithredol. Felly, mae hyfforddiant realistig ar sail senario yn chwarae rôl ganolog wrth feithrin a chynnal diogelwch diffoddwyr tân, sgiliau gweithredol, ymwybyddiaeth risg, a'r gallu i fynd i'r afael yn effeithiol â sefyllfaoedd brys.

1.3.2 Fframwaith Cyfreithiol:

Gosoda Deddf Gwasanaethau Tân ac Achub 2004 y gofynion y mae'n rhaid i'r Awdurdod Tân ac Achub ddarparu ar eu cyfer. Mae'r rhain yn mandadu darpariaethau hyfforddi ar gyfer mynd i'r afael â thanau, gwrthdrawiadau ar y ffordd a delio ag argyfyngau eraill a bennwyd. Ymhellach, mae Gorchymyn Gwasanaethau Tân ac Achub (Argyfyngau) (Diwygio) 2017 yn golygu bod hyfforddiant yn ymwneud â dŵr a digwyddiadau o lifogydd yng Nghymru yn ddyletswydd statudol.

Adolygiad Thematig o Hyfforddiant Prif Gynghorydd Tân ac Achub Cymru

Fe wnaeth y canfyddiadau a'r argymhellion a amlinellir yn adolygiad thematig Hydref 2022 Prif Gynghorydd Tân ac Achub Cymru, dynnu sylw at sawl agwedd gritigol yn ymwneud â hyfforddiant, y mae rhai ohonynt yn adleisio'r heriau a wynebwr gan GTAGC. Mae'r adolygiad thematig yn pwysleisio pwysigrwydd dadansoddiad hyfforddiant ar sail tystiolaeth ac yn mynd i'r afael â heriau sy'n ymwneud ag argaeledd diffoddwyr tân a safoni hyfforddiant. Mae'r mewnwelediadau hyn yn cyd-fynd ag ystyriaethau a gyflwynir yn yr achos busnes hwn, gan dynnu sylw at yr angen am ddull trawsnewidiol i fynd i'r afael yn effeithiol â heriau cyfleuster hyfforddi presennol GTAGC. Yn y DU, mae ffocws ar hyn o bryd ar adolygu effeithlonrwydd tactegau diffodd tân a allai arwain at yr angen i addasu cyfleusterau hyfforddi, i gyd-fynd ag unrhyw newidiadau a weithredir. Felly, mae angen i'r cyfleusterau fod yn hyblyg i addasu i'r rhain ac unrhyw newidiadau dilynol yn y dyfodol.

Ar hyn o bryd mae'r Prif Gynghorydd Tân ac Achub yn adolygu tactegau diffodd tân a ddefnyddir mewn digwyddiadau gweithredol. Rhagwelir y gallai'r adolygiad hwn argymhell technegau amgen na ellir eu cyflenwi gyda'r cyfleusterau presennol.



1.3.3 Amrywiaeth Ddaearyddol a Phroffil Risg Cymhleth:

Mae GTAGC yn cwmpasu daearyddiaeth wledig yn bennaf, yn cynnwys trefi arfordirol, strwythurau tâl, safleoedd diwydiannol sylweddol, safleoedd hanesyddol, a choridorau trafnidiaeth mawr. Mae'r tirlun risg amrywiol yn cwmpasu heriau megis tanau gwyllt, tanau preswyl, gwrthdrawiadau ar y ffordd, a digwyddiadau deunyddiau peryglus. I fynd i'r afael â'r sbectrwm o risgiau gweithredol, datblygwyd model cymhwysedd gweithredol cenedlaethol, gan ffurfio sylfaen ar gyfer Canllawiau Gweithredol Cenedlaethol, Manylebau Hyfforddi, a Safonau Tân gan Gyngor Cenedlaethol y Penaeithiad Tân.

1.3.4 Esblygiad Rheoli Digwyddiadau:

Mae rheoli digwyddiadau wedi gweld esblygiad sylweddol, gyda ffocws mawr ar asesiad risg, ymwybyddiaeth sefyllfa, ac egwyddorion cydweithredol. Mae'r esblygiad hwn yn cyd-fynd yn agos â'r safonau sefydledig ar gyfer cymhwysedd rheoli, fel yr amlinellir gan Sgiliau er Cyfiawnder, sy'n sylfaen i Strategaeth Rheoli Digwyddiadau a chynlluniau cyflenwi GTAGC.

1.3.5 Dysgu o Ddigwyddiadau a Chanllawiau Cenedlaethol:

Yng nghyd-destun y datblygiad arfaethedig, mae'n bwysig cydnabod arwyddocâd Dysgu Sefydliadol ar y Cyd a Dysgu Gweithredol Cenedlaethol wrth werthuso rheoli digwyddiadau. Mae Dysgu Sefydliadol ar y Cyd yn golygu ymdrechion dysgu ar y cyd ymhlith sefydliadau gwasanaethau brys, gan bwysleisio rhannu mewnwelediadau, arferion gorau, a gwersi a ddysgwyd o ddigwyddiadau go iawn i gyfoethogi parodrwydd ac ymateb.

Yn yr un modd, mae Dysgu Gweithredol Cenedlaethol yn canolbwyntio ar raddfa genedlaethol, gan fynd ati'n systematig i gasglu a lledaenu gwybodaeth o ddigwyddiadau o arwyddocâd cenedlaethol. Mae'r profiad ar y cyd hwn yn hysbysu polisïau, gweithdrefnau, ac arferion hyfforddi ar lefel genedlaethol, sydd o fudd i'r holl wasanaethau brys ar draws y wlad. Yr unig ffordd y mae'n bosib i ddysgu gweithredol fod yn effeithiol yw os gellir ei gymhathu i weithgareddau dyddiol Gwasanaethau Tân ac Achub.

Mae'r ganolfan hyfforddiant a datblygu arfaethedig yn cyd-fynd yn berffaith â'r egwyddorion hyn. Trwy ddarparu cyfleuster ar gyfer hyfforddi ac efelychu ar y cyd, mae'n hyrwyddo cydweithio, cyfnewid gwybodaeth, a gwella ar y cyd ymhlith ymatebwyr brys. Nid yn unig y mae hyn yn cyfoethogi parodrwydd lleol ond hefyd yn cyfrannu at nodau cenedlaethol o wella ymateb brys ar draws y sector.



Pwysigrwydd Hyfforddiant Diweddarau ac Asesiad:

Mae hyfforddiant diweddarau rheoli digwyddiadau ac asesiad yn rhan anhepgor i sicrhau parodrwydd Penaethiaid Digwyddiadau mewn sefyllfaoedd critigol. Mae'r arfer hwn yn sicrhau lledaenu'r gwersi a ddysgwyd ac mae'n cynnig mynediad at rith-efelychiadau i gwblhau'r ddolen ddysgu.

1.3.6 Model Gallu GTAGC:

Rhaid i GTAGC hyfforddi a datblygu ei staff yn barhaus i sicrhau bod gallu gweithredol yn cael ei gynnal, i'r perwyl hwn bydd y ganolfan hyfforddi yn cynnig rhaglenni hyfforddi un pwrpas wedi'u teilwra i'r anghenion penodol a amlinellir yn y model gallu sefydledig. Bydd hyn yn cynnwys hyfforddiant diweddarau cynhwysfawr ar gyfer digwyddiadau gwrthdrawiad ar y ffordd, protocolau gweithio ar uchder, tactegau diffodd tân uwch, hyfforddiant Hazmat cychwynnol ar gyfer personél ar-alwad, cyrsiau diweddarau hazmat i'r staff i gyd, sesiynau diweddarau ymwybyddiaeth dŵr, a hyfforddiant diweddarau penaethiaid digwyddiadau arbenigol ar draws pob lefel rheoli. Gan ddefnyddio dulliau hyfforddi ar flaen y gad, senarios rhyngweithiol, a thechnoleg fodern, bydd y ganolfan yn sicrhau bod personél GTAGC wedi'u paratoi'n dda i ymateb yn effeithiol i ystod eang o heriau gweithredol.

1.3.7 Safonau Cenedlaethol a Chanllawiau Gweithredol

Rhaid i lawer o'r rhaglenni hyfforddiant a datblygu y mae GTAGC yn eu creu gael eu cysoni â safonau cenedlaethol. Er enghraifft, bydd criwiau sy'n cael eu hyfforddi i weithio yn y dŵr neu'n agos ato yn cael eu hyfforddi i fodloni Cysyniad Gweithrediadau Achub o Lifogydd Defra. Daw'r safonau hyn o sawl digwyddiad llifogydd cenedlaethol proffil uchel a gafodd eu hadolygu yn Adolygiad Pitt (2007) lle canfuwyd diffygion mewn medr yn erbyn rhagdybiaethau cynllunio.

Mae'r Canllawiau a'r Fframwaith Cydymffurfio ar gyfer Hyfforddiant Ymddygiad Tân Adrannol, 2000 (CFBT) yn cynnig gofynion a chanllawiau penodol ar gyfer gwasanaethau tân yn y DU yn ymwneud â hyfforddi mewn gwres a mwg, yn enwedig yng nghyd-destun CFBT. Mae gofyn i wasanaethau tân gael cyfleusterau CFBT addas sy'n ail-greu senarios tân adrannol realistig. Rhaid i'r cyfleusterau hyn gynnwys darpariaethau ar gyfer cynhyrchu a rheoli gwres, mwg, ac amodau tân. Mae'r fframwaith yn pwysleisio senarios hyfforddiant tân byw lle bydd hyfforddeion yn profi gwres, mwg, ac amodau tân go iawn o fewn amgylcheddau wedi'u rheoli. Mae'r profiad ymarferol hwn yn hanfodol ar gyfer datblygu sgiliau diffodd tân ymarferol. Mae diogelu, realaeth a chydymffurfio â chanllawiau sefydledig yn hanfodol wrth gynnal CFBT effeithiol a diogel. Mae disgwyl i wasanaethau tân gadw at y gofynion hyn i sicrhau bod eu



rhaglenni hyfforddi yn paratoi diffoddwyr tân yn ddigonol ar gyfer yr heriau y gallent eu hwynebu yn y maes.

Mae Rheoliadau Rheoli Iechyd a Diogelwch yn y Gwaith yn rhoi dyletswydd ar y cyflogwr i wneud asesiad priodol o'r risgiau i iechyd a diogelwch eu gweithwyr, ac i gofnodi canfyddiadau arwyddocaol yr asesiad hwn. Amlinella'r Awdurdod Gweithredol Iechyd a Diogelwch sut y mae'n cymhwyso deddfwriaeth iechyd a diogelwch i'r gwasanaeth tân ac achub trwy daro'r cydbwysedd rhwng dyletswyddau gweithredol ac iechyd a diogelwch yn y Gwasanaeth Tân ac Achub.

Mae'r Canllawiau Gweithredol Cenedlaethol yn datgan:

Rhaid i wasanaethau tân ac achub hyfforddi ac asesu personél gweithredol fel eu bod yn gallu ymgymryd â'u rolau a'u cyfrifoldebau. Rhaid i bersonél ddeall y cyfrifoldebau hyn, cael digon o amser a chyfleusterau i ymarfer eu sgiliau fel eu bod wedi'u cyfarparu'n addas â'r wybodaeth weithredol sy'n ofynnol i ddatrys yr ystod lawn o ddigwyddiadau y gellir eu rhagweld yn rhesymol a gallu addasu i'r rhai na ellir eu rhagweld.'

1.3.8 Datblygu Sgiliau Arbenigol:

Bydd y ganolfan hyfforddi yn hwyluso cyflenwi hyfforddiant sgiliau arbenigol, gan gynnwys diheintio torfol, diffodd tân ar longau, ac ymateb i danau gwyllt, sy'n hanfodol ar gyfer mynd i'r afael â senarios digwyddiadau unigryw ac esblygol. Trwy ddarparu sesiynau hyfforddi hygyrch a phecynnau E-Ddysgu, bydd GTAGC yn sicrhau bod ei bersonél â'r sgiliau a'r wybodaeth sy'n ofynnol i ragori yn y meysydd arbenigol hyn. Mae hyn yn cyd-fynd â'r ymdrechion ar y cyd dan arweiniad Cyngorwyr Tactegol a rolau arweiniol cenedlaethol i sefydlu a chynnal protocolau hyfforddi cadarn o fewn y Gwasanaeth. Nid yn unig y mae Cyngorwyr Tactegol megis Swyddogion Cyswllt Digwyddiadau Cenedlaethol neu Swyddogion Diogelu'r Amgylchedd yn cynnal eu sgiliau i ymateb i ddigwyddiadau o fewn Gogledd Cymru ond gellir galw arnynt yn ôl yr angen i gefnogi digwyddiadau yn rhanbarthol ac yn genedlaethol. Mae'n hanfodol fod y rolau hyn yn gallu hyfforddi a pharatoi amgylcheddau trochi, realistig.

1.3.9 Ystyriaethau amgylcheddol

Yn dilyn pasio Deddf yr Amgylchedd (Ansawdd Aer a Seinweddau) (Cymru) 2024 yn gyfraith, rhaid i'r holl gyfleusterau mwg poeth a weithredir gan y Gwasanaeth fodloni targedau amrywiol ar gyfer crynodiad mater gronynnol o'r awyr yn yr aer amgylchynol o gwmpas pob



safle. Mesurir hyn trwy bennu crynodiad y gronynnau ar faint o 2.5 o ficronau neu uwch mewn diamedr (PM 2.5).

Mae lleoliad y Cyfleuster Hyfforddi mwg poeth presennol yn Nolgellau yn agos iawn at ganol y dref, ar waelod dyffryn. Mae'r allyriadau mwg wedi denu nifer o gwynion yn barod, ac mae parhau i weithredu'r cyfleuster hwn yn debyg o roi GTAGC wrth risg o erlyniad a/neu gamau gorfodi a fydd yn gorfodi cau'r cyfleuster hwn ar fyr rybudd.

Yn ychwanegol, mae dyletswydd ar y Gwasanaeth i gyrraedd allyriadau carbon sero net erbyn 2030. O ystyried oed a chyflwr y cyfleusterau presennol, nid ystyrir hi'n ddarbodus mynd i wariant sylweddol o ôl-osod systemau carbon isel i fodloni'r dyddiad hwn os mai'r unig fwriad yw ymestyn eu hoes weithredol dros dro.

1.4 Cyfleuster(au) Hyfforddi Presennol a pham eu bod yn anaddas

Ar hyn o bryd mae gan yr Awdurdod ddarpariaeth hyfforddi ar nifer o safleoedd o amgylch ardal yr Awdurdod.

- Dolgellau
- Y Rhyl
- Wrecsam
- Glannau Dyfrdwy
- a defnydd cyfyngedig o gyfleuster yn Airbus ar gyfer Hyfforddiant Ymddygiad Tân.

Cyfyngedig yw'r cyfleusterau hyn yng nghwmpas yr hyfforddiant y gallant ei gynnig ac mae gwasgariad daearyddol y lleoliadau hyn yn achosi aneffeithlonrwydd wrth gyflenwi gwasanaethau hyfforddi gyda'r hyfforddwyr sydd ar gael.

Mewn sawl achos mae'r cyfleusterau o oed lle mae eu disgwyliad oes parhaus yn fyr, ac ni allant gynnig yr ystod lawn o weithgareddau hyfforddi mewn amgylchedd hyfforddi trochi, realistig y mae diffodd tân modern ei angen.

Nid oes darpariaeth cyfleusterau llesiant a storio da yn yr holl safleoedd ac maen nhw'n aml yn cael eu rhannu gyda'r orsaf gyfagos. Gall hyn amharu ar weithrediadau'r orsaf ac yn golygu



bod angen cludo offer o ardaloedd eraill yn aml. Digwydd hyn ychydig cyn ymarfer ac yn cael ei symud yn fuan wedyn, i'w defnyddio'n rhywle arall, gan arwain at aneffeithlonrwydd yn nefnydd yr offer hwn a chostau cludo dianghenraid.

Mae cludo offer a deunydd cwrs yn cyflwyno heriau yn ymwneud â gofal, cynnal a chadw a gwasanaethu, ynghyd â rheolaeth logistaidd a rhestr eiddo.

Mae anhyblygrwydd i ddatblygu'r safleoedd ymhellach yn effeithio ar reoli halogiad.

Nid oes unrhyw un o'r safleoedd yn cynnig ystod lawn o weithgareddau hyfforddi y byddai model hyfforddi ardal yn gofyn amdanynt.

Nid yw hyfforddiant dŵr yn digwydd ar unrhyw un o'r safleoedd hyn gan ei fod yn cael ei ddarparu mewn Dosbarth dŵr 1 a 2 arbenigol mewn lleoliadau ar draws Gogledd Cymru, nid yw'r elfen hon o hyfforddiant yn rhan o'r achos busnes hwn ac ni fydd yn cael ei effeithio gan y cynigion hyn.

Amlinella'r arfarniad opsiynau a ganlyn y diffygion a'r buddsoddiad sy'n ofynnol ym mhob safle.

1.5 Buddion canolfan hyfforddi newydd

1.5.1 Amgylchedd Hyfforddi Uwch:

Mae canolfan hyfforddi newydd, wedi'i adeiladu i'r diben yn cynrychioli llam yn ansawdd yr hyfforddiant a gynigir i bersonél GTAGC. Trwy greu hwb canolog wedi'i gyfarparu â chyfleusterau cyfoes, bydd y ganolfan hyfforddi yn galluogi datblygu senarios hyfforddi trochi, realistig. Bydd hyfforddeion yn agored i safleoedd brys wedi'u hefelychu sy'n adlewyrchu'n agos heriau'r byd go iawn, gan feithrin lefel uwch o barodrwydd a hyblygrwydd. Bydd cynnwys cyfleusterau addysgu, arlwy, llesiant a diheintio pwrpasol yn sicrhau bod hyfforddeion yn derbyn cefnogaeth gynhwysfawr, gan gyfrannu at brofiad hyfforddi sy'n cwmpasu popeth.

1.5.2 Effeithlonrwydd Gweithredol ac Arbedion Cost:

Mae gweithgareddau hyfforddi canolog yn dileu'r aneffeithlonrwydd presennol sy'n gysylltiedig â chludo staff hyfforddi, offer, ac adnoddau i leoliadau lluosog. Bydd lleoliad canolog y ganolfan hyfforddi newydd yn gostwng yn sylweddol effeithiau teithio a chymhlethdodau logistaidd, gan ganiatáu i hyfforddwyr ddyrannu mwy o amser i hyfforddi ei hun. Mae'r dull hwn wedi'i



symleiddio yn cynyddu effeithlonrwydd cyflenwi hyfforddiant ac arbedion dyblygu adnoddau, gan wella rheolaeth amser.

1.5.3 Cysondeb a Safoni:

Mae canolfan hyfforddi ganolog yn sicrhau dull cyson a safonol tuag at hyfforddi ar draws GTAGC. Mae unfurfiaeth mewn dulliau hyfforddi, cyflenwi cynnwys, a dulliau gwerthuso yn hawdd eu cyflawni pan fydd yr holl weithgareddau hyfforddi yn digwydd o dan un to. Mae hyn yn sicrhau bod pob diffoddwr tân, waeth lle maen nhw wedi'u lleoli, yn derbyn yr un profiad hyfforddi o ansawdd uchel. Trwy uno arferion hyfforddi, mae'r ganolfan hyfforddi yn hyrwyddo dealltwriaeth ar y cyd o arferion gorau, ac yn y pendraw yn cyfoethogi gallu cyffredinol gweithlu GTAGC.

1.5.4 Addasu i Ddatblygiadau Technolegol:

Mae'r ganolfan hyfforddi newydd wedi'i dylunio i integreiddio technolegau ac offer modern. Wrth i'r sector gwasanaethau brys barhau i esblygu, daw cofleidio datblygiadau megis efelychiadau rhith-realiti a dulliau hyfforddi wedi'u gyrru gan ddata o'r pwys mwyaf. Bydd seilwaith hyblyg, modern y ganolfan hyfforddi yn barod iawn i gefnogi gwreiddio'r arloesiadau hyn, gan gyfarparu diffoddwyr tân â'r sgiliau gofynnol i lywio'r tirlun ymateb brys sy'n newid yn gyson a chaniatáu i'r Gwasanaeth ymateb yn rhwydd i addasiadau yn y dyfodol.

1.5.5 Effaith Gadarnhaol ar Recriwtio a Chadw:

Gall y ganolfan hyfforddi arfaethedig gael effaith gadarnhaol ar recriwtio a chadw yn GTAGC. Bydd yn cyfoethogi atyniad y sefydliad i recriwtiaid posibl trwy arddangos ei ymrwymiad i hyfforddiant a datblygiad proffesiynol cynhwysfawr, gan gynnwys sgiliau arweinyddiaeth a rheolaethol. Bydd darpar staff Gwasanaethau Corfforaethol a Gweithredol yn cael eu denu gan y cyfle i dderbyn hyfforddiant parhaus, gan sicrhau eu diogelwch a'u datblygiad gyrfaol.

Ar gyfer cadw, bydd y ganolfan yn meithrin twf proffesiynol personél presennol, gan gyfoethogi eu bodlonrwydd swydd a meithrin teyrngarwch. Yn gyffredinol, bydd effaith y ganolfan ar recriwtio a chadw yn cyfoethogi sefyllfa GTAGC fel cyflogwr o ddewis.

1.6 Cysondeb â Nodau Llesiant a Deddf Cenedlaethau'r Dyfodol



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Mae'r prosiect canolfan hyfforddi arfaethedig gan GTAGC yn fwy na chyfleuster un pwrpas i ddatblygu hyfforddiant a sgiliau; mae'n fenter strategol sy'n cyd-fynd yn rhwydd â nodau ac egwyddorion Deddf Cenedlaethau'r Dyfodol yng Nghymru. Mae'r Ddeddf yn dychmygu Cymru lle mae cenedlaethau presennol a'r dyfodol yn ffynnu, gan sicrhau fod penderfyniadau heddiw yn effeithio'n gadarnhaol ar lesiant cenedlaethau'r dyfodol. Trwy sefydlu canolfan hyfforddi gwasanaeth tân ac achub, anela GTAGC at wneud cyfraniad arwyddocaol at saith nod llesiant y Ddeddf:

1.6.1 Cymru Lewyrchus

Mae gweithlu cymwys, wedi'u hyfforddi'n dda yn gonglfaen i ffyniant. Trwy fuddsoddi yn y ganolfan hyfforddi, mae GTAGC yn cyfarparu ei staff gweithredol ac ystafell reoli â'r sgiliau â'r wybodaeth angenrheidiol i ymateb yn effeithiol i argyfyngau, gan gyfrannu at ddiogelwch a ffyniant cyffredinol cymunedau Cymru. Ymhellach, mae integreiddio uwch dechnolegau i raglenni hyfforddi yn sicrhau bod ein staff wedi'u paratoi i fynd i'r afael â heriau modern trwy ddatblygiadau technolegol, gan hyrwyddo ffyniant trwy hyblygrwydd ac arloesedd.

1.6.2 Cymru Gydnerth

Mae cydnerthedd wrth wraidd gwasanaethau brys. Mae'r prosiect canolfan hyfforddi yn cyfrannu'n uniongyrchol at gyfoethogi cydnerthedd cymunedau trwy roi'r offer i'n staff i ymateb yn fedrus i ystod eang o ddigwyddiadau, o danau i argyfyngau deunydd peryglus. Mae efelychiadau realistig, ymarferion ymarferol, a chydweithio gyda gwasanaethau brys eraill yn meithrin diwylliant o gydweithio a pharodrwydd, gan atgyfnerthu cydnerthedd Cymru ar y cyd i argyfyngau posibl.

1.6.3 Cymru Iachach

Mae diogelwch yn agwedd sylfaenol ar lesiant. Bydd yr hyfforddiant cynhwysfawr a ddarperir gan y ganolfan hyfforddi yn cyfrannu'n uniongyrchol at greu amgylchedd diogelach i'n staff gweithredol a'r cymunedau y maen nhw'n eu gwasanaethu. Trwy wella ymateb gweithredol, cyfoethogi cydlyniant, ac isafu ar risgiau trwy hyfforddiant effeithiol, mae'r prosiect yn sicrhau Cymru iachach, lle mae bywydau yn cael eu diogelu ac argyfyngau yn cael eu rheoli'n effeithlon.

1.6.4 Cymru sy'n fwy cyfartal



Mae tegwch mewn diogelwch ac ymateb brys yn flaenoriaeth. Mae'r prosiect canolfan hyfforddi yn meithrin mynediad cyfartal at gyfleoedd hyfforddi o ansawdd uchel i'n holl staff, sy'n trosi'n wasanaethau o ansawdd uchel i'n cymunedau. Mae'r ymrwymiad hwn i gynwysoldeb yn cyd-fynd â nod y Ddeddf o greu Cymru fwy cyfartal, ac un lle gall pawb gyfrannu at wasanaethau brys gwell ac elwa ohonynt.

1.6.5 Cymru o Gymunedau Cydlynus

Mae ymgysylltiad ac ymddiriedaeth gymunedol yn hanfodol ar gyfer ymateb brys llwyddiannus. Trwy'r ganolfan hyfforddi, hyrwydda GTAGC gydlyniant trwy gynnig cyfleoedd ar gyfer hyfforddiant ar y cyd ac ymgysylltiad cymunedol. Mae dyddiau agored, rhaglenni ymwybyddiaeth, ac ymarferion ar y cyd gyda chymunedau lleol yn cryfhau'r clymau rhwng gwasanaethau brys a'r cyhoedd, gan hyrwyddo Cymru o gymunedau cydlynus.

1.6.6 Cymru â Diwylliant Bywiog Lle Mae'r Gymraeg yn Ffynnu

Mae sensitifrwydd diwylliannol o'r pwys mwyaf mewn ymateb brys. Mae'r prosiect canolfan hyfforddi yn cofleidio amrywiaeth, bydd yn cael ei greu â sensitifrwydd diwylliannol mewn golwg a phwysigrwydd cymhwysedd diwylliannol wrth gyflenwi gwasanaethau effeithiol. Trwy feithrin ymwybyddiaeth a dealltwriaeth ddiwylliannol, sicrhau GTAGC y gall yr holl staff ryngweithio â chymunedau amrywiol a'u cefnogi, gan feithrin diwylliant bywiog o barch a chynwysoldeb.

1.6.7 Cymru sy'n Gyfrifol ar Lefel Fyd-eang

Nid yn unig y mae'r prosiect canolfan hyfforddi yn ymateb i anghenion lleol ond mae hefyd yn cyd-fynd â chyfrifoldebau byd-eang. Trwy baratoi ein staff i fynd i'r afael â heriau ar ddod, megis digwyddiadau amgylcheddol neu fygythiadau newydd, mae'r prosiect yn cyfrannu at Gymru gyfrifol yn fyd-eang sy'n mynd i'r afael â materion lleol a rhyngwladol, gan fod yn batrwm i arferion ymateb brys cynaliadwy.

Mae sefydlu'r Ganolfan Hyfforddi gan GTAGC yn cyd-fynd yn uniongyrchol â nodau llesiant Deddf Cenedlaethau'r Dyfodol yng Nghymru ac yn eu cefnogi. Trwy gyfarparu ein staff gweithredol ac ystafell reoli â'r sgiliau, y wybodaeth, a'r galluedd sy'n angenrheidiol ar gyfer ymateb brys effeithiol, mae'r prosiect yn meithrin Cymru ddiogelach, fwy cydnherth, a llewyrchus ar gyfer cenedlaethau presennol a'r dyfodol.



1.7 Cynllun Rheoli Risg Cymunedol 2024-2029

Mae'r Gwasanaeth wedi datblygu Cynllun Rheoli Risg Cymunedol 2024-2029 ar sail y nodau hyn gydag egwyddorion yn canolbwyntio ar bobl ac ymateb. Datblygwyd hyn wrth ystyried amcanion 5 mlynedd yr Adran Hyfforddiant a Datblygu sy'n canolbwyntio ar gyflawni Hyfforddiant sy'n cyflenwi rhagoriaeth, galluoedd arweinyddiaeth sy'n barod iawn i lywio ac arwain y gwasanaeth trwy dirlun sy'n esblygu'r Gwasanaeth Tân ac Achub, hyfforddi a datblygu pobl sy'n harneisio technoleg ar gyfer cyflenwi'n effeithlon, gyda chydaddoldeb, amrywiaeth a chynwysoldeb drwyddi draw ein holl fentrau, gan feithrin diwylliant o gynwysoldeb, parch ac amrywiaeth ym mhob agwedd ar ein gwaith, gyda gweithlu sy'n gorfforol iach ac yn gadarn yn feddyliol a rhaglenni hyfforddi sy'n bodloni ein risgiau cymunedol presennol a'r rhai a ragwelir.



2.0 Arfarniad Opsiynau - Dadansoddiad Ansoddol

2.1 Opsiwn 1: Cynnal Cyfleusterau Presennol ar Sail Gofal a Chynnal a Chadw gan gynnwys cydymffurfiaeth barhaus â gofynion statudol

Safleoedd presennol:

Amlinellir isod sylwebaeth ar y safleoedd presennol, gan roi manylion ar eu cyflwr ac yn nodi rhai materion sylweddol na fydd yn cael eu bodloni pe bai Opsiwn 1 yn cael ei fabwysiadu. Mae'r cyfrifiad cyllidebol ar gyfer yr opsiwn hwn yn tybio mân waith adnewyddu rheolaidd ac yn cynnwys lwfans cynyddol ar gyfer atgyweiriadau a chynnal a chadw blwyddyn ar flwyddyn wrth i gyflwr yr adeilad ddirywio.

Dolgellau:

Dyma unig gyfleuster mwg poeth GTAGC, a adeiladwyd yn 1992. Mae'r cyfleuster hwn yn cynnig hyfforddiant mewn amodau tân realistig. Cyflawnir hyn trwy losgiadau carbonaidd a defnydd cynhyrchwyr mwg synthetig. Nid yw wedi'i osod ag unrhyw fath o ddyfais glanhau mwg, mae'r mwg a gynhyrchir yn ystod yr ymarfer yn cynhyrchu mwg nad yw'n cael ei gadw o fewn y cyfleuster. Nid yw'r safle yn cefnogi defnyddio ewyn hyfforddi, ac nid yw'r tŷ tân yn addas ar gyfer hyfforddi mewn technegau diffodd tân adeilad canolog i uchel iawn.

Mae lleoliad y Cyfleuster Hyfforddi mwg poeth presennol yn Nolgellau yn agos iawn at ganol y dref, ac ar waelod dyffryn. Mae'r allyriadau mwg eisoes wedi denu nifer o gwynion, ac mae gweithrediad parhaus y cyfleuster hwn yn debygol o olygu y gallai GTAGC fod mewn perygl o erlyniad a/neu gamau gorfodi a byddai'n rhaid cau'r cyfleuster ar fyr rybudd.

Yn ychwanegol, mae dyletswydd ar y Gwasanaeth i gyrraedd allyriadau carbon sero net erbyn 2030. Oherwydd oed a chyflwr y cyfleusterau presennol, ni all y lleoliad hwn gefnogi'r dyhead hwn heb fuddsoddiad sylweddol.

Mae'r safle wedi'i leoli mewn ardal o lifogydd ac mae'n dioddef llifogydd yn rheolaidd, sy'n golygu nad oes modd ei ddefnyddio am gyfnodau sylweddol o amser. Mae hyn yn arwain at hyfforddiant yn cael ei ganslo a galwadau dilynol i lanhau'r cyfleuster. Mae'r risg hwn o lifogydd ar y safle yn gofyn i'r holl ddatblygiadau gael eu codi ar stiltiau uwchlaw lefel y ddaear, yn ychwanegol nid oes lle i storio na gadael offer, propiau hyfforddi a cherbydau ar lefel y ddaear am ran sylweddol o'r flwyddyn.



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Oherwydd natur defnydd y safle mae'r arwynebau o fewn y tŷ tân a'r cyfleuster amgylchynol wedi'u halogi'n drwm gan fwg, ac er ei fod yn annhebygol, mewn achos o lifogydd gallai hyn o bosibl achosi i halogyddion gyrraedd yr afon gerllaw. Mae system ddraenio dŵr wyneb gyfan ardal yr iard yn draenio i'r afon gerllaw, sy'n creu risg o halogiad i'r cwrs dŵr.

Er gwaethaf ychwanegu nifer o ystafelloedd golchi mewn adeilad dros dro yn ddiweddar, mae'r cyfleusterau diheintio yn parhau yn rhai "gwneud y tro a thrwsio" a phrin eu bod yn ddigonol. Nid oes ystafell ddosbarth hyfforddi ar y safle y gellir ei defnyddio gan bersonél ar gyfer gweithgareddau ymarferol wrth wisgo'r cit tân, sy'n arwain at fyfyrwyr yn defnyddio'r Bae Peiriannau fel ystafell ddosbarth, gyda gwresogi annigonol yn ystod y gaeaf ac absenoldeb cyfleusterau eraill ystafell ddosbarth. Mae'r bae peiriannau yn cael ei ddefnyddio gan Beiriannau Tân Gorsaf Dân Dolgellau, pan fydd y peiriant hwn yn ymateb i ddigwyddiadau bydd mygdarthau'r peiriant yn parhau o fewn y bae a hynny'n golygu bod staff yn agored i ronynnau mygdarth disel posibl.

Gan ystyried y cyfleusterau hyfforddi ehangach, nid oes gan y safle gyfleusterau addas ar gyfer Rheoli Digwyddiadau, Hazmat neu Hyfforddiant Gwrthdrawiad ar y Ffordd, ac nid yw'n ddigon mawr i gefnogi ymarferion hyfforddi amlasiantaethol.

Mae cydymffurfiaeth â pholisïau EDI ar y safle hwn yn wael, heb fawr o wahaniaethu rhwng cyfleusterau, a ni cheir ystafell ffydd / dawel.

Mae cyfleusterau ffitrwydd, llesiant ac arlwy cyffredinol yn cael eu rhannu â'r orsaf dân ac ar adegau prysur pan fydd staff gorsaf, myfyrwyr a hyfforddeion yn bresennol nid yw'n ddigon o faint, heb unrhyw le preifat ar gael i fyfyrwyr sy'n dymuno astudio neu ddiffoddwyr tân yr orsaf sy'n dymuno ymgymryd â hyfforddiant diweddar.

Effeithir yn drwm ar weithrediadau gorsaf tân o ddydd i ddydd gan bresenoldeb yr ysgol hyfforddi, gyda'r angen i barcio'r Peiriant Tân y tu allan (oddi ar wefr) pan fydd y Bae Peiriant yn cael ei ddefnyddio fel ystafell ddosbarth. Hefyd, mae'r Bae Peiriant yn storio swm sylweddol o offer hyfforddi megis yr efelychydd magl, sy'n syml yn rhwystro gweithgareddau arferol yr orsaf o ddydd i ddydd ynghyd â chreu risgiau o fagladau a chwympiadau.

Defnyddir y safle hefyd gan Wasanaeth Ambiwylans Cymru, fel pwynt lleoli, a Chyngor ar Bopeth sy'n syml yn ychwanegu pwysau pellach i'r safle. Mae'r llefydd parcio ar y safle yn annigonol ar gyfer yr holl ddefnyddwyr, yn enwedig pan fydd hyfforddi'n digwydd ac yn



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gyffredinol mae'n rhaid i ddefnyddwyr barcio ym maes parcio'r archfarchnad gyfagos, a all effeithio ar eu cwsmeriaid a'r gymuned leol.

Yn unigryw i Ogledd Cymru, mae gan y cyfleuster hwn lety dros nos o 10 ystafell wely, serch hynny mae angen eu moderneiddio a'u hadnewyddu. Mae'r ddarpariaeth o safon isel iawn a ni fyddai'n cyrraedd y safon a ddisgwylir gan y llety cyllideb mwyaf sylfaenol hyd yn oed.

Mae pellter sylweddol y safle hwn o brif rwydwaith cefnffyrdd hefyd yn arwain at gostau sylweddol ac oedi wrth gyflenwi darpariaeth ceir ar gyfer torri, pren i losgi, nwyddau traul safle a sicrhau contractwyr i gynnal rhai o'r cyfarpar mwy arbenigol.

Er gwaethaf buddsoddiad diweddar, ateb dros dro yw hyn i ddarparu estyniad oes byr dymor i'r cyfleuster hwn sydd â thua 5 mlynedd o oes yn weddill cyn y bydd angen buddsoddiad mawr i gynnal y cyfleusterau annigonol presennol a sicrhau cydymffurfiaeth â gofynion statudol.

Er y bydd yr arfarniad opsiynau yn gosod cost ar gynnal y cyfleusterau hyn ar sail gofal a chynnal a chadw am gyfnod o 25 mlynedd, gydag uwchraddiadau angenrheidiol i fodloni gofynion statudol gofynnol, y gwir amdani yw bod oed a chyflwr yr adeilad, wedi'i gyfuno â phryderon iechyd a diogelwch, heriau EDI, halogiad diffoddwyr tân annigonol a phrosesau rheoli mwg, ynghyd â pherygl o lifogydd parhaus yn golygu nad yw hwn yn opsiwn hirdymor ymarferol i'w ystyried.

Y Rhyl:

Datblygwyd y safle yn 1988, fel tŷ mwg oer a chyfleuster hyfforddi ynghlwm wrth Orsaf Tân. Mae gan y safle hwn iard hyfforddi mwy, gan ganiatáu ei ddefnydd ar gyfer Profion Dethol Diffoddwyr Tân Cenedlaethol a Hyfforddiant Symudiadau Gyrwyr, na ellir darparu ar eu cyfer ar unrhyw un o'r safleoedd canolfannau hyfforddi eraill.

Mae'r Tŷ Tân yn gyfleuster mwg oer yn unig, heb losgi carbonaidd yn digwydd, serch hynny nid yw wedi'i osod â pheiriant mwg wedi'i adeiladu'n rhan ohono na phibellwaith dosbarthu addas, gan ei gwneud yn anodd creu amodau addas drwyddi draw'r adeilad i efelychu amgylchedd go iawn. Nid yw'r adeilad wedi'i gyfarparu â'r systemau gwaith diogel gofynnol, megis tynnu mwg, goleuadau diogelwch a larymau argyfwng. Nid oes cyfleuster canolog i uchel iawn o fewn y propiau sydd ar gael.



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Yn yr un modd â safleoedd eraill mae llawer o'r cyfleusterau ar gyfer llesiant yn cael eu rhannu â'r orsaf dân, gan arwain at storfa loceri annigonol ar gyfer myfyrwyr sy'n ymweld a chyfleusterau cawod a llesiant annigonol.

Yn y safle hwn, mae cadw at bolisiâu EDI yn disgyn islaw safonau cyfoes, gan nad yw'r cyfleusterau wedi'u gwahanu'n ddigonol, a ni cheir lle dynodedig ar gyfer gweithgareddau ffydd neu dawl.

Mae cyfleusterau ffitrwydd, llesiant ac arlwy cyffredinol yn cael eu rhannu â'r orsaf dân ac ar adegau prysur pan fydd staff gorsaf, myfyrwyr a hyfforddeion yn bresennol nid yw'n ddigon o faint, gyda lle cyfyngedig ar gael i fyfyrwyr sy'n dymuno astudio neu ddiffoddwyr tân yn yr orsaf sy'n dymuno ymgymryd â hyfforddiant diweddar. Heb unrhyw le newid wedi'i neilltuo ar y safle i ddarpar recriwtiaid neu fyfyrwyr sy'n ymweld, mae ystafelloedd dosbarth y dylid eu neilltuo fel ardaloedd gofod glân yn cael eu defnyddio'n rheolaidd i newid i Offer Gwarchod Personol diffodd tân strwythurol ac offer anadlu.

Mae'r cyfleusterau hyfforddi hefyd yn cael eu rhannu â'r criwiau ym Mhrestatyn a Llanelwy ac yn aml mae anghenion yr adran hyfforddi yn arwain at dorri ar draws hyfforddiant craidd pob un o'r tair gorsaf.

Mae'r safle hwn yn elwa o fynediad at saith ystafell gyfarfod, sy'n cael eu rhannu â gweddill y gwasanaeth ac wedi'u gosod ag offer AV wedi dyddio, serch hynny, nid oes lle i storio offer, gan arwain at senario y disgrifir yn flaenorol o offer yn gorfod cael eu cludo a'u symud o'r safle i'w defnyddio yn y senario hyfforddi. Mae mwyafrif yr ystafelloedd hyfforddi hyn uwchlaw lefel llawr gwaelod ac wedi'u neilltuo yn ardaloedd glân, gan atal myfyrwyr ar gyrsiau ymarferol, megis cyrsiau offer anadlu neu wrthdrawiad ar y ffordd, rhag defnyddio'r lle.

Er bod y safle yn elwa o iard hyfforddi mwy, mae ei ddefnydd ar gyfer gweithgareddau lluosog yn gostwng y gallu i ymgymryd â hyfforddiant dwys o ran gofod megis hyfforddiant Pymptau ac Ysgolion, Gwrthdrawiad ar y Ffordd a Hazmat. Ni ellir defnyddio Ewyn Hyfforddi ar y safle.

Mae'r safle wedi'i gyfarparu â Chyfleuster Hyfforddi Rheoli Digwyddiadau bach ond mae hwn hefyd yn cyrraedd diwedd ei oes ac mae angen uwchraddiad mawr mewn technoleg a system. Mae'r ystafelloedd hefyd o ansawdd gwael o'i gymharu â chyfleusterau mwy newydd, sy'n cynnwys trochi ac efelychiad uwch.



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Yn gyffredinol, mae'r eiddo hwn gyda rhychwant oes presennol o tua 10 mlynedd, yn gofyn am fuddsoddiad sylweddol i'w ddwyn i safon lle bydd ganddo oes hirdymor, ac ar ôl hynny bydd angen buddsoddiad mawr pellach dim ond i gynnal y cyfleusterau annigonol presennol.

Er y bydd yr arfarniad costau yn gosod cost ar gynnal y cyfleusterau hyn ar sail gofal a chynnal a chadw am gyfnod o 25 mlynedd, y gwir amdani yw y bydd oed a chyflwr yr adeilad, wedi'i gyfuno ag absenoldeb cyfleusterau digonol i fodloni safonau EDI cyfoes yn golygu nad yw hwn yn opsiwn hirdymor ymarferol i'w ystyried.

Oherwydd agosrwydd tai lleol a defnydd presennol y safle gan yr orsaf, mae'n anhebygol y gallai'r safle fyth gael ei ddefnyddio at losgi carbonaidd, felly ni fyddai'n ddewis amgen addas i Ddolgellau.

Wrecsam:

Datblygwyd safle Wrecsam yn 2016 ac fel Y Rhyl fe'i datblygwyd fel tŷ tân mwg oer ynghlwm wrth yr orsaf dân.

Yn wahanol i'r Rhyl, nid yw'r safle hwn yn ddigon mawr i'w ddefnyddio ar gyfer Profion Dethol Diffoddwyr Tân Cenedlaethol a Hyfforddiant Gyrwyr, ac er ei fod yn fwy newydd, mae'n dioddef rhai o'r diffygion a nodir uchod ar gyfer safle'r Rhyl.

Mae gan Wrecsam yr anfantais ychwanegol oherwydd cyfyngiadau caniatâd cynllunio na ellir defnyddio'r safle o hanner dydd, Dydd Sadwrn hyd at fore dydd Llun. Mae hyn yn colli cyfle hyfforddi sylweddol ar gyfer diffoddwyr tân ar alwad a recriwtiaid.

Mae Wrecsam wedi'i leoli ar safle a rennir gydag Ymddiriedolaeth Gwasanaeth Ambiwylans Cymru. Mae'r safle yn berchen i Ymddiriedolaeth Gwasanaeth Ambiwylans Cymru gyda GTAGC yn denant. Dyluniwyd y cyfleusterau hyfforddi yn Wrecsam i fodloni anghenion y criwiau gweithredol sydd wedi'u lleoli ar y safle a chwmpas cyfyngedig sydd ganddynt y tu hwnt i'r senarios hyfforddi. Byddai angen i unrhyw ystyriaeth i ailddatblygu'r cyfleusterau hyn y tu hwnt i'w defnydd cyfredol yn gofyn am gefnogaeth a chytundeb gan Ymddiriedolaeth Gwasanaeth Ambiwylans Cymru a byddai gan hyn y potensial i effeithio ar ddyluniad a defnydd ehangach y safle.

Yn gyffredinol, er bod gan yr eiddo hwn rychwant oes presennol y tu hwnt i 25 mlynedd, bydd yn gofyn am "waith adnewyddu hanner oes" 25 mlynedd ar ôl ei adeiladu. Yn ychwanegol,



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byddai'n gofyn am fuddsoddiad sylweddol i'w ddwyn i safon y byddai'n addas i'w ddefnyddio y tu hwnt i weithgareddau hyfforddi sylfaenol yr orsaf. Byddai unrhyw ail-ddylunio o'r safle hyfforddi yn ddieithriad wedi'i gyfyngu o hyd gan y cyfleusterau cymorth cyfyngedig megis ystafelloedd addysgu a chyfleusterau llesiant sydd ar gael o fewn yr orsaf ambiwlans a thân ar y cyd presennol.

Er y bydd yr arfarniad opsiynau yn gosod cost ar gynnal y cyfleusterau hyn ar sail gofal a chynnal a chadw am gyfnod o 25 mlynedd, y gwir amdani yw y dylid ystyried y cyfleusterau fel cyfleuster hyfforddi gorsaf dân ar gyfer cynnal gallu, ac nid fel canolfan hyfforddi ar draws y gwasanaeth.

Oherwydd agosrwydd tai lleol, mae cyfyngiad ar ddefnydd ac ynghyd â defnydd presennol y safle gan yr orsaf, mae'n anhebygol y gallai'r safle fyth gael ei ddefnyddio ar gyfer llosgi carbonaidd, a chan hynny ni fyddai'n ddewis amgen addas i Ddolgellau.

Glannau Dyfrdwy:

Datblygwyd Glannau Dyfrdwy yn 2016 ac yn debyg iawn i Wrecsam fe'i datblygwyd fel tŷ mwg oer ynghlwm wrth yr orsaf dân.

O ganlyniad, yn debyg iawn i Wrecsam, mae llawer o'r cyfyngiadau y disgrifir yn flaenorol hefyd yn gymwys i'r safle hwn, er nid oes gan Lannau Dyfrdwy yr un cyfyngiadau defnydd.

Yn yr un modd â Wrecsam, mae gan yr eiddo hwn rychwant oes presennol o dros 25 mlynedd, serch hynny bydd angen "gwaith adnewyddu hanner oes" 25 mlynedd ar ôl adeiladu, ynghyd â buddsoddiad parhaus dros y cyfnod hwnnw i'w gadw yn y cyflwr hwn. Fel y nodir uchod, y gwir amdani yw y dylid ystyried y cyfleusterau fel cyfleuster hyfforddi'r orsaf dân ar gyfer cynnal gallu, ac nid fel canolfan hyfforddi ar draws y gwasanaeth.

Oherwydd agosrwydd tai lleol, ysgol a defnydd presennol y safle gan yr orsaf, mae'n anhebygol y gallai'r safle fyth gael ei ddefnyddio ar gyfer llosgi carbonaidd, a chan hynny ni fyddai'n ddewis amgen addas i Ddolgellau.

Airbus:

Dim ond ar gyfer Hyfforddiant Ymddygiad Tân Adrannol (CFBT) y defnyddir cyfleuster Airbus. Serch hynny, mae diffygion yma hefyd gan mai cyfyngedig yw mynediad i'r safle, gan mai Airbus sy'n rheoli'r amseru.



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Mae GTAGC wedi buddsoddi yn y cyfleusterau ymddygiad tân sydd wedi'u lleoli yn safle Airbus, ac er gwaethaf costau sylweddol y ddarpariaeth a'u cynnal a chadw nid yw'r cyfleusterau hyn ar gael yn rhwydd.

Mae lefelau diogelwch uchel aml yn golygu bod y safle yn anhygyrch ar fyr rybudd. Cyfyngedig yw'r mynediad at ystafell ddosbarth a chyfleusterau llesiant ac yn aml mae'n rhaid eu defnyddio ar y cyd â Gorsaf Dân Glannau Dyfrdwy fel lleoliad lle gall yr ystafell ddosbarth a'r cyfleusterau llesiant gael eu darparu.

Gydag ymdrech tuag at reoli halogyddion, mae gweithredu ar draws dau safle yn peryglu cludo personél a chyfarpar mewn cyflwr wedi'u halogi, nid yw hyn yn cyd-fynd ag uchelgais y Gwasanaeth na'r Sector ar gyfer gweithlu iach a ffit. Bu ymchwil academiaidd sylweddol sy'n canmol buddion 'cawod o fewn awr' i ostwng risg o halogyddion i iechyd diffoddwyr tân a datblygiad salwch a chlefydau megis canser.

Mae cynnal a chadw hefyd yn anodd gan fod y safle yn amodol ar gyfyngiadau "diogelwch maes awyr" sy'n cyfyngu ar fynediad ar gyfer personél cynnal a chadw. Rhaid rhannu'r defnydd hefyd gydag Airbus sy'n cyfyngu ymhellach ar y dyddiau y gellir ei ddefnyddio.

Cafodd y cynwysyddion sy'n rhan o'r cyfleuster hwn eu hadnewyddu yn 2022 gan GTAGC, gyda rhychwant oes ddisgwyliedig o rhwng 5 a 8 mlynedd.

Nid oes unrhyw waith wedi'i gynllunio ar y safle hwn, yn yr opsiwn hwn ac eithrio amnewid y cynwysyddion yn gylchol wrth iddynt dreulio.

Yn gyffredinol:

Nid oes gan GTAGC yn gyffredinol fynediad at ganolfan gynadledda ar gyfer cynulliadau mawr, megis paredau cwblhau hyfforddiant, Cyfarfodydd Awdurdod ayyb, gyda chynulliadau mawr o'r fath yn cael eu cynnal ar hyn o bryd ym Mae Peiriannau y Rhyl, gan ddefnyddio cadeiriau a chyfarpar AV wedi'u llogi neu leoliadau allanol.

Cynhelir hyfforddiant sylfaenol recriwtiaid ar hyn o bryd ar safleoedd lluosog a'i "ffitio" o amgylch hyfforddiant gwasanaeth, gyda hyfforddiant recriwtiaid "Ar Alwad" yn cael ei gynnal ar benwythnosau yn bennaf. Argraff gyntaf y rhan fwyaf o recriwtiaid diffoddwyr tân o GTAGC yw'r iard ymarferiad yn y Rhyl a'r Tŷ Tân yn Nolgellau, ac nid yw'r naill na'r llall yn darlunio delwedd briodol nac yn gosod safonau priodol.



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Yn gyffredinol mae storfa offer a chyfleusterau hyfforddwyr o ansawdd gwael neu nid ydynt yn bodoli, felly mae offer yn cael eu cludo o amgylch safleoedd, fel sy'n ofynnol ar gyfer ymarfer. Mae hyn yn arwain at ddifrod i offer a defnydd annigonol o'r offer ac adnoddau staff.

Nid oes gan y tîm ffitrwydd unrhyw brif leoliad ar hyn o bryd ac maen nhw'n symudol, mae hyn yn golygu nad oes unrhyw un safle cyson diffiniedig lle gellir darparu cefnogaeth iechyd, ffitrwydd a llesiant i staff sy'n gwella o salwch neu anafiadau.

Yn gyffredinol, ar draws y gwasanaeth nid yw'r cyfleusterau yn gymhleth, yn realistig nac yn trochi, ac nid ydynt chwaith yn cynnig hyblygrwydd i amrywio'r senario hyfforddi, gan olygu bod diffoddwyr tân uwch yn dod yn "gyfarwydd" â'r senarios hyfforddi. Cyfyngedig iawn yw'r cyfle hefyd ar gyfer ymarferion pymplau lluosog neu aml-asiantaethol.

Oherwydd lledaeniad y cyfleusterau hyfforddi a'r orddibyniaeth ar hyfforddiant gallu yn yr orsaf, mae'n aml yn anghyson sy'n annerbyniol ar gyfer rôl allweddol i ddiogelwch.

Wrth edrych ar y portffolio eiddo, dylid nodi hefyd nad yw'r opsiwn hwn yn cyfoethogi cymwysterau carbon isel unrhyw ran o'r ystâd ac eithrio sicrhau cydymffurfiaeth statudol â deddfwriaeth gyfredol.

Risgiau gweddilliol allweddol o weithredu Opsiwn 1:

Rychwant Oes Byr: Mae gan safle hyfforddi Dolgellau a Safle Airbus rychwant oes cyfyngedig o tua 5 mlynedd cyn y byddant angen buddsoddiad mawr a'u hamnewid.

Cyfyngiadau Caniatâd Cynllunio: Dylid nodi hefyd ei bod hi'n anhebygol y byddai'r strwythurau sydd eu hangen ar gyfer rhai gwelliannau, megis dyfeisiau glanhau mwg, yn derbyn caniatâd cynllunio yn safle Dolgellau. Byddai'r cyfyngiad hwn yn llesteirio ar weithredu gwelliannau arfaethedig i sicrhau cydymffurfiaeth statudol.

Effaith Amgylcheddol: Mae safle hyfforddi Dolgellau yn cynnig risgiau amgylcheddol sylweddol oherwydd ei faterion llifogydd a llygredd posibl o fwg a halogyddion o fewn Parc Cenedlaethol Eryri. Mae gweithrediad parhaus y cyfleuster hwn yn debygol o olygu bod GTAGC yn agored i risg o erlyniad a/neu gamau gorfodi a allai arwain at gau'r cyfleuster ar fyr rybudd. Mae risg hefyd o halogi afon os bydd dŵr llifogydd yn cymysgu â halogyddion safle. Gallai hyn arwain at faterion rheoleiddio a chysylltiadau cyhoeddus.



Annigonolrwydd Seilwaith: Mae gan yr holl gyfleusterau presennol gyfleusterau diheintio, llesiant, a ffitrwydd gwael, a all effeithio ar lesiant personél. Mae diffyg moderneiddio ac adnewyddu llety dros nos ac amwynderau eraill yn cynnig risgiau o ran cysur a diogelwch.

Aflonyddwch Gweithredol: Gall presenoldeb cyfleusterau hyfforddi o fewn gorsafoedd tân dorri ar draws gweithrediadau o ddydd i ddydd, gan gynnwys storio injan dân, rheoli offer a gweithgareddau'r orsaf. Gall rhannu cyfleusterau gyda gorsafoedd arwain at aneffeithlonrwydd a pheryglon posibl.

Hygyrchedd a Chyfyngiadau Defnydd: Mae gan safleoedd fel Wrecsam a Glannau Dyfrdwy gyfyngiadau ar ddefnydd oherwydd cyfyngiadau cynllunio neu agosrwydd tai lleol. Mae cyfyngiadau o'r fath yn llesteirio hyblygrwydd a defnydd o'r safleoedd hyn ar gyfer hyfforddiant.

Amodau Hyfforddi Annigonol: Nid yw cyfleusterau hyfforddi presennol yn cynnig senarios realistig a throchi, gan gyfyngu ar ansawdd yr hyfforddiant. Mae'r diffyg lle ar gyfer ymarferion cymhleth, hyfforddiant aml-asiantaethol, a senarios uwch yn rhwystro datblygu sgiliau a pharodrwydd diffodd tân.

Cymwysterau Carbon Isel: Nid yw cynnal cyfleusterau presennol heb welliannau yn cyd-fynd â nodau carbon isel, ac nid yw'r opsiwn hwn yn cyfrannu at wella ôl-troed amgylcheddol yr ystâd. Mae gofyniad statudol i gyflawni sero net erbyn 2030 y bydd yr opsiwn hwn yn methu â'i gyflenwi.

Datrysiadau Byr Dymor Costus: Mae estyniad oes byr dymor i gyfleusterau presennol yn gostus, gan ystyried yr angen am fuddsoddiadau mawr o fewn y ddegawd nesaf i gynnal cyfleusterau annigonol. Efallai na fydd y baich ariannol hwn yn gynaliadwy.

Diogelwch a Hygyrchedd: Gall safleoedd a rennir gydag endidau allanol fel Airbus ddod yn anhygyrch oherwydd mesurau diogelwch uchel, sy'n effeithio ar amserlenni hyfforddi ac ymdrechion cynnal a chadw.

Diffyg Storfa Offer Digonol: Mae diffyg cyfleusterau storio offer priodol yn arwain at gludo aneffeithlon, difrod i offer, a chyfaddawdu wrth reoli adnoddau.

Cyfleusterau Amrywiaeth a Chynhwysiant Annigonol: Mae cydymffurfio ag EDI yn bryder, heb fawr o wahaniaethu rhwng cyfleusterau ac absenoldeb ystafelloedd ffydd a thawel mewn sawl safle.



Defnydd Parhaus o Safle Airbus: Mae'r safle hwn ar gael gan Airbus ar brydles gyfyngedig ac mae deiliadaeth barhaus yn dibynnu ar ba un a yw Airbus angen y safle ar gyfer eu gweithrediadau sy'n esblygu'n barhaus. Mae risg uchel na fydd y safle hwn ar gael at ddefnydd GTAGC ar fyr rybudd.

Yn gyffredinol, mae cynnal cyfleusterau presennol heb welliannau sylweddol yn cynnig risgiau amgylcheddol, gweithredol, a seilwaith, gan effeithio ar ansawdd yr hyfforddiant a llesiant y personél.

2.2 Opsiwn 2: Buddsoddi yn y cyfleusterau presennol a datblygu i'r graddau y mae'r safleoedd yn caniatáu.

Cysyniad yr opsiwn hwn yw bod yr holl gyfleusterau yn derbyn buddsoddiad mawr i sicrhau o leiaf 25 mlynedd o oes iddynt ac i fynd i'r afael â'r diffygion a nodir uchod yn Opsiwn 1, i'r graddau y mae cyfyngiadau safle yn caniatáu.

Gan amlaf bydd hyn yn caniatáu gwella'r cyfleusterau a ddarperir ond ni fydd yn mynd i'r afael â diffygion a nodwyd yn y safle ehangach.

Dolgellau:

Ar y safle hwn, bydd yr opsiwn hwn yn darparu'r canlynol:

- a. Adnewyddu'r tŷ tân yn llawn
- b. Gosod glanhawr mwg yn y tŷ tân
- c. Adnewyddu'r maes parcio a gosod system ddraenio newydd
- d. Amnewid yr adeilad golchi dros dro presennol gyda chyfleuster parhaol addas a chreu cyfleuster storio ychwanegol.
- e. Adnewyddu'r orsaf dân bresennol a'r cyfleusterau llety, ac ychwanegu llawr ychwanegol i'r adeilad cyfan i ddarparu ystafelloedd dosbarth ayyb.

Dylid nodi ei bod hi'n anhebygol y bydd Eitemau b, d ac e yn cael caniatâd cynllunio, a adlewyrchir yn y Sgorau Ansoddol yn Adran 2.5.

Byddai'r safle hefyd yn gofyn am brynu tir ychwanegol i hwyluso'r ailddatblygiad a gynigir yn yr opsiwn hwn. Mae natur a defnydd tir yr ardal sy'n amgylchynu yn golygu y byddai'r tir hwn yn anhebygol o fod ar gael.



Y Rhyl:

Ar y safle hwn, bydd yr opsiwn hwn yn darparu'r isod:

- a. Adnewyddu'r tŷ mwg a'r iard hyfforddi yn llawn.
- b. Adeiladu cyfleusterau glochi i'w defnyddio gan yr hyfforddwyr a'r myfyrwyr.
- c. Adeiladu storfa fach a chyfleuster gwasanaethu offer anadlu.
- d. Adnewyddu mannau hyfforddi presennol yn yr orsaf dân a'r adeiladau eraill ar y safle.

Wrecsam:

Ar y safle hwn, bydd yr opsiwn hwn yn darparu'r canlynol:

- a. Gwaith adnewyddu lefel ganolig i'r tŷ tân i fynd i'r afael â rhai o'r diffygion.
- b. Adeiladu cyfleusterau golchi i'w defnyddio gan hyfforddwyr a myfyrwyr, gan gynnwys darparu ystafell ddosbarth.
- c. Adeiladu cyfleuster storio bach.

Glannau Dyfrdwy:

Ar y safle hwn, dim ond gwaith adnewyddu ysgafn a fydd yn cael ei wneud i'r tŷ tân gan nad oes digon o le ar y safle i ddarparu unrhyw gyfleusterau uwch pellach.

Airbus:

Ni fydd unwaith waith yn cael ei gynnal ar y safle hwn fel rhan o'r opsiwn hwn, ac eithrio amnewid cylchol o'r cynwysyddion ar raglen amnewid bob 8 mlynedd.

Yn gyffredinol:

Byddai'r buddsoddiad hwn yn methu â mynd i'r afael â rhai materion sylweddol megis diffyg lle parcio ar y safleoedd, llifogydd rheolaidd yn Nolgellau, methu creu cyfleuster hyfforddi canolig i uchel iawn, anallu i ddefnyddio ewyn hyfforddi, unrhyw welliannau yn y cymwysterau carbon isel, mynd i'r afael â'r gallu i gynnal ymarferion aml-asiantaethol neu bympiau lluosog mawr a darparu canolfan gynadledda. Er y bydd yn gwneud darpariaeth i gyfoethogi cymwysterau EDI mewn modd cyfyngedig, dim ond gwella'r sefyllfa bresennol fydd hyn, a ni fydd yn creu safon gyfoes i gydymffurfio ag EDI.

Er y bydd yr opsiwn hwn yn creu cyfleuster storio gwell ym mhob safle, ni fydd yn dileu'r angen i gludo offer hyfforddi rhwng canolfannau.



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Bydd yr opsiwn hwn hefyd yn methu â mynd i'r afael â materion lleoliadau canolfan hyfforddi ar wasgar ac aneffeithlonrwydd hyn. Ynghyd â methu mynd i'r afael yn ddigonol ag ymyrraeth yn nefnydd y cyfleusterau hyn gan griwiau gorsaf.

Fel y nodwyd yn gynharach, oherwydd yr angen am ardal tir ychwanegol a'r anawsterau tebygol o sicrhau caniatâd cynllunio ar gyfer y cynigion hyn o fewn y parc cenedlaethol, nid yw hwn yn opsiwn ymarferol.

Risgiau gweddilliol allweddol o weithredu Opsiwn 2:

Cyfyngiadau Caniatâd Cynllunio: Fel y crybwyllwyd, mae'n anhebygol y bydd y strwythurau sy'n ofynnol ar gyfer rhai gwelliannau, megis dyfeisiau glanhau mwg a lloriau ychwanegol ar gyfer ystafelloedd dosbarth, yn derbyn caniatâd cynllunio yn safle Dolgellau. Byddai'r cyfyngiad hwn yn llesteirio ar weithredu'r gwelliannau arfaethedig.

Cyfyngiadau Safle Ehangach: Mae'r opsiwn yn canolbwyntio ar adnewyddu strwythurau presennol ond nid yw'n mynd i'r afael â'r diffygion a nodwyd yn y safleoedd ehangach. Mae materion megis parcio ceir, llifogydd rheolaidd yn Nolgellau, a chreu cyfleusterau hyfforddi uchel iawn yn parhau heb eu bodloni, gan gynnig risgiau gweithredol ac amgylcheddol.

Cyfleuster Hyfforddi Canolig ac Uchel iawn: Mae'r anallu i greu cyfleuster hyfforddi canolig i uchel iawn yn gyfyngiad sylweddol, gan ei fod yn cyfyngu ar gyfleoedd hyfforddi ar gyfer senarios sy'n cynnwys adeiladau tal, sy'n gyffredin i ddiffodd tân trefol. Er nad oes gan GTAGC nifer sylweddol o adeiladau uchel iawn o fewn ei ffiniau daearyddol mae llawer o adeiladau canolig yn ein trefi arfordirol, megis gwestai, tai lletya ac eiddo amlfeddiannaeth.

Defnydd Ewyn Hyfforddi: Nid yw'r opsiwn yn caniatáu ar gyfer defnyddio ewyn hyfforddi, sy'n cyfyngu ar realaeth hyfforddi a pharodrwydd ar gyfer senarios diffodd tân penodol.

Gwelliannau Carbon Isel: Nid yw'r buddsoddiad hwn yn cyfoethogi'n sylweddol ar gymwysterau carbon isel y cyfleusterau, gan olygu ei fod yn brin o gyrraedd nodau cynaliadwyedd.

Ymarferion Aml-asiantaethol ac Aml-bwmp: Mae gan yr opsiwn hwn ddiffygion o hyd yn narpariaethau ymarferion aml-asiantaethol neu aml-bwmp, gan gyfyngu ar y cwpas ar gyfer hyfforddiant ymateb brys integredig. Heb gydweithredu a chydlyniant rhwng gwahanol wasanaethau brys a gyflawnir trwy hyfforddiant aml-asiantaethol, effeithir ar effeithlonrwydd cyfathrebu ac ymateb yn ystod argyfyngau go iawn.



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Canolfan Gynadledda: Mae absenoldeb canolfan gynadledda ar gyfer cynulliadau mawr yn parhau yn fater, gan effeithio o bosibl ar effeithlonrwydd cyfarfodydd a digwyddiadau.

Cydymffurfiaeth EDI Uwch: Er bod rhai datblygiadau i ddarpariaeth EDI wedi'u cynllunio, efallai na fydd yr opsiwn hwn yn creu cyfleusterau sy'n cydymffurfio'n llwyr ag EDI, ac o bosib na fydd yn mynd i'r afael â holl bryderon EDI.

Amnewid Cynhwysydd yn Barhaus: Yn safle Airbus, mae amnewid cynhwysydd yn gylchol yn dal i gynnig heriau cynnal a chadw oherwydd cyfyngiadau diogelwch a defnydd ar y cyd.

Defnydd Parhaus o Safle Airbus: Mae'r safle hwn ar gael gan Airbus ar brydles gyfyngedig ac mae meddiannaeth barhaus yn dibynnu ar Airbus â'u gofynion gweithrediadau ar gyfer y safle sy'n esblygu'n gyson. Mae risg uchel na fydd y safle hwn ar gael at ddefnydd GTAGC ar fyr rybudd.

Er gwaethaf buddsoddiad, gallai fod diffygion gweddilliol o hyd yn y cyfleusterau, gan effeithio o bosibl ar ansawdd yr hyfforddiant, diogelwch, a'r gallu i fodloni safonau hyfforddi modern.

Yn gryno, er bod yr opsiwn "Buddsoddi yn y Cyfleusterau Presennol" yn cynnig uwchraddiadau angenrheidiol, mae'n gadael nifer o risgiau gweddilliol a materion heb eu bodloni a allai effeithio ar effeithlonrwydd, diogelwch, a chynaliadwyedd y cyfleusterau hyfforddi.



2.3 Opsiwn 3: Datblygu Canolfan Hyfforddi newydd i fodloni Anghenion Hyfforddi Craidd

Amlinella'r cynnig hwn ganolfan hyfforddi canolog, gwasanaeth cyfan newydd ar ran o safle sy'n cael ei gaffael ym Marc Busnes Llanelwy.

Bwriad y ganolfan hyfforddi arfaethedig yw creu cyfleusterau hyfforddi trochi a realistig a cheir ei manylion yn y cynllun ynghlwm yn Atodiad B. Bydd yn darparu cyfleusterau hyfforddi digonol i fodloni gofynion hyfforddi craidd GTAGC.

Mae hyn yn cynnwys darparu:

- Hwb Hyfforddi - yn cynnwys ystafelloedd dosbarth, Canolfan Hyfforddi Penaethiaid Digwyddiadau, Swyddfeydd Hyfforddwyr ac Ardal Luniaeth. Mae'r adeilad yn aml-ddefnydd ac yn hyblyg i ganiatáu i'r ystafelloedd dosbarth ac ardal luniaeth gael eu cyfuno mewn amryw gyfuniadau i ddarparu ar gyfer digwyddiadau a chyfarfodydd mwy.
- Ysgol Offer Anadlu - Ysgol Hyfforddi Offer Anadlu, yn cynnwys ystafelloedd dosbarth arbenigol, ystafelloedd cawod rhywedd-niwtral a chyfleusterau dihalogi llawn, storfa propiau daear tân, storfa cit, Ystafelloedd Dosbarth Hyfforddi Gwrthdrawiad ar y Ffordd a chyfleusterau torri ceir dan do.
- Darn o ffordd ddeuol ar gyfer Hyfforddiant Gwrthdrawiad ar y Ffordd
- Iard Ymarferiad - gyda lle digonol ar gyfer dau brawf blîp, profion gwledig, profi ffitrwydd recriwtiaid, dau dŵr ymarferiad, pwll dŵr lifft dwfn.
- Hyfforddiant Offer Anadlu - Tŷ Tân Mwg Oer ar gyfer Hyfforddiant Offer Anadlu cychwynnol
- Garej Peiriannau ar gyfer pedwar peiriant hyfforddi



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- Rhos o ddau dŷ teras wedi'i chyfarparu â Phropiau Hyfforddi LPG megis tân ffenestr, tân llain ymyl ffordd, fflachiad, teledu wedi gorboethi a sythwyr gwallt wedi gorboethi. Bydd yr adeilad hefyd yn caniatáu ar gyfer hyfforddiant ysgol do ac wedi'i gyfarparu â phaneli PV wedi'u hefelychu.
- Tŷ tân carbonaidd pum llawr, yn cynnwys gwahanol fathau o adeiladau, megis croglofft, fflatiau un ystafell myfyrwyr, ystafelloedd gwesty, tŷ ffug, llawr fel sbwng a gofod cyfyngedig. Bydd yr adeilad wedi'i gyfarparu i efelychu diffodd tân mewn adeiladu canolig i uchel iawn a bydd wedi'i gyfarparu â chyfarpar monitro tymheredd, set pwmp taenellwr, gwacáu mwg mewn argyfwng a systemau larwm.
- Cynwysyddion CFBT - bydd y rhain yn cynnwys ymosodiad, arddangosiad a chynwysyddion tân ffenestr, y cyfan wedi'i leoli o dan "cwfl mwg" a fydd yn cael ei ddefnyddio i gasglu mwg a'i sianelu i lanhawr mwg.
- Ewyn Diffodd Tân - Disgwylir i'r safle fod ar gael i gefnogi defnyddio Ewyn Hyfforddi neu Ddiffodd Tân, er ni ellir cadarnhau hyn hyd at gwblhau cam nesaf y broses ddylunio a bydd yn gofyn am ymgysylltiad pellach â Dŵr Cymru i gadarnhau.

Gyda senarios a phropiau hyfforddi amrywiol, mae'r opsiwn hwn yn cynnig profiadau hyfforddi hynod realistig a throchi. Mae'r realaeth hwn yn helpu'r personél i ddatblygu'r sgiliau, y galluoedd gwneud penderfyniadau, a'r hyder sy'n angenrheidiol i ddelio â sefyllfaoedd cymhleth dan straen mawr yn effeithiol.

Mae gan yr opsiwn hwn ddarpariaeth uchel ar gyfer hyfforddiant aml-berygl, aml-asiantaethol. Mae'n galluogi cydweithio a chydlyniant rhwng gwahanol ymatebwyr mewn lleoliadau realistig. Mae hyfforddiant mewn amgylchedd aml-asiantaethol yn gwella cyfathrebu rhyngasiantaethol ac effeithlonrwydd ymateb yn ystod argyfyngau go iawn.

Yn gyffredinol, bydd y datblygiad hefyd yn cynnwys ardal maes parcio fawr, wedi'i chyfarparu â chyfleusterau gwefru car EV, ardal fawr o baneli PV a fydd yn sicrhau bod y safle yn ddi-garbon a bydd yr Hwb Hyfforddi a'r Ysgol Offer Anadlu yn cyflawni Sgôr Rhagorol BREEAM.



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Bydd yr Hwb Hyfforddi, Adeilad Gwrthdrawiad ar y Ffordd, Ysgol Offer Anadlu a'r Garej Peiriannau wedi'u cyfarparu â thaenellwyr OH1. Bydd y safle hefyd yn elwa o system hydrant tân mewnol, gan sicrhau bod dŵr hyfforddi digonol ar gael bob amser ar y gwasgedd gofynnol.

Dim ond tua 80% o'r safle y bydd y datblygiad arfaethedig yn ei ddefnyddio ac mae wedi'i osod mewn ffordd a fydd yn caniatáu datblygiad pellach i weddill y safle gyda phropiau ychwanegol yn y dyfodol wrth i anghenion hyfforddi'r gwasanaeth esblygu a datblygu. Bydd y safle dros ben yn cael ei adael yn flaenar ar ddiwedd y datblygiad hwn. Bydd rhai agweddau ar yr opsiwn hwn, megis gwanhad draenio a chyflenwadau gwasanaethau yn fwy na'r gofyn i ganiatáu ar gyfer ehangu yn y dyfodol. Bydd hyn yn sicrhau na fydd unrhyw ehangu yn y dyfodol yn gofyn am weithiau adferol drud ac ymwithiol i'r safle datblygedig.

Risgiau gweddilliol allweddol o weithredu Opsiwn 3:

Mae'r opsiwn hwn yn bodloni gofynion hyfforddiant craidd gwasanaeth tân ac achub modern gyda risgiau gweddilliol cyfyngedig.

Defnydd o Ewyn Hyfforddi: Efallai na fydd yr opsiwn yn caniatáu ar gyfer defnyddio ewyn hyfforddi a fyddai'n cyfyngu ar realaeth a pharodrwydd ar gyfer senarios penodol diffodd tân cysylltiedig ag ewyn.

Llai o Senarios Hyfforddi: Bydd ystod y propiau a'r cyfleusterau a ddarperir o dan yr opsiwn hwn yn hwyluso ystod eang o senarios a brofir yn gyffredin. Serch hynny, bydd y safle hefyd yn cynnwys propiau arbenigol i ail-greu senarios llai cyffredin, a fyddai'n cael defnydd bach iawn, megis y rheini y deuir ar eu traws mewn lleoliadau trafndiaeth a diwydiannol arbenigol.



2.4 Opsiwn 4: Datblygu Canolfan Hyfforddi aml-berygl, aml-asiantaethol newydd

Mae hyn i bob pwrpas yn fersiwn mwy o gynigion Opsiwn 3, gan gynnig propiau hyfforddi realistig a throchi, a fyddai'n cynnwys:

- Llwyfan Hyfforddi Diwydiannol - byddai hyn hefyd yn cynnwys y gallu i ddefnyddio ewyn diffodd tân.
- Glan Cei a Llong
- Ardal Hyfforddi Wledig - i gynnwys ffermdy, Tân Tanc LPG, cae mwdlyd, iard fferm, stablau ac ysgubor.
- Cwmp ffos
- Ardal Drefol - a fydd yn cynnwys tai teras, tŷ sengl, eiddo adfeilliedig, bwyty bwyd brys a senario llifogydd trefol, lle bydd hi'n bosibl gorlifo rhan o'r ardal drefol.
- Senario Cludiant - yn cynnwys trac rheilffordd, ceg twnnel, croesfan reilffordd, cerbyd rheilffordd a gorsaf reilffordd.
- Ewyn Diffodd Tân - Bydd y safle yn cefnogi defnyddio Ewyn Hyfforddi neu Ddiffodd Tân.

Bydd y ffyrdd ychwanegol, iardiau a llawr caled cyffredinol yn caniatáu i ymarferion hyfforddi lluosog gael eu lledaenu ar draws y safle heb ymyrryd â'i gilydd. Byddant hefyd yn caniatáu ymarferion hyfforddi aml-beiriant ac ymarferion aml-asiantaethol mwy. Bydd y safle mwy hwn hefyd yn cynnig budd ychwanegol o allu cynnal ymateb aml wasanaeth i ddigwyddiad mawr, megis y rheini sy'n cynnwys nifer fawr o bobl wedi'u hanafu ar rwydweithiau cludiant.

Fel Opsiwn 3, bydd y datblygiad hefyd yn cynnwys maes parcio ceir mawr, wedi'i gyfarparu â chyfleusterau gwefru ceir EV, ardal fawr o baneli PV a fydd yn sicrhau bod y safle yn ddi-garbon a bydd yr Hwb Hyfforddi a'r Ysgol Offer Anadlu yn cyflawni Sgôr Rhagorol BREEAM.



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Bydd yr Hwb Hyfforddi, Ysgol Offer Anadlu a'r Garej Peiriannau wedi'u cyfarparu â thaenellwyr OH1. Bydd y safle hefyd yn elwa o system hydrant tân mewnol, gan sicrhau bod dŵr hyfforddi digonol ar gael bob amser ar y gwasgedd gofynnol.

Risgiau gweddilliol allweddol o weithredu Opsiwn 4:

Nid oes unrhyw risgiau gweddilliol o weithredu Opsiwn 4, mae'r opsiwn hwn yn amlygu ei hun oherwydd ei alluoedd hyfforddi cynhwysfawr, ffocws aml-asiantaethol, realaeth, cynaliadwyedd, ac amlbwrpasedd. Mae'n cynnig y cyfle gorau i baratoi personél ar gyfer ystod eang o senarios brys a gwella cydweithio rhwng asiantaethau.



2.5 Crynodeb o'r Dadansoddiad Ansoddol

Mae'r dadansoddiad ansoddol a grynhoir isod, yn cymharu pob un o'r pedwar opsiwn a ddisgrifir uchod, dros ugain o feini prawf, gyda sgôr yn yr ystod 0 – 5. Dyry hyn gyfanswm sgôr ansoddol ar gyfer pob opsiwn allan o 100, sydd wedyn yn cael ei ddefnyddio i gymharu pob opsiwn yn y dadansoddiad gwerth cost yn ddiweddarach yn yr adroddiad.

Meini Prawf Ansawdd	Opsiwn 1:	Opsiwn 2:	Opsiwn 3:	Opsiwn 4:
Cyfanswm Sgorau:	15	27	93	100
Darparu cyfleusterau LPG	0	0	5	5
Darparu ar gyfer Hyfforddiant Gweithio ar Uchder	1	1	4	5
Defnydd ewyn hyfforddi ar y safle	0	0	2	5
Darparu Cyfleusterau ar gyfer Hyfforddiant Aml-asiantaethol	1	1	4	5
Darparu Hyfforddiant CFBT hygrych	0	0	5	5
Darparu Cyfleusterau Cynadledda	0	0	5	5
Darparu cyfleusterau llesiant a ffitrwydd digonol	1	1	5	5
Cymwysterau Di-garbon	0	1	5	5
Darparu ar gyfer Hyfforddiant Pymplau ac Ysgolion	1	1	5	5
Darparu Hyfforddiant Gwrthdrawiad ar y Ffordd	1	1	4	5
Darparu Hyfforddiant Hazmat a Gofal i'r Rhai wedi'u Hanafu	1	1	4	5
Cyfleu Delwedd a Safonau Priodol yr Awdurdod	0	1	5	5
Darparu cyfleusterau carbonaidd	1	2	5	5
Cydymffurfiaeth EDI	1	2	5	5
Cydymffurfiaeth Halogiad Amgylcheddol	0	2	5	5
Darparu Cyfleusterau Hyfforddiant Offer Anadlu	2	2	5	5



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Darparu Hyfforddiant Digwyddiadau	Penaethiaid	2	2	5	5
Storfa Offer		1	2	5	5
Rheolaeth ddigonol ar fwg carbonaidd		0	3	5	5
Darparu cyfleusterau mwg oer		2	4	5	5
Cyfanswm Sgorau:		15	27	93	100

Mae'r meini prawf ar gyfer y sgorau a ddefnyddir fel a ganlyn:

Sgôr	Meini Prawf
0	Cyfleusterau heb eu darparu
1	Ansawdd gwael y cyfleusterau sy'n cael eu darparu
2	Cyfleusterau ymarferol, cyffredin yn cael eu darparu
3	Cyfleusterau o ansawdd da yn cael eu darparu
4	Cyfleusterau o ansawdd da iawn yn cael eu darparu
5	Cyfleusterau gwych o'r radd flaenaf yn cael eu darparu



3.0 Arfarniad Opsiynau - Dadansoddiad Meintiol

Cyflwyniad:

Mae'r costau cyfalaf ar gyfer Opsiwn 1 wedi'u seilio ar ymgymryd ag atgyweiriadau adferol i'r tai tân / mwg presennol ym mhob un o'r safleoedd i'w dwyn i safon dderbyniol a sicrhau cydymffurfiaeth statudol. Dylid nodi nad yw hyn yn eu dwyn i safonau hyfforddi neu amgylcheddol presennol ond yn syml yn atgyweirio neu'n disodli (ar sail debyg) yr elfennau gwreiddiol.

Mae'r gost / m2 wedi'i addasu i adlewyrchu oed yr eiddo presennol ac wedi'u cymhwyso i'r arwynebeddau llawr sydd wedi'u darparu gan GTAGC.

Mae costau cylch oes ar gyfer Opsiwn 1 yn cynnwys cyfleusterau hyfforddi presennol ynghyd â'r cynwysyddion CFBT yn Airbus a'r adeiladau dros dro yn Nolgellau.

Mae'r costau cyfalaf ar gyfer Opsiwn 2 wedi'u seilio ar ymgymryd â gwaith adnewyddu ar y safleoedd presennol ynghyd â darparu cyfleusterau hyfforddi newydd fel y disgrifir yn Adran 2.2. Mae hyn hefyd yn cynnwys uwchraddio a darparu cyfleusterau golchi addas ym mhob safle. Cyfrifwyd y costau ar sail cost/m2, ar sail y lwfansau arwynebedd llawr safonol ac arwynebedd llawr yr adeilad presennol, fel sy'n gymwys.

Mae costau cylch oes ar gyfer Opsiwn 2 yn cynnwys cyfleusterau hyfforddi wedi'u hadnewyddu ynghyd â'r cyfleusterau a adeiledir o'r newydd a'r cynwysyddion FBT yn Airbus.

Mae'r costau cyfalaf ar gyfer Opsiynau 3 a 4 wedi'u seilio ar ddyluniadau sydd wedi'u cynnwys fel Atodiadau o fewn yr achos busnes hwn. Datblygwyd y costau o ddata meincnod ar gyfer prosiectau o natur debyg wedi'u hymgodi i'r diwrnod presennol.

Ar gyfer pob opsiwn, mae lwfansau canrannol wedi'u gwneud ar gyfer gwaith rhagarweiniol y prif gontractwr, gorbenion ac elw, risg, ffioedd dylunio a chwyddiant.



Lwfansau Risg:

O ystyried natur wahanol pob cynllun a llwybr caffael a rhagwelir, mae lwfansau risg wedi'u hasesu'n unigol ar gyfer pob opsiwn.

Ar gyfer Opsiynau 1 a 2, mae'n debyg mai'r llwybr caffael dewisol fydd dull traddodiadol ac felly bydd mwyafrif o'r risg prosiect yn parhau gyda GTAGC.

Ar gyfer Opsiynau 3 a 4, mae'n debyg mai'r llwybr caffael dewisol fydd dull partneru dylunio ac adeiladu ac felly bydd risgiau'r prosiect yn cael eu rhannu rhwng GTAGC a'r contractwr a benodir. O ganlyniad, mae lwfans ar gyfer risg contractwr wedi'i gynnwys o fewn y gost cyfalaf sydd wedi'i seilio ar 3% o gyfanswm costau'r gwaith. Mae lwfans risg cleientiaid hefyd wedi'i gynnwys ar raddfa o 5% o'r gost gwaith gan gynnwys yr holl ffioedd.

Dylid nodi bod y rhain yn lwfansau risg arferol ar gyfer cynlluniau wedi'u datblygu'n llawn ac nid ydynt yn caniatáu ar gyfer datblygu dyluniad cleient rhwng Cyfnodau 1 i 4 RIBA.

Chwyddiant:

Ar gyfer Opsiynau 1 a 2 mae costau wedi'u cyflwyno ar brisiau heddiw, serch hynny mae'r rhai ar gyfer Opsiynau 3 a 4 yn cynnwys lwfansau chwyddiant i bwynt canol y gwaith adeiladu.

Mae lwfans chwyddiant o 11.2% wedi'i wneud. Mae'r rhagolwg wedi'i seilio ar Ragolwg TPI Popeth BCIS (fel y cyhoeddwyd ym mis Medi 2024) o Ch3 2024 (Mynegai 394) i Ch3 2027 (Mynegai Rhagamcanol 438).

3.1 Opsiwn 1: Cynnal Cyfleusterau Presennol ar Sail Gofal a Chynnal a Chadw gan gynnwys cydymffurfiaeth barhaus â gofynion statudol

Amlinellir y cyfrifiad cyllideb manwl ar gyfer yr opsiwn hwn yn Atodiad A - Opsiwn 1, ynghyd â rhagolwg llif arian, yn ôl blwyddyn ariannol, ar gyfer elfen gyfalaf y gwaith. Yn yr achos hwn, gan mai opsiwn gofal a chynnal a chadw yn unig ydyw, dim ond gwariant cyfalaf cychwynnol bach sydd ei angen i fynd i'r afael ag ôl-groniad o waith cynnal a chadw.

Felly cyfanswm y costau ar gyfer yr opsiwn hwn yw costau cylch oes yn unig. Yn yr opsiwn hwn, i sicrhau cymhariaeth debyg at ei debyg â'r opsiynau sy'n weddill, cyfrifir y cylch oes dros gyfnod o saith mlynedd ar hugain. (Yr opsiynau eraill yw gwaith adeiladu cyfalaf dwy flynedd o hyd ac yna cyfnod gweithredol o 25 mlynedd).



Cyfanswm y costau oes gyfan felly yw £10.250m.

3.2 Opsiwn 2: Buddsoddi yn y cyfleusterau presennol a'u datblygu i'r graddau y bydd y safleoedd yn caniatáu.

Amlinellir y cyfrifiad cyllideb manwl ar gyfer yr opsiwn hwn yn Atodiad A - Opsiwn 2, ynghyd â rhagolwg llif arian, yn ôl blwyddyn ariannol, ar gyfer elfen gyfalaf y gwaith.

Cyfanswm costau ar gyfer yr opsiwn hwn yw gwariant cyfalaf cychwynnol o £17.977m gyda chost cylch oes o £3.504m dros y cyfnod gweithredol o bum mlynedd ar hugain a ganlyn.

Felly cyfanswm y costau oes gyfan yw £21.481m.

3.3 Opsiwn 3: Datblygu Canolfan Hyfforddi newydd i fodloni Anghenion Hyfforddi Craidd

Amlinellir y cyfrifiad cyllideb manwl ar gyfer yr opsiwn hwn yn Atodiad A - Opsiwn 3, ynghyd â rhagolwg llif arian, yn ôl blwyddyn ariannol, ar gyfer elfen gyfalaf y gwaith.

Yn ychwanegol, mae'r opsiwn hwn yn gofyn am brynu safle newydd. Nid yw costau prynu tir yn cael eu hystyried yn yr arfarniad hwn gan fod y safle wedi'i brynu'n ddiweddar gan yr Awdurdod.

Cyfanswm y costau ar gyfer yr opsiwn hwn yw gwariant cyfalaf cychwynnol o £37.417m gyda chost cylch oes o £3.820m dros y cyfnod gweithredol o bum mlynedd ar hugain a ganlyn.

Gan hynny y costau oes gyfan yw £41.237m.

Mae gan yr opsiwn hwn hefyd fudd ychwanegol o ran y bydd yn caniatáu adleoli llety swyddfa, felly'n caniatáu terfynu'r brydles ar Uned 8B, gan arbed £100.3 mil y flwyddyn i'r Awdurdod mewn costau refeniw (ar sail gwariant presennol). Byddai'r arbediad refeniw hwn gyfwerth â chyfanswm o £2.51m dros 25 mlynedd.

3.4 Opsiwn 4: Datblygu Canolfan Hyfforddi aml-berygl, aml-asiantaethol newydd

Amlinellir y cyfrifiad cyllideb manwl ar gyfer yr opsiwn hwn yn Atodiad A - Opsiwn 4, ynghyd â rhagolwg llif arian, yn ôl blwyddyn ariannol, ar gyfer elfen gyfalaf y gwaith.



Yn ychwanegol, mae'r opsiwn hwn yn gofyn am brynu safle newydd. Nid yw'r costau prynu tir wedi'u hystyried yn yr arfarniad hwn gan fod y safle wedi'i brynu'n ddiweddar gan yr Awdurdod.

Cyfanswm costau'r opsiwn hwn yw gwariant cyfalaf cychwynnol o £46.719m gyda chost cylch oes o £4.033m dros gyfnod gweithredol o bum mlynedd ar hugain a ganlyn.

Y costau oes gyfan felly yw £50.752m.

Mae gan yr opsiwn hwn hefyd fudd ychwanegol o ran y bydd yn caniatáu adleoli llety swyddfa, felly'n caniatáu terfynu'r brydles ar Uned 8B, gan arbed £62.4 mil y flwyddyn i'r Awdurdod mewn costau rhent. Byddai'r arbediad refeniw hwn gyfwerth â chyfanswm o £1.56m dros 25 mlynedd.

3.5 Crynodeb o'r Dadansoddiad Meintiol

Dyry'r tabl crynodeb isod fanylion cyfanswm costau oes gyfan pob Opsiwn dros gyfnod arferol o bum mlynedd ar hugain.

Opsiwn	Cost Cyfalaf	Cylch Oes (25 mlynedd)	Cost Oes Gyfan
Opsiwn 1: Gofal a Chynnal a Chadw	£ 5,530,000	£ 4,720,000	£ 10,250,000
Opsiwn 2: Buddsoddi yn y Presennol	£ 17,977,000	£ 3,504,000	£ 21,481,000
Opsiwn 3: Hyfforddiant Craidd	£ 37,417,000	£ 3,820,000	£ 41,237,000
Opsiwn 4: Safle Cyfan	£ 46,719,000	£ 4,033,000	£ 50,752,000



4.0 Cysoni Gwerth Cost ac Argymhelliad

4.1 Yn yr adran hon ceir manylion yn y tabl isod am gysoni cost / gwerth pob opsiwn a daw i gasgliad pa un sy'n cynnig y "Gwerth am Arian" gorau.

Y fethodoleg yn syml yw rhannu'r gost oes gyfan gan sgôr ansoddol sy'n rhoi "cost fesul pwynt ansawdd". Y gost isaf fesul pwynt sy'n darparu'r "Gwerth am Arian" gorau ar gyfer y buddsoddiad a wneir.

Dylid nodi nad yw hyn yn gyfrifiad o fforddiadwyedd.

Opsiwn	Cost Oes Gyfan	Sgôr Ansoddol	Sgôr Cost / Gwerth
Opsiwn 1: Gofal a Chynnal a Chadw	£ 10.250m	15	0.68
Opsiwn 2: Buddsoddi yn y Presennol	£ 21.481m	27	0.79
Opsiwn 3: Hyfforddiant Craidd	£ 41.237m	93	0.44
Opsiwn 4: Safle Cyfan	£ 50.752m	100	0.51

4.2 Dadansoddiad ac Ystyried Risg

Cyflawnir y sgôr cost / gwerth isaf o 0.44 gan Opsiwn 3, sy'n cadarnhau bod yr opsiwn hwn yn rhoi'r gwerth ansoddol mwyaf fesul punt a warir i GTAGC ac felly'n cynrychioli'r "gwerth am arian" gorau.

Cyflawnir y sgorau cost / gwerth uchaf gan Opsiynau 1 a 2, sy'n cadarnhau mai'r opsiynau hyn sy'n rhoi'r gwerth ansoddol lleiaf fesul punt a warir i GTAGC ac felly'n cynrychioli'r "gwerth am arian" lleiaf.

Fel y nodir yn flaenorol yn Adrannau 2 a 3, mae'r opsiynau hyn, y mae'r ddau yn defnyddio eiddo presennol sy'n cynnwys rhwystrau sylweddol i gyflenwi sy'n gofyn am brynu tir ychwanegol, lle nad oes tir ar gael a chymeradwyaethau cynllunio heriol sy'n anhebygol o fod yn llwyddiannus. Ac felly mae risg uchel iawn na fydd modd cyflwyno'r naill opsiwn na'r llall ac



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felly byddai GTAGC yn cael eu gadael â chyfleusterau hyfforddi is na'r safon ac nad ydynt yn cydymffurfio'n gyfreithiol y tu hwnt i 2030.

Mae Opsiynau 1 a 2 hefyd yn dal i gynnwys diffygion yn y cyfleusterau hyfforddi y maen nhw'n eu cynnig, o'u cymharu ag Opsiwn 3, a allai hefyd arwain at ehangu bwch sgiliau diffoddwyr tân wrth i dechnegau hyfforddi newydd gael eu cyflwyno a risgiau newydd ymddangos.

Opsiwn 4 sy'n cynnig yr ail werth am arian gorau, serch hynny, daw hyn ar gost cyfalaf sylweddol ychwanegol i opsiwn 3, gan hynny nid yw'n cael ei argymhell ar gyfer datblygiad pellach.

Argymhellir felly bwrw ymlaen ag Opsiwn 3, ac mae Adran 5 dilynol yr achos busnes hwn yn canolbwyntio ar gyflenwi'r opsiwn hwn yn unig.



5.0 Dadansoddiad o'r Opsiwn a Ddewiswyd

5.1 Gwerthuso'r Safle

Mae'r tîm ymgynghori sy'n cynnwys IKG Consulting Limited, Owen Devonport a Perfect Circle (consortiwm o ymgynghorwyr y mae BGH (Penseiri), Harley Haddow (Gwasanaethau Adeiladu a Charbon Isel a Gleeds (Mesur Meintiau)), ynghyd â swyddogion o GTAGC, wedi ymgymryd â diwydrwydd dyladwy ar y tir a brynwyd a'i addasrwydd ar gyfer gweithredu Opsiwn 3.

Mae'r diwydrwydd dyladwy wedi cynnwys ymgymryd â nifer o arolygon a pharatoi dyluniadau amlinellol ar gyfer yr elfennau adeiladu mawr. Mae hyn er mwyn hysbysu'r modelau cost ac i gadarnhau nad oes unrhyw rwystrau mawr i atal datblygu'r defnydd dan sylw.

Gweithiau Dylunio:

Mae'r allbynnau o'r gwaith dylunio ynghlwm wrth yr achos busnes hwn fel Atodiadau B - J.

Daw'r gwaith dylunio hwn i'r casgliad y bydd Opsiwn 3 arfaethedig yn:

- Ffitio ar y safle
- Gallu cael ei adeiladu i safon Ddi-garbon ar gyfer ynni a reoleiddir
- Gallu cael ei ddraenio, ei wasanaethu a'i gyrchu yn ddigonol
- Gallu cael ei adeiladu ar gost resymol o ystyried amodau'r tir a nodwyd

Arolygon ac Adroddiadau:

Arolwg Topograffig a Chyfleustodau - Mae'r arolwg hwn wedi adnabod prif bibell nwy gwasgedd uchel gyda hawddfaint sylweddol ar hyd ffin y safle â'r briffordd gydag ail brif bibell nwy gwasgedd canolig i ffin ogleddol y safle. Mae effaith y canfyddiadau hyn ar y dyluniad presennol wedi bod yn fach ac mae'r ddau wedi'u cynnwys yn y cynllun Opsiwn 3 a gyflwynir.

Mae'r Arolwg Topograffig hefyd wedi adnabod llethr safle ac er ei fod yn fwy na'r disgwyl yn wreiddiol fe ellir ei ddatblygu. Mae'r cynllun Opsiwn 3 a'r gyllideb sydd wedi'u cynnwys yn yr achos busnes hwn yn caniatáu ar gyfer y waliau cynnal angenrheidiol a symud daear sy'n ofynnol o ganlyniad i hyn.



Gwaith Ymchwilio Safle - Mae ymchwilio'r safle wedi adnabod tir da ar y cyfan gydag ychydig iawn o halogiad. Mae dwy ardal fach o bryder ar y safle o ran halogiad a thir meddal, ond mae'r rhain yn ymddangos yn unigryw ar hyn o bryd. Mae lwfansau wedi'u cynnwys i fynd i'r afael â'r materion hysbys.

Mae'r dŵr daear hefyd wedi'i brofi ar gyfer halogiad a dyfnder, nid oes unrhyw bryderon wedi'u hadnabod o ran y naill neu'r llall.

Dylid nodi cyn y bydd caniatâd cynllunio yn cael ei roi y bydd angen profion halogiad pellach a manylach. Hefyd, nid yw'r gwaith sydd wedi'i wneud hyd yma yn cynnwys torri trwy lorïau caled ac mae risg sylweddol y bydd tir gwael a halogiad wedi'u lleoli lle nad oes profi wedi'i gynnal hyd yma. Mae'n risg normal ar y pwynt hwn mewn datblygiad ac mae symiau cronfa frys wedi'u cynnwys yng nghostau'r gyllideb i'w rhoi yn erbyn yr eitem hon os bydd angen.

Arolwg Ecoleg - Mae'r Ecolegydd wedi adnabod, yn ôl y disgwyl, bod y safle yn cynnwys poblogaeth madfall ddŵr sylweddol. Bydd angen rheoli hyn, serch hynny mae'r gwaith sy'n ofynnol bellach wedi'i feintio a chyllideb wedi'i chynnwys yn y cynlluniau cost. Mae'r cyfyngiadau amser hefyd wedi'u cynnwys yn y rhaglen. Mae'r rhaglen yn tybio ar hyn o bryd y bydd ffensio a dal madfallod yn digwydd yn ystod cyfnod Chwefror 2025 - Mehefin 2025, serch hynny mae hyn yn dibynnu ar dywydd a thymheredd. Pe na bai'n bosibl cwblhau hyn erbyn mis Medi 2025, yna byddai'r gwaith hwn yn cael ei oedi hyd at y flwyddyn ganlynol, gan mai dim ond mewn tymhorau penodol y gellir ei wneud.

Arolwg Coedyddiaeth - Ni wnaeth yr arolwg hwn adnabod unrhyw bryderon.

Asesiad Canlyniadau Llifogydd - Ni wnaeth yr asesiad hwn adnabod unrhyw bryderon ac nid yw'r safle wedi'i leoli mewn ardal sy'n agored i lifogydd.

Cynllunio

Mae Atodiad O yn cynnwys Adroddiad Prawf Dilyniannol ac Adroddiad Marchnata ar hyfywedd y datblygiad hwn o safbwynt cynllunio.

Mae'r prosiect wedi'i drafod gyda swyddogion o'r awdurdod cynllunio. Mae'r awdurdod cynllunio wedi cynnwys sylwadau â rhybudd er bod cymeradwyo'r datblygiad yn amodol ar



sawl agwedd manwl nad ydynt wedi'u datblygu na'u cyflwyno hyd yma, byddai'r egwyddor o ddefnyddio'r tir at y defnydd hwn yn cael ei gefnogi, yn amodol ar dderbyn prawf dilyniannol drafft a'r adroddiadau marchnata a ddarperir yn ffurfiol.

Mae ymgynghoriad gyda'r Awdurdod Gweithredol Iechyd a Diogelwch hefyd wedi datgelu bodolaeth dwy ardal "dim adeiladu" posibl ar y safle. Un yw'r brif bibell nwy gwasgedd uchel y disgrifir uchod nad ydym yn cynnig ei datblygu. Mae'r ail ardal yn ymddangos o fewn cwrmpas pwynt ar y safle a fyddai'n ymddangos yn lleoliad hanesyddol y ffwrnes chwyth gwaith gwydr. Mae'r Awdurdod Gweithredol Iechyd a Diogelwch wedi cynghori y byddant yn tynnu eu canllawiau "dim adeiladu" pan fyddan nhw'n cael eu hysbysu gan yr awdurdod cynllunio nad yw'r perygl bellach yn bodoli. Mae'r awdurdod cynllunio wedi nodi y byddant yn gwneud hyn ar ôl derbyn cais cynllunio ffurfiol.

Yn gryno, er bod yr ymchwiliadau wedi adnabod rhai materion sydd angen eu rheoli, mae'r broses ar gyfer gwneud hyn wedi'i hadnabod, ei rhaglennu a chyllideb ar ei chyfer yn y modelau cost. Gan hynny, ni chredir bod unrhyw rwystrau mawr sy'n atal y safle rhag cael ei ddatblygu at ei ddefnydd arfaethedig gan GTAGC.

5.2 Adolygiadau Porth a Rhaglen Prosiect

Mae rhaglen fanwl ar gyfer caffael opsiwn 3 a ddewiswyd wedi'i chynnwys yn Atodiad R.

Mae'r rhaglen arfaethedig, o reidrwydd, yn gwneud nifer o ragdybiaethau yn ymwneud â dyddiad dechrau'r prosiect, sef bod cymeradwyaeth i brynu'r tir a dechrau'r prosiect yn cael ei rhoi erbyn diwedd Hydref 2024, a bod prynu'r tir yn cael ei gwblhau erbyn diwedd Medi 2024.

Y cyfnodau cyntaf yn y broses ddatblygu fyddai ymgymryd â thair tasg allweddol:

- Gwaith Lliniaru Madfallod ar y safle.
- Dechrau'r broses Cais Cynllunio a chyflwyno cais cynllunio.
- Penodi'r tîm dylunio a dechrau datblygu dyluniad i Gam 3 RIBA.

Mae'r rhain i gyd yn weithgareddau hir a byddem yn rhagweld cwblhau erbyn mis Hydref 2025 ar gyfer lliniaru ar fadfallod a chymeradwyaeth cynllunio, gyda chwblhau dyluniad Cam 3 RIBA yn digwydd ym mis Rhagfyr 2025, ac ar ôl hynny byddai Adolygiad Porth 1 yn cael ei gynnal i



gadarnhau hyfywedd parhaus y prosiect a'r parodrwydd i fwrw ymlaen i gam nesaf dyluniad a datblygiad manwl a chytuno ar y pris cytundeb

Mae'r rhaglen hefyd yn cynnig caffael a phenodi partner contractwr dylunio ac adeiladu erbyn Mehefin 2025 i gynorthwyo â'r broses ddylunio. Byddai hyn ar gyfer y cyfnod cyn-adeiladu yn y lle cyntaf a fyddai'n cael ei gwblhau ym mis Tachwedd 2026 gyda chwblhau dyluniad manwl a chyfrifiad o'r swm cytundeb.

Ail Adolygiad Porth i gymeradwyo'r dyluniadau terfynol, llofnodi'r cytundeb adeiladu a dechrau adeiladu. Rhagwelir y bydd hyn yn digwydd ym mis Rhagfyr 2026, gyda'r gwaith yn dechrau ar y safle ym mis Chwefror 2027, ar gyfer cyfnod adeiladu amcangyfrifedig o 18 mis.

Disgwylir cwblhau'r prosiect felly ym mis Gorffennaf 2028.

5.3 Cyllideb a Llif Arian

Amlinella Atodiad A y gofyniad cyllideb cyfalaf ar gyfer Opsiwn 3 a ddewiswyd ar £37.417m gan gynnwys yr holl ffioedd dylunio a chronfeydd brys. Mae hyn yn eithrio costau oes gyfan yn adran 4 a fyddai'n cael eu hariannu o'r gyllideb refeniw.

Ar sail y rhaglen yn Atodiad R, byddai hyn yn arwain at y llif arian a ragwelir fel a ganlyn.

Blwyddyn Ariannol	Llif Arian Net
2024 / 25	£ 0.440m
2025 / 26	£ 1.270m
2026 / 27	£ 1.270m
2027 /28	£ 23.957m
2028 / 29	£ 10.480m
Cyfanswm:	£ 37.417m

5.4 Cymwysterau Carbon Isel



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Mae Harley Haddow wedi ymgymryd â modelu thermol dynamig ar gyfer y ddau adeilad a fydd yn cael eu meddiannu ar y safle (yr Hwb Gweinyddol a Hyfforddi, a'r Ysgol Offer Anadlu) i asesu ar y cam cynnar hwn ôl-troed carbon gweithredol tebygol ar gyfer yr adeiladau. Maen nhw hefyd wedi cyfrifo'r carbon posibl sy'n gysylltiedig â'r safle ehangach pan ddaw hi at ei oleuo'n gyffredinol, a dadansoddiad o ddefnydd disgwylidig pwyntiau gwefru ceir EV.

O'r modelu a'r cyfrifiadau hyn, maen nhw wedi gallu rhagweld cyfanswm dwyster defnydd ynni ac ôl-troed carbon cysylltiedig fesul blwyddyn ar gyfer y safle cyfan (ac eithrio unrhyw garbon sy'n gysylltiedig ag ymarferion hyfforddi gwirioneddol sydd wedi'u heithrio'n benodol yn y 'Canllaw Sector Cyhoeddus Cymru ar gyfer Adrodd ar Garbon Sero-Net' [Llywodraeth Cymru]).

Mae'r dadansoddiad, er yn ei ddyddiau cynnar iawn, yn nodi bod cyfanswm yr allyriadau carbon o'r safle bob blwyddyn yn tua 60tCO_{2e}.

Gyda'r bwriad o wrthbwysu'r holl allyriadau carbon, mae'r cynigion yn cynnwys tua 2,900sqm o araeau ffotofoltäig (PV - paneli solar yn cynhyrchu trydan), a thua 6,500sqm o ardaloedd twf ar gyfer coed - sy'n amsugno carbon yn naturiol wrth iddynt dyfu. Mae'r rhain o'u cyfuno yn gallu gwrthbwysu 60-70tCO_{2e} y flwyddyn, gan ddangos yn y pendraw ar y cam hwn, **bod y safle i'w weld yn ddi-garbon wrth ei weithredu.**

5.5 Proses Gaffael

Mae'r rhaglen yn rhagweld ar hyn o bryd y bydd caffael opsiwn 3 dewisedig yn digwydd gan ddefnyddio'r cytundebau fframwaith priodol sy'n cydymffurfio yn unol â gweithdrefnau caffael GTAGC.

Mae'r fethodoleg gaffael a awgrymir isod wedi'i dethol er mwyn sicrhau bod gan yr ymgynghorwyr a'r contractwr a benodir brofiad addas o ran canolfannau hyfforddi tân ac o faint addas i ymgymryd â phrosiect o'r maint hwn, wrth uchafu ar y cyfleoedd i fusnesau lleol gefnogi ac elwa o'r buddsoddiad sylweddol hwn.



Y cynnig cychwynnol byddai caffael yr ymgynghorwyr dylunio a'r Contractwr angenrheidiol fel a ganlyn:

Ymgynghorwyr Dylunio

Cynigir caffael y rhain trwy'r fframwaith SCAPE a phenodi Perfect Circle fel y prif ymgynghorydd dylunio. Dewisir y fframwaith hwn gan fod ganddo hyblygrwydd sylweddol o'i fewn, er mwyn caniatáu i GTAGC gymryd rôl arweiniol wrth benodi is-ymgynghorwyr dylunio gan sicrhau lle fo'n bosibl bod cyflenwyr lleol yn cael eu penodi. Mae'r Fframwaith hwn hefyd yn bodloni'r meini prawf angenrheidiol ar gyfer prosiect o'r gwerth hwn ac wedi bod yn amodol ar brofi'r farchnad wrth ymgymryd â dethol y cyflenwr Fframwaith.

Mae Perfect Circle yn cynnig tîm lleol amrywiol, integredig o gyflenwyr arbenigol, gan gyflawni gwerth am arian, effeithlonrwydd ac effaith ar yr economi leol. Mae wedi cyflenwi dros 3,000 prosiect trwy eu fframweithiau sector cyhoeddus er 2016, gan gefnogi cleientiaid gyda dros £720m o gyflenwi gwasanaeth, gan ychwanegu £110m o werth cymdeithasol a budd cymunedol.

Contractwr Dylunio ac Adeiladu

Cynigir y bydd y contractwr dylunio ac adeiladu yn cael ei gaffael trwy'r fframwaith Pagabo sy'n cydymffurfio, sydd â chyflenwyr o'r maint a'r profiad angenrheidiol wedi'u penodi ar hyn o bryd. Mae defnyddio'r fframwaith hwn yn caniatáu cynnal proses ddethol cystadleuaeth fach rhwng pob un o'r cyflenwyr fframwaith, gan brofi nifer o elfennau, megis:

- Elfennau masnachol dethol
- Prosesau ansawdd
- Profiad
- Cynnwys cyflenwyr lleol
- Cynnig Gwerth Cymdeithasol

Mae Pagabo yn aelod Arloesol o Social Value UK ac wedi cyflenwi gwerth cymdeithasol ac economaidd ar draws y DU. Mae £54 miliwn o hyn yng Nghymru. Mae hyn yn cynnwys meysydd megis:



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- Prentisiaethau
- Creu swyddi
- Cynhyrchaeth gweithlu
- Buddion i economïau lleol
- Lleoliadau gwaith

Mae'r Fframwaith hwn hefyd yn bodloni'r meini prawf statudol angenrheidiol ar gyfer prosiect o'r gwerth hwn ac mae wedi bod yn amodol ar brofi'r farchnad wrth ymgymryd â dethol y cyflenwyr Fframwaith.

North Wales Fire Training Centre

Capital and Lifecycle Costs
Business Case Options 1- 4
August 2024

Contents

Option 1 Capital and Lifecycle Costs

Option 2 Capital and Lifecycle Costs

Option 3 Capital and Lifecycle Costs

Option 4 Capital and Lifecycle Costs

Indicative Cashflow Forecast

Drawing List

Option 1 Capital and Lifecycle Costs

	Quant	Unit	Rate	Total	
Dolgellau (1992 Build)					
Major Refurbish existing fire house	321.49	m2	2,055	660,533	
incl ful re-wiring, re-roof, temperature monitoring, smoke system, internal doors, int walls, ext windows and doors.					
Replace temporary portacabin buildings	1.00	item	164,368	164,368.00	
External works/drainage	1.00	item	102,730.00	102,730.00	
Installation of smoker cleaner and ductwork	1.00	item	770,475.00	770,475.00	
Sub total				1,698,106.35	
Rhyl (1988 Build)					
Refurbish existing cold smoke house	210.4	m2	2,054.6	432,288	
Refurbish masonry drill tower	147.40	m2	1,027.30	151,424.02	
Sub total				583,711.86	
Wrexham (2016 Build)					
Light refurbishment existing fire house	315	m2	1,027	323,505	
Sub total				323,505.00	
Deeside (2016 Build)					
Light refurbishment existing fire house	301	m2	1,027	309,217	
Sub total				309,217.30	
SUBTOTAL				2,914,541	
Main Contractor Preliminaries	25.0%			728,635	
Main Contractor's Risk Allowance				-	
Main Contractor's Overheads and Profit	10.0%			364,318	
SUB TOTAL (WORKS COST ESTIMATE)				4,007,493	
Allowance for client fees	20%			801,499	
Client Risk Allowance	15.0%			721,349	
TOTAL ESTIMATED PROJECT COST - CURRENT DAY (excluding VAT)				5,530,341	
Inflation to mid-point construction	excluded				
TOTAL ESTIMATED PROJECT COST 3Q 24 (excluding VAT)				5,530,341	

Notes

Indicative costs only for refurbishment of existing properties

Gleeds general clarifications:

Gleeds' construction cost forecasts are based on the latest information from the supply chain and are current at the date of issue. However, they are subject to change due to evolving market conditions and disruptors, necessitating regular reviews to incorporate market feedback.

While the volatility in materials pricing has cooled, prices remain elevated compared to pre-pandemic levels. Labour pressures persist, with the effects of the long-term skills shortage mounting.

Although forecasts suggest lower construction output in 2024, there is growing optimism in industry data indicating an increase in new orders. Additionally, the expectation of interest rate cuts is bolstering confidence. There is also a strong pipeline of work related to infrastructure and energy investment, particularly concerning the transition to net zero.

Caution remains within the supply chain, especially given the elevated levels of construction insolvencies, which affect risk appetite and capacity in certain areas. This has the potential to result in regional price uplifts due to the limited availability of subcontractors with the resulting associated economic supply and demand impact.

As geopolitical tensions continue, uncertainty persists. Any escalation in unrest could significantly disrupt supply chains and reignite inflation. Therefore, Gleeds recommends regularly reviewing and updating information based on the latest conditions.

NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 1

FIRE STATIONS
 BASED ON 1810m2 (AREA OF REFURBISHMENT)

	RENEW					RENEW	RENEW	MAINTAIN		MAINTAIN	
	FABRIC	SERVICES	DÉCOR	WREXHAM	DEESIDE	DOLGELLAU PORTACABINS	CONTAINERS	FABRIC	SERVICES	CONTAINERS	TOTALCOST £
1	10,792	4,388	0				0	5,811	8,150	0	29,140
2	10,792	7,313	0				0	5,811	13,582	0	37,499
3	10,792	4,388	897				0	5,811	8,150	0	30,037
4	10,792	7,411	0				0	5,811	13,763	41,092	78,869
5	10,792	17,260	0				0	5,811	32,054	0	65,917
6	10,792	7,313	20,424				0	5,811	13,582	0	57,922
7	10,792	4,388	0				0	5,811	8,150	0	29,140
8	10,792	7,411	0				164,368	5,811	13,763	0	202,145
9	10,792	4,388	897				0	5,811	8,150	0	30,037
10	71,327	20,185	0				0	38,407	37,486	0	167,406
11	10,792	4,388	0				0	5,811	8,150	0	29,140
12	10,792	7,313	20,456			164,368	0	5,811	13,582	41,092	263,414
13	10,792	4,388	0				0	5,811	8,150	0	29,140
14	10,792	7,313	0				0	5,811	13,582	0	37,499
15	20,792	39,590	897	1,195,425	1,142,295		0	5,811	73,525	0	2,478,335
16	10,792	7,411	0				164,368	5,811	13,763	0	202,145
17	10,792	4,388	0				0	5,811	8,150	0	29,140
18	10,792	7,313	20,456				0	5,811	13,582	0	57,954
19	10,792	4,388	0				0	5,811	8,150	0	29,140
20	71,327	23,696	0				0	38,407	44,006	41,092	218,528
21	10,792	4,388	897				0	5,811	8,150	0	30,037
22	10,792	7,313	0				0	5,811	13,582	0	37,499
23	10,792	4,388	0				0	5,811	8,150	0	29,140
24	10,792	7,411	20,424			164,368	164,368	5,811	13,763	0	386,937
25	10,792	17,260	0				0	5,811	32,054	0	65,917
26	10,792	7,313	0				0	5,811	13,582	0	37,499
27	10,792	4,388	897				0	5,811	8,150	0	30,037
Total	422,450	247,091	86,243	1,195,425	1,142,295	328,736	493,104	222,099	458,895	123,276	4,719,614

NOTES

Airbus Containers - assumed repairs at Yr 4, 12 and 20
 Airbus Containers - assumed replaced at Yr 8, 16 and 24.
 Portacabins (Dolgellau) assumed replaced at year 12 and 24.
 Assumed Major Refurbishment of Deeside and Wrexham fire houses required at Year 15
 Based on Year 1 start of 2025, no allowance for inflation beyond this date
 Lifecycle analysis based on 27 years
 Excludes cleaning costs, facilities management and energy costs
 Life Cycle Costs based on figures provided by BCIS for similar property with uplift included due to age/condition.

Option 2 Capital and Lifecycle costs

	Quant	Unit	Rate	Total	
Dolgellau					
Major Refurbishment existing fire house	321.49	m2	2,054.60	660,533.35	
Installation of smoker cleaner and ductwork	1.00	item	770,475.00	770,475.00	
Allowance for external works / drainage	1.00	item	102,730.00	102,730.00	
New Ablutions building + fireground store	330.00	m2	3,595.55	1,186,531.50	
Major Refurbishment and re-modelling of existing station	404.50	m2	2,054.60	831,085.70	
Additional floor added to existing fire station	404.50	m2	3,595.55	1,454,399.98	
Provision of temporary fire station (off site)	1.00	item	770,475.00	770,475.00	
Rhyl					
Major refurbishment cold smoke house	210.40	m2	2,054.60	432,287.84	
Allowance for external works to yard	1.00	item	102,730.00	102,730.00	
New shower block/Ablutions/BA store	240.00	m2	3,595.55	862,932.00	
Refurb existing training space in the fire station (Classrooms)	120.00	m2	1,540.95	184,914.00	
Refurbish masonry drill tower	147.40	m2	1,027.30	151,424.02	
Wrexham					
Medium level refurbishment of the fire house	314.90	m2	1,540.95	485,245.16	
Ablutions facilities + classroom	290.00	m2	3,595.55	1,042,709.50	
Small storage facility	100.00	m2	2,054.60	205,460.00	
Deeside					
Light refurbishment of existing fire house	300.50	m2	1,027.30	308,703.65	
New ablutions facilities	240.00	m2	3,595.55	862,932.00	
Airbus					
New ablutions facilities	240	m2	3,595.55	862,932.00	
SUBTOTAL				11,278,501	
Main Contractor Preliminaries	20.0%			2,255,700	
Main Contractor's Risk Allowance	included				
Main Contractor's Overheads and Profit	5%			676,710	
SUB TOTAL (WORKS COST ESTIMATE)				14,210,911	
Allowance for fees	15%			2,131,637	
Risk Allowance	10.0%			1,634,255	
TOTAL ESTIMATED PROJECT COST - CURRENT DAY (excluding VAT)				17,976,802	
Inflation to mid-point construction	excluded				
TOTAL ESTIMATED PROJECT COST TO 3Q 24 (excluding VAT)				17,976,802	

Notes

Indicative costs only for refurbishment of existing properties together with provision of new accommodation as indicated above in line with the business case

Gleeds general clarifications:

Gleeds' construction cost forecasts are based on the latest information from the supply chain and are current at the date of issue. However, they are subject to change due to evolving market conditions and disruptors, necessitating regular reviews to incorporate market feedback.

While the volatility in materials pricing has cooled, prices remain elevated compared to pre-pandemic levels. Labour pressures persist, with the effects of the long-term skills shortage mounting.

Although forecasts suggest lower construction output in 2024, there is growing optimism in industry data indicating an increase in new orders. Additionally, the expectation of interest rate cuts is bolstering confidence. There is also a strong pipeline of work related to infrastructure and energy investment, particularly concerning the transition to net zero.

Caution remains within the supply chain, especially given the elevated levels of construction insolvencies, which affect risk appetite and capacity in certain areas. This has the potential to result in regional price uplifts due to the limited availability of subcontractors with the resulting associated economic supply and demand impact.

As geopolitical tensions continue, uncertainty persists. Any escalation in unrest could significantly disrupt supply chains and reignite inflation. Therefore, Gleeds recommends regularly reviewing and updating information based on the latest conditions.

NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 2

FIRE STATIONS
 BASED ON 3663m2 (AREA OF REFURBISHMENT)

	RENEW			RENEW	MAINTAIN		MAINTAIN	
	FABRIC	SERVICES	DÉCOR	CONTAINERS	FABRIC	SERVICES	CONTAINERS	TOTALCOST £
1	21,840	8,880	0	0	11,760	16,492	0	58,972
2	21,840	14,800	0	0	11,760	27,486	0	75,887
3	21,840	8,880	1,814	0	11,760	16,492	0	60,786
4	21,840	14,998	0	0	11,760	27,853	41,092	117,543
5	21,840	34,929	0	0	11,760	64,869	0	133,398
6	21,840	14,800	41,332	0	11,760	27,486	0	117,219
7	21,840	8,880	0	0	11,760	16,492	0	58,972
8	21,840	14,998	0	164,368	11,760	27,853	0	240,819
9	21,840	8,880	1,814	0	11,760	16,492	0	60,786
10	144,349	40,850	0	0	77,727	75,864	0	338,789
11	21,840	8,880	0	0	11,760	16,492	0	58,972
12	21,840	14,800	41,397	0	11,760	27,486	41,092	158,376
13	21,840	8,880	0	0	11,760	16,492	0	58,972
14	21,840	14,800	0	0	11,760	27,486	0	75,887
15	21,840	80,121	1,814	0	11,760	148,796	0	264,331
16	21,840	14,998	0	164,368	11,760	27,853	0	240,819
17	21,840	8,880	0	0	11,760	16,492	0	58,972
18	21,840	14,800	41,397	0	11,760	27,486	0	117,284
19	21,840	8,880	0	0	11,760	16,492	0	58,972
20	144,349	47,954	0	0	77,727	89,058	41,092	400,180
21	21,840	8,880	1,814	0	11,760	16,492	0	60,786
22	21,840	14,800	0	0	11,760	27,486	0	75,887
23	21,840	8,880	0	0	11,760	16,492	0	58,972
24	21,840	14,998	41,332	164,368	11,760	27,853	0	282,151
25	21,840	34,929	0	0	11,760	64,869	0	133,398
26	21,840	14,800	0	0	11,760	27,486	0	75,887
27	21,840	8,880	1,814	0	11,760	16,492	0	60,786
Total	834,708	500,056	174,530	493,104	449,441	928,688	123,276	3,503,803

NOTES

Airbus Containers - assumed repairs at Yr 4, 12 and 20
 Airbus Containers - assumed replaced at Yr 8, 16 and 24.
 Based on Year 1 start of 2025, no allowance for inflation beyond this date
 Lifecycle analysis based on 27 years
 Excludes cleaning costs, facilities management and energy costs
 Life Cycle Costs based on figures provided by BCIS for Fire Stations

Option 3 Capital and Lifecycle Costs

	Quant	Unit	Rate	Total	
Site Clearance generally (excluding GCN area)	29,509.00	m2			
Break up existing concrete slabs/kerbs etc; grubbing up shallow foundations	3,405.00	m2			
Demolish existing concrete retaining walls, assume 200 thick	200.00	m2			Incl below as client enabling works
Allowance for grubbing up existing underground drainage	2,000.00	m			
Allowance for breaking out existing manholes	100.00	nr			
Allowance for breaking up existing tarmac roads/paths/kerbs	6,479.00	m2			
Reduced level excavation, to formation level; ave say 450mm across the site	13,279.05	m3	3.60	47,745	
Disposal to on site spoil heaps	13,279.05	m3	6.16	81,849	
Back fill to make up levels	13,279.05	m3	5.14	68,208	Assume all re-used from site material
Dispose off site surplus excavated material		m3	30.82	-	Assumed all material on site re-used.
Buildings					
Admin Hub and HQ	1,819.00	m2	3,976.92	7,234,026	as previous uplifted to current day
BA Classrooms incl Gym.	960.00	m2	3,724.87	3,575,875	see separate cost plan
RTC Building incl Energy Centre + Fireground store	433.00	m2	3,223.08	1,395,594	
Appliance garage	344.00	m2	2,300.00	791,200	see separate cost plan, area increased WC/CL added + storage
Firehouse	680.00	m2	2,230.39	1,516,666	see separate cost plan, unchanged costs uplifted for inflation only
BA training building	133.00	m2	1,851.52	246,253	see separate cost plan
Forced entry / MoE rig	1.00	item	5,136.50	5,137	
House + shop/flat	234.00	m2	2,415.85	565,309	see separate cost plan, updated 21.8.24
Allowance for furniture (Contractor supply and install)	1.00	item	205,460.00	205,460	
Scenarios					
Highway Scenario - allowance for crash barriers	1.00	item	21,162.38	21,162	
BA Crawl Pipe	1.00	item	15,871.79	15,872	
LPG tank farm	1.00	item	61,638.00	61,638	tanks and valves only excl hardstanding/fence
Rural ditch	1.00	item	5,290.60	5,291	
FBT containers	1.00	item	164,368.00	164,368	
Canopy over FBT Containers	1.00	item	231,142.50	231,143	
Training towers (2nr)	1.00	item	211,623.80	211,624	
Foundation bases to towers	1.00	item	15,409.50	15,410	
Deep water pit	1.00	item	15,871.79	15,872	
Smoke cleaner (excl electric supply)	1.00	item	513,650.00	513,650	
Specialist installation to create LPG scenario terraced house	1.00	item	130,087.00	130,087	
Industrial Structure incl LPG Scenario	1.00	item	529,059.50	529,060	
Other props					
Dressing shelter	1.00	item	15,871.79	15,872	
M&E installations					
Site wide distribution;					
hydrant mains pipework	804.00	m	185.17	148,877	
sprinkler pipework	217.00	m	185.17	40,182	
HV/LV cable	786.00	m	100.52	79,010	
LPG gas distribution pipework	1.00	item	10,273.00	10,273	
domestic water pipework (mains fed)	345.00	m	58.20	20,078	
Service trenches	2,153.00	m	58.20	125,297	
Roof PV's to Buildings incl fixing system	830.00	m2	256.83	213,165	
Battery Storage	1.00	item	105,811.90	105,812	
External lighting around the site	1.00	item	162,518.86	162,519	Adjusted pro rata
Electric vehicle charging - allowance for 8nr vehicle spaces	8.00	nr	5,290.60	42,325	8nr double chargers
Sprinkler tank and base	1.00	item	105,811.90	105,812	
Emergency generator	1.00	item			excluded
Water storage tank 100,000 L (Hydrant) incl pump house	1.00	item	142,846.07	142,846	
Substation enclosure	1.00	item	20,000.00	20,000	
Battery storage enclosure	1.00	item	30,000.00	30,000	
Above ground fuel tank	1.00	item	15,000.00	15,000	
External works					
Concrete hardstandings	5,546.00	m2	66.77	370,331	
Concrete Retaining walls					
600 high x 300 wide	16.20	m2	770.48	12,482	
1150 high x 300 wide	69.00	m2	770.48	53,163	
450mm high retaining wall to front Admin Hub, assume brick	22.50	m2	513.65	11,557	
Allowance for steps and ramps to front entrance Admin Hub	1.00	item	25,682.50	25,683	
2.4m high earth retaining system	96.00	m2	565.02	54,241	
Retaining wall to water storage area	22.00	m2	770.48	16,950	
Soft landscaped areas	4,455.00	m2	16.18	72,082	
Allowance for mix of plants/shrubs	1.00	item	30,819.00	30,819	
Hedgerow to car park	1.00	item	30,000.00	30,000	for Bio Diversity Net Gain
Tree planting zone	incl above				
Wildflower planting area	3,925.00	m2	16.18	63,506	
Trees	56.00	nr	264.53	14,814	note: saplings only
Pedestrian walkways	2,456.00	m2	51.37	126,152	
Tarmac (Highway Scenario and Access Road around site)	4,862.00	m2	94.51	459,515	
Car Park (Tarmac/Permeable Paving)	3,104.00	m2	105.81	328,440	
Allowance for kerbs	1,849.00	m	41.09	75,979	
Allowance for footpath edging	737.00	m	20.55	15,142	
Road markings	1.00	item	10,581.19	10,581	
Timber fencing to houses	32.00	m	79.36	2,539	
Shelter to Well being areas		m2	264.53	-	not shown on drawing
External plant areas fencing/gates	140.00	m	100.52	14,073	incl LPG area, retained as previous Opt 3
External site furniture; benches, bins etc	1.00	item	20,546.00	20,546	
External Signage	1.00	item	51,365.00	51,365	
Secure perimeter fencing	531.00	m	169.30	89,898	

Vehicle / pedestrian gates	1.00	item	20,802.83	20,803	
Timber post/rail fence to front entrance/car park	377.00	m	51.37	19,365	
Great Crested Newt area	13,843.00	m2			left fallow
Surface Water Drainage (hard landscaped areas)	15,968.00	m2	49.73	794,114	
Attenuation; Tank 1 1.8m deep x 17m wide x 53m long, Tank 2 1.2m deep x 15m x 30m	2,161.80	m3	323.60	699,557	retained as previous cost plan
Foul Water Drainage	4,603.00	m2	42.32	194,821	
Allow for connection into existing drain	1.00	item	26,452.98	26,453	
Incoming services; power, data, water					
Incoming power	1.00	item	154,095.00	154,095	Based on quotation received from SPEN.
Incoming water	1.00	item	51,365.00	51,365	Initial advice from Welsh Water
Incoming data/telecoms	1.00	item	51,365.00	51,365	
Allowance for modification to bellmouth junction	1.00	item	20,000.00	20,000	
SUBTOTAL				22,907,363	
Main Contractor Preliminaries	12.5%			2,863,420	
Main Contractor's Risk Allowance	3%			773,123	
Main Contractor's Overheads and Profit	5%			1,327,195	
SUB TOTAL (WORKS COST ESTIMATE)				27,871,102	
<u>Main Contractor Fees.</u>					
Main Contractor Pre Construction fee (RIBA STAGE 3/4) SAY 0.75%	0.75%			209,033	
Main Contractor Design fees RIBA 4-6	5.25%			1,463,233	
<u>Client costs</u>					
<u>Design Fees - allowance</u>					
QS RIBA 1-6	1.00%			278,711	
PM RIBA 1-6	0.5%			139,356	
Architect to RIBA 3	1.0%			278,711	
M&E to RIBA 4	0.75%			209,033	
Structural / Civil Engineer to RIBA 3	0.5%			139,356	
M&E Technical Advice RIBA 5/6	1.00	item	102,730.00	102,730	
Building Clerk of Works RIBA 5/6	1.00	item	102,730.00	102,730	18 MONTHS ON SITE
CDM Principal Designer RIBA 1-6	1.00	item	51,365.00	51,365	
Building Regulations Principal Designer	1.00	item	51,365.00	51,365	
BREEAM Advisor and Reports RIBA 1-6	1.00	item	77,047.50	77,048	
Planning fees	1.00	item	32,359.95	32,360	
Building Regulation fees	1.00	item	35,955.50	35,956	
Site Surveys	1.00	item	61,638.00	61,638	including Ground Investigation
GCN Mitigation	1.00	item	154,095.00	154,095	survey costs, newt fencing
<u>Client enabling works / site clearance</u>					
Site Clearance generally to whole site (excluding GCN area)	41,053.00	m2	5.29	217,195	
Break up existing concrete slabs/kerbs etc; grubbing up shallow foundations	7,067.00	m2	14.38	101,639	Assume 150mm thick, crush on site for re-use
Demolish existing concrete retaining walls, assume 200 thick	200.00	m2	102.73	20,546	
Allowance for grubbing up existing underground drainage	2,600.00	m	51.37	133,549	
Allowance for breaking out existing manholes	130.00	nr	513.65	66,775	
Allowance for breaking up existing tarmac roads/paths/kerbs	8,650.00	m2	15.93	137,824	Assume 100mm thick
Main contractor attendances	10%			67,753	
Client small props allowance	1.00	item	51,365.00	51,365	
Land costs incl SDLT	Excluded				
Client legal fees	Excluded				
Financing costs	Excluded				
Client Risk Allowance	5.0%			1,602,723	
TOTAL ESTIMATED PROJECT COST - CURRENT DAY (excluding VAT)				33,657,189	1.1955672
Inflation to mid-point construction (3Q 2027)	11.2%			3,759,508	BCIS 394 (3Q 24) to 438 (3Q 27)
TOTAL ESTIMATED PROJECT COST TO 4Q 26 (excluding VAT)				37,416,697	

Risks - currently excluded from Works cost estimate

Costs for dealing with poor ground conditions e.g poor bearing capacity, soft spots, obstructions and the like
Surplus material from excavations are assumed to be inert
Removal and disposal of contaminated materials off site incl asbestos
Removal of redundant underground buried services
Diversion of services e.g underground or overhead cables, gas/water mains
Dewatering measures during construction
Suitability of fill for re-use on site
Availability of services locally such as incoming power, water and telecoms.
Dealing with Ecological issues - over and above current allowances
Delays to programme
Abnormal or onerous planning conditions
Inflation - over and above current allowances
Contractor availability to undertake project of this scale and nature
Off site highway works / Section 278
Phasing of the works

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NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 3

FIRE SERVICE ADMIN/CONTROL BUILDINGS EXCLUDING HQ
 BASED ON 1819m2

	RENEW			MAINTAIN		
	FABRIC	SERVICES	DÉCOR	FABRIC	SERVICES	TOTAL ADMIN HUB COST £
1	8,901	9,697	0	4,793	18,008	41,399
2	9,325	11,025	0	5,021	20,475	45,846
3	8,901	10,095	0	4,793	18,748	42,537
4	9,325	11,025	0	5,021	20,475	45,846
5	11,444	10,494	0	6,162	19,488	47,588
6	9,325	11,423	20,807	5,021	21,215	67,791
7	8,901	9,697	0	4,793	18,008	41,399
8	9,325	11,025	0	5,021	20,475	45,846
9	8,901	10,095	0	4,793	18,748	42,537
10	127,366	12,220	3,804	68,582	22,695	234,667
11	8,901	9,697	0	4,793	18,008	41,399
12	9,325	11,423	40,317	5,021	21,215	87,301
13	8,901	9,697	0	4,793	18,008	41,399
14	9,325	11,025	0	5,021	20,475	45,846
15	11,444	10,892	0	6,162	20,228	48,726
16	9,325	11,025	0	5,021	20,475	45,846
17	8,901	9,697	0	4,793	18,008	41,399
18	9,325	11,423	20,807	5,021	21,215	67,791
19	8,901	9,697	0	4,793	18,008	41,399
20	127,366	64,290	3,804	68,582	119,396	383,438
21	8,901	9,697	0	4,793	18,008	41,399
22	9,325	11,025	0	5,021	20,475	45,846
23	8,901	10,095	0	4,793	18,748	42,537
24	9,325	11,025	40,317	5,021	20,475	86,163
25	11,444	10,494	0	6,162	19,488	47,588
Total	471,324	317,998	129,856	253,790	590,565	1,763,533
£/m2/yr						38.78

NOTES

Cost for Building Props is for maintenance and basic fabric renewal only. Assumes a weighting of 80% for renewal/20% maintenance

Based on Year 1 start of 4Q 28, no allowance for inflation beyond this date

Lifecycle analysis based on 25 years

Excludes cleaning costs, facilities management and energy costs

Life Cycle Costs based on figures provided by BCIS

NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 3

BA SCHOOL AND APPLIANCE GARAGE (BASED ON FIRE STATION LIFE CYCLE MODEL)
 BASED ON 1737m2

	RENEW			MAINTAIN		TOTAL COST OTHER BUILDINGS £
	FABRIC	SERVICES	DÉCOR	FABRIC	SERVICES	
1	11,225	7,950	0	6,044	4,281	29,500
2	11,225	13,251	0	6,044	7,135	37,655
3	11,225	7,950	897	6,044	4,281	30,397
4	11,225	13,427	0	6,044	7,230	37,926
5	11,225	31,271	0	6,044	16,838	65,378
6	11,225	13,251	20,446	6,044	7,135	58,101
7	11,225	7,950	0	6,044	4,281	29,500
8	11,225	13,427	0	6,044	7,230	37,926
9	11,225	7,950	897	6,044	4,281	30,397
10	74,189	36,572	0	39,948	19,692	170,401
11	11,225	7,950	0	6,044	4,281	29,500
12	11,225	13,251	20,478	6,044	7,135	58,133
13	11,225	7,950	0	6,044	4,281	29,500
14	11,225	13,251	0	6,044	7,135	37,655
15	11,225	71,730	897	6,044	38,624	128,520
16	11,225	13,427	0	6,044	7,230	37,926
17	11,225	7,950	0	6,044	4,281	29,500
18	11,225	13,251	20,478	6,044	7,135	58,133
19	11,225	7,950	0	6,044	4,281	29,500
20	74,189	42,932	0	39,948	23,117	180,186
21	11,225	7,950	897	6,044	4,281	30,397
22	11,225	13,251	0	6,044	7,135	37,655
23	11,225	7,950	0	6,044	4,281	29,500
24	11,225	13,427	20,446	6,044	7,230	58,372
25	11,225	31,271	0	6,044	16,838	65,378
Total	406,553	426,490	85,436	218,908	229,649	1,367,036
£/m2/yr						31.48

NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 3

BUILDING PROPS E.G FIRE HOUSE, TERRACED HOUSES
 BASED ON 1047M2

	MAINTAIN		RENEWAL	
	FABRIC	SERVICES	BASIC FABRIC RENEWAL	TOTAL COST BUILDING PROPS £
1	2,082	1,475	2,568	6,125
2	2,082	2,458	2,568	7,108
3	2,082	1,475	2,568	6,125
4	2,082	2,490	2,568	7,140
5	2,082	5,800	2,568	10,450
6	2,082	2,458	2,568	7,108
7	2,082	1,475	2,568	6,125
8	2,082	2,490	2,568	7,140
9	2,082	1,475	2,568	6,125
10	13,760	6,783	2,568	23,111
11	2,082	1,475	2,568	6,125
12	2,082	2,458	2,568	7,108
13	2,082	1,475	2,568	6,125
14	2,082	2,458	2,568	7,108
15	2,082	13,303	2,568	17,953
16	2,082	2,490	2,568	7,140
17	2,082	1,475	2,568	6,125
18	2,082	2,458	2,568	7,108
19	2,082	1,475	2,568	6,125
20	13,760	7,962	2,568	24,290
21	2,082	1,475	2,568	6,125
22	2,082	2,458	2,568	7,108
23	2,082	1,475	2,568	6,125
24	2,082	2,490	2,568	7,140
25	2,082	5,800	2,568	10,450
Total	75,406	79,106	64,206	218,718
£/m2/yr				8.36

NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 3

EXTERNAL WORKS

LANDSCAPE MAINTAIN	WHITE LINING REPAIRS	SERVICE PETRO CHEM RIG/LPG	SERVICE SMOKE CLEANER	PUMP MAINTENANCE	CLEANING COSTS (EXCLUDED)	WASTE REMOVAL (EXCLUDED)	TOTAL COST EXTERNALS £	GRAND TOTAL
14,382			2,055	2,055			18,491	95,516
14,382			2,055	2,055			18,491	109,101
14,382	1,079		2,055	2,055			19,570	98,629
14,382			2,055	2,055			18,491	109,404
14,382			2,055	2,055			18,491	141,908
14,382	1,079		2,055	2,055			19,570	152,570
14,382			2,055	2,055			18,491	95,516
14,382			2,055	2,055			18,491	109,404
14,382	1,079		2,055	2,055			19,570	98,629
14,382			2,055	2,055			18,491	446,671
14,382			2,055	2,055			18,491	95,516
14,382	1,079		2,055	2,055			19,570	172,112
14,382			2,055	2,055			18,491	95,516
14,382			2,055	2,055			18,491	109,101
14,382	1,079		2,055	2,055			19,570	214,769
14,382			2,055	2,055			18,491	109,404
14,382			2,055	2,055			18,491	95,516
14,382	1,079		2,055	2,055			19,570	152,602
14,382			2,055	2,055			18,491	95,516
14,382			2,055	2,055			18,491	606,406
14,382	1,079		2,055	2,055			19,570	97,491
14,382			2,055	2,055			18,491	109,101
14,382			2,055	2,055			18,491	96,654
14,382	1,079		2,055	2,055			19,570	171,245
14,382			2,055	2,055			18,491	141,908
								0
359,555	8,629	0	51,365	51,365			470,914	3,820,202

Option 4 Capital and Lifecycle costs

	Quant	Unit	Rate	Total	
Site Clearance generally (excluding GCN area)	29,509.00	m2			
Break up existing concrete slabs; disposal off site	3,405.00	m2			
Demolish existing concrete retaining walls, assume 200 thick	200.00	m2			Incl below as client enabling works
Allowance for grubbing up existing underground drainage	2,000.00	m			
Allowance for breaking out existing manholes	100.00	nr			
Allowance for breaking up existing tarmac roads/paths	6,479.00	m2			
Reduced level excavation, ave 450mm deep to formation level; disposal off site	18,473.85	m3	3.60	66,424	
Disposal to on site spoil heaps	18,473.85	m3	6.16	113,869	
Back fill to make up levels	18,473.85	m3	5.14	94,891	Assume all re-used from site material
Additional RL excavation to rear of site ; disposal off site	17,893.20	m3	43.15	772,031	
Backfill to make up levels (obtained off site); ave 700 thick	8,080.80	m3	46.23	373,563	
Buildings					
Admin Hub incl HQ	1,819.00	m2	3,976.92	7,234,026	see separate cost plan
BA School incl fireground stores, energy centre, RTC classroom	1,157.00	m2	3,223.08	3,729,106	see separate cost plan
Appliance garage	271.00	m2	2,119.38	574,352	see separate cost plan
Firehouse	680.00	m2	2,230.39	1,516,666	see separate cost plan
BA training building & forced entry rig	133.00	m2	1,851.52	246,253	see separate cost plan
Forced entry / MoE rig to the above	1.00	item	5,136.50	5,137	
Terraced houses	349.00	m2	2,417.20	843,601	see separate cost plan
1nr Detached house	182.00	m2	2,035.03	370,375	see separate cost plan
2nr Semi detached houses	242.00	m2	1,945.80	470,883	see separate cost plan
Fast food property/Industrial commercial building	199.00	m2	2,425.02	482,580	see separate cost plan
Farmhouse	62.00	m2	2,463.11	152,713	see separate cost plan
Farm shed	176.00	m2	1,666.15	293,242	see separate cost plan
Allowance for furniture (Contractor supply and install)	1.00	item	205,460.00	205,460	
Scenarios					
Aircraft	1.00	item			concrete base measured elsewhere, prop supplied by client
Ship	1.00	item	529,059.50	529,060	
Water feature 1m deep concrete box (filled with water)	1.00	item	31,743.57	31,744	
Raised Quayside (1500mm above water level) + steps at each end + steps down into water	1.00	item	37,034.17	37,034	
Industrial Structure incl LPG Scenario	1.00	item	529,059.50	529,060	
Industrial Rail	1.00	item	105,811.90	105,812	
Highway Scenario - allowance for crash barriers	1.00	item	21,162.38	21,162	
BA Crawl Pipe	1.00	item	15,871.79	15,872	
LPG tank farm	1.00	item	83,099.38	83,099	
Tunnel Mouth/Bridge	1.00	item	49,202.53	49,203	
Rail Platform	1.00	item	22,220.50	22,220	Carriage client supply
Railway track	55.00	m	1,058.12	58,197	
Level crossing	1.00	item	52,905.95	52,906	
Trench collapse	1.00	item	31,743.57	31,744	
Muddy field + agricultural machinery + fencing / gate	1.00	item	15,871.79	15,872	
Rural ditch	1.00	item	5,290.60	5,291	
Hedge	1.00	item	2,645.30	2,645	
Cattle grid	1.00	item	26,452.98	26,453	
Farm yard + silo + diesel fuel tank + fencing and gate	1.00	item	21,162.38	21,162	
FBT containers	1.00	item	190,461.42	190,461	
Canopy over FBT Containers	1.00	item	231,142.50	231,143	
Urban street (bundled for flood scenario)	1.00	item	158,717.85	158,718	
Training towers (2nr)	1.00	item	211,623.80	211,624	
Foundation bases to towers	1.00	item	15,409.50	15,410	
Deep water pit	1.00	item	15,871.79	15,872	
Smoke cleaner (excl electric supply)	1.00	item	476,153.55	476,154	
Specialist installation to create LPG Scenarios: terraced house [LPG flashover, LPG fire Bed 2 1st floor, LPG fire roof level]	1.00	item	130,087.00	130,087	
Specialist installation to create LPG Scenarios: farm house kitchen, detached house kitchen, semi detached house kitchen, fast food kitchen	1.00	item	102,730.00	102,730	
Other props					
Dressing shelter	1.00	item	15,871.79	15,872	
Bus shelter	1.00	item	10,581.19	10,581	
M&E installations					
Site wide distribution;					
hydrant mains	983.00	m	185.17	182,023	
sprinklers	218.00	m	185.17	40,367	
LV	1,101.00	m	100.52	110,674	
LPG gas distribution pipework	1.00	item	25,682.50	25,683	
domestic water (mains fed)	599.00	m	58.20	34,860	
Service trenches	2,902.00	m	58.20	168,886	
PV's to Solar Farm	332.00	m2	256.83	85,266	
PV "car ports"	2,036.00	m2	513.65	1,045,791	
Roof PV's to Buildings incl fixing system	830.00	m2	256.83	213,165	
Battery Storage	1.00	item	105,811.90	105,812	
External lighting around the site	1.00	item	232,786.18	232,786	
Electric vehicle charging - allowance for 8nr vehicle spaces	8.00	nr	5,290.60	42,325	
Sprinkler tank and base	1.00	item	105,811.90	105,812	
Emergency generator	1.00	item			excluded
Water storage tank 200,000 L (flood) incl pump house	1.00	item	232,786.18	232,786	
Water storage tank 100,000 L (Hydrant) incl pump house	1.00	item	142,846.07	142,846	

External works					
Concrete hardstandings 200m slab	8,318.00	m2	66.77	555,430	700mm Sub-base included elsewhere
450mm high retaining wall to front Admin Hub, assume brick	22.50	m2	513.65	11,557	
Allowance for steps and ramps to front entrance Admin Hub	1.00	item	25,682.50	25,683	
2.4m high earth retaining system	96.00	m2	565.02	54,241	
Retaining wall to water storage area	22.00	m2	770.48	16,950	
Soft landscaped areas;	1,304.00	m2	16.18	21,099	
Allowance for mix of plants/shrubs	1.00	item	40,064.70	40,065	
Tree planting zone	8,557.00	m2	16.18	138,452	
Wildflower planting	3,504.00	m2	16.18	56,695	
Trees [sapling only allowed for]	375.00	trees	264.53	99,199	
Pedestrian walkways tarmac incl sub-base	2,745.00	m2	51.37	140,997	
Paving to back/front of housing	559.00	m2	66.77	37,327	
Farm yard allowance for paving	240.00	m2	66.77	16,026	
Muddy field	211.00	m2	15.41	3,251	
Tarmac (Highway Scenario and Access Road around site) incl 200mm MOT1 sub-base	7,611.00	m2	94.51	719,328	
Car Park (Tarmac/Permeable Paving)	3,265.00	m2	105.81	345,476	
Allowance for kerbs	2,421.00	m	41.09	99,484	
Allowance for footpath edging	1,797.00	m	20.55	36,921	
Road markings	1.00	item	10,581.19	10,581	
Timber fencing to houses	124.00	m	79.36	9,841	
Shelter to Well being areas		m2	264.53	-	not shown on plans
External plant areas fencing/gates	335.00	m	100.52	33,675	
External site furniture; benches, bins etc	1.00	item	26,709.80	26,710	
External Signage	1.00	item	66,774.50	66,775	
Secure perimeter fencing	910.00	m	169.30	154,062	
Vehicle / pedestrian gates	incl				
Great Crested Newt area	13,843.00	m2			left fallow
Surface Water Drainage (hard landscaped areas)	22,498.00	m2	49.73	1,118,861	
Attenuation; Tank 1 1.8m deep x 20m wide x 46m long, Tank 2 1.2m deep x 20m x 30m	2,376.00	m3	323.60	768,872	
Foul Water Drainage	5,270.00	m2	42.32	223,051	
Allow for connection into existing drain	1.00	item	26,452.98	26,453	
Incoming services; power, data, water					
Incoming power	1.00	item	154,095.00	154,095	Based on quotation received from SPEN.
Incoming water	1.00	item	51,365.00	51,365	Initial advice from Welsh Water
Incoming data/telecoms	1.00	item	51,365.00	51,365	
Drainage to Petro Chem rig (foam tank)	1.00	item	158,717.85	158,718	
Hedgerow to car park for Bio Diversity Net Gain	1.00	item	30,000.00	30,000	Added in 29.8.24
Allowance for modification to bellmouth junction	1.00	item	20,000.00	20,000	
SUBTOTAL				28,834,042	
Main Contractor Preliminaries	12.5%			3,604,255	96 WEEKS CONSTRUCTION PERIOD
Main Contractor's Design Contingency	3%			973,149	
Main Contractor's Overheads and Profit	5%			1,670,572	
SUB TOTAL (WORKS COST ESTIMATE)				35,082,019	
<u>Main Contractor Fees</u>					
Main Contractor Pre Construction fee (RIBA STAGE 3/4) SAY 0.75%	0.75%			263,115	
Main Contractor Design fees RIBA 4-6	5.25%			1,841,806	
<u>Client costs</u>					
Design Fees - allowance					
QS RIBA 1-6	1.0%			350,820	
PM RIBA 1-6	0.5%			175,410	
Architect to RIBA 3	1.0%			350,820	
M&E to RIBA 4	0.75%			263,115	
Structural Engineer to RIBA 3	0.5%			175,410	
M&E Technical Advice RIBA 5/6	1.00	item	123,276.00	123,276	
Building Clerk of Works RIBA 5/6	1.00	item	123,276.00	123,276	
CDM Principal Designer RIBA 1-6	1.00	item	51,365.00	51,365	
Building Regulations Principal Designer	1.00	item	51,365.00	51,365	
BREEAM Advisor RIBA 1-6	1.00	item	77,047.50	77,048	
Planning fees	1.00	item	46,228.50	46,229	
Building Regulation fees	1.00	item	35,955.50	35,956	
Site Surveys	1.00	item	61,638.00	61,638	including Ground Investigation
GCN Mitigation	1.00	item	154,095.00	154,095	survey costs, newt fencing
<u>Client enabling works / site clearance</u>					
Site Clearance generally to whole site (excluding GCN area)	41,053.00	m2	5.29	217,195	
Break up existing concrete slabs/kerbs etc; grubbing up shallow foundations	7,067.00	m2	14.38	101,639	Assume 150mm thick, crush on site for re-use
Demolish existing concrete retaining walls, assume 200 thick	200.00	m2	102.73	20,546	
Allowance for grubbing up existing underground drainage	2,600.00	m	51.37	133,549	
Allowance for breaking out existing manholes	130.00	nr	513.65	66,775	
Allowance for breaking up existing tarmac roads/paths/kerbs	8,650.00	m2	15.93	137,824	Assume 100mm thick
Main Contractor attendances	10%			67,753	
Client small props allowance	1.00	item	51,365.00	51,365	
Land costs incl SDLT	Excluded				
Client legal fees	Excluded				

Financing costs	Excluded				
Client Contingency	5%			2,001,170	
TOTAL ESTIMATED PROJECT COST - CURRENT DAY (excluding VAT)				42,024,578	
Inflation to mid-point construction (3Q 2027)	11.2%			4,694,145	BCIS 394 (3Q 24) to 438 (3Q 27)
TOTAL ESTIMATED PROJECT COST TO 4Q 26 (excluding VAT)				46,718,723	

Risks - currently excluded from Works cost estimate

Costs for dealing with poor ground conditions e.g poor bearing capacity, soft spots, obstructions and the like
Surplus material from excavations are assumed to be inert
Removal and disposal of contaminated materials off site incl asbestos
Removal of redundant underground buried services
Diversion of services e.g underground or overhead cables, gas/water mains
Dewatering measures during construction
Suitability of fill for re-use on site
Availability of services locally such as incoming power, water and telecoms.
Dealing with Ecological issues - over and above current allowances
Delays to programme
Abnormal or onerous planning conditions
Inflation - over and above current allowances
Contractor availability to undertake project of this scale and nature
Off site highway works / Section 278
Phasing of the works

Gleeds general clarifications:

Gleeds' construction cost forecasts are based on the latest information from the supply chain and are current at the date of issue. However, they are subject to change due to evolving market conditions and disruptors, necessitating regular reviews to incorporate market feedback.

While the volatility in materials pricing has cooled, prices remain elevated compared to pre-pandemic levels. Labour pressures persist, with the effects of the long-term skills shortage mounting.

Although forecasts suggest lower construction output in 2024, there is growing optimism in industry data indicating an increase in new orders. Additionally, the expectation of interest rate cuts is bolstering confidence. There is also a strong pipeline of work related to infrastructure and energy investment, particularly concerning the transition to net zero.

Caution remains within the supply chain, especially given the elevated levels of construction insolvencies, which affect risk appetite and capacity in certain areas. This has the potential to result in regional price uplifts due to the limited availability of subcontractors with the resulting associated economic supply and demand impact.

As geopolitical tensions continue, uncertainty persists. Any escalation in unrest could significantly disrupt supply chains and reignite inflation. Therefore, Gleeds recommends regularly reviewing and updating information based on the latest conditions.

NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 4

FIRE SERVICE ADMIN/CONTROL BUILDINGS
 BASED ON 1819m2

	RENEW			MAINTAIN		
	FABRIC	SERVICES	DÉCOR	FABRIC	SERVICES	TOTAL ADMIN HUB COST £
1	8,901	9,697	0	4,793	18,008	41,399
2	9,325	11,025	0	5,021	20,475	45,846
3	8,901	10,095	0	4,793	18,748	42,537
4	9,325	11,025	0	5,021	20,475	45,846
5	11,444	10,494	0	6,162	19,488	47,588
6	9,325	11,423	20,807	5,021	21,215	67,791
7	8,901	9,697	0	4,793	18,008	41,399
8	9,325	11,025	0	5,021	20,475	45,846
9	8,901	10,095	0	4,793	18,748	42,537
10	127,366	12,220	3,804	68,582	22,695	234,667
11	8,901	9,697	0	4,793	18,008	41,399
12	9,325	11,423	40,317	5,021	21,215	87,301
13	8,901	9,697	0	4,793	18,008	41,399
14	9,325	11,025	0	5,021	20,475	45,846
15	11,444	10,892	0	6,162	20,228	48,726
16	9,325	11,025	0	5,021	20,475	45,846
17	8,901	9,697	0	4,793	18,008	41,399
18	9,325	11,423	20,807	5,021	21,215	67,791
19	8,901	9,697	0	4,793	18,008	41,399
20	127,366	64,290	3,804	68,582	119,396	383,438
21	8,901	9,697	0	4,793	18,008	41,399
22	9,325	11,025	0	5,021	20,475	45,846
23	8,901	10,095	0	4,793	18,748	42,537
24	9,325	11,025	40,317	5,021	20,475	86,163
25	11,444	10,494	0	6,162	19,488	47,588
Total	471,324	317,998	129,856	253,790	590,565	1,763,533
<i>£/m2/yr</i>						38.78

NOTES

Cost for Building Props is for maintenance and basic fabric renewal only. Assumes a weighting of 80% for renewal/20% maintenance

Based on Year 1 start of 4Q 28, no allowance for inflation beyond this date

Lifecycle analysis based on 25 years

Excludes cleaning costs, facilities management and energy costs

Life Cycle Costs based on figures provided by BCIS

**NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 4**

BA SCHOOL AND APPLIANCE GARAGE (BASED ON FIRE STATION LIFE CYCLE MODEL)
BASED ON 1428m2

	RENEW			MAINTAIN		TOTAL COST OTHER BUILDINGS £
	FABRIC	SERVICES	DÉCOR	FABRIC	SERVICES	
1	9,228	3,519	0	4,969	6,536	24,252
2	9,228	5,866	0	4,969	10,893	30,956
3	9,228	3,519	738	4,969	6,536	24,990
4	9,228	5,944	0	4,969	11,039	31,180
5	9,228	13,843	0	4,969	25,708	53,748
6	9,228	5,866	16,809	4,969	10,893	47,765
7	9,228	3,519	0	4,969	6,536	24,252
8	9,228	5,944	0	4,969	11,039	31,180
9	9,228	3,519	738	4,969	6,536	24,990
10	60,991	16,189	0	32,842	30,066	140,088
11	9,228	3,519	0	4,969	6,536	24,252
12	9,228	5,866	16,835	4,969	10,893	47,791
13	9,228	3,519	0	4,969	6,536	24,252
14	9,228	5,866	0	4,969	10,893	30,956
15	9,228	31,753	738	4,969	58,969	105,657
16	9,228	5,944	0	4,969	11,039	31,180
17	9,228	3,519	0	4,969	6,536	24,252
18	9,228	5,866	16,835	4,969	10,893	47,791
19	9,228	3,519	0	4,969	6,536	24,252
20	60,991	19,005	0	32,842	35,295	148,133
21	9,228	3,519	738	4,969	6,536	24,990
22	9,228	5,866	0	4,969	10,893	30,956
23	9,228	3,519	0	4,969	6,536	24,252
24	9,228	5,944	16,809	4,969	11,039	47,989
25	9,228	13,843	0	4,969	25,708	53,748
Total	334,226	188,795	70,240	179,971	350,620	1,123,852
£/m2/yr						31.48

NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 4

BUILDING PROPS E.G FIRE HOUSE, TERRACED HOUSES
 BASED ON 2023m2

	MAINTAIN		RENEWAL	
	FABRIC	SERVICES	BASIC FABRIC RENEWAL	TOTAL COST BUILDING PROPS £
1	4,022	2,849	5,137	12,008
2	4,022	4,748	5,137	13,907
3	4,022	2,849	5,137	12,008
4	4,022	4,812	5,137	13,971
5	4,022	11,206	5,137	20,365
6	4,022	4,748	5,137	13,907
7	4,022	2,849	5,137	12,008
8	4,022	4,812	5,137	13,971
9	4,022	2,849	5,137	12,008
10	26,586	13,106	5,137	44,829
11	4,022	2,849	5,137	12,008
12	4,022	4,748	5,137	13,907
13	4,022	2,849	5,137	12,008
14	4,022	4,748	5,137	13,907
15	4,022	25,705	5,137	34,864
16	4,022	4,812	5,137	13,971
17	4,022	2,849	5,137	12,008
18	4,022	4,748	5,137	13,907
19	4,022	2,849	5,137	12,008
20	26,586	15,385	5,137	47,108
21	4,022	2,849	5,137	12,008
22	4,022	4,748	5,137	13,907
23	4,022	2,849	5,137	12,008
24	4,022	4,812	5,137	13,971
25	4,022	11,206	5,137	20,365
Total	145,678	152,834	128,413	426,925
£/m2/yr				8.44

NORTH WALES TRAINING CENTRE
BCIS LIFE CYCLE COST ANALYSIS
OPTION 4

EXTERNAL WORKS

LANDSCAPE MAINTAIN	WHITE LINING REPAIRS	SERVICE PETRO CHEM RIG/LPG	SERVICE SMOKE CLEANER	PUMP MAINTENANCE	CLEANING COSTS (EXCLUDED)	WASTE REMOVAL (EXCLUDED)	TOTAL COST EXTERNALS £	GRAND TOTAL
20,546		3,596	2,055	2,055			28,251	105,909
20,546		3,596	2,055	2,055			28,251	118,959
20,546	1,541	3,596	2,055	2,055			29,792	109,326
20,546		3,596	2,055	2,055			28,251	119,247
20,546		3,596	2,055	2,055			28,251	149,951
20,546	1,541	3,596	2,055	2,055			29,792	159,254
20,546		3,596	2,055	2,055			28,251	105,909
20,546		3,596	2,055	2,055			28,251	119,247
20,546	1,541	3,596	2,055	2,055			29,792	109,326
20,546		3,596	2,055	2,055			28,251	447,834
20,546		3,596	2,055	2,055			28,251	105,909
20,546	1,541	3,596	2,055	2,055			29,792	178,790
20,546		3,596	2,055	2,055			28,251	105,909
20,546		3,596	2,055	2,055			28,251	118,959
20,546	1,541	3,596	2,055	2,055			29,792	219,038
20,546		3,596	2,055	2,055			28,251	119,247
20,546		3,596	2,055	2,055			28,251	105,909
20,546	1,541	3,596	2,055	2,055			29,792	159,280
20,546		3,596	2,055	2,055			28,251	105,909
20,546		3,596	2,055	2,055			28,251	606,929
20,546	1,541	3,596	2,055	2,055			29,792	108,188
20,546		3,596	2,055	2,055			28,251	118,959
20,546		3,596	2,055	2,055			28,251	107,047
20,546	1,541	3,596	2,055	2,055			29,792	177,914
20,546		3,596	2,055	2,055			28,251	149,951
513,650	12,328	89,889	51,365	51,365			718,596	4,032,906

Indicative Cashflow Forecast

North Wales Fire and Rescue Service
New Training Centre Site
Indicative Cashflow Forecast (Capital costs)
August 2024

	FINANCIAL YEAR					
OPTION	24/25	25/26	26/27	27/28	28/29	
1	£ 2.08					
2	£ 10.79	£ 7.19				
3	£ 0.96	£ 0.99	£ 1.03	£ 23.94	£ 10.48	
4	£ 1.21	£ 1.25	£ 1.29	£ 24.62	£ 18.33	

Drawing List

North Wales Fire and Rescue Service
New Training Centre Site
Drawing List (Option 3 and 4)
August 2024

Drawing ref	Revision	Name
2267.03.00.206	P2	Pr Site Plan Opt 3B
2267.03.01.302	P1	Pr Floor Plans TAH Opt 3B
2267.03.01.402	P1	Pr Elevations TAH Opt 3B
2267.03.02.302	P1	Pr Floor Plan BA Opt 3B
2267.03.02.402	P1	Pr Elevations BA Opt 3B
2267.03.03.302	P1	Pr App Garage Opt 3B
2267.03.14.301	P1	Pr Floor Plan RTC Opt 3B
2267.03.14.401	P1	Pr Elevations RTC Opt 3B
2267.03.00.204	P3	Pr Site Plan Opt 4
2267.03.03.301	P1	Appliance Garage
2267.03.04.301	P1	Fire House
2267.03.04.302	P1	Fire House
2267.03.04.303	P1	Fire House
2267.03.04.401	P1	Fire House
2267.03.04.402	P1	Fire House
2267.03.04.501	P1	Fire House
2267.03.04.502	P1	Fire House
2267.03.05.301	P1	FBT Canopy
2267.03.07.301	P1	BA Training Bldg
2267.03.08.301	P1	Terraced Houses
2267.03.08.302	P1	Terraced Houses
2267.03.08.303	P1	Terraced Houses
2267.03.08.401	P1	Terraced Houses
2267.03.08.402	P1	Terraced Houses
2267.03.08.501	P1	Terraced Houses
2267.03.09.301	P1	Detached House
2267.03.10.302	P1	Semi-Detached House
2267.03.11.301	P1	Ind Comm and Food
2267.03.12.301	P1	Agricultural Bldg
2267.03.13.301	P1	Farm House
2267.03.00.202	P1	Ex Site Plan
2270.03.00 SK03	P1	Level Strategy Opt 3
2270.03.00 SK04	P1	Level Strategy Opt 4
2270.03.00 SK01	P1	Proposed Drainage Strategy Opt 3
2270.03.00 SK02	P1	Proposed Drainage Strategy Opt 4
BGH Outline Civil and Structural Strategy	Rev -	
Harley Hadow MEP Services Overview -	Rev 2	

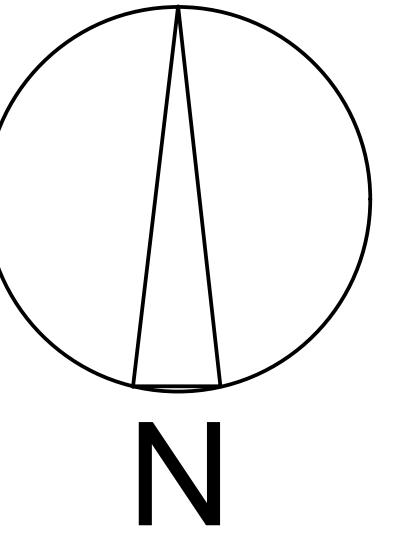
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Hazard Identification

hazard	date



DEVELOPED SITE AREA = APPROX. 2.677 Ha

RESIDUAL SITE AREA = APPROX. 1.041 Ha

SITE AREA BOUNDED BY SOLID RED LINE = APPROX. 3.718 Ha

GCN MITIGATION AREA

HIGH & INTERMEDIATE PRESSURE GAS MAINS
HAZARD / NO BUILD ZONE

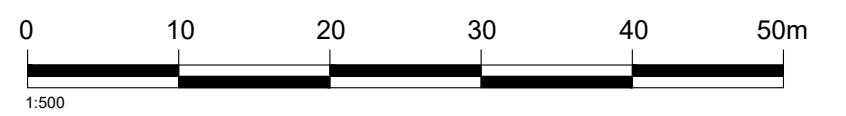
WILDFLOWER LANDSCAPING ZONE

SOFT LANDSCAPING / TREE PLANTING ZONE

AREA RETAINED FOR FUTURE EXPANSION

SAFE WALKING ROUTE

OPTION 3B





OPTION 4

	GCN MITIGATION AREA	
	HIGH & INTERMEDIATE PRESSURE GAS MAINS HAZARD / NO BUILD ZONE	
	WILDFLOWER LANDSCAPING ZONE	3,206 SQ.M
	TREE PLANTING ZONE	6,383 SQ.M
	PV - TRAINING & ADMIN. HUB	480 SQ.M
	PV - BA SCHOOL ETC.	350 SQ.M
	PV - SOLAR FARM	332 SQ.M
	PV - CAR PARK	1,935 SQ.M
	BASED ON AN INDIVIDUAL SOLAR PANEL OF 1M X 2M NOMINAL SIZE	
	DEVELOPMENT AREA	3.956 Ha
	GCN MITIGATION AREA	1.305 Ha

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ref	hazard	date

N

P3	UPDATED IN LINE WITH COMMENTS RECEIVED AT PTM 21.08.23	ST	23.08.23
P2	UPDATED IN LINE WITH COMMENTS RECEIVED AT PTM 08.08.23	ST	10.08.23
P1	FIRST ISSUE	ST	07.08.23
ref	revision	by	date

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Bradshaw Gass & Hope LLP

client

GLEEDS

project

NORTH WALES FIRE & RESCUE SERVICE
NEW TRAINING CENTRE

drawing

PROPOSED SITE PLAN

OPTION 4

drawn by

ST

date

AUG 23

checked by

date

scale

1:500

rev

A0

dwg no

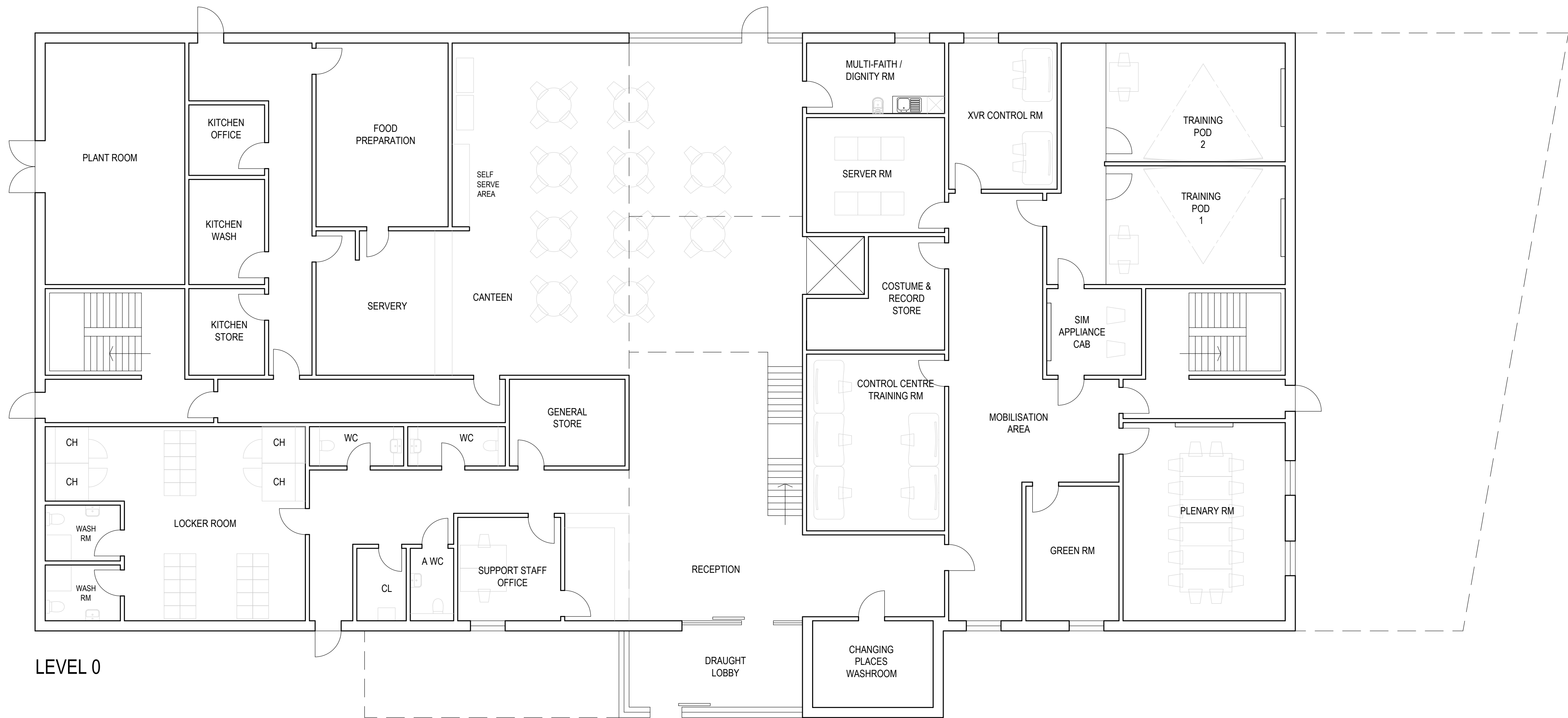
2270.01.00.204

rev

P3



LEVEL 1



LEVEL 0

OPTION 3B

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ref	hazard	date

P1	FIRST ISSUE	ST	18.08.24
ref	revision	by	date

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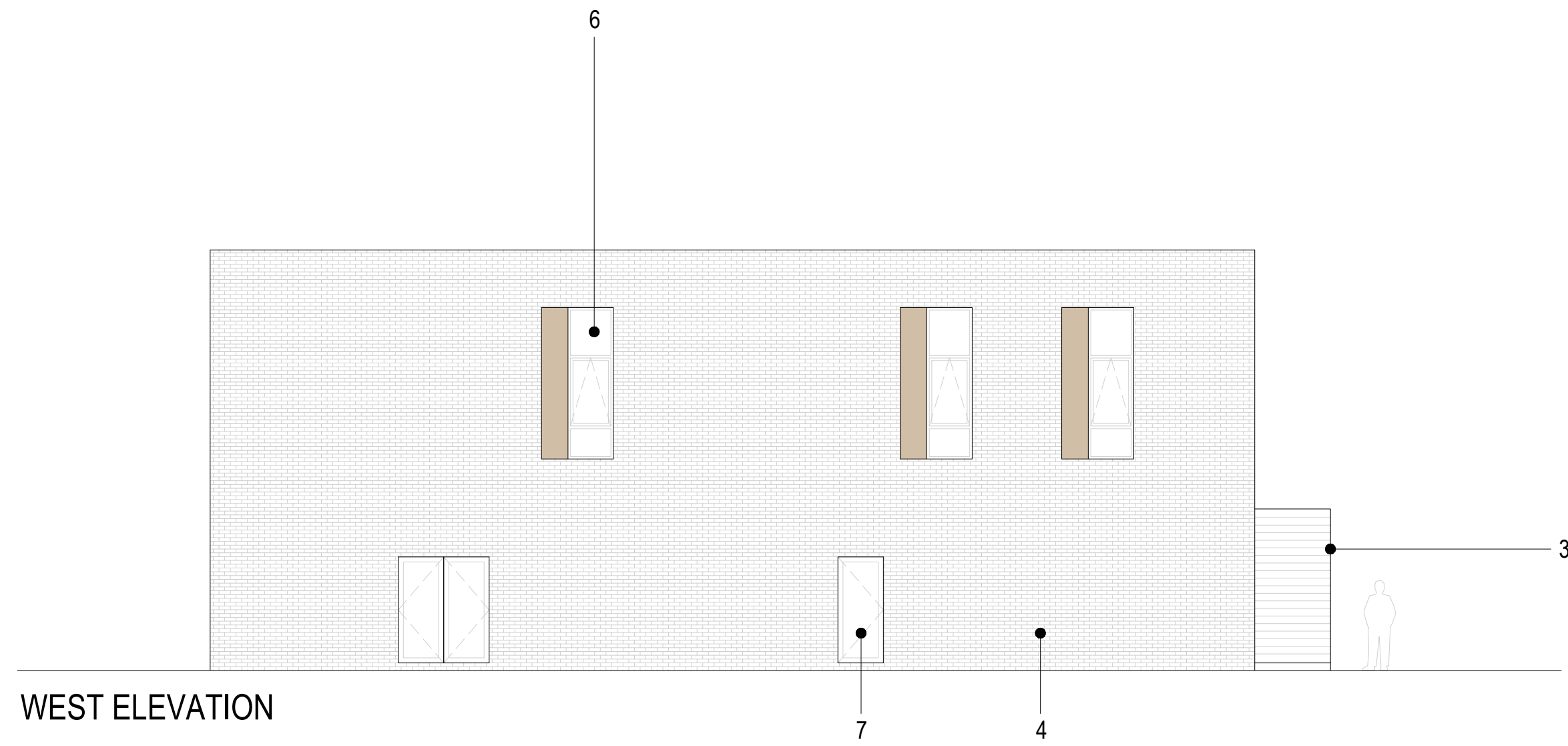
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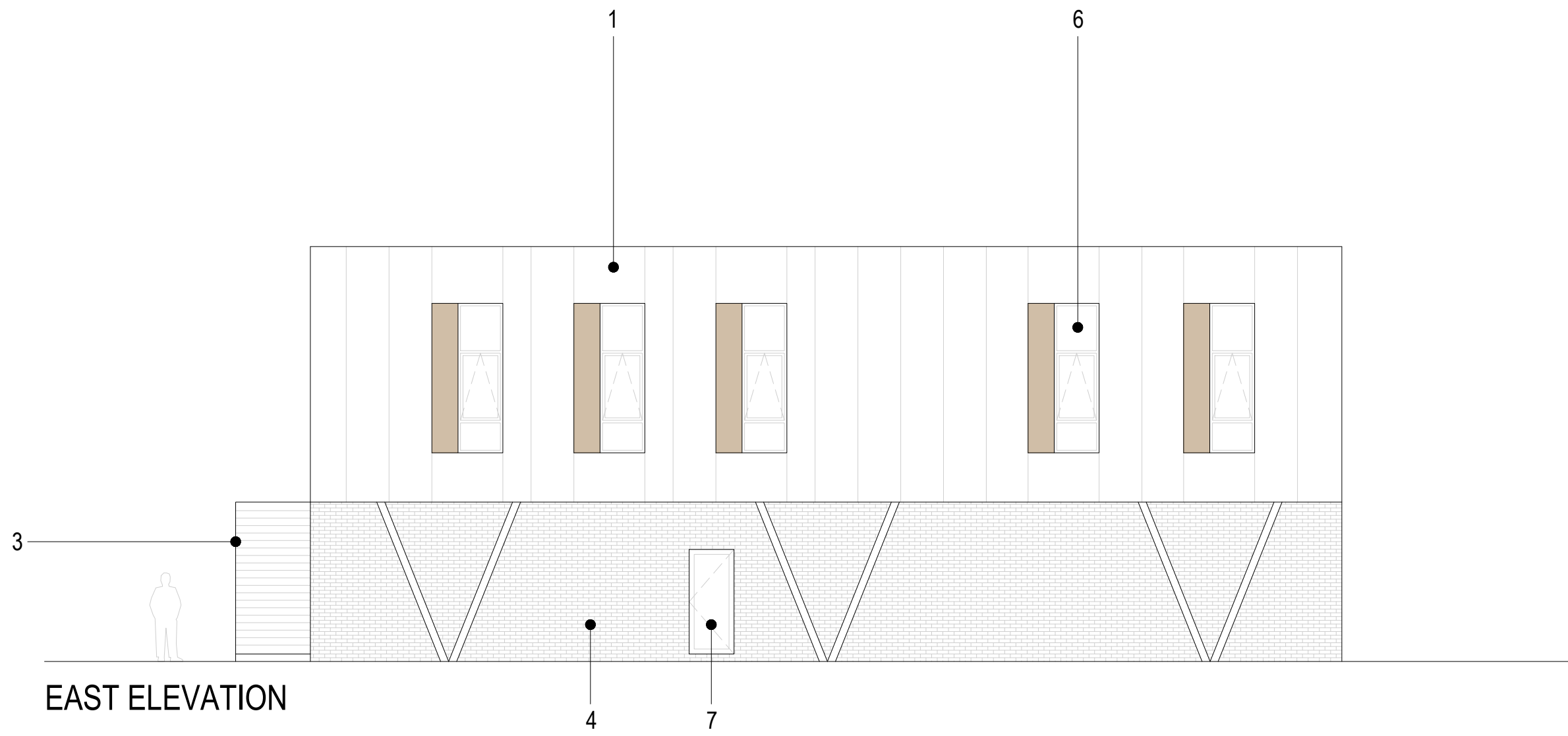
client	GLEEDS		
project	NORTH WALES FIRE & RESCUE SERVICE NEW TRAINING CENTRE		
drawing	TRAINING & ADMIN. HUB PROPOSED FLOOR PLAN		
drawn by	ST	date	AUG 24
checked by		date	
scale	1:50		A1
dwg no	2267.03.01.302	rev	P1



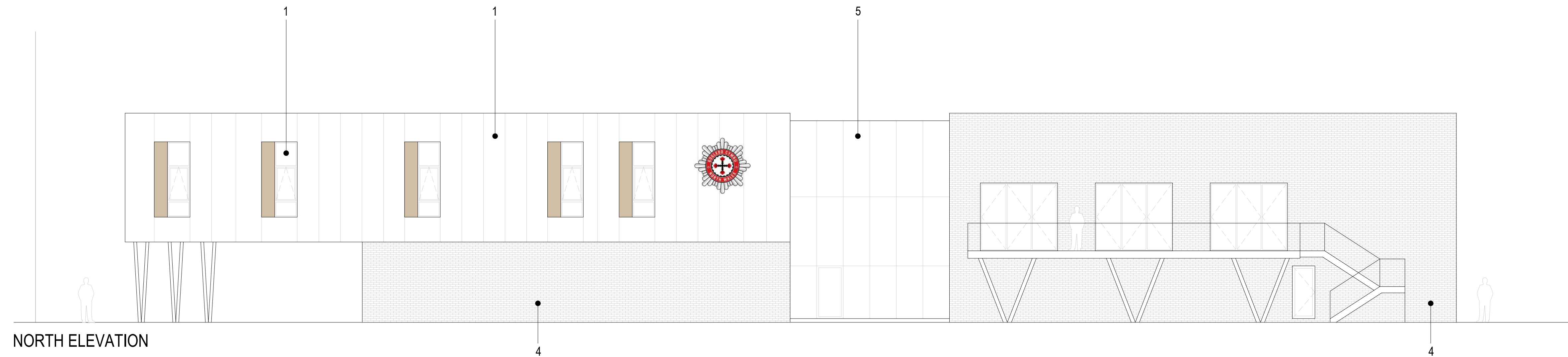
SOUTH ELEVATION



WEST ELEVATION



EAST ELEVATION



NORTH ELEVATION

OPTION 3B

- | | | | |
|---|---|---|--|
| 1 | COLOUR COATED PROFILED METAL WALL CLADDING | 5 | COLOUR COATED ALUMINIUM FRAMED CURTAIN WALLING |
| 2 | TRESPA FLAT PANEL CLADDING | 6 | COLOUR COATED ALUMINIUM FRAMED WINDOWS |
| 3 | COLOUR COATED 'WOOD-LOOK' METAL WALL CLADDING | 7 | COLOUR COATED ALUMINIUM FRAMED DOORS |
| 4 | BRICKWORK | 8 | BRISE SOLEIL |



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Hazard Identification

ref	hazard	date

P1	FIRST ISSUE	ST	18.08.24
ref	revision	by	date

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Bradshaw Gass & Hope LLP

client
GLEEDS

project
**NORTH WALES
FIRE & RESCUE SERVICE
NEW TRAINING CENTRE**

drawing
**TRAINING & ADMIN. HUB
PROPOSED ELEVATIONS**

drawn by	ST	date	AUG 23
checked by		date	

scale	1:100	A1
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dwg no	2267.03.01.402	rev	P1
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North Wales Fire & Rescue Service
Gwasanaeth Tân ac Achub Gogledd Cymru

New Training Centre
Canolfan Hyfforddi

Precedent Images - Administration & Training Hub Building
Adeilad Canolbwynt Gweinyddu a Hyfforddiant





Gwasanaeth Tân ac Achub
Fire and Rescue Service

Natural cladding materials and oversailing
upper floor with interesting structural support

Textured slate or slate-look wall cladding



Textured slate or slate look wall cladding

Oversailing upper floor with
interesting structural support

Building Fabric





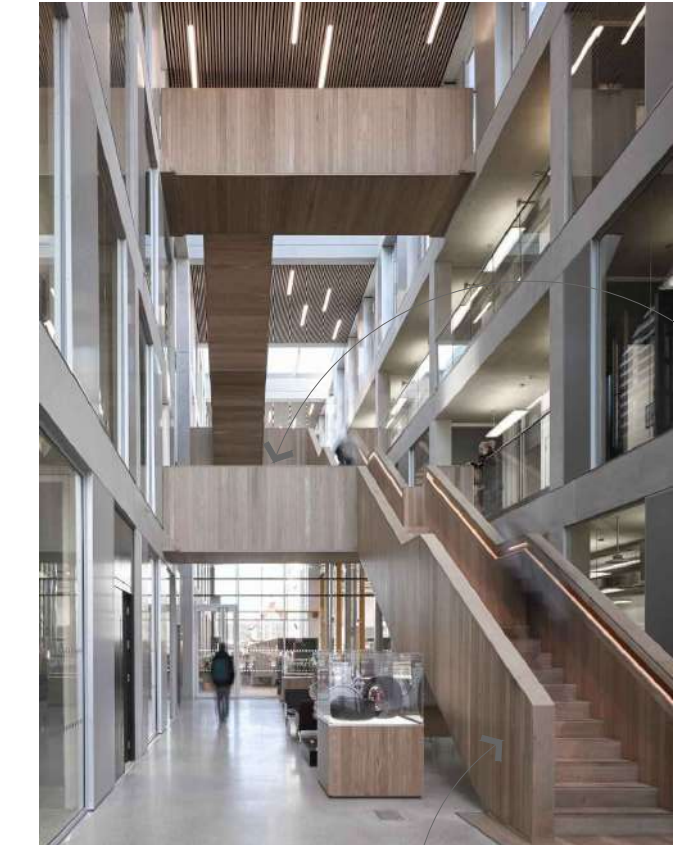
Gwasanaeth Tân ac Achub
Fire and Rescue Service

Simple materials palette creating
clean lines and bold statement



Feature staircase within centralised
atrium. Natural materials

Bright / open atrium with light from above and
interesting structural form



Link bridge

Feature staircase within centralised
atrium. Natural materials

Bright / open welcome space
with large windows. Subtle use
of natural materials

Welcome Space & Circulation





Gwasanaeth Tân ac Achub
Fire and Rescue Service

Open ceilings / exposed
building services

Use of natural materials



Interesting use of materials creating
privacy screening to private offices



Meeting Pods

Interesting acoustic room dividers



Thoughtful implementation of internal
planting to sub-divide space and
create a calming work environment

Office / Meeting





Gwasanaeth Tân ac Achub
Fire and Rescue Service



Compact / modern self-service area with bright furniture and dynamic features



Bright / open space with large windows



Minimalist / modern self-service area utilising natural materials

Refreshments & Light Dining





OPTION 3B



P1	FIRST ISSUE	ST	18.08.24
ref	revision	by	date

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project					
NORTH WALES FIRE & RESCUE SERVICE NEW TRAINING CENTRE					
drawing					
BA TRAINING HUB PROPOSED FLOOR PLAN					
drawn by checked by scale		ST		date date	
dwg no		1:50		A1	
2267.03.02.302		rev		P1	



OPTION 3B

- 1 COLOUR COATED PROFILED METAL WALL CLADDING
- 2 TRESPA FLAT PANEL CLADDING
- 3 COLOUR COATED 'WOOD-LOOK' METAL WALL CLADDING
- 4 BRICKWORK
- 5 COLOUR COATED ALUMINIUM FRAMED CURTAIN WALLING
- 6 COLOUR COATED ALUMINIUM FRAMED WINDOWS
- 7 COLOUR COATED ALUMINIUM FRAMED DOORS
- 8 BRISE SOLEIL
- 9 COLOUR COATED INSULATED SECTIONAL DOOR

status				PRELIMINARY	
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P1	FIRST ISSUE			ST	18.08.24
ref	revision			by	date
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Bradshaw Gass & Hope LLP					
client					
GLEEDS					
project					
NORTH WALES FIRE & RESCUE SERVICE NEW TRAINING CENTRE					
drawing					
BA TRAINING HUB PROPOSED ELEVATIONS					
drawn by		ST		date	
checked by				date	
scale		1:100			A1
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					P1



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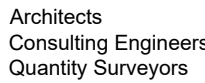
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ref	hazard	date



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ref	revision	by	date



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project

NORTH WALES
FIRE & RESCUE SERVICE
NEW TRAINING CENTRE

drawing

RTC / STORES / ENERGY CENTRE PROPOSED FLOOR PLAN

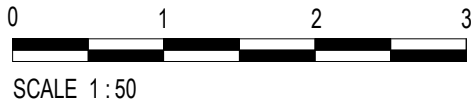
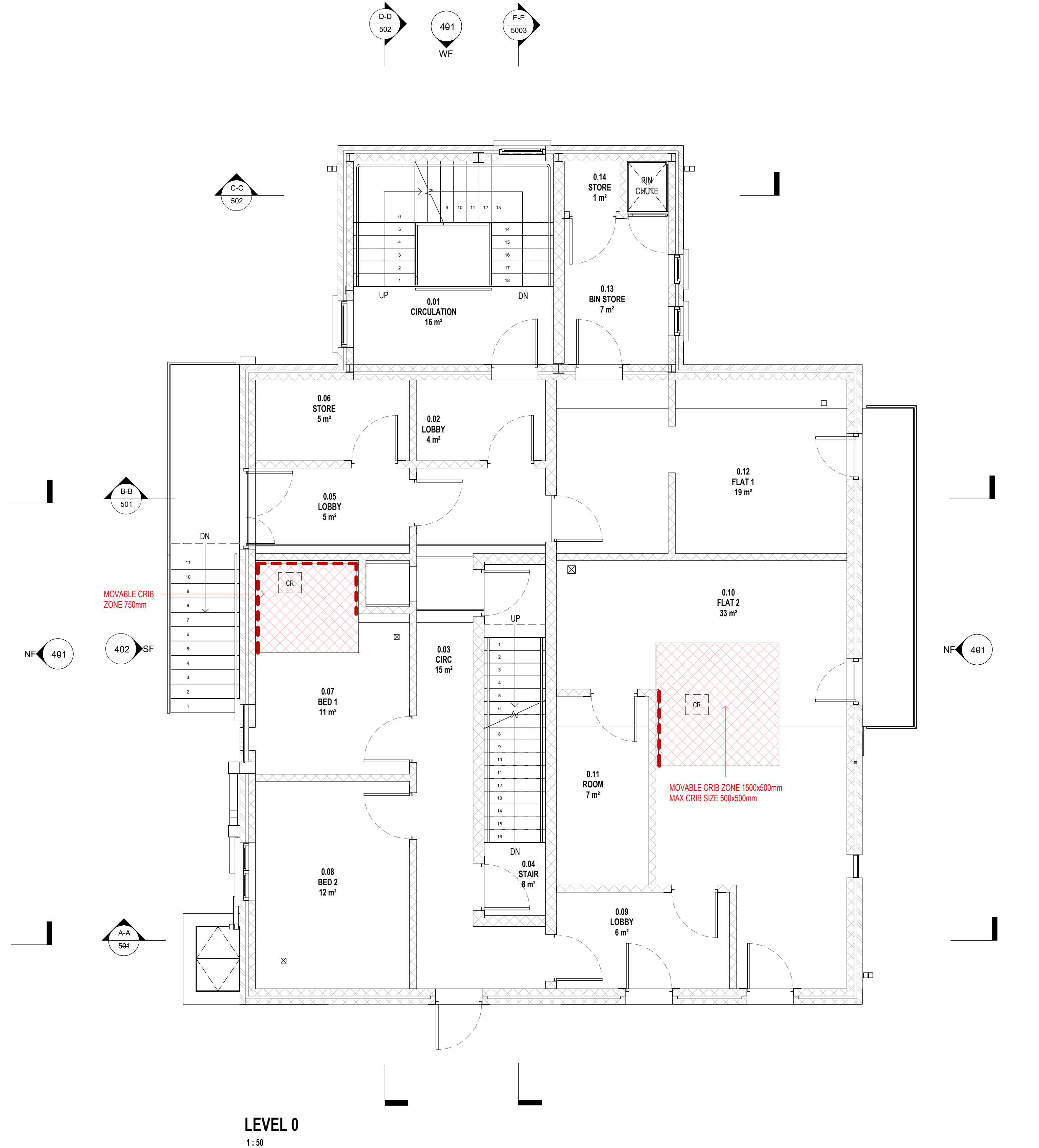
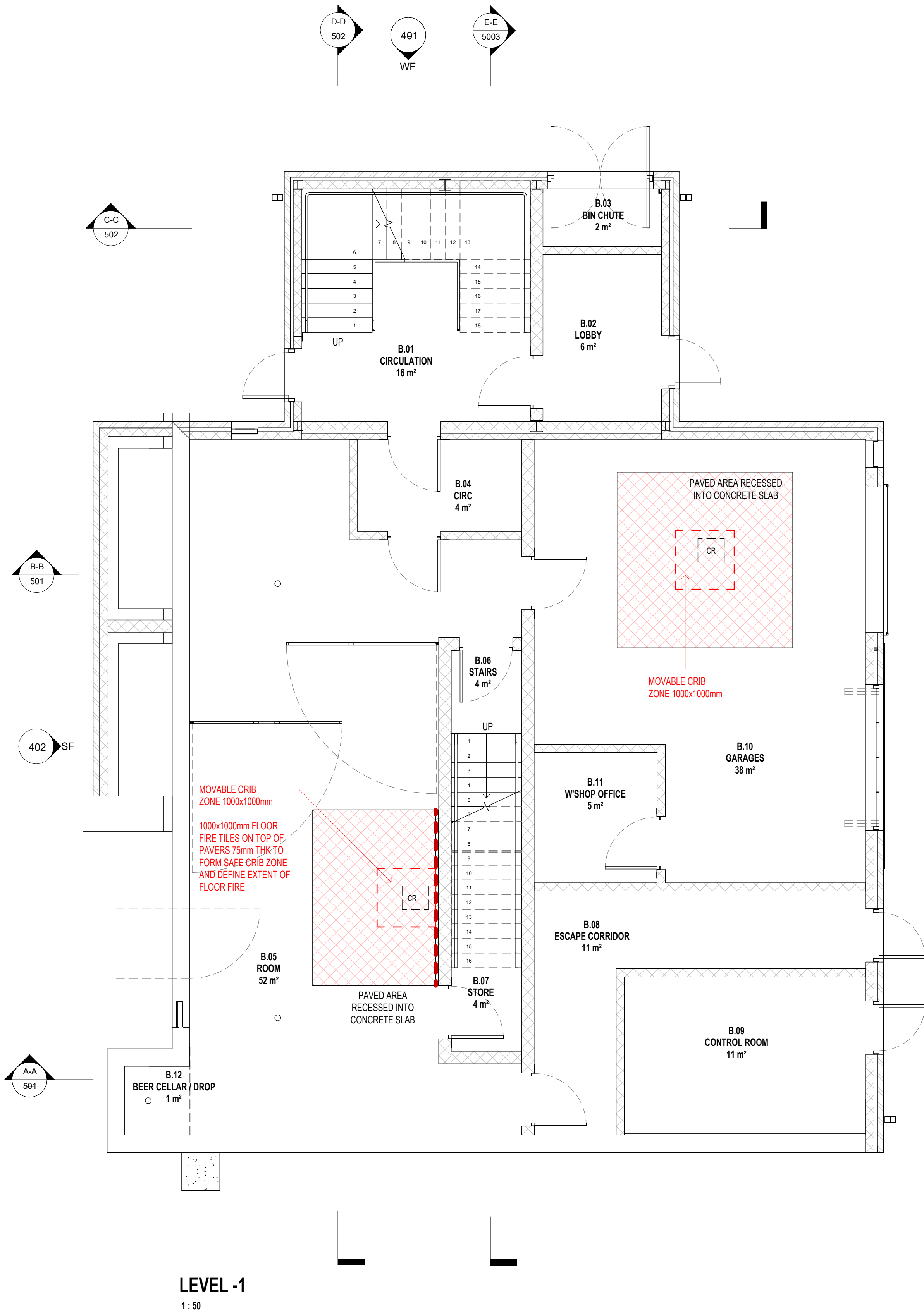
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checked by		date	

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OPTION 3B





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Hazard Identification			⚠
ref	hazard	date	

P1	FIRST DRAWING ISSUE	LC	07.08.2023
ref	revision	by	date

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ISG CONSTRUCTION LTD

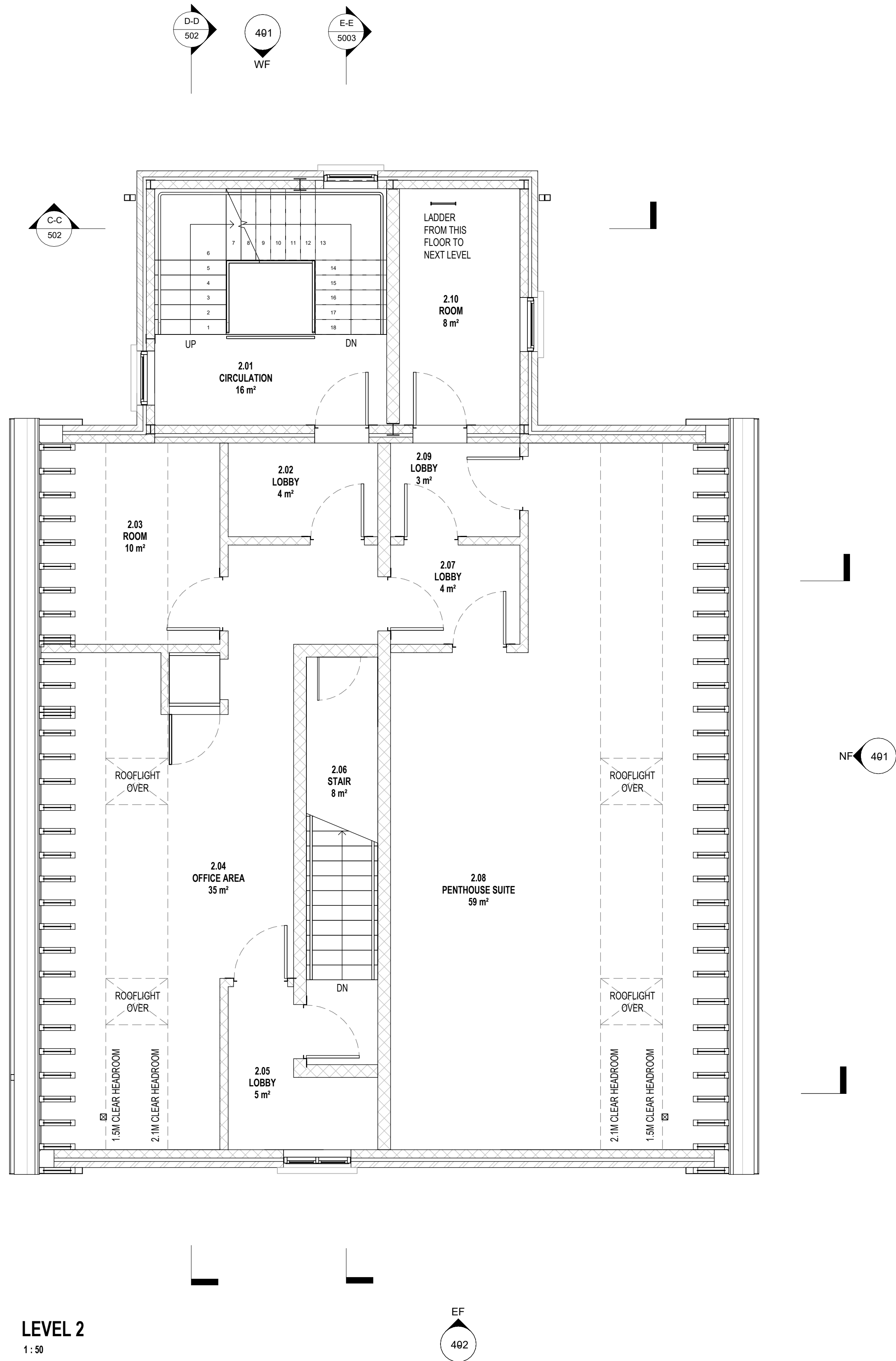
project
NORTH WALES TRAINING CENTRE

drawing
FIRE HOUSE
PLAN - LEVEL -1 & 0

drawn by	LC	date	AUG 2023
checked by	ST	date	AUG 2023

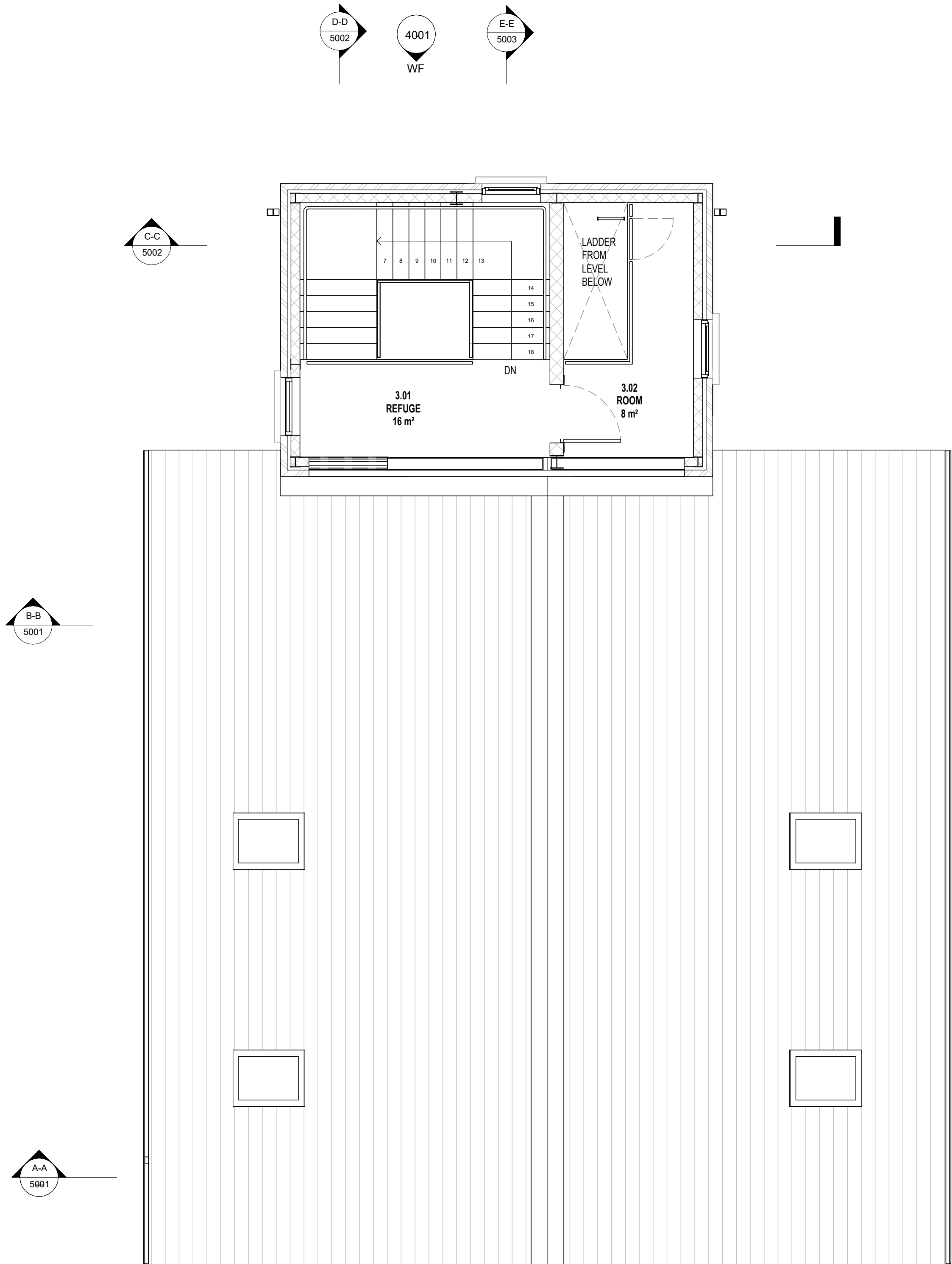
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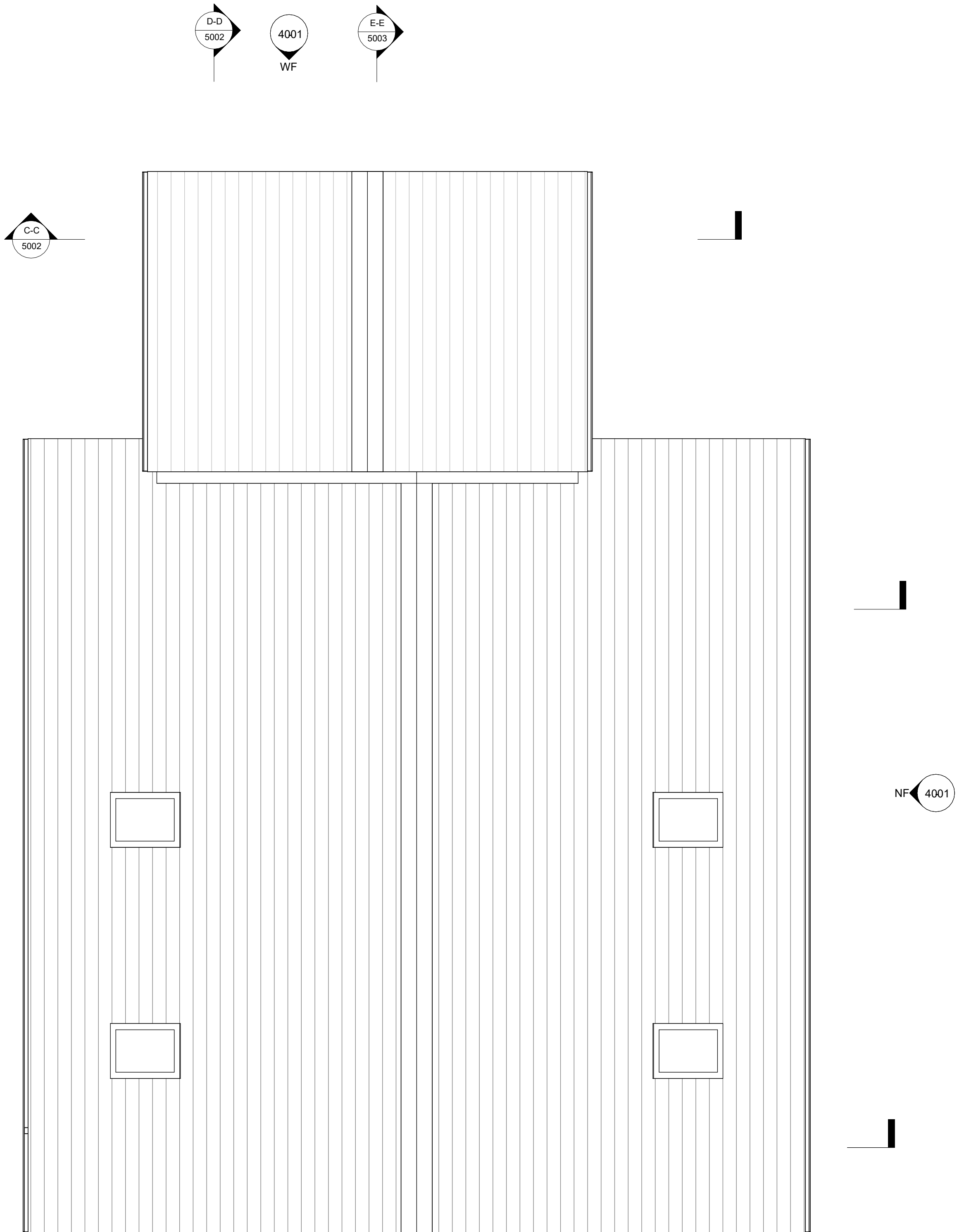


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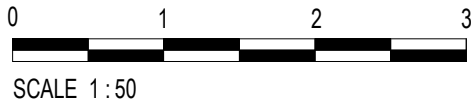
SCALE 1:50



LEVEL 3
1:50



ROOF
1:50



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Hazard Identification		
ref	hazard	date

P1	FIRST DRAWING ISSUE	LC	07.08.2023
ref	revision	by	date

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Bradshaw Gass & Hope LLP

client
ISG CONSTRUCTION LTD

project
NORTH WALES TRAINING CENTRE

drawing
FIRE HOUSE
PLAN - LEVEL 3 & ROOF

drawn by	LC	date	AUG 2023
checked by	ST	date	AUG 2023
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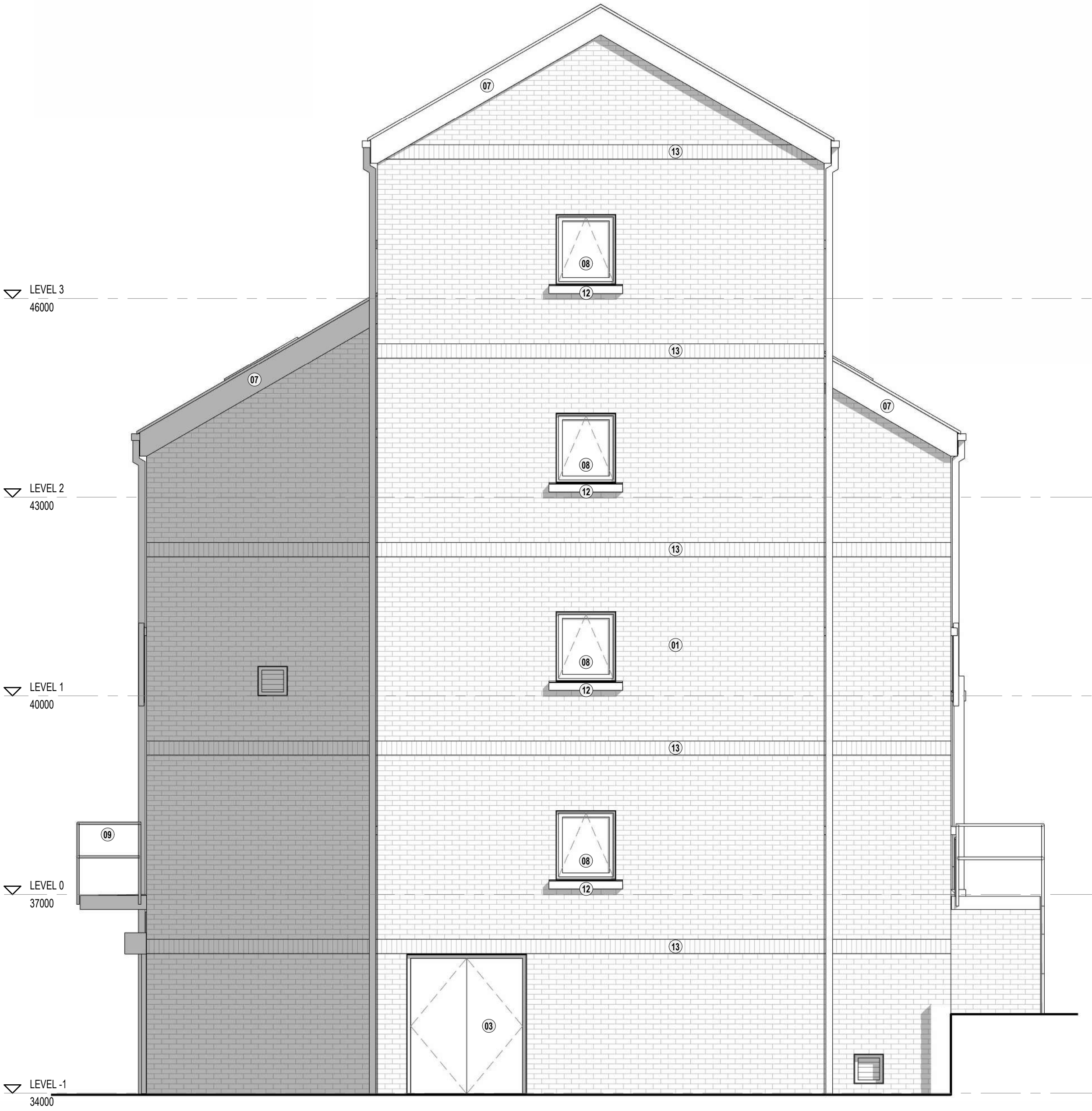
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ELEVATION MATERIAL LEGEND

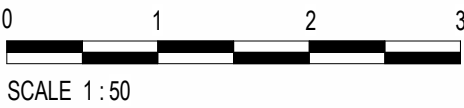
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03	STEEL DOORSET	TBC
04	VELUX ROOF LIGHTS	TBC
05	METAL ROLLER SHUTTER DOOR	TBC
06	METAL BI-FOLD 4 PANEL DOORS	TBC
07	STEEL RWP / FASCIA / GUTTER	TBC
08	STEEL FRAMED WINDOW GLAZED WITH CLEAR GLASS	TBC
09	1100mm HIGH STEEL HANDRAILING TO BALCONY	TBC
10	STEEL JULIET BALCONY	TBC
11	STEEL FRAMED WINDOW GLAZED WITH PAINTED STEEL SHEET (BLACK)	TBC
12	CONCRETE CILL WITH SACRIFICIAL TIMBER	TBC
13	SOLDIER COURSE BRICKWORK BANDING	TBC
14	COMPOSITE FLAT PANEL WALL CLADDING	TBC



NORTH FACING ELEVATION
1 : 50



WEST FACING ELEVATION
1 : 50



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Hazard Identification			
ref	hazard	date	

P1	FIRST DRAWING ISSUE	LC	07.08.2023
ref	revision	by	date

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Bradshaw Gass & Hope LLP

client	ISG CONSTRUCTION LTD		
project	NORTH WALES TRAINING CENTRE		
drawing	FIRE HOUSE ELEVATIONS - SHEET 1		
drawn by	LC	date	AUG 2023
checked by	ST	date	AUG 2023
scale	1 : 50		A1
dwg no	2267.03.04.401		rev P1

ELEVATION MATERIAL LEGEND

REF	DESCRIPTION	PRODUCT REF / COLOUR
01	BRICK OUTER LEAF / CAVITY / BLOCKWORK	TBC
02	COATED STEEL TILES ON ENGINEERED TIMBER RAFTERS	TBC
03	STEEL DOORSET	TBC
04	VELUX ROOF LIGHTS	TBC
05	METAL ROLLER SHUTTER DOOR	TBC
06	METAL BI-FOLD 4 PANEL DOORS	TBC
07	STEEL RWP / FASCIA / GUTTER	TBC
08	STEEL FRAMED WINDOW GLAZED WITH CLEAR GLASS	TBC
09	1100mm HIGH STEEL HANDRAILING TO BALCONY	TBC
10	STEEL JULIET BALCONY	TBC
11	STEEL FRAMED WINDOW GLAZED WITH PAINTED STEEL SHEET (BLACK)	TBC
12	CONCRETE CILL WITH SACRIFICIAL TIMBER	TBC
13	SOLDIER COURSE BRICKWORK BANDING	TBC
14	COMPOSITE FLAT PANEL WALL CLADDING	TBC

status PRELIMINARY

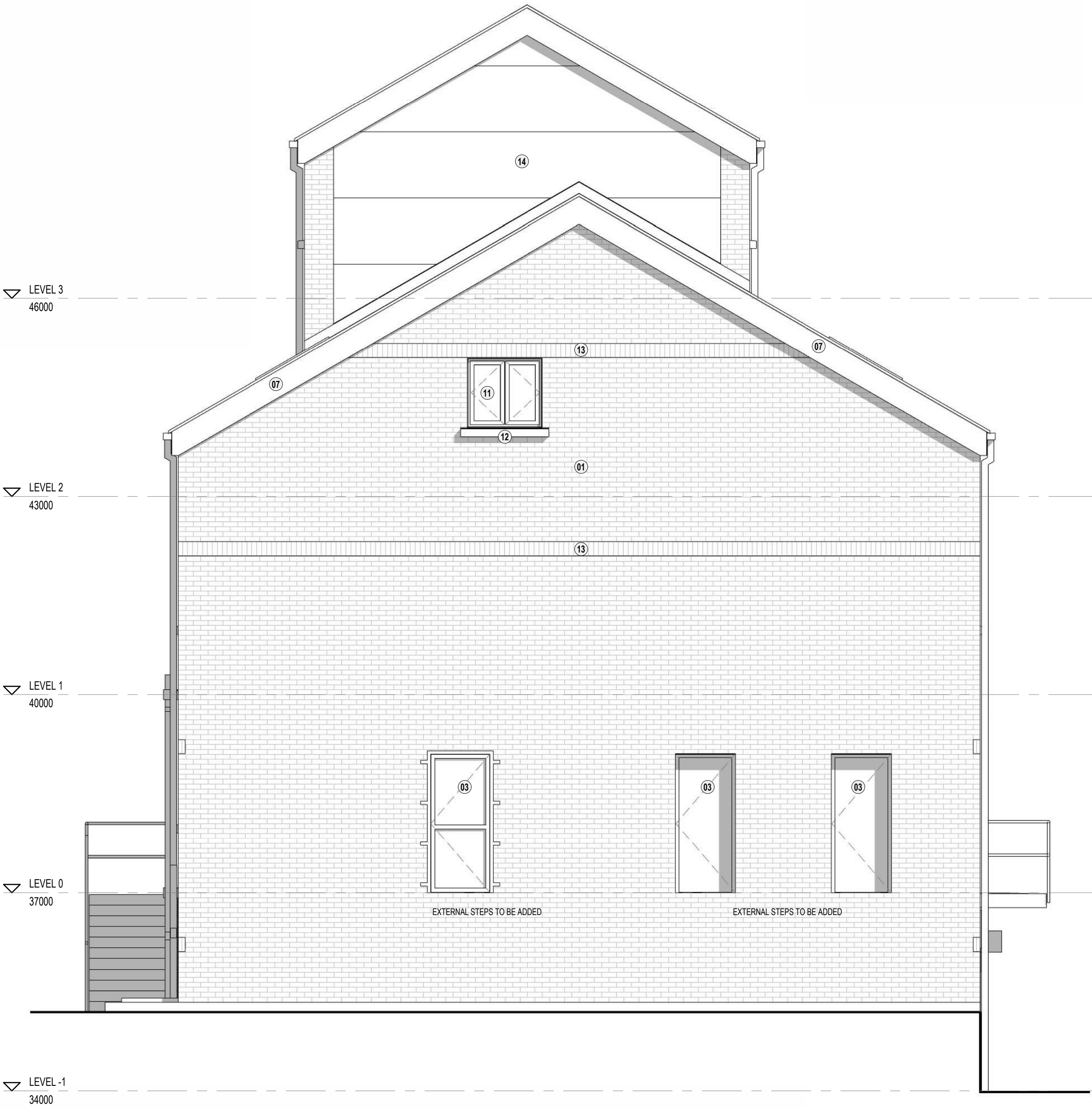
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EAST FACING ELEVATION
1 : 50



SOUTH FACING ELEVATION
1 : 50

P1	FIRST DRAWING ISSUE	LC	07.08.2023
ref	revision	by	date

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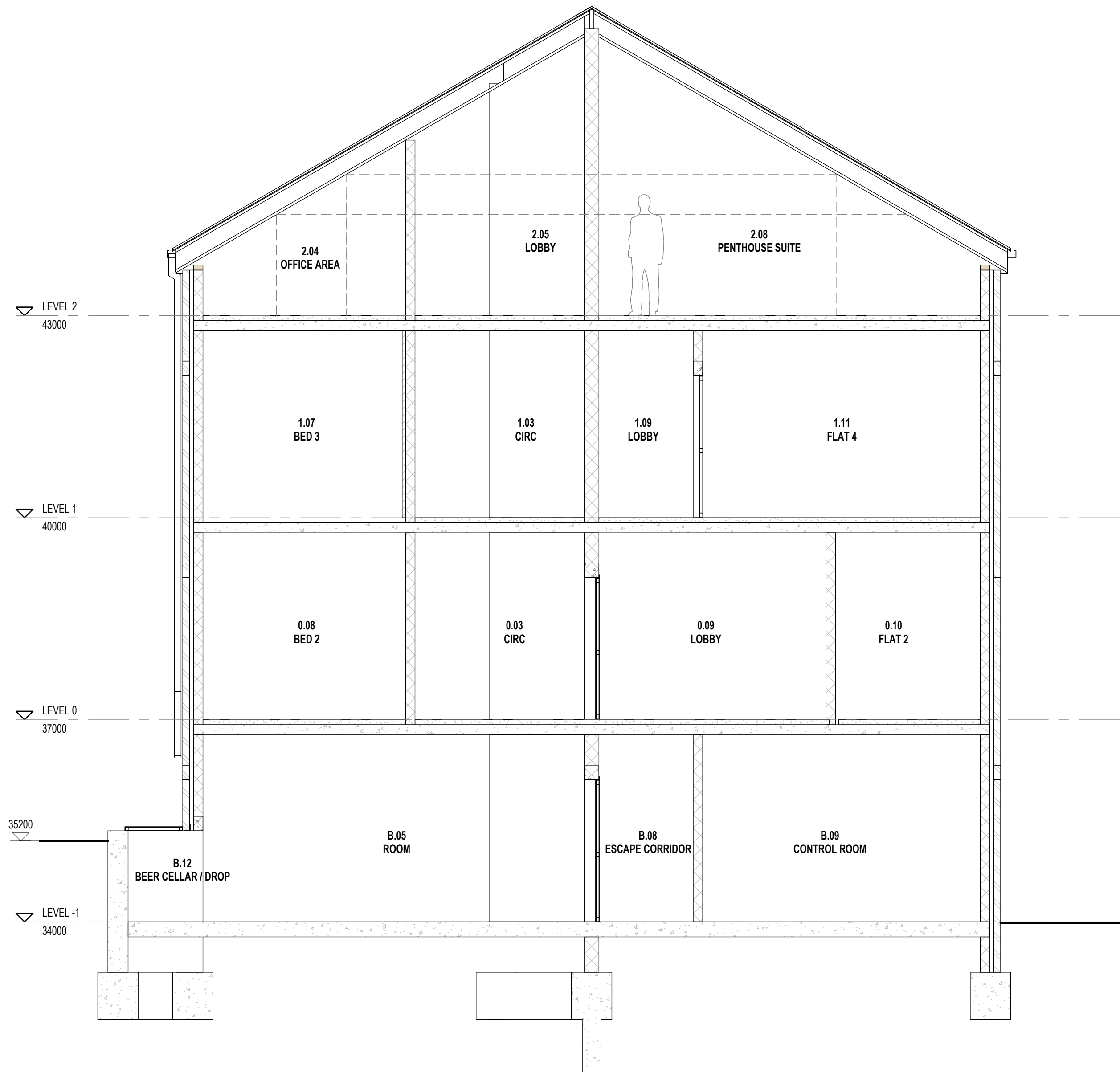
Bradshaw Gass & Hope LLP

client
ISG CONSTRUCTION LTD

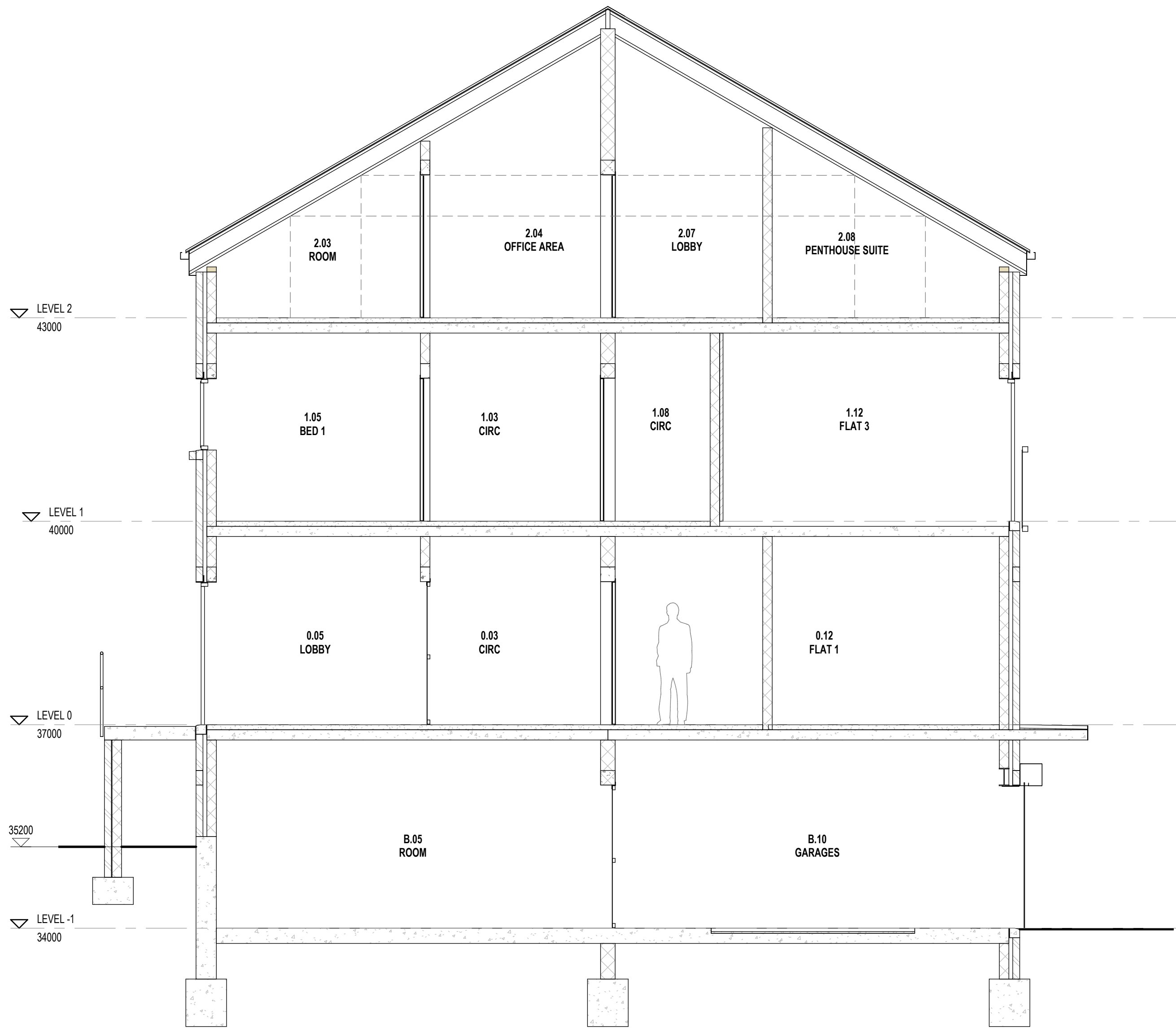
project
NORTH WALES TRAINING CENTRE

drawing
FIRE HOUSE
ELEVATIONS - SHEET 2

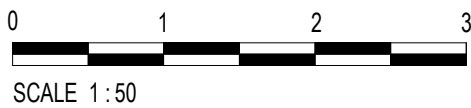
drawn by	LC	date	AUG 2023
checked by	ST	date	AUG 2023
scale	1 : 50		A1
dwg no	2267.03.04.402	rev	P1



SECTION A-A
1:50



SECTION B-B
1:50



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Bradshaw Gass & Hope LLP

client
ISG CONSTRUCTION LTD

project
NORTH WALES TRAINING CENTRE

drawing
FIRE HOUSE
PROPOSED GA SECTIONS - SHEET 1

drawn by	LC	date	AUG 2023
checked by	ST	date	AUG 2023

scale	1:50	A1
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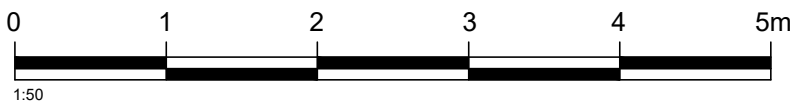
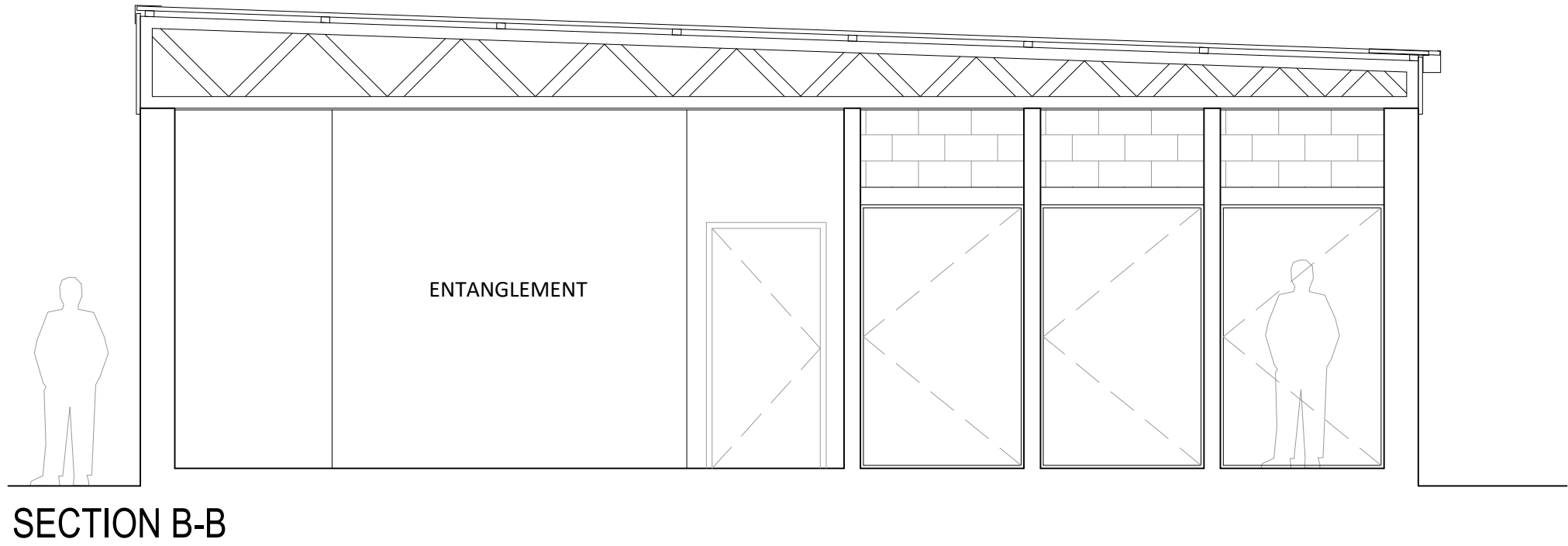
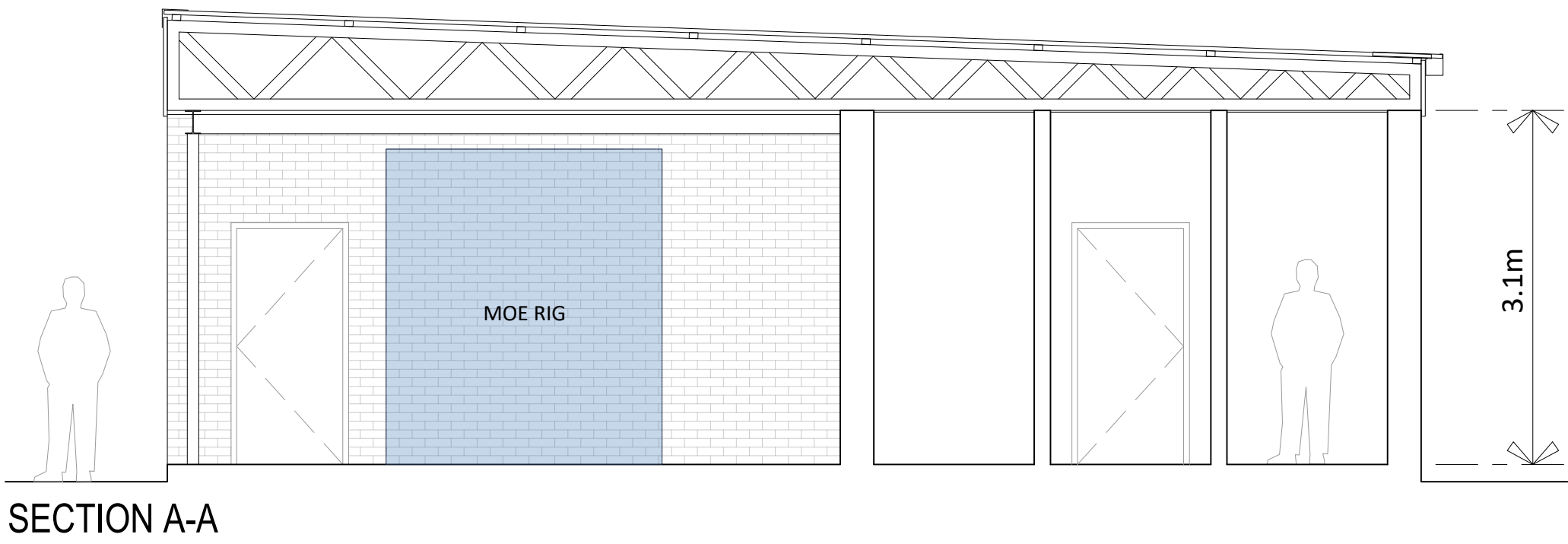
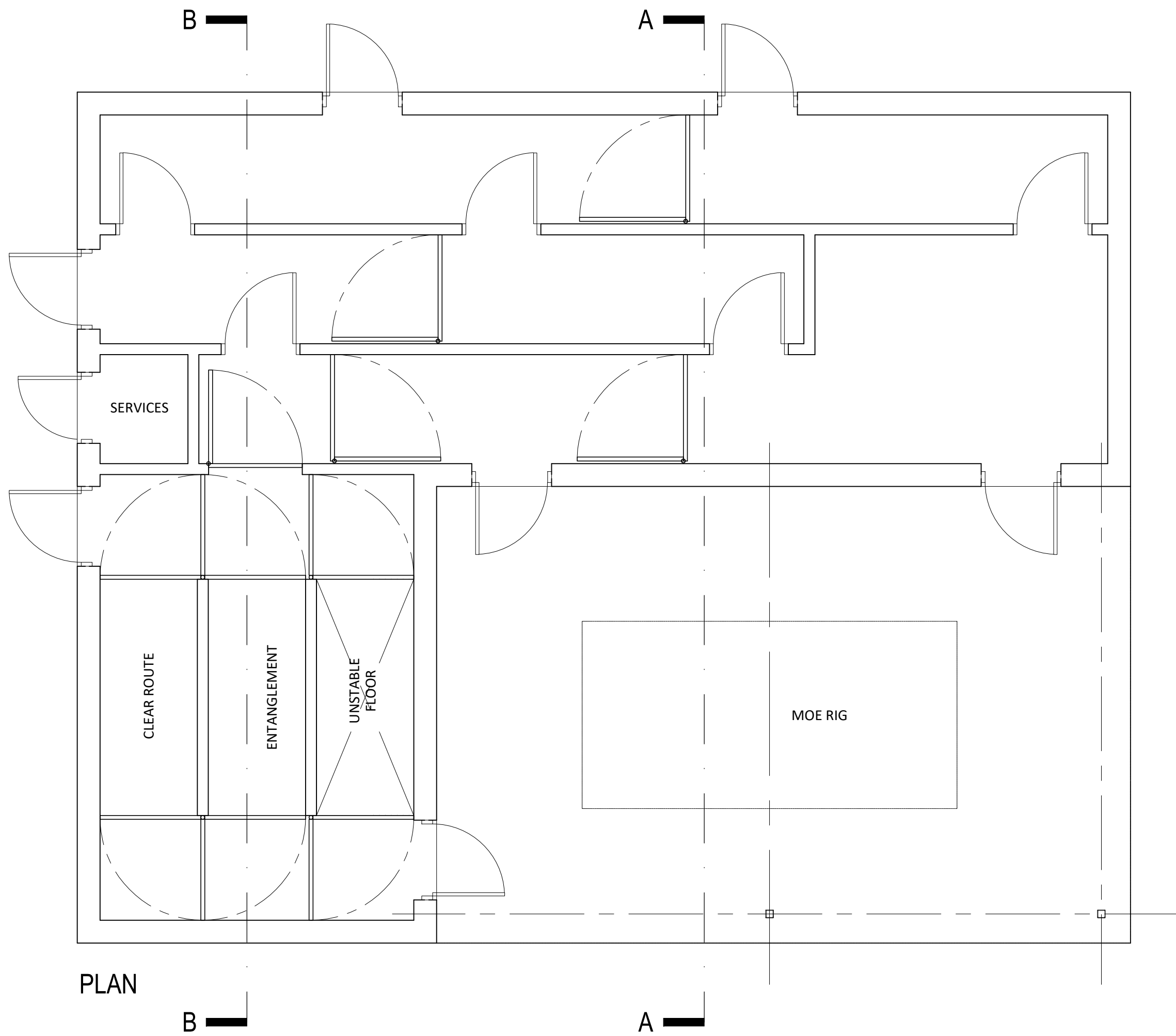
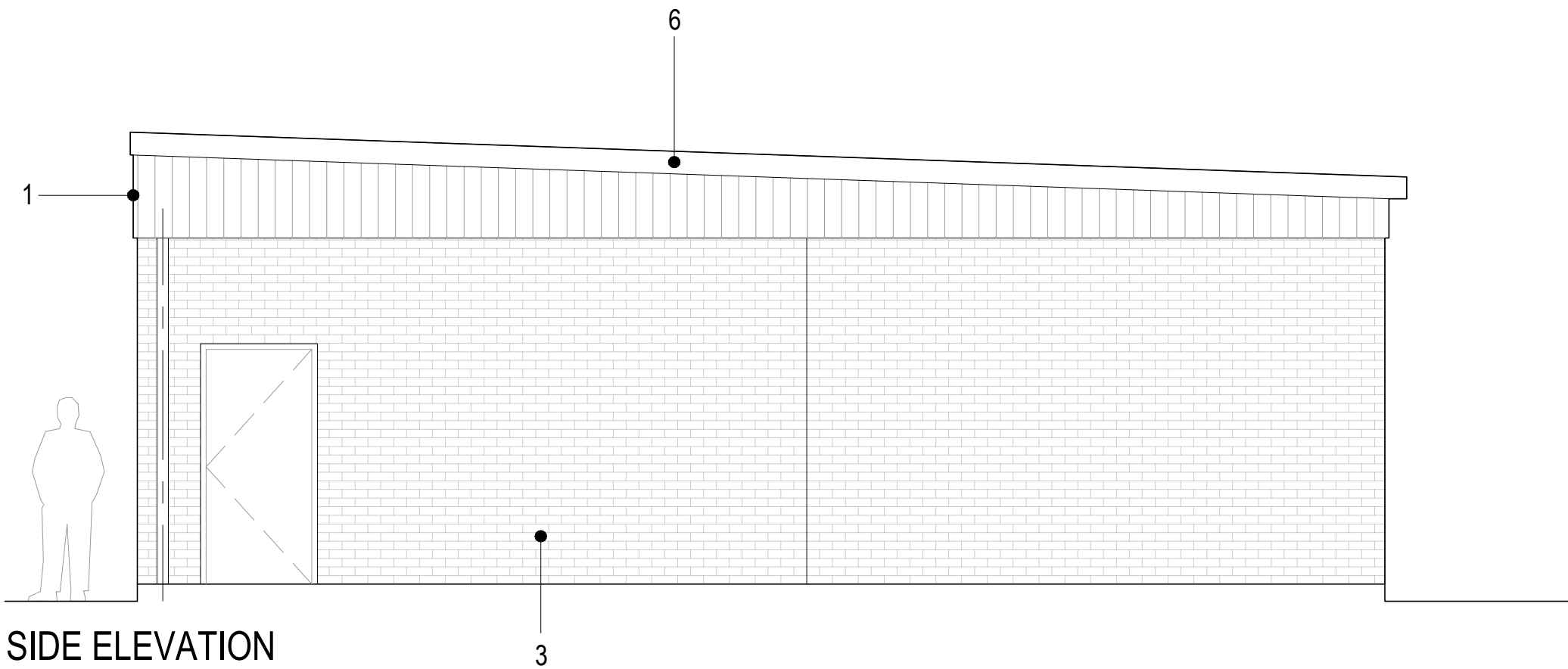
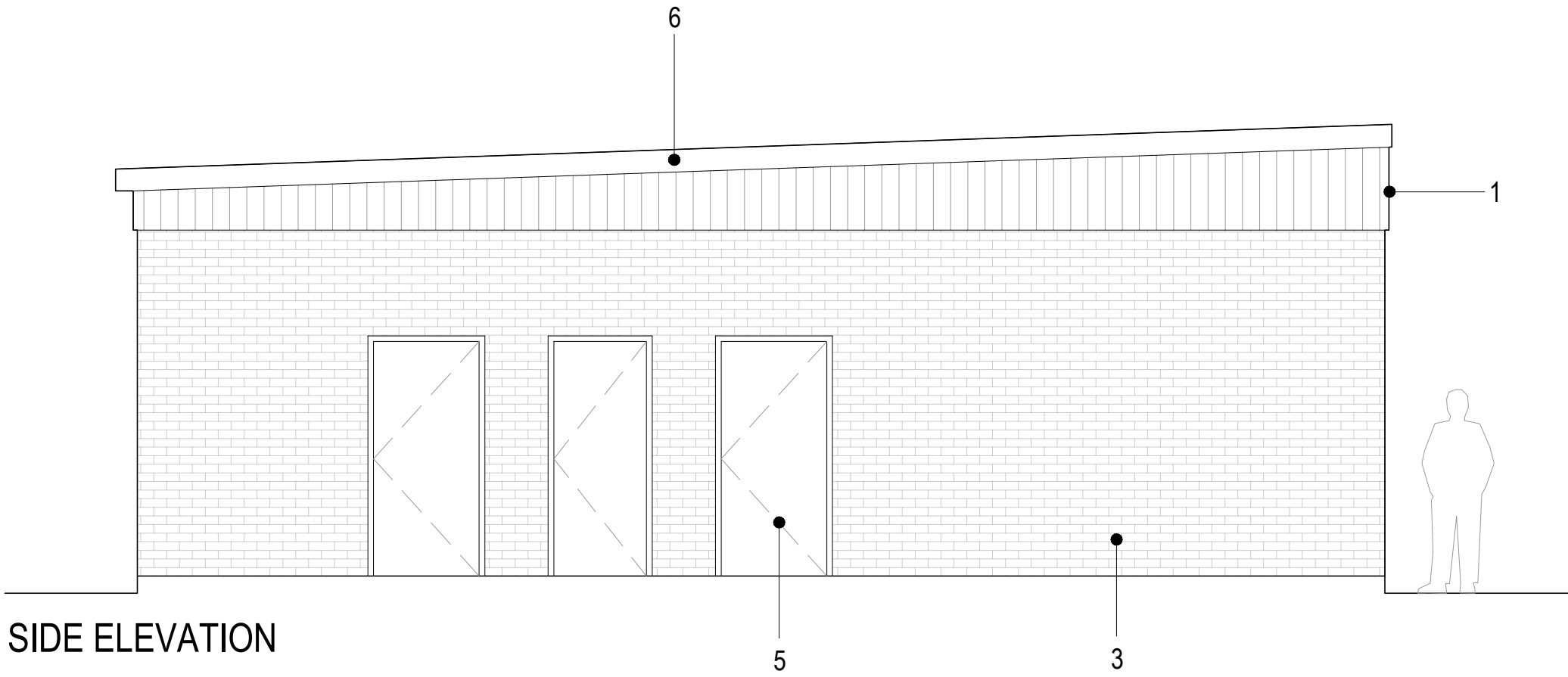
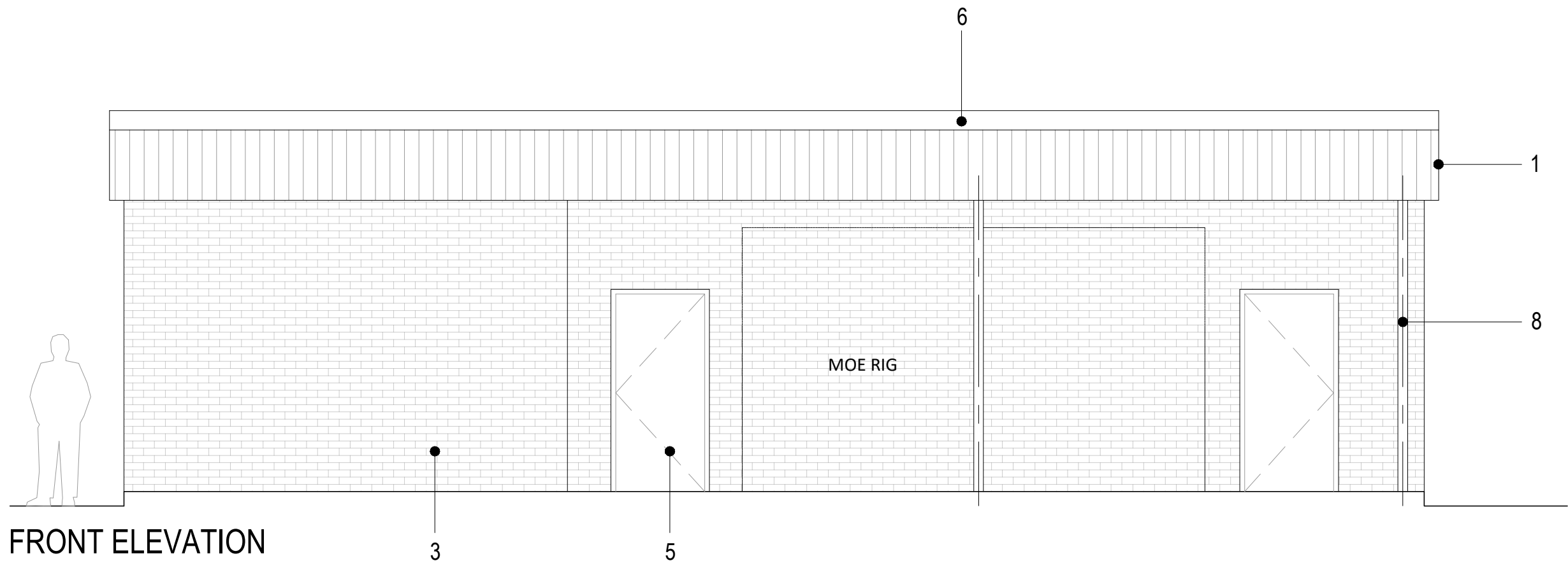
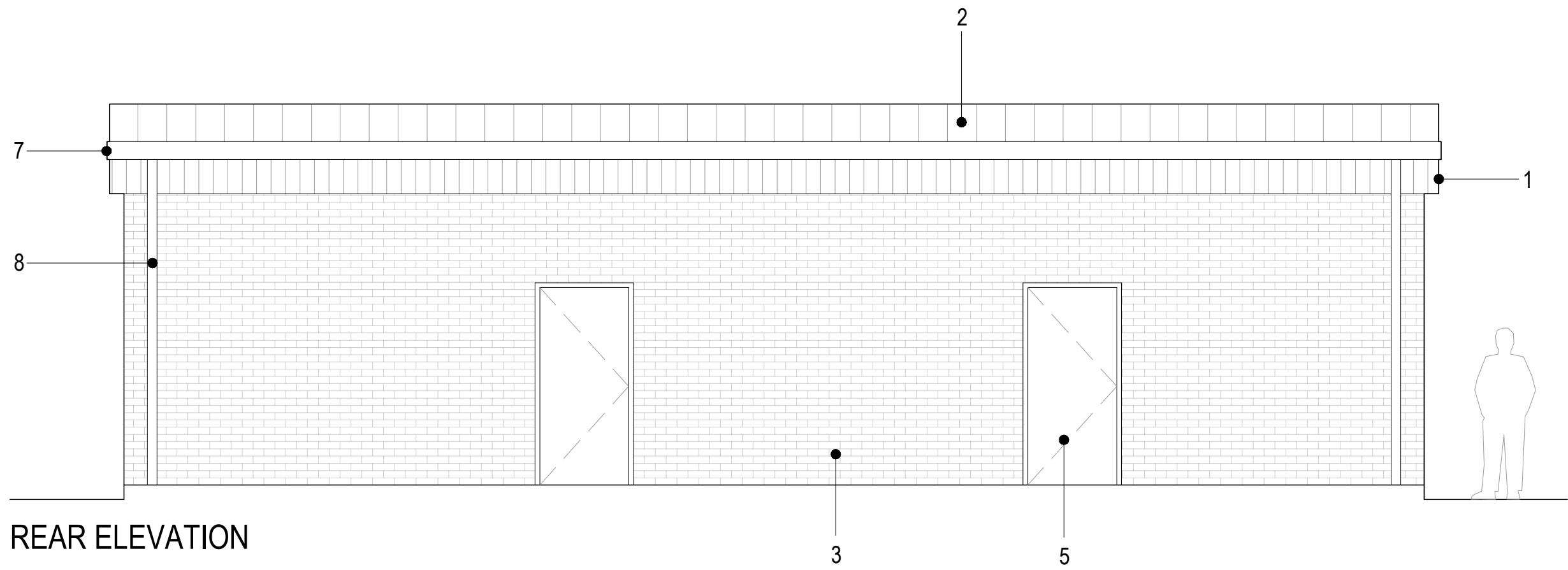
dwg no	2267.03.04.501	rev	P1
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- 1 COLOUR COATED PROFILED METAL WALL CLADDING
- 2 COLOUR COATED PROFILED METAL ROOF CLADDING
- 3 STRUCTURAL STEEL FRAMING
- 4 COLOUR COATED METAL FLASHING
- 5 COLOUR COATED METAL GUTTER
- 6 COLOUR COATED METAL RWP'S



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P1	FIRST ISSUE	ST	17.08.23
ref	revision	by	date
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Bradshaw Gass & Hope LLP			
client			
GLEEDS			
project			
NORTH WALES FIRE & RESCUE SERVICE NEW TRAINING CENTRE			
drawing			
FBT SMOKE CONTAINMENT CANOPY			
drawn by ST		date AUG 23	
checked by		date	
scale 1:100		A1	
dwg no 2267.03.05.301		rev P1	



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All dimensions are to be checked on site by the contractor prior to proceeding with any work.		
Hazard Identification 		
ref	hazard	date

- 1 COLOUR COATED PROFILED METAL WALL CLADDING
- 2 COLOUR COATED PROFILED METAL ROOF CLADDING
- 3 BRICKWORK
- 4 STRUCTURAL STEELWORK
- 5 COLOUR COATED STEEL DOORS
- 6 COLOUR COATED METAL FLASHING
- 7 COLOUR COATED METAL GUTTER
- 8 COLOUR COATED METAL RWP'S

P1	FIRST ISSUE	ST	17.08.23
ref	revision	by	date

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Bradshaw Gass & Hope LLP

client	GLEEDS		
project	NORTH WALES FIRE & RESCUE SERVICE NEW TRAINING CENTRE		
drawing	BA TRAINING BUILDING		
drawn by	ST	date	AUG 23
checked by		date	
scale	1:50		A1
dwg no	2267.03.07.301		rev P1



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2270.01
North Wales Fire and Rescue Service

New Training Centre – St Asaph Civil and Structural Engineering Strategy

Rev A - September 2023

Report Details:

Prepared By: B Howarth

Checked By: BGH

Revisions:	Initial Issue	-	August 2023
	Revision A	-	September 2023

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 - 1.1 Introduction
 - 1.2 Project Overview
 - 1.3 Site description
- 2. Training and Administration Hub**
 - 2.1 Substructure Proposal
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 - 7.1 Pavement Build Up
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Appendix A – Drainage Strategy Layout

Appendix B – Preliminary Levels Assessment

Appendix C – Former Site Features

Appendix D – Existing Drainage Information

1.0 Introduction

1.1 Introduction

Gleeds Ltd have appointed Bradshaw Gass and Hope LLP to provide structural engineering services to North Wales Fire and Rescue Service.

Bradshaw Gass and Hope LLP will require approval of the assumptions set out in this report before commencing the next stage of design.

Various options for the training centre have been proposed, this document focuses on Options 3 & 4 only.

Option 3 covers approx. 70% of the site with an area set aside for future expansion and development at a later stage.

Option 4 cover the full development and training props.

1.2 Project Overview

This Civil & Structural Engineering Strategy report summarises the civil and structural brief and proposals for the project. The project involves the design and construction of a Fire and rescue training Centre in North Wales.

The centre will have a number of training buildings and training props across the site. In addition to car parking and ancillary buildings.

1.3 Site Description

1.3.1 GENERAL DESCRIPTION:

The site is adjacent to and is accessed by the B5381 Glascoed Road Whalley Road. The site is a former glass works.

To the north lies a local Electrical distribution station, to the east fields and a plumbers merchants.

Fields and a Factory to the south and New Vision Business Park to the East.

The site slopes downhill in a northern direction.

1.3.2 NEAREST ADDRESS:

St. Asaph, St Asaph, Denbighshire,
Wales, LL17 0LQ, United Kingdom

1.3.3 OS MAPS:

OS Grid Ref: SJ 02011 74059

Indicates site altitude as 32m.

Centre of the Site is approx. 1.55km from the River Elwy

Centre of the Site is approx. 7.8km to the nearest Coastline

1.3.4 ARCHIVE MAPS:

The 1885-1900 Map shows the site undeveloped fields.

The 1888-1913 Map shows the site undeveloped fields.

The 1937-1961 Map shows the site undeveloped fields.

The 1955-1961 Map shows a building located in the south of the site

1.3.5 COAL AUTHORITY MAP INFORMATION

The site is not within a coal mining reporting area.

1.3.6 FLOOD ZONE MAP INFORMATION

The stream and ditch which diagonally crosses the site represents a high flood risk local to that area.

1.3.7 GROUND CONDITIONS

The ground conditions do vary across the site, however the typical ground conditions are:

- **Made Ground** comprising light brown, fine to coarse SAND and angular to subangular, fine to coarse GRAVEL of limestone to a depth of between 0.30m and 1.00m bgl (30.28m and 27.87m AOD), underlain by:
- **[North Western Corner Only] Glacial Till** comprising firm, bluish grey, slightly gravelly, slightly sandy, silty CLAY to a depth of between 1.50m to 2.40m bgl (30.23m and 26.47m AOD), underlain by:
- **Glacial Till** comprising stiff, brown, mottled grey, slightly gravelly, slightly sandy CLAY to a depth of at least 5.45m bgl (23.42m AOD) at termination. The base of this stratum was not proven in any exploratory holes.

A Phase 2 ground investigation survey is available which gives greater understanding of the existing ground conditions.

Some historically infilled ponds are noted within the Phase 2, also perched ground water has been found at circa 1.0m depth at many test locations.

Some asbestos and TPH contamination was noted within the Phase 2 laboratory test, please refer to the Phase 2 for further information.

It should be noted the ground investigation found undocumented services at some trial pit positions, in addition to buried concrete slabs. This may represent a risk during excavation, earthworks and foundation construction.

1.3.8 NOTABLE FEATURES

- The north west of the site is a Great Crested Newt protection zone and cannot be developed or affected in any way.
- A High Pressure gas main runs to the south of the site and a large easement zone is required, within which no works can be carried out.
- A Low pressure gas main runs to the North of the site, which is also subject to an easement zone.
- High pressure insulated pipe work was noted at several locations
- Various service chambers have been noted on site.
- A number of raised concrete platforms, walls and retaining wall have been noted on site.

2. Training and Administration Hub

2.1 Substructure Proposals

The Phase 2 ground investigation indicates that the Glacial Till clay is suitable to carry loads from a single storey building as such it is taken that shallow reinforced concrete pad footings will be suitable to the steel column locations.

Dynamic Sample DS02 was carried out within the demise of the proposed training hub and this indicates suitable glacial till at to provide a founding strata at approx. 1.2m below existing ground level.

Note due to the presence of established trees and medium volume change potential of the soil heave precautions and local foundation deepening may be required to the western elevation.

Due to the varying depth of perched water on the site, it may be necessary to consider dewatering during excavations.

The dynamic sample local to this area indicates made ground (sands and gravels) to a depth of 0.65m. This made ground will need to be stripped and re-graded and compacted to provide suitable support to a reinforced concrete ground bearing slab.

Note: much of the made ground noted on site appears to be demolition material, from the former glassworks. If re-graded and suitable compacted this should be suitable for used as hard core sub base for slabs and roadways.

2.2 Superstructure Proposals

A steel frame is considered the most appropriate solution. The frame will be braced in each orthogonal direction and bracing locations will need to be agreed with Bradshaw Gass and Hope Architectural. It is likely that braced bays can be located in walls.

The roof will have sufficient plan bracing to transfer lateral loads to braced bays.

The architectural layouts permit the adoption of a regular grid system with conventional beam/column framing arrangement.

Alternatively, should bracing not be possible a moment frame could be adopted though steelwork costs would likely increase as a result. Steel should be assumed to be S355 grade hot-rolled steel designed in accordance with BS 5950.

Steel execution class should be assumed to be EXC2 to BS EN 1090.

It should be assumed that all internal steelwork will require corrosion protection to suit a C2 Low Risk environment.

It is possible that external columns and steelwork in cavities (in particular external columns) will need to be treated to suit a C3 Medium Risk environment. This will be determined during detailed design.

Fire protection requirements will be confirmed by others during detailed design – our working assumption is that 60 minutes will be required. At this stage we have assumed that fire protection will be provided to the steel frame with intumescent paint. It is assumed that fire protection will be required to all steel which supports accessible areas of the roof.

Internal blockwork partitions are to be non-loadbearing. These walls are to be built off the ground floor structure. These walls will require pre-cast concrete lintels to door openings, contraction joints at regular centres. Larger panels may require additional wind posts or framing to provide restraint. These walls may require additional restraint at the head and at external wall interfaces. Additional secondary steel framing to provide restraint if required will be determined during the detailed design stage. Tying details to external walls if required will also be determined during the detailed design stage.

3. B.A. School

3.1 Substructure Proposals

The Phase 2 ground investigation indicates that the Glacial Till clay is suitable to carry loads from a single storey building as such it is taken that shallow reinforced concrete pad footings will be suitable to the steel column locations.

Trial pit TP08 was carried out within the demise of the proposed B.A. School and this indicates suitable glacial till at to provide a founding strata at approx. 1.2m below existing ground level.

Note due to the presence of established trees and medium volume change potential of the soil heave precautions and local foundation deepening may be required to the western elevation.

The Trial pit local to this area indicates made ground (sands, gravels and brick) to a depth of 0.6m. This made ground will need to be stripped and re-graded and compacted to provide suitable support to a reinforced concrete ground bearing slab.

Note: much of the made ground noted on site appears to be demolition material, from the former glassworks. If re-graded and suitable compacted this should be suitable for used as hard core sub base for slabs and roadways.

3.2 Superstructure Proposals

A steel frame is considered the most appropriate solution. The frame will be braced in each orthogonal direction and bracing locations will need to be agreed with Bradshaw Gass and Hope Architectural. It is likely that braced bays can be located in walls.

The roof will have sufficient plan bracing to transfer lateral loads to braced bays.

The architectural layouts permit the adoption of a regular grid system with conventional beam/column framing arrangement.

Alternatively, should bracing not be possible a moment frame could be adopted though steelwork costs would likely increase as a result. Steel should be assumed to be S355 grade hot-rolled steel designed in accordance with BS 5950.

Steel execution class should be assumed to be EXC2 to BS EN 1090.

It should be assumed that all internal steelwork will require corrosion protection to suit a C2 Low Risk environment.

It is possible that external columns and steelwork in cavities (in particular external columns) will need to be treated to suit a C3 Medium Risk environment. This will be determined during detailed design.

Fire protection requirements will be confirmed by others during detailed design – our working assumption is that 60 minutes will be required. At this stage we have assumed that fire protection will be provided to the steel frame with intumescent paint. It is assumed that fire protection will be required to all steel which supports accessible areas of the roof.

It is assumed that any cladding will be an SFS system & any additional support members carry loads back to the main hot rolled steel column positions and there are no additional cladding support members as part of the hot-rolled steel frame. The cladding system will be designed by a specialist cladding contractor.

Internal blockwork partitions are to be non-loadbearing. These walls are to be built off the ground floor structure. These walls will require pre-cast concrete lintels to door openings, contraction joints at regular centres. Larger panels may require additional wind posts or framing to provide restraint. These walls may require additional restraint at the head and at external wall interfaces. Additional secondary steel framing to provide restraint if required will determined during the detailed design stage. Tying details to external walls if required will also be determined during the detailed design stage.

4. Appliance Garage

4.1 Substructure Proposals

The Phase 2 ground investigation indicates that the Glacial Till clay is suitable to carry loads from a single storey building as such it is taken that shallow reinforced concrete pad footings will be suitable to the steel portal frame locations.

Trial pit TP05 is the closest position to the proposed appliance garage and this indicates suitable glacial till at to provide a founding strata at approx. 1.2m below existing ground level.

The Trial pit local to this area indicates made ground (Reinforced concrete, gravels and limestone) to a depth of 0.7m. This made ground will need to be stripped and re-graded compacted and/or replaced with engineered fill to provide suitable support to a reinforced concrete ground bearing slab.

Note: much of the made ground noted on site appears to be demolition material, from the former glassworks. If re-graded and suitable compacted this should be suitable for used as hard core sub base for slabs and roadways.

3.2 Superstructure Proposals

A steel portal frame is considered the most appropriate solution. The frame will be braced in the long direction with bracing within/adjacent to external walls.

The roof will have sufficient plan bracing to transfer lateral loads to braced bays and portal frames.

Steel should be assumed to be S355 grade hot-rolled steel designed in accordance with BS 5950.

Steel execution class should be assumed to be EXC2 to BS EN 1090.

Fire protection requirements will be confirmed by others during detailed design – our working assumption is that 60 minutes will be required. At this stage we have assumed that fire protection will be provided to the steel frame with intumescent paint. It is assumed that fire protection will be required to all steel which supports accessible areas of the roof.

It is assumed that any cladding will be an SFS system & any additional support members carry loads back to the main hot rolled steel column positions and there are no additional cladding support members as part of the hot-rolled steel frame. The cladding system will be designed by a specialist cladding contractor.

5. Training Props

5.1 Fire House

The fire house will be subject to high temperatures and as such is required to be a highly robust structure.

It will primarily be constructed in high strength load bearing masonry. To account for potential thermal movement the load bearing masonry will require an increased number of joints than would be typical for a building of its size. All lintels are to be Naylor pre-cast concrete, with any lintels close to burn areas being Naylor Ultra Fire lintels.

The roof is to be engineered timber TJI joists.

The internal floors will be pre-cast concrete units spanning between load bearing walls. Typically 150mm concrete units with a 75mm concrete screed to the top surface. Any steel required to form openings will require concrete encasement of the beam line be formed in reinforced concrete. The support of external balconies will be formed by cantilever beams within the depth of the floor.

The basement retaining walls and slab are to be formed in reinforced concrete.

The foundation solution will be reinforced concrete piled ground beams.

All burn areas are to be protected with refractory concrete fire tiles and insulation to specialist design.

All internal gullies will be required to connect to the foul water system.

5.2 Pair of Semi-Detached houses

The semi-detached houses will follow the same form of construction as the Fire house and as such is required to be a highly robust structure.

It will primarily be constructed in high strength load bearing masonry. To account for potential thermal movement the load bearing masonry will require an increased number of joints than would be typical for a building of its size. All lintels are to be Naylor pre-cast concrete, with any lintels close to burn areas being Naylor Ultra Fire lintels.

The roof is to be engineered timber TJI joists.

The internal floors will be pre-cast concrete units spanning between load bearing walls. Typically 150mm concrete units with a 75mm concrete screed to the top surface. Any steel required to form openings will require concrete encasement of the beam line be formed in reinforced concrete.

The ground floor is to be a beam and block solution spanning onto ground beams.

The foundation solution will be reinforced concrete piled ground beams.

All burn areas are to be protected with refractory concrete fire tiles and insulation to specialist design.

All internal gullies will be required to connect to the foul water system.

5.3 B.A. Training Building and Forced Entry Rig

The B.A. training building is to be a single storey masonry building, with a light weight steel roof supported by load bearing walls and an open/canopy area formed with structural steel beams and a column.

Simple strip footings are envisaged for the foundations, with a ground bearing slab on layers of hardcore to a minimum of 0.7m below existing ground level. The ground bearing slab will require a recess to accommodate an unstable floor scenario.

5.4 Containment Enclosure

The containment enclosure area houses Attack and Demo units, which are made from repurposed shipping containers. These sit on a reinforced concrete slab and have a large extract canopy over.

The extract canopy is free standing roof supported by an exposed portal frame structure.

As bracing cannot be permitted additional steel moment frames will be required to provide stability. The roof will have sufficient plan bracing to transfer lateral loads to moment frames and portal frames.

Steel should be assumed to be S355 grade hot-rolled steel designed in accordance with BS 5950.

It should be assumed that all steelwork will require corrosion protection to suit a C3 High Risk environment.

Steel execution class should be assumed to be EXC2 to BS EN 1090.

The foundations to the portal frame should be taken as reinforced concrete pads, founding at a depth of 1.2m below ground level.

The ground bearing slab should be taken as 200mm thick and reinforced with mesh, on hardcore to a depth of 0.7m below ground.

5.5 Highway Scenario

The Highway scenario is to be a length of external Tarmac which resembles an "A" road.

The Suggested build up is:

- 50mm Stone Mastic asphalt with 20mm chippings
- 60mm Dense Asphalt Cement
- 190mm Asphalt Cement
- 150mm Mot Type 1 Sub base
- 6F5 Hardcore to 700mm below ground level.

Note: much of the made ground noted on site appears to be demolition material, from the former glassworks. If re-graded and suitable compacted this should be suitable for used as hard core sub base for slabs and roadways.

5.6 The RTC Outdoor

The RTC outdoor area is to be a concrete hardstanding area.

It is suggested that a 200mm thick aerated reinforced concrete slab be used. This will require a hardcore sub base to a minimum of 0.7m below ground to avoid the existing made ground conditions on site.

5.7 Drill Yard

The RTC outdoor area is to be a concrete hardstanding area. Due to the proposed usage for fitness tests etc the yard is to be as flat as possible while still free draining as such a fall of 1 in 100 is to be used. In order to work with this fall ACO channel drains are recommended to the perimeter.

It is suggested that a 200mm thick aerated reinforced concrete slab be used. This will require a hardcore sub base to a minimum of 0.7m below ground to avoid the existing made ground conditions on site.

On previous projects firefighters have preferred darker coloured concrete as it is less reflective in wet conditions. It has been found previously that using a lower C30 grade concrete (than the typical C40 grade typically used in hardstanding design) has given a darker colour. However changes in local sourcing of cement, sands and aggregates can cause variations in colour. In addition the colour of the concrete is not a property which can be specified in a structural concrete mix design without the addition of a pigment. As such it may be necessary to consider adding a pigment to the concrete mix.

Note: much of the made ground noted on site appears to be demolition material, from the former glassworks. If re-graded and suitable compacted this should be suitable for used as hard core sub base for slabs and roadways.

5.8 Training Towers

The training towers are a specialist item, these are typically supplied by Crofton Engineering.

The bases to the training towers require a large concrete anchorage within a block or concrete. Due to the site conditions this will require piling.

5.9 Industrial Structure (Option 3 Expansion/Option 4)

This is to be an unclad galvanised steel frame. This will have various steel stairs, walkways and platforms in addition to training props such as dummy pipework, tanks and LPG burners.

The sub structure is to be a raft slab, with plinths and sumps as required to suit training scenarios. The Raft will be Reinforced concrete and is to sit on hardcore sub base in layers to a competent bearing strata. It may be possible to use site won material (concrete...etc) as the hardcore following suitable re-grading.

5.10 Ship Scenario (Option 3 Expansion/Option 4)

The Ship scenario is to be confirmed, it is understood this will be supported by a raft slab foundation, similar in principle to the Industrial structure noted in section 5.9.

5.11 Farm House and Farm Building (Option 3/option 4)

The Farm House building, is to be a single storey masonry structure supporting a timber joist and steel profiled roof.

The foundation and ground floor slab are to be reinforced concrete raft on compacted hardcore sub-base to a suitable bearing strata.

The agricultural building is to be a steel portal frame, with Masonry external wall to approx. 2.6m with 2.5m of cladding above.

Lateral bracing is to be used within the walls and the roof will have sufficient plan bracing to transfer lateral loads to the lateral bracing and portal frames.

Steel should be assumed to be S355 grade hot-rolled steel designed in accordance with BS 5950.

It should be assumed that all steelwork will require corrosion protection to suit a C3 High Risk environment.

Steel execution class should be assumed to be EXC2 to BS EN 1090.

The foundations to the portal frame should be taken as reinforced concrete pads, founding at a depth of 1.2m below ground level.

The ground bearing slab should be taken as 200mm thick and reinforced with mesh, on hardcore to a depth of 0.7m below ground. It is suggested site won material may be suitable for use as hardcore following suitable re-grading.

6. Drainage Strategy

Please Refer to Appendix A – Drainage Strategy Layout

6.1 Surface Water Drainage Design

The surface water drainage strategy is subject to further detailed. The infiltration tests carried out as part of the Phase 2 report indicate that the site is unsuitable for the use of soakaways.

The drainage design will be subject to a Flood Consequences Assessment identifying current flood risks to the development site. The Suds drainage system will be designed to suit National and local planning policy, regulations and relevant design guidance include:

- National Planning Policy Framework (NPPF) July 2021, Paragraphs 153-158 and 159-169;
- National Planning Practice Guidance (NPPG);
- Principles of Sustainable drainage systems (SuDS) set out by DEFRA (2011);
- CIRIA SuDS Manual C753 (2015);
- CIRIA (2010) Planning for SuDS;
- Non-Statutory Technical Standards for Sustainable Drainage Systems (DEFRA) (March 2015);

The system will be designed to ensure there is no surcharging to the drainage system for a 1 in 30-year storm event and no internal property flooding for a 1 in 100-year storm event + 40% allowance for climate change.

Although part of a stream crosses the site this forms part of the Great Crested Newt protection zone, and as such this cannot be used as a discharge point for the surface water due to the potential change in water level and its subsequent effect on the newt population.

The current proposal is for surface water from the buildings and local hardstanding areas to be collected via a series of attenuation tanks. With surface water connecting to the existing Welsh Water assets locally.

It is the intention to re-use existing drainage connections were possible in order to avoid any works within the associated exclusion zone adjacent to the gas mains on site.

As a SUD's feature and to act as a pollutant control it is proposed that car parking bays will be formed of impermeable surfacing with water collected via a series of perforated pipes within a layer of clean stone.

The drainage system will manage the surface water runoff from impermeable areas of the site through attenuating in the SuDS features with gradual release into the existing surface water network. The flow rate will be restricted using a hydro-brake flow control device or similar.

A SAP application and agreement is required to be in place with Welsh Water prior to any sewer construction on site.

6.2 Foul Water Drainage Design

The foul water drainage network will be designed to achieve a self-cleansing flow of no less than 0.75 m/s up to the connection into the local Welsh Water asset.

The total foul water discharge rate will be calculated in-line with Sewers for Adoption guidance domestic flows calculated in accordance with BS EN 752 and BS EN 12056-2.

The foul water flow rate is to be agreed with Welsh Water and is subject to approval.

From Archive information approximate location of the foul drainage connection from the former glassworks has been identified. It is intended to

7. Roads and Car Park

7.1 Pavement Build Up

In addition to the Highway Scenario given in section 5.5 the following build ups are also suggested:

General Concrete Hardstanding:

200mm Reinforced concrete slab (Air Entrained)

6F5 Hardcore to 700mm below ground level

Access Roadway & Impermeable Parking

40mm Stone Mastic Asphalt

50mm Dense Asphalt Cement

150mm Asphalt Cement

200mm MOT Type 1

6F5 Hardcore to a minimum depth of 700mm below ground

Permeable Parking

60mm Block Paving

25mm Crushed Aggregate Bedding

300mm Clean Stone

Geotextile/Tanking Layer

6F5 Hardcore to 700mm below ground level

Foot Path

20mm Asphalt Cement

60mm Dense Asphalt Cement

200 MOT Type 1

Note: much of the made ground noted on site appears to be demolition material, from the former glassworks. If re-graded and suitable compacted this should be suitable for used as hard core sub base for slabs and roadways.

The sub-base of existing roadways and slabs may be suitable for re-use following in-situ CBR testing.

7.2 Site Levels and Retaining Walls

As noted previously the site slopes from South to North, with a general fall of circa 4.5m across the 265m (approx.) length.

As a general rule there is a steady change in levels across the site, however there are some notable exceptions:

- 1 Between the area of the proposed drill yard and B.A. training school there is a sharp change in level of circa 2.0m combined with the general fall across the site.
- 2 The recently formed vehicle entrance/exit is circa 1.2m higher than much of the surrounding site.
- 3 Adjacent to the proposed appliance garage position there appears to be the floor slab of a former building which is causing a step in levels locally.
- 4 Across the proposed fire house position the existing level falls approx. 0.6m.
- 5 Across the proposed containment enclosure position the existing level falls approx. 1.0m.

Please refer to the mark up plan in appendix B.

The existing levels have been retained where possible.

- 1 Between the proposed PV solar farm and BA School we will require a 2.4m retaining wall. We are suggesting an earth retaining wall / engineered bank would be best suited for this location, provided the space can be accommodated.

The Tensar Tech Natural Green banking is proposed as a potential system. This does not require and specialist installation knowledge and can be seeded to form a steep grass bank.

- 2 To deal with the higher vehicle entrance/exit a 450mm high retaining wall will be required adjacent to the Training and administration hub, in addition to the re-grading of the area immediately between the vehicle entrance and the Training and Administration Hub.

As the wall position will be within a landscaped area it is suggested this proposed retaining wall be formed in masonry with a reinforced concrete base and core.

- 3 The area adjacent to the proposed appliance garage will require further detailed design following the grubbing out of the apparent existing slab.
- 4 A 0.6m High Reinforced concrete retaining wall will be required between the proposed Fire house and semi-detached houses. It is likely this will require a barrier or handrail.
- 5 A 1.15m Reinforced concrete retaining wall will be required adjacent to the containment enclosure. Due to proximity to the waste skips we would suggest a vehicle barrier will be required adjacent to the wall.

7. Ancillary buildings

Electrical Sub-Station

It is assumed the substation will be an entirely separate structure, clad to suit the proposed buildings adjacent with a split level base and slab to accommodate trenches as required to suit the local electricity supplier.

The sub-station design will be confirmed during the detailed design stage.

8. Existing Foundations / Building Positions

The site is understood to have been extensively developed as a former Glass works.

Appendix D shows the drainage plan of the former site (Please note this appears to have been reproduced many times with some information obscured) with positions of buildings shown.

Due to the composition and depth of the made ground (gravel, brick & concrete fragments...etc) it is assumed that following demolition of the former glassworks the material has been spread across site.

As such it is highly unlikely that existing foundations will have been removed and grubbed out, in addition some trial pits carried out for the Phase 2 found multiple slabs at depths. This may be indicative of infilled pits or shallow basement areas.

Given the information in the Geotechnical investigation it is likely much of the existing foundations will be founded in the Clay layer, however it is likely that heavy plant and equipment would require a deep foundation solution.

Using the Topographic survey and archive aerial photographs (dated 2006) we have approximately plotted the former building and yard positions (Appendix C). These will be the likely positions of buried foundations on site.

Following a site walk round various concrete walls, loading platforms, slabs and retaining walls are present on site. In addition an insulated steam pipe network appears to be present.

It should also be noted that in at least one of the trial pits carried out for the geotechnical survey undocumented buried services were encountered.



Aerial Photograph of Existing Site (September 2023)



Concrete Walls, Platforms and Retaining Structures



Partially obscured retaining wall & Steel Stanchions.

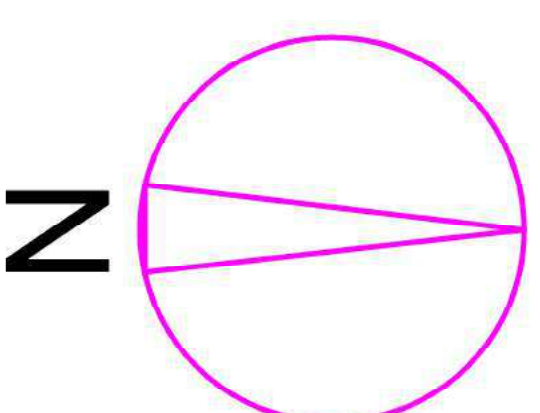
Additional Photographs are shown in appendix C

Appendix A – Drainage Strategy

This drawing shall be filed in conjunction with all other relevant drawings, specifications and associated documentation. Any discrepancies, errors or omissions are to be reported to the original provider immediately.

All specimens are to be checked on site by the contractor prior to proceeding with any work.

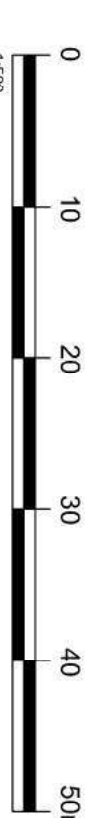
Hazard Identification		
ref	hazard	date



- | | |
|--|------------|
| GGN MITIGATION AREA | |
| HIGH & INTERMEDIATE PRESSURE GAS MAINS
HAZARD / NO BUILD ZONE | |
| WILDFLOWER LANDSCAPING ZONE | 3,206 SQ.M |
| TREE PLANTING ZONE | 3,336 SQ.M |
| PV - TRAINING & ADMIN HUB | 480 SQ.M |
| PV - BA SCHOOL ETC. | 350 SQ.M |
| PV - SOLAR FARM | 332 SQ.M |
| PV - CAR PARK | 1,935 SQ.M |
| BASED ON AN INDIVIDUAL SOLAR
PANEL OF 14 X 24 NOMINAL SIZE | |
| DEVELOPMENT AREA | 2,858 Ha |
| GGN MITIGATION AREA | 1,305 Ha |
| FUTURE EXPANSION AREA | 1,098 Ha |



OPTION 3



p1	FIRST ISSUE	sl	13/09/003
ref	revision	by	date

Bradshaw Gass & Hope LLP

GLEEDS

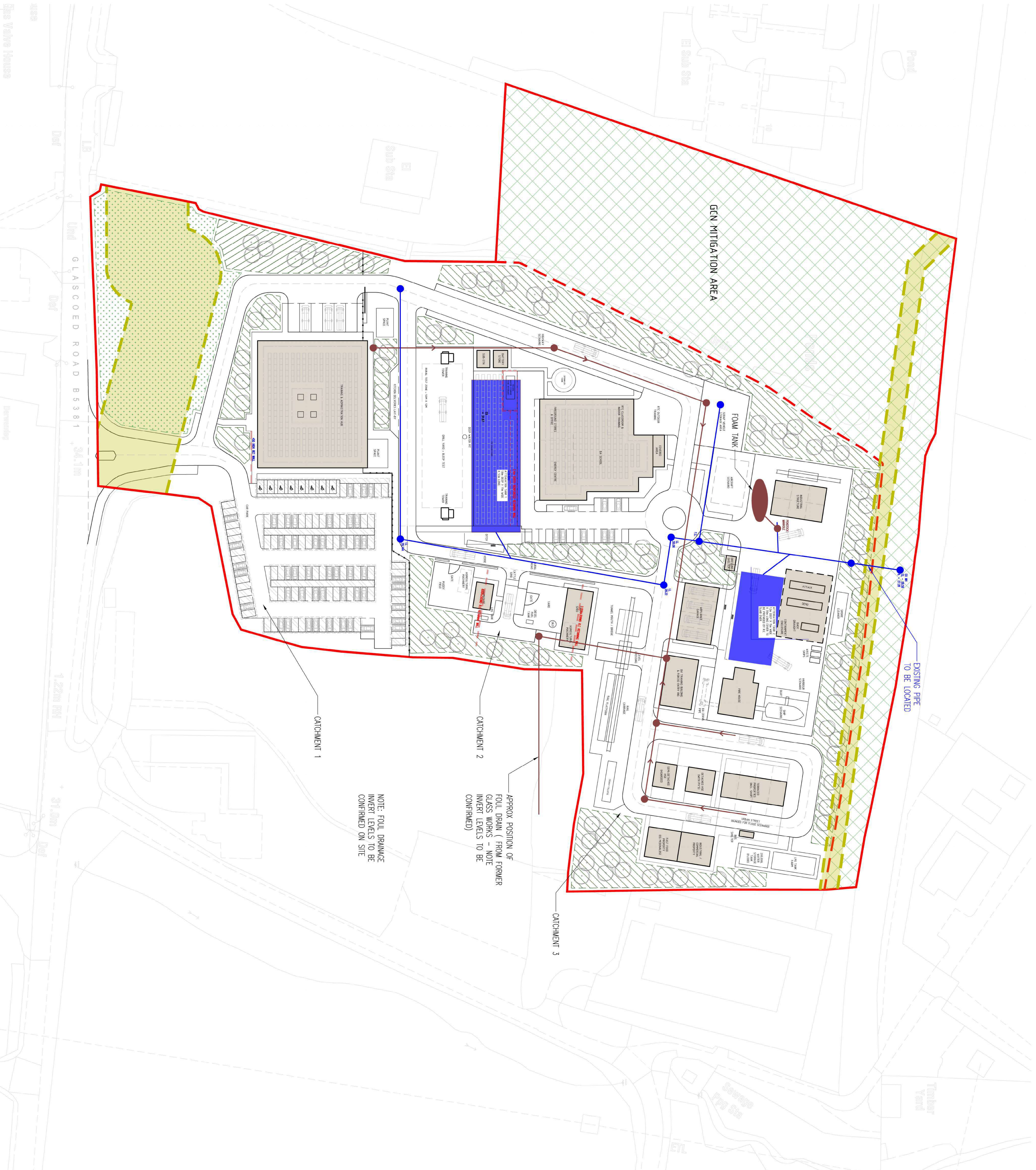
**NORTH WALES FIRE & RESCUE
SERVICE
NEW TRAINING CENTRE**

**PROPOSED DRAINAGE STRATEGY
OPTION 3**

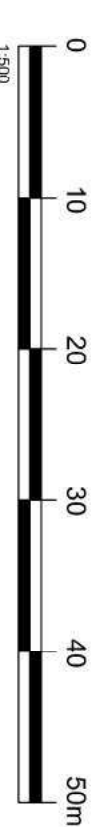


ATTENUATION = 665m³

1000



OPTION 4



Appendix B – Preliminary Levels Assessment

hazard	date



GLASCOED ROAD B5381

- | | |
|---------------------|----------|
| DEVELOPMENT AREA | 3.956 Ha |
| GCN MITIGATION AREA | 1.305 Ha |

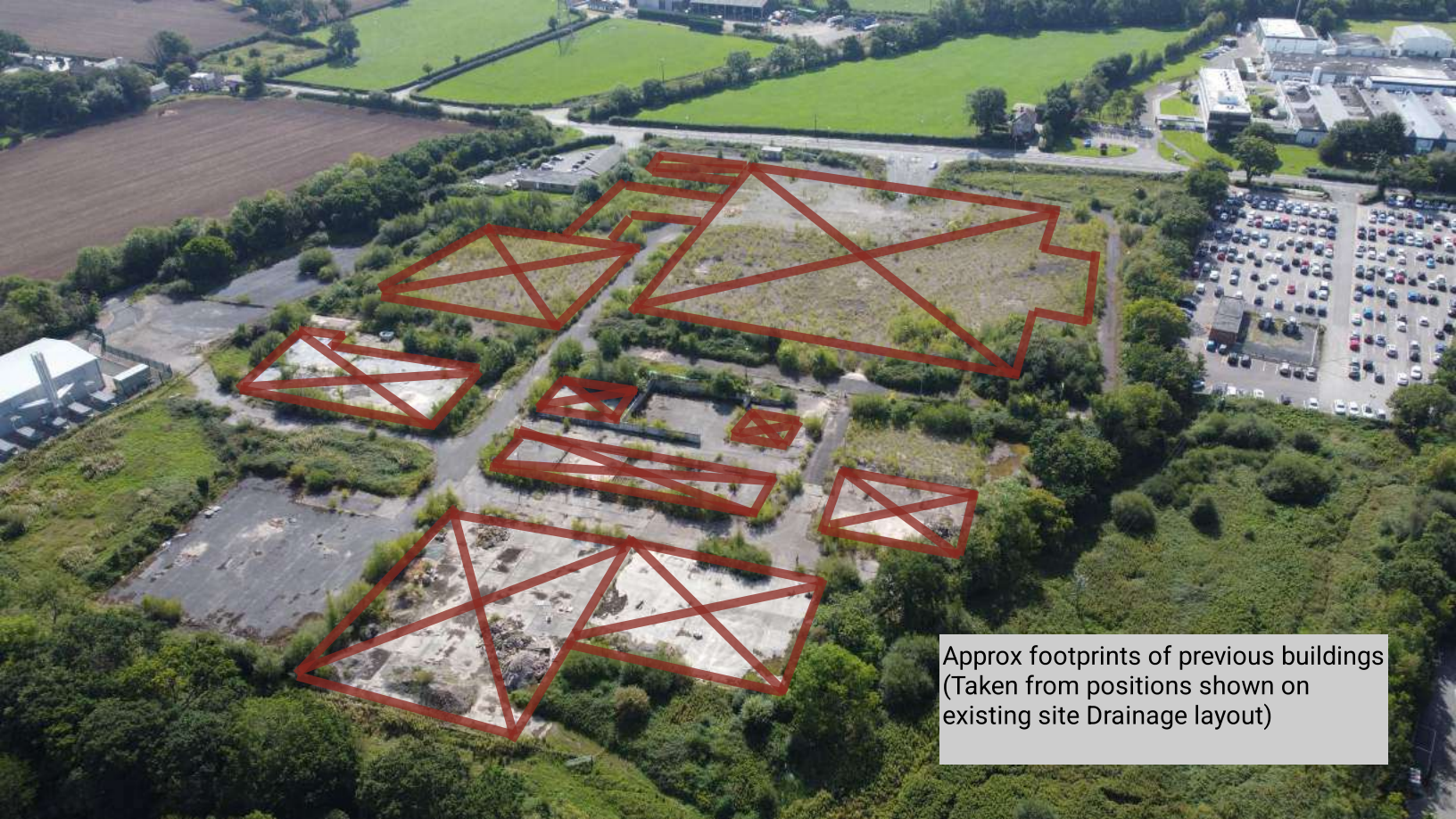
EXISTING LEVEL

PROPOSED LEVEL

DIFFERENCE IN LEVEL



Appendix C – Former Site Features



Approx footprints of previous buildings
(Taken from positions shown on
existing site Drainage layout)



Former Gate House – Note Steam Pipe



Existing Roadway- View from Site Entrance



Gas Easement Zone – View from Site Entrance



Concrete Platform – Suspected Former Loading Bay



Concrete Roadway



Undocumented Chambers



Former Building Positions – Existing Slabs Remain



Former Building Position – Undocumented Retaining Wall



Gas Main Marker



Concrete Roadway and Raised Platform (Note Gas Power Station in Background)



Existing Tarmac Area



Typical Roadway



Former Threshold and Level Changes



Reinforced Concrete Wall



Reinforced Concrete Wall



Existing Walls and Concrete Yard



Ramp/Change in Level from Demolition Debris



Stone Retaining Wall



Suspected steam pipe network



Suspect Steam Pipe Network



View towards former entrance

Appendix D – Existing Drainage Information



North Wales Fire & Rescue Service – New Training Centre

MEP Services Overview

September 2023

Document Revision Control

Revisions	Date	Reason for Issue	By	Approved
00	25/08/23	For information only	IC/TB	IC
01	04/09/23	Updated following design team meeting	IC	IC
02	15/09/23	Appendices added, including proposed services routing	IC	IC

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3.0 Training & Administration Hub (TAH)	6
4.0 BA School (BA)	10
5.0 Training Props / Sitewide Requirements	14

1.0 Introduction

This document has been prepared to provide a high-level overview of the likely servicing proposals for the new Fire Training Centre, in St. Asaph, North Wales.

2.0 Incoming Services

New incoming services will be required for electricity, water and comms. There is no proposal to bring natural gas onto the site.

2.1 Electric

An initial electrical connection quote has been applied for, to provide a budget cost for the new connection – which has suggested a cost of ~£90,000. At this stage, we would suggest that a larger amount than this be used for the cost plan. Only when a formal (and paid for) application is processed will we get confirmation on any limitations on exporting electricity generated by the PV array back into the grid.

HV incoming cables will route to the substation on the site, before electrical services being distributed at LV around the site to the buildings, and to the props where appropriate.

Battery storage is proposed, to store any surplus electricity generated by the PV arrays.

PV arrays are proposed, currently located:

- Roof of the Training & Admin Hub building
- Roof of the BA School building
- Solar farm
- Car park (canopies over the parking spaces)

2.2 Water

Incoming water mains will be provided to give supplies to:

- The occupied buildings (TAH & BA)
- The 100,000l water storage tank for the training hydrant supplies
- The sprinkler tank (provides sprinkler protection to the occupied buildings)
- The 200,000l water storage tank for the flood training prop (Option 4 only)

A town hydrant main will run around the building to provide hydrant coverage in the event of genuine (unplanned) fires.

2.3 Comms

A new incoming comms cable will be provided, from the BT network.

3.0 Training & Administration Hub (TAH)

The TAH building is a single storey building which will likely be serviced as follows. It is also worth noting that the building has a BREEAM 'Excellent' requirement, as such there will be extensive energy/consumer meters and controls that need to be included in the early-stage cost plan.

3.1 Mechanical

3.1.1 Primary Plant

Primary heat source – some sort of heat pump technology (both ground source and air source currently being investigated further). Location for the heat pumps in the Energy Centre

3.1.2 Heating/Cooling

Whilst still to be considered further, the heating and cooling for the building is likely to comprise of a combination of heating/cooling from the mechanical ventilation system, 4-pipe fan coil units (maximising the use of the heat pumps), and radiators – suitably sized to take into account the low grade heat generated by the heat pumps.

Subject to heat gains in some of the more specialist training rooms (e.g., Control Centre Training room, Sim Appliance Cab), additional cooling may also need to be provided.

Server Room – a single dedicated DX unit is proposed (no redundancy)

3.1.3 Ventilation

Given the shape/form of the building, and the specialist uses of certain areas, there will need to be significant areas of the building that are mechanically ventilated. This is not a bad thing, as high efficiency heat recovery will be utilised to keep heating/cooling requirements to a minimum. There is a preference to avoid having plant located on the roof, for both visual and maintenance reasons. AHUs are likely to be located in/around the external plant compounds to the north of the building. Routing ductwork through the building will require much more coordination given that it will have to pass over some of the Training Rooms.

Variable air volume systems (VAV) will likely be provided to allow the ventilation rates to increase/decrease to suit occupancy in individual parts of the building.

The kitchen will have its own dedicated ventilation plant, separate from that serving the rest of the building.

Where possible, natural ventilation by means of manually openable windows will be provided – albeit the opportunity for this may be limited.

3.1.4 Domestic Water Services

Domestic cold and hot water services will be piped through the building serving the kitchens, WC block, washroom and multi-faith room. Domestic hot water will likely be generated by high temperature heat pumps. Sizing and recovery times for the hot water generators will be discussed in further detail as the project progresses.

The potential inclusion of rainwater or greywater recycling is still to be discussed.

3.1.5 Above Ground Drainage

There are no known complications to the drainage requirements, over and above any other type of 'standard' office building, as such it is likely that this will be installed in uPVC pipework. Acoustic implications of this will need to be considered in noise sensitive areas.

Drainage from the kitchen ideally will be in either HDPE or Cast Iron. Grease interceptors should be included before the drainage from the kitchen hits the below ground system.

3.1.6 Sprinklers

Sprinklers will be provided to the building – level of classification OH1. Sprinkler tank is provided external to the building.

3.1.7 BMS/Controls

A full building BMS will be provided – which will likely be linked or even combined with the other occupied buildings on site. This is all still to be defined further.

3.2 Electrical

3.2.1 Primary Plant

The building will be served by an incoming low voltage supply terminated in a new 4 pole MCCB Main Switch within a Form 4 Type 2 Panelboard located within the ground floor plant room.

The Panelboard will be c/w outgoing MCCB's and metering.

Distribution boards will be provided to serve distinct areas of the building, all distribution boards will be separately metered (for lighting and power), except where providing power services only.

3.2.2 Electrical Containment & Distribution

All cabling and containment systems will be within ceiling voids where applicable with recessed mounted drops to accessories, except in plant room where drops will be surface mounted.

Dado trunking will be installed with drops from the ceiling void carried out via vertical runs of dado trunking (dado droppers).

Dado trunking will be three compartments and suitable for Cat 6 data cabling.

Dado trunking will be mounted at a height to suit desk/whiteboard fit out.

IT / Comms Room

A fully functional building IT/Comms system will be provided – which will likely be linked with the other occupied buildings on site. This is all still to be defined further.

3.2.3 General Lighting

The intention is for an energy efficient LED lighting scheme that compliments the building style and client purpose. To this end, the majority of lighting will be recessed mounted in the suspended ceiling / designed for suspended fitting where there are no ceilings

Note: Any requirement for turn-out lighting to simulate an operational fire station to be confirmed.

Lighting Control Systems

1. Generally, within corridors, locker rooms, shower rooms, stores and WC's etc., the luminaries will be controlled via passive infra-red movement sensors utilising microwave technology.
2. Within the plant rooms, etc. the luminaries will be manually switched.
3. Elsewhere, such as the training rooms, offices etc. luminaires will be controlled via passive infra-red absence detectors and retractive switches, daylight sensing will be provided to external perimeter rooms where appropriate.

3.2.4 Emergency Lighting

A fully functional emergency lighting installation will be provided.

Emergency test key switches will be installed as part of multi gang switches located adjacent to the distribution boards for testing purposes.

3.2.5 Small Power & Data

Small Power & Data provision will be provided throughout the building to suit Room Data Sheet requirements – This is still to be defined further.

3.2.6 Fire Alarms

A fully functional building fire alarm system will be provided – which will likely be linked with the other occupied buildings on site. This is all still to be defined further along with the category of system required.

Interfacing with Other Systems

The following systems will be interfaced with the fire alarm system:

- Sprinklers
- Access Control Systems
- BMS
- Car Park Gate/Barrier

3.2.7 PV – see 2.1.

3.2.8 Access Control

A fully functional building access control system will be provided – which will likely be linked with the other occupied buildings on site. This is all still to be defined further.

The system will comprise of all proximity access control readers, door controllers, request to exit buttons, emergency break glass units, electro-magnetic locking devices, cards, cabling, power supplies, and all other equipment to form a complete installation.

3.2.9 PA System

A fully functional building Public Address system will be provided – This is all still to be defined further.

Note: Any requirement for turn-out beacons to simulate an operational fire station to be confirmed.

3.2.10 TV Distribution System

There are no requirements for a TV distribution system on the site. There will likely be multiple display screens throughout the site, albeit these will not have a traditional 'aerial' system associated. Any future live TV services would need to be via the internet / Smart TVs.

3.2.11 Lightning Protection

A fully functional building lightning protection system will be provided.

The system will comprise air termination networks, down conductors, earth electrodes and all cross connections and mechanical fixings.

A lightning protection specialist will measure the earth resistance and provide earth electrodes as required.

Connections to earthing electrodes will be housed in concrete inspection housings provided as part of the lightning protection system.

4.0 BA School (BA)

The BA School building is also a single storey building which will likely be serviced as follows. Much like the TAH, the BA School also has a BREEAM 'Excellent' requirement, as such there will be extensive energy/consumer meters and controls that need to be included in the early-stage cost plan.

4.1 Mechanical

4.1.1 Primary Plant

Primary heat source – some sort of heat pump technology (both ground source and air source currently being investigated further). Location for the heat pumps in the Energy Centre

4.1.2 Heating/Cooling

Whilst still to be considered further, the heating and cooling for the building is likely to comprise of a combination of heating/cooling from the mechanical ventilation system, 4-pipe fan coil units (maximizing the use of the heat pumps), and radiators – suitably sized to take into account the low grade heat generated by the heat pumps.

Server Room – dedicated DX unit provided. Query whether n+1 redundancy is required?

4.1.3 Ventilation

Given the uses of the BAS most of it will need to be mechanically ventilated. This is not a bad thing, as high efficiency heat recovery will be utilized to keep heating/cooling requirements to a minimum. There is a preference to avoid having plant located on the roof, for both visual and maintenance reasons. AHUs are likely to be located in/around the external plant compounds – locations of which still to be determined.

Variable air volume systems (VAV) will likely be provided to allow the ventilation rates to increase/decrease to suit occupancy in individual parts of the building.

Where possible, natural ventilation by means of manually openable windows will be provided – albeit the opportunity for this may be limited.

4.1.4 Domestic Water Services

Domestic cold and hot water services will be piped through the building serving the various showers, WCs and WHBs. Domestic hot water will likely be generated by high temperature heat pumps. Sizing and recovery times for the hot water generators will be discussed in further detail as the project progresses.

The potential inclusion of rainwater or greywater recycling is still to be discussed.

4.1.5 Above Ground Drainage

There are no known complications to the drainage requirements, over and above any other type of 'standard' office building, as such it is likely that this will be installed in uPVC pipework. Acoustic implications of this will need to be considered in noise sensitive areas.

4.1.6 Sprinklers

Sprinklers will be provided to the building – level of classification OH1. Sprinkler tank is provided external to the building (same shared sprinkler tank as the TAH Building)

4.1.7 BMS/Controls

A full building BMS will be provided – which will likely be linked or even combined with the other occupied buildings on site. This is all still to be defined further.

4.2 Electrical

4.2.1 Primary Plant

The building will be served by an incoming low voltage supply terminated in a new 4 pole MCCB Main Switch within a Form 4 Type 2 Panelboard located within the ground floor plant room.

The Panelboard will be c/w outgoing MCCB's and metering.

Distribution boards will be provided to serve distinct areas of the building, all distribution boards will be separately metered (for lighting and power), except where providing power services only.

4.2.2 Electrical Containment & Distribution

All cabling and containment systems will be within ceiling voids where applicable with recessed mounted drops to accessories, except in plant room where drops will be surface mounted.

Dado trunking will be installed with drops from the ceiling void carried out via vertical runs of dado trunking (dado droppers).

Dado trunking will be three compartments and suitable for Cat 6 data cabling.

Dado trunking will be mounted at a height to suit desk/whiteboard fit out.

IT / Comms Room

A fully functional building IT/Comms system will be provided – which will likely be linked with the other occupied buildings on site. This is all still to be defined further.

4.2.3 General Lighting

The intention is for an energy efficient LED lighting scheme that compliments the building style and client purpose. To this end, the majority of lighting will be recessed mounted in the suspended ceiling.

Note: Any requirement for turn-out lighting to simulate an operational fire station to be confirmed.

Lighting Control Systems

1. Generally, within corridors, locker rooms, shower rooms, stores and WC's etc., the luminaries will be controlled via passive infra-red movement sensors utilising microwave technology.

2. Within the plant rooms, etc. the luminaries will be manually switched.

3. Elsewhere, such as the gym, training rooms, offices etc. luminaires will be controlled via passive infra-red absence detectors and retractive switches, daylight sensing will be provided to external perimeter rooms where appropriate.

4.2.4 Emergency Lighting

A fully functional emergency lighting installation will be provided.

Emergency test key switches will be installed as part of multi gang switches located adjacent to the distribution boards for testing purposes.

4.2.5 Small Power & Data

Small Power & Data provision will be provided throughout the building to suit Room Data Sheet requirements – This is still to be defined further.

4.2.6 Fire Alarms

A fully functional building fire alarm system will be provided – which will likely be linked with the other occupied buildings on site. This is all still to be defined further along with the category of system required.

Interfacing with Other Systems

The following systems will be interfaced with the fire alarm system:

- Sprinklers
- Access Control Systems
- BMS System
- Car Park Gate/Barrier

4.2.7 PV – see 2.1.

4.2.8 Access Control

A fully functional building access control system will be provided – which will likely be linked with the other occupied buildings on site. This is all still to be defined further.

The system will comprise of all proximity access control readers, door controllers, request to exit buttons, emergency break glass units, electro-magnetic locking devices, cards, cabling, power supplies, and all other equipment to form a complete installation.

4.2.9 PA System

No requirements within the BA Building.

4.2.10 TV Distribution System

There are no requirements for a TV distribution system on the site. There will likely be multiple display screens throughout the site, albeit these will not have a traditional 'aerial' system associated. Any future live TV services would need to be via the internet / Smart TVs.

4.2.11 Lightning Protection

A fully functional building lightning protection system will be provided.

The system will comprise air termination networks, down conductors, earth electrodes and all cross connections and mechanical fixings.

A lightning protection specialist will measure the earth resistance and provide earth electrodes as required.

Connections to earthing electrodes will be housed in concrete inspection housings provided as part of the lightning protection system.

5.0 Training Props / Sitewide Requirements

5.1 Training Props

All still to be discussed further.

In general, the props require small power electrical supplies to suit local consumer units which provide lighting to the various rigs/props. Similarly, ICT/network cabling will be required to the majority of props for BMS reporting purposes.

Within the Fire House, a 'fake' sprinkler pump set will also be installed.

5.2 Sitewide Services

Street lighting, power outlets, ICT infrastructure, barriers, access control, CCTV, EV charging locations to be provided.

Wi-Fi is also required throughout the site.

6.0 Appendices

6.1 – Proposed Services Routes, Option 3

6.2 – Proposed Services Routes, Option 4



DEVELOPMENT AREA	2.858 Ha
GCN MITIGATION AREA	1.305 Ha
FUTURE EXPANSION AREA	1.098 Ha



North Wales Fire & Rescue Service – New Training Centre

Low and Zero Carbon Strategy Report

September 2023

Document Revision Control

Revisions	Date	Reason for Issue	By	Approved
00	15/09/2023	For information only	PP / GK	IC

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Executive Summary

To ascertain the operational carbon footprint of the proposed Admin & Training Hub as well as BA school (North Wales Fire and Training Centre), Harley Haddow Ltd was commissioned to undertake an energy assessment of the proposed buildings using dynamic thermal modelling and using the model to ascertain the operational carbon footprint (per annum). Furthermore, ways to offset the generated carbon during building operation were identified through photovoltaic panels or trees or a combination of both.

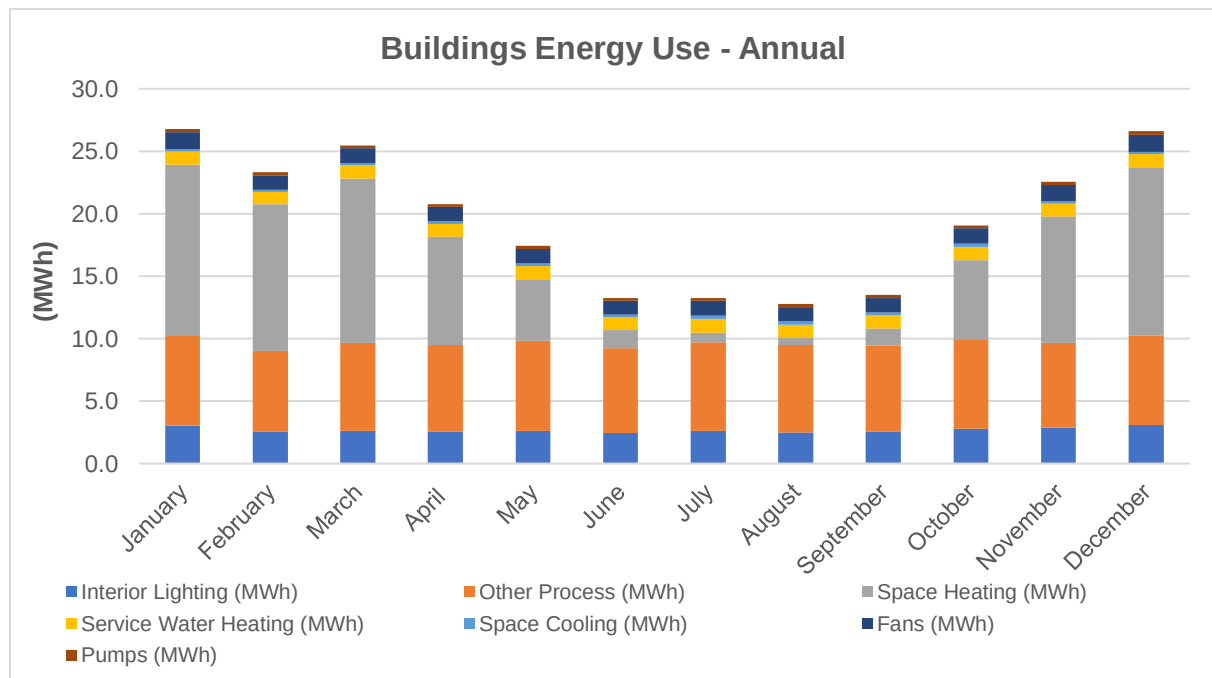


Figure 1: Annual energy use - proposed buildings

Furthermore, the feasibility for an efficient ground source heat pump (GSHP) was also tested in tandem with an expert. The feasibility study, which was based on the geology beneath the site advised that an open loop ground source heating/cooling system would be difficult to develop at any scale due to there being limited water present. Yields from local boreholes are low, due to the geology rather than being poorly drilled. However, closed loop boreholes or horizontal collectors under parking/landscaping may prove beneficial for the purpose. Should the GHSP system be paired with a solar thermal system to recharge the closed loops in warmer conditions, then the borehole array could be further reduced.

The high level modelling exercise suggests that the energy use intensity of the building is expected to be circa 83 kWh/m²/year, whilst the carbon footprint is expected to be around 32 Tonnes of CO_{2e}/year. Carbon emissions by the site, which includes external lighting and EV charging is expected to generate an additional 28 tCO_{2e}. To offset that amount of carbon emissions (for building + site), roughly 1562 PV panels (covering circa 2885 m²) or 6000 trees or a combination of two are required. Considering available roof area for PV mounting of 2907m², a PV array of the same size can offset the entire energy demand, and ensure the proposed building along with the overall site is net zero carbon in operation.

Please note that results and recommendations are based on the assumptions described in this report. If any of the inputs change then results are likely to change, and recommendations might no longer be appropriate.

1. Introduction

To ascertain the operational carbon footprint of the proposed Admin & Training Hub as well as BA school (North Wales Fire and Training Centre), Harley Haddow Ltd was commissioned to undertake an energy assessment of the proposed buildings using dynamic thermal modelling and using the model to ascertain the operational carbon footprint (per annum). Furthermore, ways to offset the generated carbon during building operation were identified through photovoltaic panels or trees or a combination of both.

2. Modelled Parameters

2.1. Occupancy

The occupancy of the proposed spaces in the admin-training and BA blocks that was used for the dynamic thermal modelling can be seen in the table below. The sensible and latent heat gains per person are based on the values defined in the UK National Calculation Methodology.

Space Name	Occupancy	Sensible Gain	Latent Gain
	(Number)	(W/person)	
L0_PR_BA_Classroom	16	70	70
L0_PR_BA_Workshop	3	48.6	131.4
L0_PR_Locker_Room_Student	10	70	70
L0_PR_Locker_Room_Trainer	10	70	70
L0_PR_RTC_Classroom	25	70	70
L0_PR_RTC_Indoor_Training	4	70	70
L0_PR_Staff_Gym	10	102	198
L0_TAH_Breakout/Circulation	30	70	70
L0_TAH_Changing_Place	2	70	70
L0_TAH_Classroom	14	70	70
L0_TAH_Classroom	14	70	70
L0_TAH_Command/Plenary	8	48.6	131.4
L0_TAH_Control_Centre_Training	2	48.6	131.4
L0_TAH_Green_Room	2	73	50
L0_TAH_Immersive_Trauma	1	48.6	131.4
L0_TAH_IT_Classroom	33	73.2	46.8
L0_TAH_Kitchen	5	63	117

L0_TAH_Meeting	2	73	50
L0_TAH_Meeting	2	73	50
L0_TAH_Multi_Faith	2	73	50
L0_TAH_Office	2	73	50
L0_TAH_Restaurant/Cafe	150	67.1	42.9
L0_TAH_Sim_Appliance_Cab	2	73.2	46.8
L0_TAH_Study	30	85.4	54.6
L0_TAH_Teams_Pod	3	61	39
L0_TAH_Training_Pods	10	48.6	131.4
L0_TAH_Trauma_Classroom	14	70	70
L0_TAH_XVR_Control	5	73	50

Table 1: Occupancy figures in the model

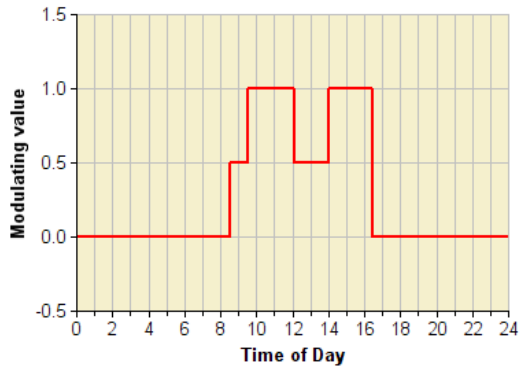
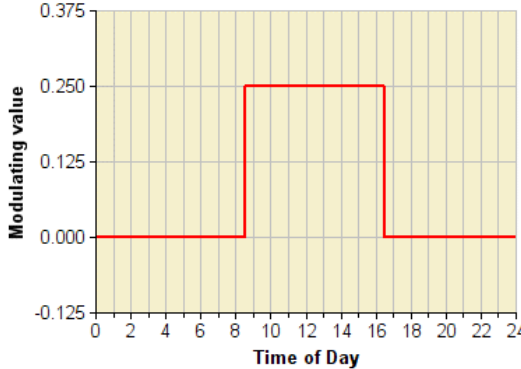
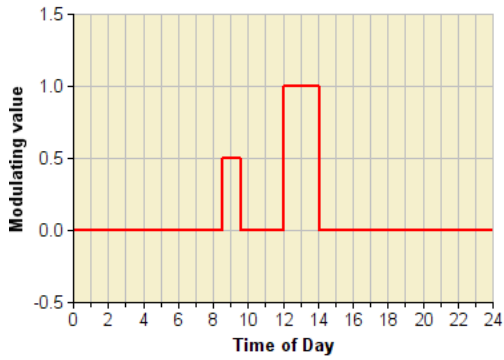
	
Occupancy Profile for all regularly occupied areas - Training and Classroom (6 days a week operation)	Occupancy profile for all offices – Assuming 25% occupancy across the working hours (0900 to 1700 hours)
	N/A (Blank)
Occupancy profile for the dining area (restaurant/café) – 150 students for lunch and 50% of students for breakfast (responds to the occupancy profile for occupied areas)	

Table 2: Profiles used for occupancy

2.2. Equipment gains – both blocks

The equipment gains for the proposed spaces are predominantly referred from the UK National Calculation Methodology and has been modelled as such. The gains can be seen in the table below:

Space Name	Consumption (W/m ²)
Circulation, Lobby, Study	1.83
Training Pods, Command, Workshop, Immersive Trauma, Control Centre	4.36
Washrooms	4.57
Classroom, Indoor Training, Changing and Lockers	4.79
Green Room, Offices, Meeting	11.90
Gymnasium	14.14
Restaurant/Cafeteria	17.17
Kitchen	34.02
IT Classrooms, Simulation Appliance	27.81
Energy Centre, Compressor	54.41

Table 3: Equipment gains modelled - referred from the UK NCM

The equipment gains which are not referred from the UK National Calculation Methodology but were used in the model are as follows:

Space Name	Consumption (W/m ²)
Server Room	150

Table 4: Modelled equipment gains - not based on NCM

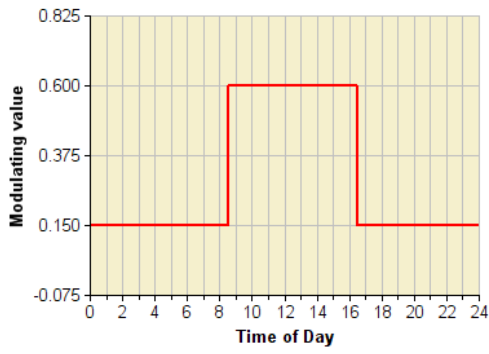
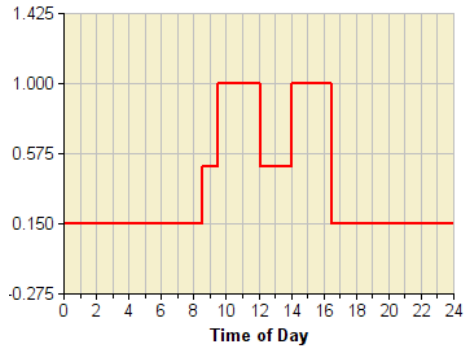
	
Equipment gains profile for all unoccupied areas (i.e. spaces which are not normally continuously occupied – such as washrooms, locker rooms, store)	Equipment gains profile for all occupied areas (Classrooms, training labs, immersive trauma, gymnasium, appliance lab)

Table 5: Profiles used to control the equipment gains

2.3. Lighting Gains – both blocks

A generic lighting gain value was used in the model to reflect energy efficient luminaires. In addition, daylight dimming was used to further reduce the lighting energy use wherever possible (occupied spaces with access to ample daylight)

Space Name	Gain
All Spaces (Both TAH and BA Blocks)	5W/m ²

Table 6: Modelled lighting power density

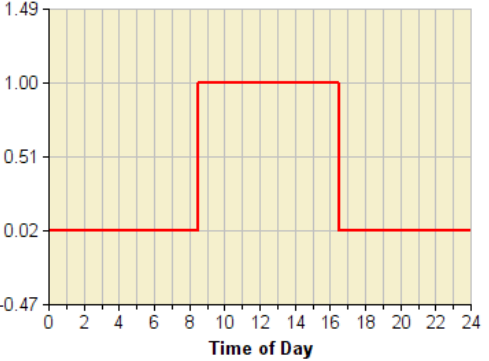
	Lights to dim to 25% of their peak luminous flux if the illuminance on the work-plane is >300 Lux
Lighting profile used in the model – 07:00 to 17:00 hours with 0.1W/m² of parasitic power demand.	Dimming condition used in the modelling – only applied to spaces with access to daylight.

Table 7: Lighting and dimming profile/parameters

2.4. Fabric properties – all spaces

The following fabric parameters were modelled based on limiting U values as defined in the Part L2, 2021 (with 2023 amendments) of the English and Welsh Building Regulations.

Building Category	Modelled Name	Source	U value (W/m ² .K)
Roof	NW_Roof	Part L2, 2021	0.18
Ground/Exposed Floor	NW_Floor	Part L2, 2021	0.18
External Wall	NW_Wall	Part L2, 2021	0.26
Internal Partition	NW_Partition	NCM Default	1.00
Internal Ceiling/Floor	NW_Ceiling	NCM Default	1.00
External Window	NW_Window	Part L2, 2021	1.60
Door	NW_Door	Part L2, 2021	1.60

Table 8: Fabric properties modelled

2.5. HVAC System – all spaces

The HVAC systems which were assigned to the spaces are detailed in the table below. Heating is modelled to be supplied by Heat Pump(s) (Ground Source or Air Source or a combination of both) through a low temperature hot water loop (LTHW). Mechanical ventilation (MVHR) is proposed in regularly occupied spaces to provide thermal comfort, maintain reasonable CO₂ levels and also recover heat to reduce the overall energy consumption. No cooling is modelled in the blocks apart from the DX unit serving the server room.

Spaces	Heating/Cooling System	Modelled efficiency	Ventilation
Classroom	LTHW fed heater battery – Heat Pump	300%	MVHR
Dining	LTHW fed heater battery – Heat Pump	300%	MVHR
Offices	LTHW fed heater battery – Heat Pump	300%	MVHR
Meeting	LTHW fed heater battery – Heat Pump	300%	MVHR
Labs	LTHW fed heater battery – Heat Pump	300%	MVHR
Workshops	LTHW fed heater battery – Heat Pump	300%	MVHR
Gymnasium	LTHW fed heater battery – Heat Pump	300%	MVHR
Washrooms	Electric Panel Heater – Direct Electric	100%	Extract
Circulation	Electric Panel Heater – Direct Electric	100%	Passive
Stores	Electric Panel Heater – Direct Electric	100%	Passive
Locker Room	Electric Panel Heater – Direct Electric	100%	Extract
Kitchen	Electric Panel Heater – Direct Electric	100%	Extract
Server Room	Direct Exchange Refrigerant (DX)	250% - Heating 500% - Cooling	Passive

Table 9: Modelled heating and cooling system with the heating/cooling source efficiencies

The mechanical ventilation heat recovery system is modelled to have a heat recovery efficiency of 77% along with a summer bypass to utilize free cooling during the spring/fall season. The modelled flowrates for the spaces are referred from the UK National Calculation Methodology. Note: the model is simulated with no operable windows and hence relies solely on the mechanical ventilation units to provide adequate fresh air and maintain thermal comfort. Domestic hot water is assumed to be supplied via direct electric systems throughout the building. Again, the DHW consumption has been referred from the UK National Calculation Methodology.

Spaces	DHW System	Modelled efficiency	Consumption
All	Point of Use Instantaneous heater	100%	NCM

Table 10: Modelled DHW systems

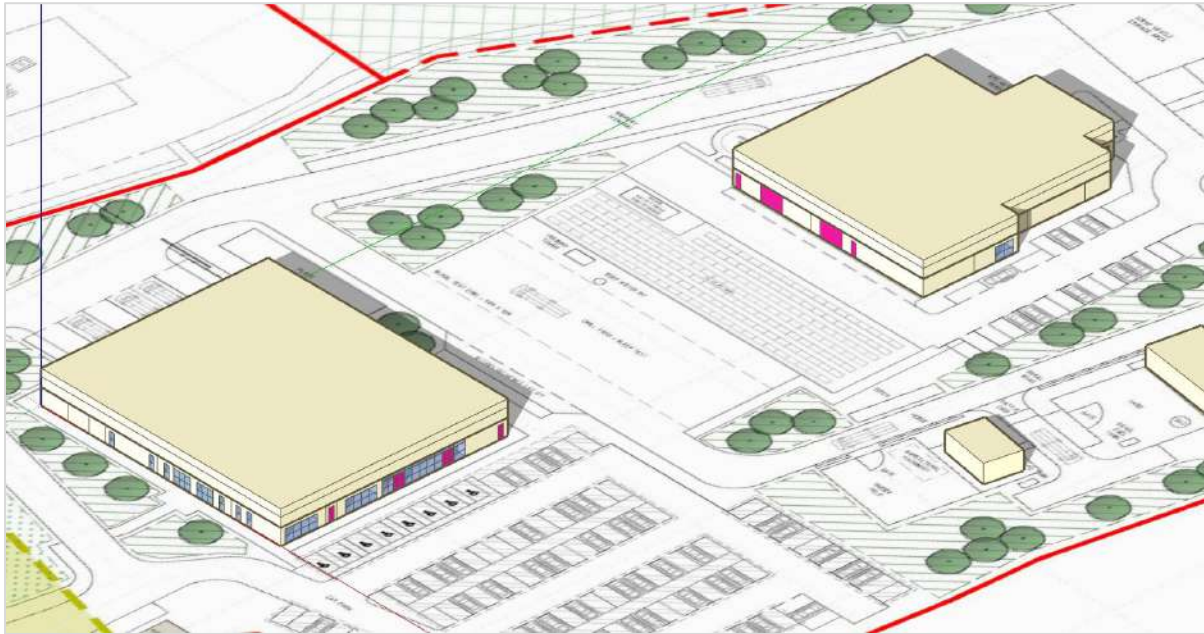


Figure 2: Modelled Geometry

2.6. External Lighting

Energy consumption attributable to external lighting has also been ascertained. The calculations are based on finding the running length of walkway and using the allowable lighting power density table published by United States Green Building Council (USGBC). The aforementioned table stipulates that a maximum of 3.2W of lighting can be installed per running metre length (LZ4 category) of walkway and 0.5W/m² of landscaping.

A time and date calculator was used to calculate hours which are categorized as 'Night' and 'Astronomical Twilight' to establish hours per annum during which the lights will be illuminated. Based on the calculations, which were taken on the 15th of every month, a total of 3126 hours of darkness was calculated in the UK. The running length of pathways, parking spaces and vehicular circulation as well as the landscaped areas was calculated from the site plan provided by the Architect. The running length was calculated to be circa 1750 metres for walkways and circa 6500m² for landscape-green areas.

2.7. Electrical Vehicle Charging – On site

50% of parking spaces being allocated for EV charging were factored in the overall operational carbon footprint. Roughly 65 parking spaces are expected to have EV charging and a diversity of 25% was applied to bring the overall number of EV chargers being used at a time to 17 parking spaces (to reflect the absence of any ULEZ zones in Wales and only 0.17% of vehicles to be electric in Wales as of 2020). It was assumed that 7kW chargers are installed and the chargers are used for 4 hours a day.

3. Ground Source Heat Pump Feasibility

The feasibility for an efficient ground source heat pump (GSHP) was also tested in tandem with an expert. The feasibility study, which was based on the geology beneath the site advised that an open loop ground source heating/cooling system would be difficult to develop at any scale due to there being limited water present. Yields from local boreholes are expected to be low due to the local geology. However, closed loop boreholes or horizontal collectors under parking/landscaping may prove beneficial for the building. A closed loop GHSP system be paired with a solar thermal system to recharge the ground during warmer conditions, which may then allow the borehole array to be further reduced. The feasibility study was based on a peak demand of 90kW, a value which corroborates with the dynamic thermal model's output.

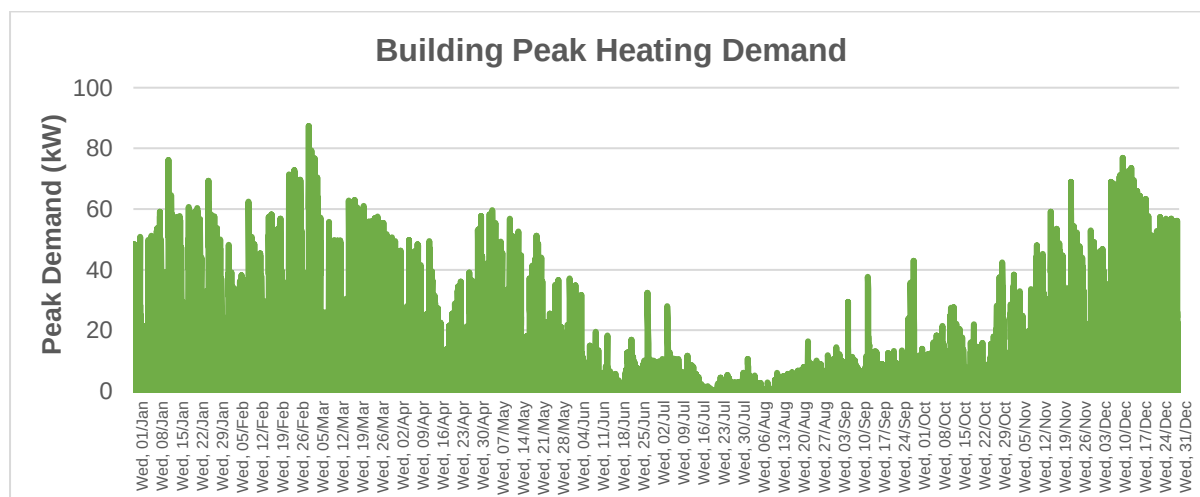


Table 11: Peak demand from the model used for the ground source heat pump study

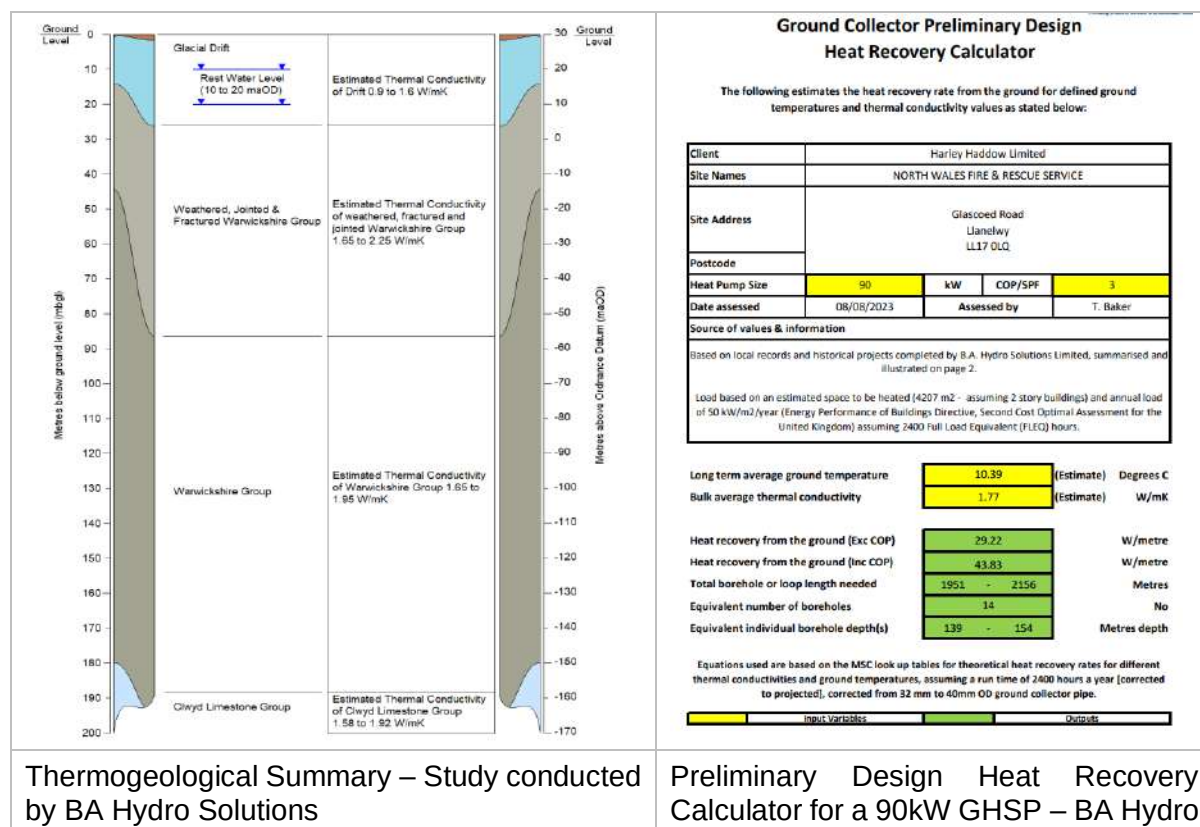


Figure 3: Screenshot of the GHSP feasibility study

4. Results

4.1. Energy Demand – Buildings

The monthly energy demand for various end uses (lighting, small power, heating, hot water, cooling, fans and pumps) is shown in the table below:

Month	Interior Lighting	Other Process	Space Heating	Water Heating	Space Cooling	Fans	Pumps
(MWh)							
January	3.0	7.2	13.7	1.1	0.2	1.35	0.3
February	2.6	6.4	11.8	1.0	0.2	1.15	0.2
March	2.6	7.0	13.2	1.1	0.2	1.17	0.2
April	2.6	6.9	8.6	1.1	0.2	1.15	0.2
May	2.6	7.2	4.9	1.1	0.2	1.18	0.2
June	2.4	6.8	1.5	1.0	0.2	1.09	0.2
July	2.6	7.1	0.8	1.1	0.3	1.16	0.2
August	2.5	7.0	0.6	1.1	0.3	1.12	0.2
September	2.6	6.9	1.4	1.1	0.3	1.14	0.2
October	2.8	7.2	6.3	1.1	0.2	1.24	0.2
November	2.8	6.8	10.1	1.0	0.2	1.27	0.3
December	3.1	7.2	13.4	1.1	0.2	1.38	0.3
Summed total	32.2	83.7	86.1	12.8	2.6	14.41	2.88

Table 12: Monthly energy demand

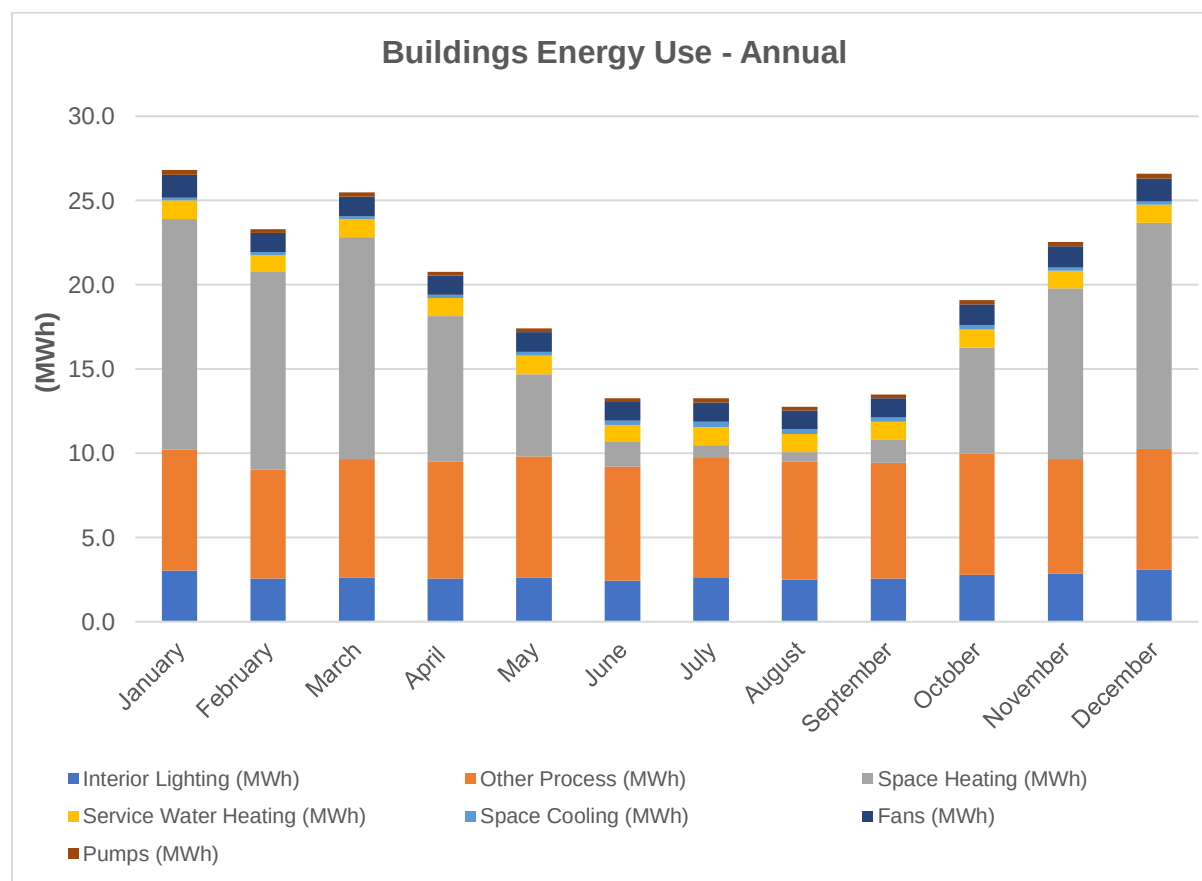


Figure 4: Visual representation of the energy demand.

4.2. Energy Demand – External lighting and EV Charging

Component	Installed Capacity	Hours/Annum	Total consumption
External lighting	Pathways – 5.6kW Green/Landscape – 3.2kW	3126	27506 kWh/Year
EV Charging	17*7kW each – 224kW	1460	173740 kWh/Year

Table 13: Energy consumed by EV chargers and External lighting

4.3. Carbon Footprint – Building

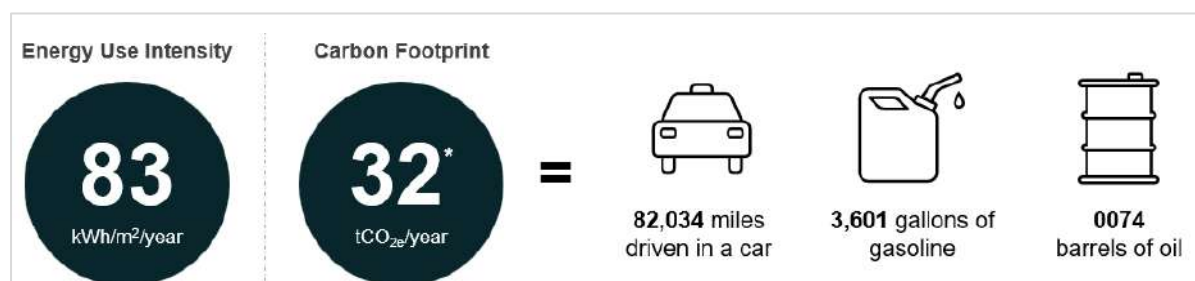


Figure 5: Visual representation of the energy use intensity and the carbon footprint

The operational carbon footprint is based on an emission factor of 0.1388 KgCO_{2e}/kWh of electricity consumed. It is essentially a long-range factor accounting for grid decarbonisation out to 2050.

4.4. Carbon Footprint – External lighting and EV Charging

Component	Annual Consumption	Carbon factor	Annual Carbon
External lighting	27506 kWh/Year	0.1388 KgCO _{2e} /kWh	3817 KgCO _{2e} /Year
EV Charging	173740 kWh/Year	0.1388 KgCO _{2e} /kWh	24115 KgCO _{2e} /Year

Table 14: Energy consumed by EV chargers and external lighting

4.5. Carbon offset – Building

To offset 32tCO_{2e} of carbon emissions arising from circa 235MWh/year of electricity consumption (83 kWh/m²/Year) from the building roughly 833 PV panels (covering circa 1500 m²) or 3200 trees or a combination of two are required. Figure 6 shows the grid displaced electricity on a monthly basis from a PV array of 1500 m² mounted horizontally with an efficiency of 21.6% against the simulated monthly energy demand from the model. Of itself this is sufficient to offset the entire energy demand, operational carbon footprint of the buildings (Training and BA blocks) and ensure the proposed buildings are net zero carbon in operation.

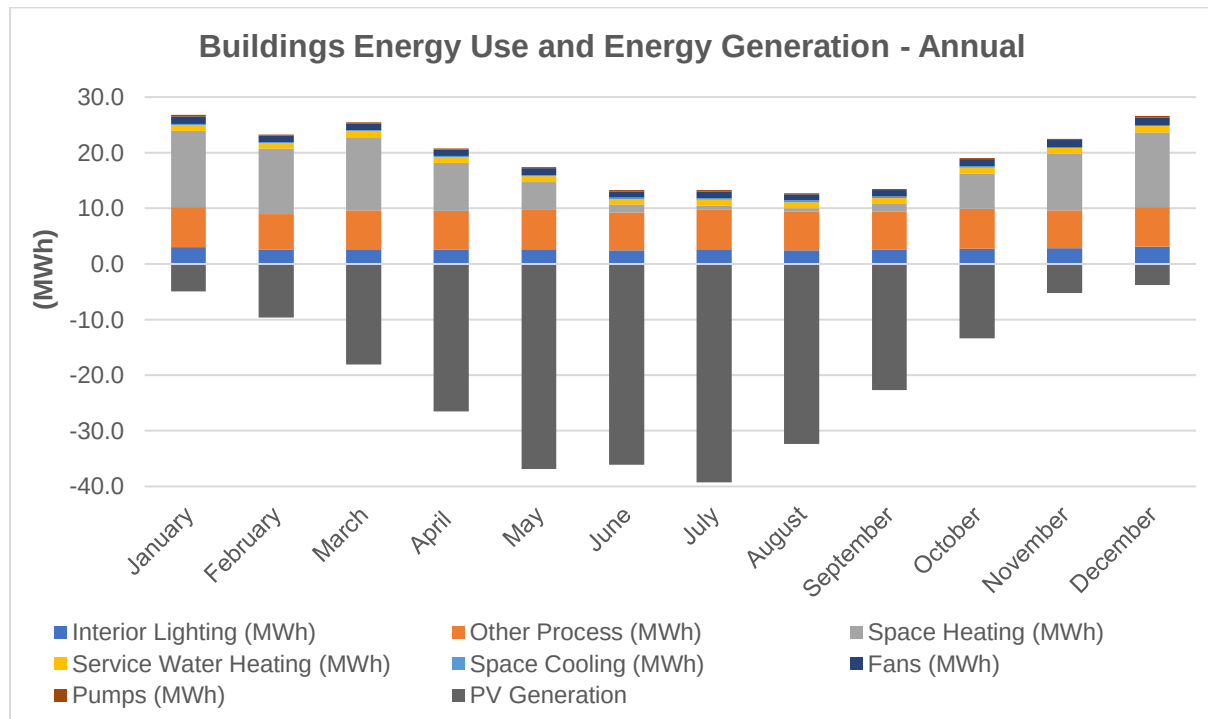


Figure 6: Visual representation of energy consumption and energy generation (from a 1500m² PV array) – buildings

4.6. Carbon offset – External lighting and EV Charging

To offset 28 tCO_{2e} of carbon emissions from EV charging and external lights, roughly 729 PV panels (covering circa 1385 m²) or 2800 trees or a combination of two are required for the external lighting and EV charging. These calculations are based on an installed external lighting capacity of 8.8 kW (based on USGBC's permissible lighting power density for external spaces), being used for 3126 hours annually and 17 X 7kW EV chargers (25% of total EV charging stations proposed) being used for 4 hours a day or 1460 hours annually.

4.7. Carbon offset – Whole site (Buildings + External lighting and EV Charging)

The site plan indicates a potential PV mounting area of circa 2907 m² (highlighted in orange in Figure 8), which can in-theory accommodate enough PV panels to offset the operational carbon emissions of the whole site (buildings + external factors such as lighting and EV charging). Additionally, the plans also indicate a potential area of 6505m² available for planting trees (marked in red in Figure 9). This is sufficient for approximately 1200 trees offsetting approximately 12tCO_{2e} per annum. Whilst this could contribute to the total it is insufficient of itself to offset the site emissions, hence the installation of solar power should be considered the primary route for carbon offsetting on site.

The carbon balance of the site, considering all the trees, potential PV arrays, buildings and external elements (external lighting and EV charging) is illustrated in Figure 7 below.

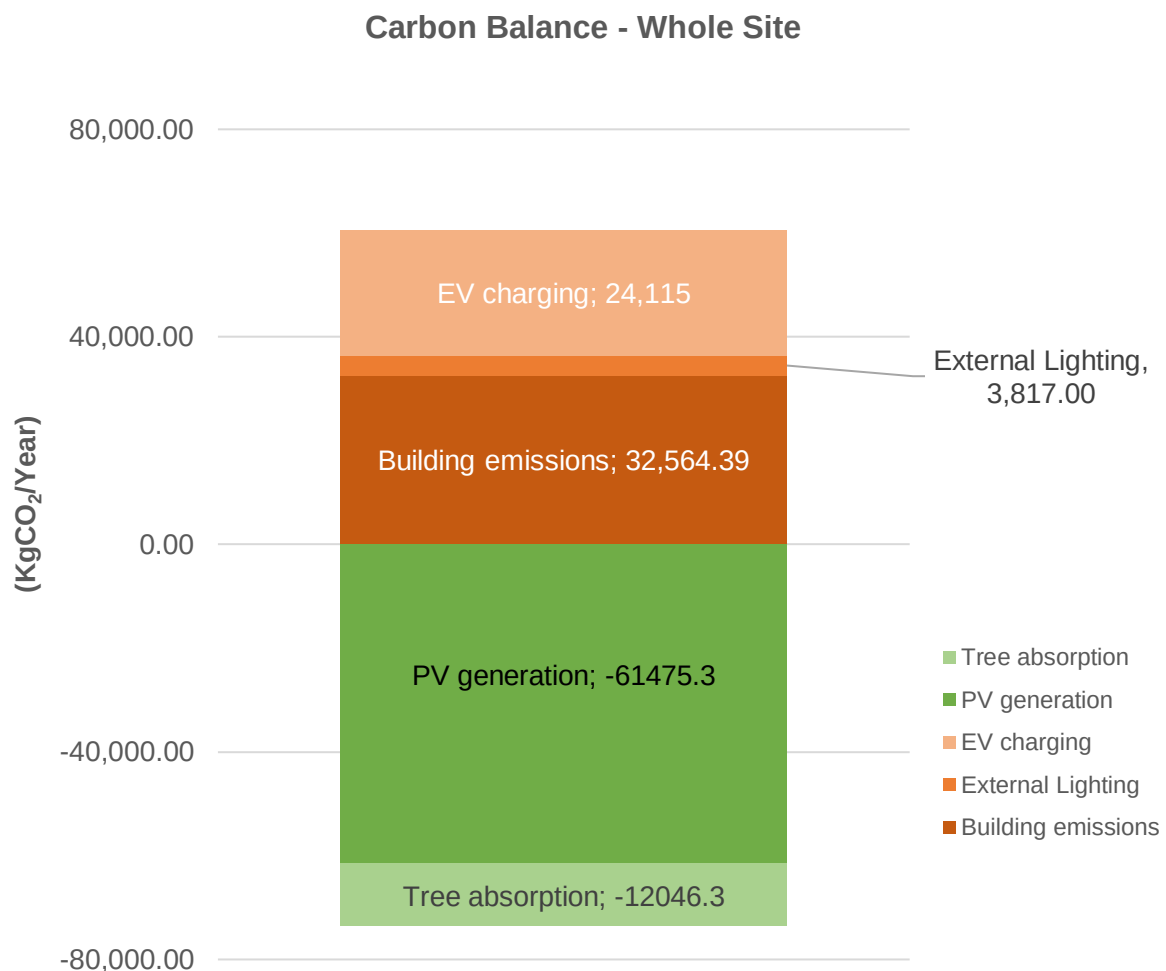
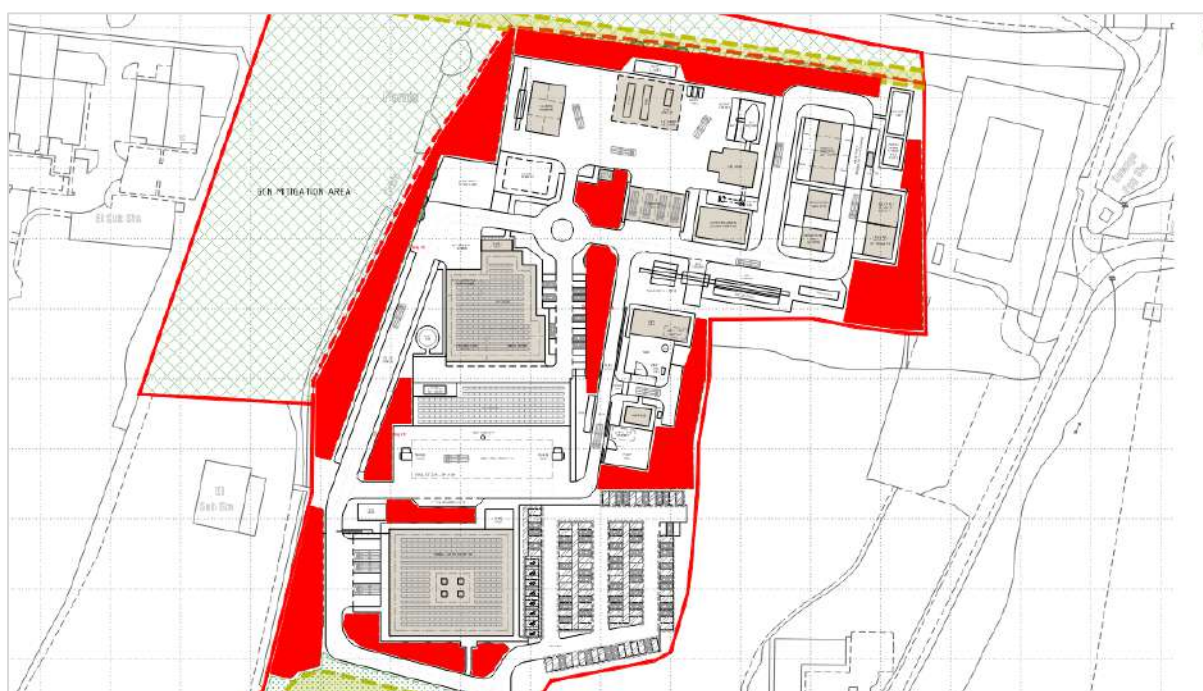


Figure 7: Carbon balance of the whole site (emissions in positive and offset in negative)



5. Appendix A – References

CIBSE Guide A (2021)	Guide A: Environmental design (2015) CIBSE
UK NCM	NCM (uk-ncm.org.uk)
Part L2, 2021 with 2023 amendments	Conservation of Fuel and Power, Part L, Volume 2, 2021
USGBC – Lighting table	Allowable lighting power densities, by lighting zone (GIBc17)
EV market share	Welsh Government Electric Vehicle Charging Strategy - Arup

Our ref: GCR/vn/P5053

19 June 2023

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For the attention of Mr Stephen Roberts
Head of Facilities
North Wales Fire and Rescue Service
St Asaph
Denbighshire

Dear Stephen

Sequential Test Report – Suitable Site for Proposed New Fire Training Centre

1.0 Instruction

- 1.1** We refer to your kind instruction to provide a Sequential Test Report in respect of suitable sites for the development of a Fire and Rescue Service Training Centre, having regard to your requirements as set out in the report prepared by IKG Consulting dated 23 June 2022.

2.0 Background

- 2.1** We were initially instructed in September 2022 to provide advice on the appropriate level of bid to be offered for the acquisition of the freehold title to the subject property. At the time of completing this original report we undertook market research in order to establish the tone of value that comparable evidence would support. It was noted then that there was a noticeable absence of similar sized sites available throughout the whole of North Wales.
- 2.2** For the purpose of our instruction the property search on site availability was undertaken on the full geographical area of North Wales, comprising the counties of Gwynedd, Anglesey, Conwy, Denbighshire, Flintshire and Wrexham, making note of any site of over 1 acre (0.40 ha). The search was not restricted to industrial or business/enterprise zones, and included any site that may have been within the settlement envelope. There were no such sites identified within the entire search area. Had there been they would have been assessed against the criteria provided. Our research confirmed that there remains only a very limited stock of suitable and appropriately sized commercial/industrial development sites currently available in the market place which are described herein.

2.3 We append to the rear of this report a summary of our search which shows that the majority of sites available are far smaller in size than that which is required for the Training Centre Development.

3.0 Land Requirements

3.1 We have been provided with a copy of a report prepared by IKG Consulting dated 23 June 2022, which sets out the land requirements for the proposed training centre which are as follows:

- Land size in the region of 10-20 acres which include space for carbon offset arrangement as an organisation aspiring to become carbon neutral (10 acres for operations – remainder landscaping /trees /buffer zone);
- Though most topography will be considered, large flat or gently sloping areas are preferred, features such as steeper slopes, quarries, cliff faces, water features and small rivers will not rule out as they could be incorporated into training scenarios;
- The site will need to be in Flood Plain 1;
- The site should be located on the A55 corridor;
- The site must not be in the Nation Park;
- The site must have the ability to allow of wood and LPG. (There will be some form of grey smoke emissions from the site);
- The site will require substantial water and electricity supplies and means of water disposal. Being close to infrastructure will be advantageous though not fully essential);
- Brownfield sites will be considered, but any site must be free of contaminants or at least any contaminants declared and the land value adjusted accordingly.

3.2 Additionally we were provided with a copy of an Isochrone Map, produced by North Wales FRS, defining the optimum location of fire stations in regard to travel distance in relation to the area in which the new Fire Training Centre be best located.

4.0 Site Identification

4.1 Having analysed our findings, we further refined our search taking into account the specific requirements set out in the IKG report and listed in paragraph 3.1 of this report, and addressing only those aspects we considered relevant sites of circa 10 acres or more, located within appropriate proximity of the entire A55 corridor and within Flood Zone Area 1.

4.2 This eliminated all but three of the available sites, and for reasons given below are deemed inappropriate for the proposed development as described in the IKG Consulting report of 23 June 2022.

4.3 Freehold Land for Sale in the marketplace

- Holyhead, Anglesey - Unit C9 Parc Cybi

Located within the established Llangefni Industrial Estate, within Anglesey's Enterprise Zone/Grant Assisted Area at a distance of c. 0.2 miles from Junction 2 off the A55 Expressway.

10.5 acres of land – asking price £735,000 (£70,000 per acre)

Although within the A55 corridor, the site is located at the furthest point west of the search area, and in an area having the least number of fire stations located within a 60 minute travelling time (1-20 fire stations). The Parc has land zoned for employment use under B1, B2, B8 use classes.

There is an existing truck stop for 168 vehicles located at the centre of the park and a new Premier Inn, which is under construction.

We consider that this land is not suitable for your requirements

- Deeside Industrial Estate, Flintshire - Waste Management/Waste to Energy Development Site, Weighbridge Road

15.48 acres of brownfield land, located within the Deeside Enterprise Zone. The property comprises the site of a former power station and, currently has planning consent for waste management uses.

Part of the access road to the site appears to be within in an area identified as being at high risk of flooding by Natural Resources Wales, whilst the rest of the site is not identified as being at risk as it is at a slightly higher level.

There are also certain access rights reserved in favour of Scottish Power over the site to access their adjacent sub-station.

The site lies at the westerly most point of the search area, having 20-26 stations within a 60 minute drive.

We considered that this land is unlikely to be suitable for you requirements.

- KSS Site, Sarn Road, Rhyl

257 acre, strategic development site, this is being advertised speculatively to test the market. This site has been identified as a key strategic site Denbighshire County Council's current Local Development Plan for mixed use site. See Local Plan extract Policy BSC5 – Key Strategic Site – Bodelwyddan appended to this report.

The site is completely devoid of any infrastructure and services.

Any development of this site would be a future intent, and for this reason we disregarded this site at this stage.

4.4 Subject Site

Land at Glascoed Road, St Asaph

Comprising a level rough surfaced site extending to the required 10 acres. It has an established vehicular access off Glascoed Road, with access to services.

The site is centrally located along the A55 corridor, within a short distance of Junction 26 of the A55 Expressway, and the most accessible having 32 to 39 fire stations located within a 60 minutes.

The site is entirely within Flood Zone 1.

The site is located on the periphery of the St Asaph Business Park.

4.5 Leasehold Land

4.5.1 Whilst outside our brief we have also included in our search parameters those sites that we are aware to be available in the market place on leasehold/ground lease basis.

4.5.2 It may be that the landlord on a direct approach, might consider disposal on a long ground lease or even a freehold basis, but we have not undertaken any such enquiry with the landowner(s) or their agent(s) to establish whether this could be the case.

4.5.3 We have deemed it appropriate to report on these sites despite that they fall outside the brief.

- Land at Tata Steel, Shotton Works

100 acres of land available to let within the Deeside Enterprise Zone, for industrial development purposes. The landowner (Tata Steel UK Limited) have full control over how the site can be developed, and it is their aspiration that the site be a "construction campus for Wales and the United Kingdom. It is the stated current intention of the freeholder not to sell any part of the site but to work in partnerships with likeminded businesses delivering a construction centre of excellence in North Wales.

We consider that your proposed use may not accord with the landowner's aspirations. Accordingly we have dismissed this site.

- Former Ferodo Site, Caernarfon

40 acre site with buildings. The full extent of the building extends to some 250,000 sq ft approx. which are to be retained.

It is understood that approximately half of this building will be retained by the owners for some form of leisure scheme development and that they have engaged with the appropriate planning authority involved with the Menai Straits Development Plan. Our searches of the planning portal have not revealed any further information on this aspect.

The agents are currently offering, on the market, the remaining part of the building extending to some 125,000 sq ft (see particulars appended at rear) and advertised as being available to let, but the agents advise that the vendor's may consider a freehold disposal.

Having regard to the fact that the factory was utilised for the production of automotive parts and components, principally brake shoe lining pads and clutches (originally asbestos based), it is thought that there may still be issues with some form of contamination affecting part of the site.

The site is outside of the A55 corridor, approximately 4.5 miles from Junction 9 of the Expressway, with a catchment of 20-26 fire stations within 60 minutes.

We considered that this land is unlikely to be suitable for your requirements.

5.0 Conclusion

- 5.1 Having regard to the above it is our opinion that the Land at Glascoed Road, St Asaph is the most suitable site for locating the new Fire Training Centre.
- 5.2 None of the other sites reported upon within this Report deemed to offer comparable alternatives for locating the proposed new development.

Yours sincerely



Celt Rowlands & Co

APPENDICES

CRCo 1 – FULL LIST OF SITES CONSIDERED

CRCo 2 – DENBIGHSHIRE LOCAL DEVELOPMENT PLAN EXTRACT

CRCo 1 – FULL LIST OF SITES CONSIDERED



1



Development Site- North Wales Business Park

A547

Abergele, LL22 8LJ

Parcel Size: **1.64 AC**
 Lot Dimensions: -
 # of Lots: -
 Proposed Use: -

Sale Price: **£795,000**
 Price/AC: **£484,756**
 Sale Status: **Active**
 Days On Market: **761**
 Tenure: **Long Leasehold**

This property is represented by Eddisons - Robert Diggle, 0151 268 5280
 This property is for sale individually

2



Development Land

Conway Rd

Llandudno, LL31 9NB

Parcel Size: **7.36 AC**
 Lot Dimensions: -
 # of Lots: -
 Proposed Use: -

Sale Price: **£1,500,000**
 Price/AC: **£203,804**
 Sale Status: **Active**
 Days On Market: **217**
 Tenure: **Freehold**

This property is represented by St Davids Commercial - Charlotte Flannigan, 01492 534881
 This property is for sale individually

3		Llandegai Rd Bangor, LL57 4HP	Parcel Size: 4.46 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: For Sale Price/AC: - Sale Status: Active Days On Market: 4,170 Tenure: Freehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
4		Llandegai Rd Bangor, LL57 4HP	Parcel Size: 5.66 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: For Sale Price/AC: - Sale Status: Active Days On Market: 4,170 Tenure: Freehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
5		Llandegai Rd Bangor, LL57 4HP	Parcel Size: 5.73 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: For Sale Price/AC: - Sale Status: Active Days On Market: 4,170 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
6		Llandegai Rd Bangor, LL57 4HP	Parcel Size: 5.58 AC Lot Dimensions: - # of Lots: - Proposed Use: Industrial	Sale Price: For Sale Price/AC: - Sale Status: Under Offer Days On Market: 4,170 Tenure: Freehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
7		Llandegai Rd Bangor, LL57 4HP	Parcel Size: 5.73 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: For Sale Price/AC: - Sale Status: Active Days On Market: 4,170 Tenure: Freehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				

8		Llandegai Rd Bangor, LL57 4HP	Parcel Size: 6.80 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: For Sale Price/AC: - Sale Status: Active Days On Market: 4,170 Tenure: Freehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
9		Llandegai Rd Bangor, LL57 4HP	Parcel Size: 3.24 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: For Sale Price/AC: - Sale Status: Under Offer Days On Market: 4,170 Tenure: Freehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
10		Llandegai Rd Bangor, LL57 4HP	Parcel Size: 7.77 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: For Sale Price/AC: - Sale Status: Under Offer Days On Market: 1,622 Tenure: Freehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
11		Llandegai Rd Bangor, LL57 4HP	Parcel Size: 2.25 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: For Sale Price/AC: - Sale Status: Active Days On Market: 1,622 Tenure: Freehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
12		Llandygai Rd Bangor, LL57 4HP	Parcel Size: 1.40 AC Lot Dimensions: - # of Lots: - Proposed Use: Industrial	Sale Price: £295,000 Price/AC: £210,714 Sale Status: Active Days On Market: 247 Tenure: Freehold
This property is represented by Legat Owen - Mark Diaper, 01244 408236 Rupert Chadwick Dunbar, 01270 621001 This property is for sale individually				

13		C1 Parc Cybi Holyhead, LL65 2YE	Parcel Size: 4.20 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £294,000 Price/AC: £70,000 Sale Status: Active Days On Market: 1,590 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
14		C2 Parc Cybi Holyhead, LL65 2YE	Parcel Size: 3.80 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £266,000 Price/AC: £70,000 Sale Status: Active Days On Market: 1,590 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
15		C3 Parc Cybi Holyhead, LL65 2YE	Parcel Size: 2.15 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £150,500 Price/AC: £70,000 Sale Status: Active Days On Market: 1,590 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
16		C4 Parc Cybi Holyhead, LL65 2YE	Parcel Size: 2 AC Lot Dimensions: - # of Lots: - Proposed Use: Industrial	Sale Price: £140,000 Price/AC: £70,000 Sale Status: Active Days On Market: 1,590 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
17		C5 Parc Cybi Holyhead, LL65 2YE	Parcel Size: 3 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £210,000 Price/AC: £70,000 Sale Status: Active Days On Market: 1,590 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				

18		C7 Parc Cybi Holyhead, LL65 2YE	Parcel Size: 1.35 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £94,500 Price/AC: £70,000 Sale Status: Active Days On Market: 1,590 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
19		C8 Parc Cybi Holyhead, LL65 2YE	Parcel Size: 1.86 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £130,200 Price/AC: £70,000 Sale Status: Active Days On Market: 1,590 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
20		C9 Parc Cybi Holyhead, LL65 2YE	Parcel Size: 10.50 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £735,000 Price/AC: £70,000 Sale Status: Active Days On Market: 1,590 Tenure: Freehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
21		KSS Sarn Rd Rhyl, LL18 5UN	Parcel Size: 150 AC Lot Dimensions: Irregular # of Lots: - Proposed Use: Apartment Units	Sale Price: For Sale Price/AC: - Sale Status: Active Days On Market: 860 Tenure: Freehold
This property is represented by Legat Owen - Matthew Pochin, 01244 408205 This property is for sale individually				
22		St Asaph Business Park St Asaph, LL17 0JD	Parcel Size: 1.56 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £156,000 Price/AC: £100,000 Sale Status: Active Days On Market: 1,777 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				

23		St Asaph Business Park St Asaph, LL17 0JD	Parcel Size: 1.01 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £101,000 Price/AC: £100,000 Sale Status: Active Days On Market: 1,777 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
24		St Asaph Business Park St Asaph, LL17 0JD	Parcel Size: 2.12 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £212,000 Price/AC: £100,000 Sale Status: Active Days On Market: 1,777 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
25		St Asaph Business Park St Asaph, LL17 0JD	Parcel Size: 1.09 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: For Sale Price/AC: - Sale Status: Active Days On Market: 1,778 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
26		St Asaph Business Park St Asaph, LL17 0JD	Parcel Size: 2.88 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £288,000 Price/AC: £100,000 Sale Status: Active Days On Market: 1,778 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				
27		St Asaph Business Park St Asaph, LL17 0JD	Parcel Size: 2.66 AC Lot Dimensions: - # of Lots: - Proposed Use: Commercial	Sale Price: £266,000 Price/AC: £100,000 Sale Status: Active Days On Market: 1,778 Tenure: Long Leasehold
This property is represented by Welsh Government - Julie McNamara, 0300 061 5593 This property is for sale individually				

28

**St Asaph Business Park****St Asaph, LL17 0JD**

Parcel Size: **2.25 AC**
 Lot Dimensions: -
 # of Lots: -
 Proposed Use: **Commercial**

Sale Price: **£225,000**
 Price/AC: **£100,000**
 Sale Status: **Active**
 Days On Market: **1,778**

Tenure: **Long Leasehold**

This property is represented by Welsh Government - Julie McNamara, 0300 061 5593
 This property is for sale individually

29

**Plot C7****St Asaph Business Park****St Asaph, LL17 0JD**

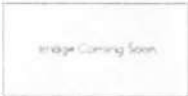
Parcel Size: **4.54 AC**
 Lot Dimensions: -
 # of Lots: -
 Proposed Use: **Commercial**

Sale Price: **For Sale**
 Price/AC: -
 Sale Status: **Active**
 Days On Market: **1,778**

Tenure: **Long Leasehold**

This property is represented by Welsh Government - Julie McNamara, 0300 061 5593
 This property is for sale individually

30

**Waste to Energy, Deeside Industrial Site****Weighbridge Rd****Deeside, CH5 2LF**

Parcel Size: **15.48 AC**
 Lot Dimensions: -
 # of Lots: -
 Proposed Use: -

Sale Price: **For Sale**
 Price/AC: -
 Sale Status: **Active**
 Days On Market: **1,496**

Tenure: **Freehold**

This property is represented by Avison Young - Chris Lockwood, 020 7911 2884 Paul Marsh, 020 7911 2852
 This property is for sale individually

CRCo 2 – DENBIGHSHIRE LOCAL DEVELOPMENT PLAN EXTRACT

sustainability. Around 50 hectares of employment land will be allocated in the Local Development Plan.

Spatial Strategy

The Local Development Plan spatial strategy is to focus development into a small number of large sites in the north of the County, with smaller scale new development being supported in other County settlements. The main justification for this spatial approach is based on the issues and objectives set out in the preceding chapters, which in summary include:

- Benefits of large mixed use developments in integrating land uses (homes, shops, leisure facilities and jobs) to create sustainable communities;
- Benefits of larger mixed use developments in delivering significant infrastructure investment and community facilities;
- The north of the County has the 64% of the County's population, the greatest level of housing need and the strongest housing market;
- The County's main public transport nodes are located to the north – primarily based around the train stations at Rhyl and Prestatyn;
- The A55(T) is located in the north – this road is a trans-European network and is the source of considerable commercial and commuter activity;
- The constraints on development land are more significant in the south of the County.
- The need to protect and enhance the natural and built heritage of the County.

It is important to consider that, whilst this spatial strategy aims to concentrate the majority of the Local Development Plan development requirements into the north of the County, it does not aim to preclude development opportunities in other parts of the County. Smaller scale sites have been allocated in other settlements to meet local needs.

The distribution of growth and new development in the County will be largely determined by the settlement hierarchy and associated spatial strategy. All settlements within the County have been placed into a five tier classification system as set out below. Further detail is set out in Policy BSC 1 - Growth Strategy for Denbighshire. Development boundaries have been defined for Bodelwyddan, the Lower Growth Towns, and villages within the settlement hierarchy; these are shown on the proposals maps. Development boundaries have been drawn to allow for an appropriate level of development for each settlement and to follow clearly identifiable features. Within development boundaries, new development will, in principle, be supported provided that it meets the criteria of other policies in the Local Development Plan and material planning considerations.

Key Strategic Site – Bodelwyddan

Bodelwyddan has been identified as a Key Strategic Site to meet the needs of Denbighshire in line with the LDP strategy. This large mixed use site will deliver new housing, employment opportunities, open space and community facilities,

creating a sustainable, expanded community. The site is identified on the proposals maps.

Lower Growth Towns

The towns of Rhyl, Prestatyn, St Asaph, Denbigh, Ruthin and Corwen have been identified as lower growth towns. These towns function as regional and/or local service centres with wide rural hinterlands. These centres will collectively make an important contribution to the overall housing and employment requirements of the County. Development boundaries have been drawn for each town and the proposals maps show housing, employment and retail allocations as appropriate.

Villages

The settlement tier for villages contains both traditional villages and the towns of Rhuddlan and Llangollen. This tier in the hierarchy refers to the level of growth that it is considered is appropriate for each of these settlements as opposed to any strict definition of what constitutes a 'village'. The amount of growth will vary between villages and growth will be primarily to meet local needs. All villages have defined development boundaries and where appropriate housing and employment allocations are shown on the proposals maps.

Hamlets

A settlement tier for hamlets has been developed in response to local concerns that development opportunities for local people have been overly constrained in very rural areas in previous Plans. Hamlets have been defined as having a community facility such as a school, shop, pub, place of worship etc either within the settlement or being a settlement that supports a neighbouring facility. Housing growth within hamlets will still be limited by a quota for each settlement and tied to local needs, with the aim of helping to sustain local communities and facilities. No development boundaries have been defined for hamlets as these would be overly restrictive given the limited amount of development that would be permitted; instead areas of search are shown on the proposals maps within which appropriate affordable housing proposals will be considered.

Open Countryside

All other areas are classified as open countryside where development opportunities will be strictly controlled in line with national policy. There will be a limited contribution to meeting housing needs through conversions of redundant rural buildings and infill development. Appropriate employment opportunities will also be supported to help sustain local communities.

Phasing

In general, it is expected that housing development will be delivered by the private sector, including housing associations (Registered Social Landlords, or RSLs). The private sector is also expected to make a contribution towards much of the public

This policy will contribute to meeting Objective(s):

1: Population and Community

Policy BSC 5 – Key Strategic Site – Bodelwyddan

Land at Bodelwyddan has been identified as a Key Strategic Site as shown on the proposals map, as part of the Preferred Strategy of the Local Development Plan and in order to meet the acknowledged development needs of the north of the County. The site is intended to be an exemplar site in terms of sustainability and high quality design.

Development will be phased over the plan period and should incorporate all the following key elements:

- 1,715 dwellings including the provision of affordable housing in accordance with Policy BSC4; and
- education, training and health provision; and
- 26 hectares of B1, B2 & B8 serviced employment land and units; and
- new highway network between the existing A55 Junction 26 and Sarn Road and other offsite improvements; and
- onsite community facilities, open space, retail provision; and
- safeguarding and enhancement of any areas / species of nature conservation importance; and
- pedestrian and cycle facilities to serve connectivity between homes and jobs, including the surrounding Rights Of Way network; and
- new public transport links; and
- sustainable building materials, energy efficient and water efficient measures and aspire to be carbon neutral; and
- consideration as to the potential impacts on the linguistic, cultural and social character of the area; and
- integration of the development into the landscape based on the findings of a robust landscape framework.

A development brief and detailed masterplan will be required to be produced in consultation key stakeholders and the local community before a decision is made on a planning application.

National Policy links

Planning Policy Wales :

Chapter 4 – Planning for Sustainability
Chapter 7 – Economic Development
Chapter 9 – Housing
Chapter 12 – Infrastructure and Services

Technical Advice Notes:

TAN 2 – Planning & Affordable Housing
TAN 12 - Design

Justification

The Wales Spatial Plan, North East Wales Area, identifies a hub between the towns on the Denbighshire coast and St. Asaph. The hub provides a focus for future employment, housing and retail and provides continued support and opportunity for growth and regeneration for a wider area.

The site also lies within the North Wales Coast Strategic Regeneration Area. The employment allocation at Bodelwyddan will assist in the regeneration of Rhyl and improved linkages between the two settlements will enhance the sustainability of them both.

The site is in close proximity to the County boundary with Conwy County Borough this lends itself to collaboration work in terms of identifying need for affordable housing, education and employment provision. Whilst a development of this size brings change to the existing residents of Bodelwyddan the Council identifies a number of opportunities in site masterplanning to address the strategic County issues such as housing needs, and building on the economic success of the St Asaph Business Park and local colleges. In environmental terms some real opportunities for enhancement exist. Bringing forward a strategic mixed development is likely to have a host of other benefits such as, greater opportunity to promote sustainable development principles, reduced reliance on the private car and a mixed sustainable community. In addition to the delivery of serviced employment sites development could provide various community benefits such as funding of school places, transport improvements, affordable housing and extra care housing.

Building a sense of place through high quality design is key and masterplanning the infrastructure requirements to reduce water demand and increase renewable energy generation is integral to the design.

A development brief and detailed masterplan will be required to be produced in consultation with key stakeholders and the local community before a decision is made on a planning application.

This policy will contribute to meeting Objective(s):

- 1: Population and Community
- 2: Economy and Jobs
- 6: Transport

- 12: Infrastructure
- 13: Mixed Use Development

Policy BSC 6 - Local connections affordable housing in hamlets

Local connections affordable housing will be permitted in the hamlets listed below, provided that all the following criteria are met:

- i) the proposal would provide an affordable dwelling to meet local needs; and,
- ii) the proposals would help to secure the viability of the local community, and strengthen the community and linguistic character; and,
- iii) new housing is located within the defined area of search of the hamlet and overall growth levels restricted to that indicated below; and,
- iv) the proposal is in keeping with traditional building styles and is sympathetic in design, scale and materials to other traditional buildings in the locality; and,
- v) satisfactory arrangements are made to ensure the dwelling is retained in perpetuity as an affordable dwelling for local need and this is contained in a Section 106 agreement.

The hamlets included in the policy are listed below and shown on the proposals maps – the figure in the second column denotes the number of dwellings that will be permitted in each settlement over the Plan period.

National Policy links

Planning Policy Wales :

Chapter 4 – Planning for Sustainability
Chapter 9 – Housing.

Technical Advice Notes

TAN 2 – Planning & Affordable Housing
TAN 6 – Planning for Sustainable Rural Communities
TAN 12 – Design

Justification

New dwellings in the hamlets will be restricted to affordable housing only in order to meet local affordable housing need. An applicant must have a strong local connection with the Community Council area in accordance with the Council's Local Connections Policy, as stipulated in the Supplementary Planning Guidance on Affordable Housing.

Applicants will not necessarily need to be registered on any housing waiting list but must:

1. not be able to afford to purchase a suitable property for their needs on the open market, and

STRICTLY PRIVATE AND CONFIDENTIAL

Jamie Bradshaw
Owen Davenport Limited

Email: jamie@owendavenport.co.uk

Date: 09 August 2023

Our Ref: MJP/RH

Your Ref:

Email: mattpochin@legatowen.co.uk

Direct Line: 01244 408205

Dear Jamie

RE: TEN ACRE SITE, ST ASAPH BUSINESS PARK, ST ASAPH

I refer to your request to provide a review of the marketing and background to the marketing of the St Asaph Business Park site, upon which you are working to secure planning consent for a new facility for the North Wales Fire and Rescue Services.

Legat Owen

Legat Owen are a commercial property practice based in Chester and Nantwich, providing services in all aspects of commercial property. The Practice geographically focuses upon the Cheshire and North Wales markets, where we are recognised as the principle independent practice. We have an agency team of 14 fee earners with skill sets in all sectors and many years of experience in the North West and Wales.

The subject site falls within the abilities provided by the practice to include industrial, office and development expertise.

The primary personnel involved in the site during the course of its marketing have been Stephen Wade (sadly deceased), Mark Diaper, Ben Lamont and Matthew Pochin.

Historical Involvement

The site was first taken on as an instruction by Legat Owen in November 2009, when it was acquired by Stretton Property Group and Anwyl in a joint venture company.

Directors: Peter D Johnston FRICS, Matthew J W Pochin BSc (Hons) MRICS, Susan Wigfield, Mark L Hopley BSc (Hons) MRICS, Mark Atherton BSc MRICS, James Lutton BSc (Hons) MRICS, William J Sadler MSc MRICS, Natalie L Tansey BA (Hons) MSc MRICS, Andrew T M Butler BSc (Hons) MRICS, William H P Rees BSc Econ MRICS, Mark R Diaper BSc (Hons) MRICS, Sam Tarjomani MRICS

Associates: Thomas J Creer BSc (Hons) MRICS, Jonathan Hardie BSc (Hons) MRICS, Mark C Eastwood BA (Hons) MRICS, Samantha Sleight BA (Hons)

Legat Owen Limited Reg No. 2185761. Reg. Office Albion House, Albion Street, Chester CH1 1RQ

Website: www.legatowen.co.uk

Also at Nantwich Court, Hospital Street, Nantwich, Cheshire CW5 5RH - Tel: 01270 621001

Regulated by RICS

The intention of the joint venture partnership was to market the opportunity for commercial use with a specific focus on the office and industrial sectors (subject to planning) as effectively an extension to the St Asaph Business Park.

From 2009 through to the acquisition in late 2021 by CAM Ltd the scheme has been fully marketed through the usual tools as an opportunity of the nature outlined.

- Marketing boards – Continually in existence on site and still on site today (August 2023)
- Marketing brochures – See attachment of a selection of generic brochures that have been used, with the initial brochure being dated November 2009
- Aerial photography – Refer to brochures
- Mail shots – Direct to agents, company specific and geographically focused
- Web listings – Legat Owen, Zoopla, Loopnet, EG Propertylink and Nova Loca

We assess the marketing spend on the site from November 2009 to the current date to be somewhere in the region of £12,000 to £15,000 plus VAT.

One area that has not been significantly covered during the marketing process has been media advertising. This is not uncommon as this form of promotion is seen as unduly expensive in relation to the leads it generates. We would not see the choice to not use advertising via that medium as a hinderance to full exposure in generating leads and building the site profile and market awareness.

Occupier Focus

The site was acquired by the joint venture partnership with the specific strategy to create buildings and generate rental or capital.

All interests were considered on a leasehold and freehold basis from owner occupiers, developers and potential land sales.

The broad approach to marketing had to be taken in relation to this site due to its secondary location and relatively limited demand and catchment.

Pricing

In a similar manor to the broad approach to marketing, pricing for leasehold and freehold design and builds, land sales were always kept broad to ensure no interested parties or opportunities were dismissed from the process due to pricing.

Therefore, the market approach has always been broad and flexible.

Enquiries

During the marketing process very limited numbers of enquiries materialised.

We found most office or high-tech users focused on the existing and established opportunities offered at Vista Business Park whilst the subject site was perceived to be on the fringe to the established area. As highlighted on the VBP website it is publicised as stating "There is a sizeable amount of developable land for B1 uses". Interestingly, how much new build space of scale has been committed to on the existing VBP during the course of the marketing of the subject site would be worth establishing, if any.

Some enquiries did arise from energy from waste businesses and data centres but the construction costs and the upgrades to the service infrastructure made these opportunities unviable.

Consideration was given to small scale office and individual schemes but the costs of splitting the site and providing services and infrastructure was too costly and once more provided issues with viability. Whilst existing units and supply are/were available and provided for on the VBP, then the enquiries were never going to be able to compete.

Eventually the joint partnership between Stretton and Anwyl took the decision to dispose of the site to CVAM Ltd in September 2021. This was a strategic decision based upon the lack of opportunity to develop the site. The Partnership decided to extract what funds they could and invest elsewhere.

The new purchaser saw the site as an opportunity to create a new facility for their existing business on part, whilst leaving the balancing plot as a development opportunity. It was at this point that the North Wales Fire and Rescue Service were identified as an occupier looking for a bespoke new opportunity along the A55. Hence the position we are in today with an owner occupier taking part of the site and a very specific and location sensitive occupier taking the balance of the land. This is the best, and with hindsight, the only currently viable mix of use for the land.

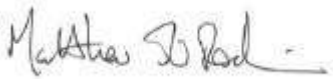
As you will see from our involvement in the site from November 2009 up until the point of disposal in September 2021, and the interest from the North Wales Fire and Rescue Services, a 12 year period has elapsed.

I am sure you will agree that a 12 year holding period for a site of this nature does not make sense for an active developer, such as the partnership between Stretton and Anwyl. All avenues had been explored, break up, speculative development, land sales but the site, based upon the allocation was not financially viable and more cost effective and readily available opportunities already existed on the VBP.

Therefore, we have no qualms, or issues, to fully support a change of direction for use of the site as we feel that if the significant development by the North Wales Fire and Rescue Services is not pursued, the site could remain dormant for a further number of years.

We hope this letter is of assistance and if you require any further information, please do not hesitate to contact me.

Yours sincerely



Matt Pochin BSc (Hons) MRICS
Director

Particulars added to our database on 5th November 2009.



GLASCOED ROAD
ST ASAPH BUSINESS PARK
ST ASAPH LL17 0LL



Description

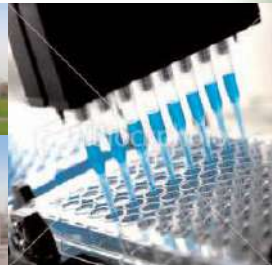
The site, which is clear and level, extends to approximately 18 acres or thereabouts and offers potential (subject to planning) for a range of employment uses including: Offices, Research & Development, Hi-Tech Manufacturing & Warehouse/ Distribution in units from 7,804 sq ft (725 sq m).

The site has 5,000 kVA power capacity.



Schedule

Unit 1	15,000 sq m	161,460 sq ft
Unit 2	5,000 sq m	53,820 sq ft
Unit 3A	2,250 sq m	24,219 sq ft
Unit 3B	2,250 sq m	24,219 sq ft
Unit 4A	725 sq m	7,804 sq ft
Unit 4B	725 sq m	7,804 sq ft
Unit 4C	725 sq m	7,804 sq ft
Unit 5A	875 sq m	9,419 sq ft
Unit 5B	775 sq m	8,342 sq ft
Unit 5C	750 sq m	8,073 sq ft



Opportunity

A design team is in place with a proven track record in providing bespoke, fast track, design & build solutions.

Financial Support

The site is situated within a Tier 1 Assisted Area. Qualifying projects may be eligible for financial support via the Welsh Assembly Government.

- Office
- Research & Development
- Hi-Tech Manufacturing
- Warehouse/Distribution





Location

St Asaph Business Park is widely regarded as the premier business park in North Wales and is already

home to a number of major occupiers including *The Welsh Assembly Government, TRB, North Wales Police, RNLI and Conwy & Denbighshire NHS Trust.*

Well served by road communications the park has the benefit of direct access to Junction 26 of the A55

Expressway (Euro Route 22). The A55 provides a link to Wrexham, Chester and the national motorway network (M56 & M53) to the east and direct route to the port of Holyhead in the west offering ferry services to the Republic of Ireland.



Terms

Completed buildings are available on both Leasehold and Freehold terms.

Legal Costs

Each party will be responsible for their own legal costs.

VAT

All prices and rentals quoted are exclusive of but may be liable to VAT.

Viewing and Further Information

Please contact the joint agents Lamont and Legat Owen for further information or to arrange a site inspection.



NEIL LAMONT
nlamont@lamonts.co.uk
MATTHEW POCHIN
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STEPHEN WADE
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Misrepresentation Act 1967. Unfair Contract Terms 1977. The Property Misdescription Act 1991. These particulars are issued without any responsibility on the part of the agent and are not to be construed as containing any representation or fact upon which any person is entitled to rely. Neither the agent nor any person in their employ has any authority to make or give any representation or warranty whatsoever in relation to the property. Published December 2010 Fifth Level Design

Particulars were updated on our database on 15th December 2020.



**GLASCOED ROAD, ST ASAPH BUSINESS PARK,
ST ASAPH LL17 0LL**

FOR SALE

Serviced employment land from 1 to 18 acres

ENTER



Description

Location

OS Plan

Further Information





Description

Location

OS Plan

Further Information



The site, which is clear and level, extends to approximately 18 acres or thereabouts and offers potential (subject to planning) for a range of employment uses including:

- Offices
- Research & Development
- Hi-Tech Manufacturing & Warehouse/Distribution.

The site has 5,000 kVA power capacity. Plots of serviced employment land are available from 1 to 18 acres.



Description

Location

OS Plan

Further Information



St Asaph Business Park is widely regarded as the premier business park in North Wales and is already home to a number of major occupiers Glydwr University, TRB, North Wales Police, RNLI and Betsi Cadwaladr University. Well served by road communications the park has the benefit of direct access to Junction 26 of the A55 Expressway (Euro Route 22). The A55 provides a link to Wrexham, Chester and the national motorway network (M56 & M53) to the east and direct route in the west offering ferry services to the Republic of Ireland.

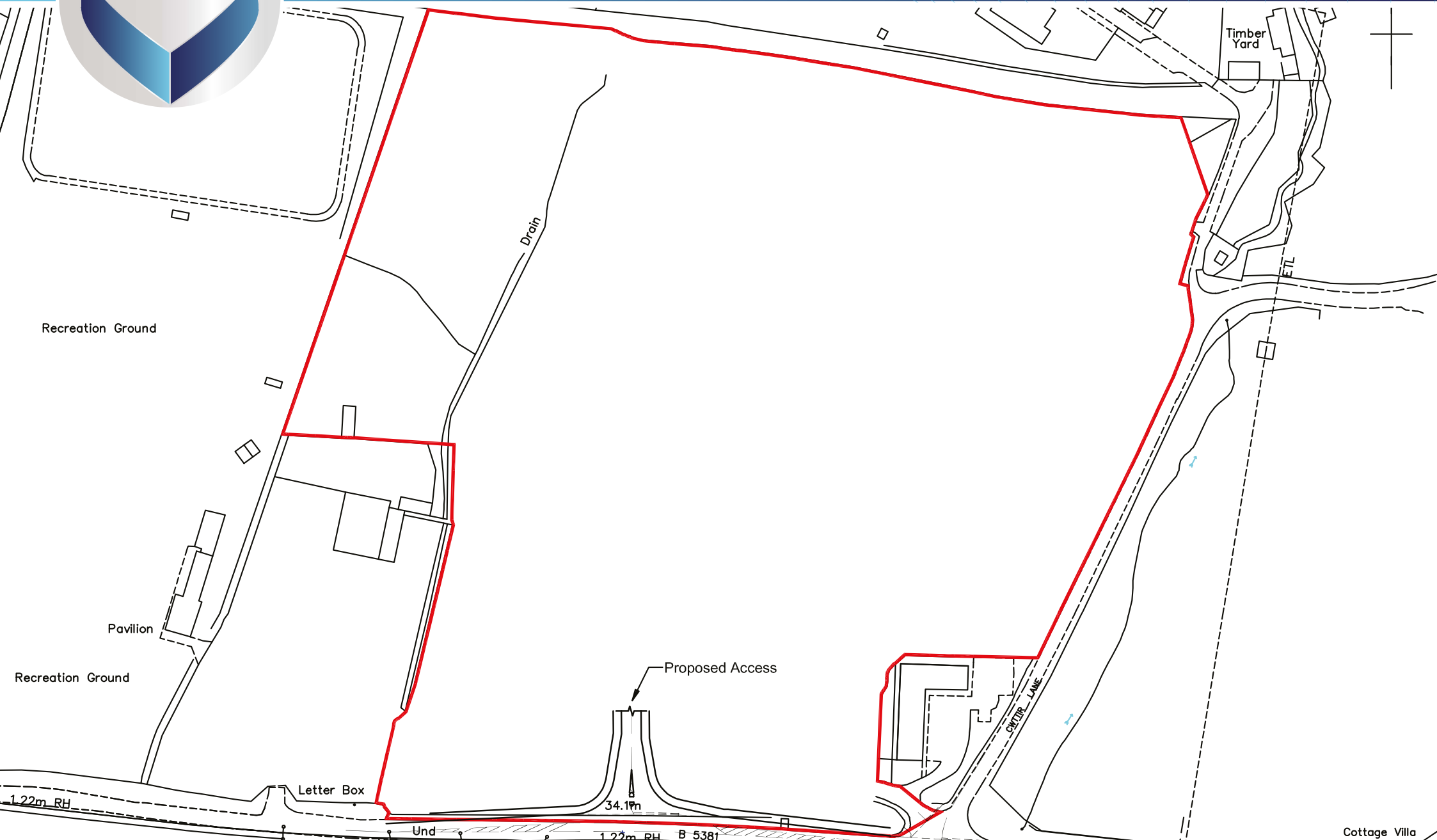


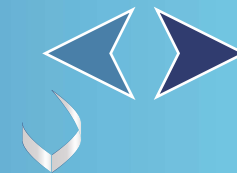
Description

Location

OS Plan

Further Information





Description	Location	OS Plan	Further Information
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Financial Support

The site is situated within a Tier 1 Assisted Area. Qualifying projects may be eligible for financial support via the Welsh Assembly Government.

Terms

Price Upon Application.

Legal Costs

Each party will be responsible for their own legal costs.

VAT

All prices and rentals quoted are exclusive of but may be liable to VAT.

Viewing and Further Information

Please contact the agent Legat Owen for further information or to arrange a site inspection.

Stephen Wade

stephenwade@legatowen.co.uk

Matt Pochin

mattpochin@legatowen.co.uk

Mark Diaper

markdiaper@legatowen.co.uk



Misrepresentation Act 1967. Unfair Contract Terms Act 1977 The Property Misdescriptions Act 1991. These particulars are issued without any responsibility on the part of the agent and are not to be construed as containing any representation or fact upon which any person is entitled to rely. Neither the agent nor any person in their employ has any authority to make or give any representation or warranty whatsoever in relation to the property. November 2015. RB&Co 0161 833 0555. www.richardbarber.co.uk

Particulars were updated on our database on 16th December 2020.

Stephen Wade was removed from the contacts.





Glascoed Road, St. Asaph

Site Location Plan

Issue No.3

Project Management • Architecture • Building Surveying • Cost Consultancy







Gross Internal Areas			
Unit	Gross Internal Areas (ft²)		
	Footprint	No of floors	Total GIA
01	13200	1	13,200
02	16200	1	16,200
03	16200	1	16,200
04	16200	1	16,200
05	19500	1	19,500
06	19000	1	19,000
07	96800	1	96,800
Total:: 7	197100		197,100

Parking Schedule	
Description	Total
Parking Bays	246



Gross Internal Areas			
Unit	Gross Internal Areas (ft²)		
	Footprint	No of floors	Total GIA
01	38000	1	38,000
02	8500	1	8,500
03	8500	1	8,500
04	8500	1	8,500
05	8500	1	8,500
06	16300	1	16,300
07	18300	1	18,300
08	96800	1	96,800
Total:: 8	203400		203,400

Parking Schedule	
Description	Total
Parking Bays	264



Glascoed Road, St. Asaph

Typical Elevation

Issue No.3

Project Management • Architecture • Building Surveying • Cost Consultancy









STRETTON
PROPERTY GROUP

ANWYL
thoughtful building

C4
Consulting

- Project Management
- Architecture
- Building Surveying
- Cost Consultancy

LegatOwen
CHARTERED SURVEYORS
01244 408200
www.legatowen.co.uk

LETTING AGENT

Particulars were updated on our database on 1st April 2021.

LO logo changed.





Glascoed Road, St. Asaph

Site Location Plan

Issue No.3

Project Management • Architecture • Building Surveying • Cost Consultancy







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Parking Schedule	
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Glascoed Road, St. Asaph

Typical Elevation

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STRETTON
PROPERTY GROUP

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Appendix V – List of Surveys Undertaken

The following surveys have been completed to inform this Business Case.

1. Geotechnical Site Investigation Report – Phase 1
2. Geotechnical Site Investigation Report – Phase 2 – including isolated contamination Testing.
3. Ecology Report
4. Flood Consequences Assessment
5. Topographical Survey
6. Desktop Utility Survey
7. Arboricultural Survey
8. H and S Exclusion Zone Report
9. Extensive Information provided by current landowner



North Wales Fire & Rescue Service – New Training Centre

BREEAM New Construction V6 Pre-Assessment Report

September 2023

Document Revision Control

Revisions	Date	Reason for Issue	By	Approved
00	Sep 2022	For Information		SJP
01	Sep 2023	Updated for 2023 Re-Visit	IC	IC

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2.0 Introduction	5
3.0 Pre-Assessment Results	8
4.0 Summary.....	27

1.0 Executive Summary

Harley Haddow have undertaken a BREEAM Pre-Assessment for the proposed North Wales Fire Training Centre.

Individual credits considered achievable were selected by the design team in order to achieve a targeted 'Excellent' BREEAM UK New Construction V6 Assessment.

The following credits are mandatory for a 'Excellent' rating and have been included:

BREEAM Issue	BREEAM Rating/ Minimum number of credits
	Excellent
Man 03: Responsible construction practices	1 Credit Responsible construction management
Man 04: Commissioning and handover	1 Credit Commissioning test schedule and responsibilities
Man 04: Commissioning and handover	Criterion 11 Building User Guide
Man 05: Aftercare	1 Credit Commissioning Implementation
Ene 01: Reduction of energy use and carbon emissions	4 Credits Energy Performance
Ene 02: Energy monitoring	1 Credit First Sub-Metering Credit
Wat 1: Water consumption	1 Credit
Wat 02: Water monitoring	Criterion 1
Mat 03: Responsible sourcing of construction products	Criterion 1
Wst 03: Operational Waste	1 Credit

A final target score of **76.71%** was determined which provides an **6.71%** margin on the minimum 70% score required for an Excellent rating.

The results of the Pre-Assessment are included within this report along with details of the credit criteria that the project must achieve.

2.0 Introduction

2.1 General

The proposed North Wales Fire Training Centre development is required to undergo assessment and certification against the BREEAM environmental assessment method.

The minimum requirement for the project is to achieve a “Excellent” rating under the BREEAM V6 New Construction Scheme Version 0.0.

A desktop Pre-Assessment exercise has been carried this report summarises the potential credits which are achievable with the current design strategy.

Analysis of the Pre-Assessment results shows that a BREEAM rating of “Excellent” can be targeted for this project, with an anticipated BREEAM score of **76.71%**.

2.2 BREEAM Categories

The BREEAM New Construction scheme awards credits in 9 separate sections which relate to the construction, design and procurement decisions made on a project:

- Management – project brief and design, life cycle costing, construction practices, commissioning, and aftercare.
- Health and Wellbeing – indoor air quality, thermal comfort, acoustic performance, daylighting, and occupant controls.
- Energy – energy reduction, carbon emissions, heating and lighting control, energy monitoring, low carbon design.
- Transport – transport assessment, travel plan, sustainable transport measures.
- Water – leak detection, water meters, low flush toilets and grey water use.
- Materials – specification of building material and prohibition of hazardous substances.
- Waste – waste management, waste recycling, and functional adaptability.
- Land Use and Ecology – existing and enhanced ecological value of the site.
- Pollution – pollution monitoring, ozone depleting substances and NOx emission rates.

2.3 BREEAM Credits for Innovation

Innovation credits provide additional recognition for a building that innovates in the field of sustainable performance, above the level that is currently recognised in BREEAM. An additional 1% score can be added to a building’s final BREEAM score for each innovation credit achieved, up to a maximum of 10%.

Innovation credits can be achieved by meeting exemplary performance requirements or by making an application to BRE based on a particular building feature, system, or process.

2.4 Explanation of Scoring

Each category is weighted differently to reflect the relative significance that it has on the environmental impact of the building as follows:

BREEAM Section	Weighting %		
	Fully Fitted Out	Shell Only	Shell and Core Only
Management	11%	12%	11%
Health & Wellbeing	14%	7%	8%
Energy	16%	9.5%	14%
Transport	10%	14.5%	11.5%
Water	7%	2%	7%
Materials	15%	22%	17.5%
Waste	6%	8%	7%
Land Use & Ecology	13%	19%	15%
Pollution	8%	6%	9%

Figure 1: Environmental Weightings

For each BREEAM section the number of credits achieved, as determined by the BREEAM Assessor, is converted into a percentage of the total credits available for the section. This percentage is then multiplied by the section weighting, giving the section score. Each section score is then added together to give the overall BREEAM score (as a percentage).

The BREEAM score then determines the BREEAM rating as described in the table below:

BREEAM Rating	Minimum Score Required
Unclassified	<30%
Pass	≥30%
Good	≥45%
Very Good	≥55%
Excellent	≥70%
Outstanding	≥85%

Figure 2: BREEAM rating benchmarks

BREEAM rating benchmarks enable a client and all other stakeholders to compare the performance of a newly constructed building with other BREEAM rated buildings, and the typical sustainability performance of a stock of new non-domestic buildings in the UK. In this respect each BREEAM rating broadly represents performance equivalent to:

1. Outstanding: Less than the top 1% of UK new non-domestic buildings (innovator)
- 2. Excellent: Top 10% of UK new non-domestic buildings (best practice)**
3. Very Good: Top 25% of UK new non-domestic buildings (advanced good practice)
4. Good: Top 50% of UK new non-domestic buildings (intermediate good practice)
5. Pass: Top 75% of UK new non-domestic buildings (standard good practice)

2.5 Minimum Performance

To achieve a BREEAM rating, the minimum percentage score must be achieved, as described above, and the minimum standards (i.e., number of credits achieved) applicable to that rating level complied with as outlined in the table below:

BREEAM Issue	BREEAM Rating/ Minimum number of credits				
	Pass	Good	Very Good	Excellent	Outstanding
Man 03: Responsible construction practices	-	-	-	1 responsible construction management	2 responsible construction management
Man 04: Commissioning and handover	-	-	1 Commissioning test schedule and responsibilities	1 commissioning-test schedule and responsibilities	1 Commissioning test schedule and responsibilities
Man 04: Commissioning and handover	-	-	Criterion 11 Building User Guide	Criterion 11 Building User Guide	Criterion 11 Building User Guide
Man 05: Aftercare	-	-	-	1 Commissioning Implementation	1 Commissioning Implementation
Ene 01: Reduction of energy use and carbon emissions	-	-	-	4 Energy performance	6 Energy performance 4 Energy modelling and reporting
Ene 02: Energy monitoring	-	-	1 First Sub Metering	1 First Sub Metering	1 First Sub Metering
Wat 01: Water consumption	-	1	1	1	2
Wat 02: Water monitoring	-	Criteria 1	Criteria 1	Criteria 1	Criteria 1
Mat 03: Responsible sourcing of materials	Criteria 1	Criteria 1	Criteria 1	Criteria 1	Criteria 1
Wst 01: Construction waste management	-	-	-	-	1
Wst 03: Operational waste	-	-	-	1	1

Figure 3: Minimum BREEAM Standards

2.6 BREEAM Certification

The project will be assessed and verified at Design stage at which point an interim design certificate will be issued by BRE. Full certification will only be achieved following the Post Construction assessment.

3.0 Pre-Assessment Results

The information below summarises the potential credits that can be targeted by the team to attain an 'Excellent' rating.

3.1 Management

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
Man 01	Project Brief and Design	Up to 4 credits are available where the following is achieved: 1. Prior to completion of concept design the project delivery stakeholders have identified and defined their roles, responsibilities, and contribution. 2. Prior to completion of concept design all relevant interested party stakeholders have been consulted and covers the minimum consultation content. <i>Pre-Requisite for BREEAM AP credits - The project team, including the client, formally agree strategic performance targets early in the design process.</i> 3. Will a Sustainability Champion (BREEAM AP) be appointed at RIBA stage 1 and performance targets contractually agreed? 4. Will a Sustainability Champion (BREEAM AP) be appointed to monitor and report progress during concept, developed and technical design stages?	4	4
Man 02	Life cycle cost and service life planning	4 credits are available where the following are achieved: 1. Will a feasibility stage elemental Life Cycle Cost (LCC) analysis be commissioned and completed? 2. Will a component level LCC be commissioned and completed? 3. Will full capital cost reporting take place?	4	4
Man 03	Responsible Construction Practices	Up to 6 credits are available where the following is achieved:	6 (+1 <i>Innovation</i>)	6 (+1 <i>Innovation</i>)

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
		<i>Pre-Requisite – all timber and timber-based products are legally harvested and traded.</i> 1. Will the principal contractor operate a compliant Environmental Management System AND will the principal contractor adopt best practice pollution prevention policies and procedures? <i>Pre-Requisite for the BREEAM AP - The client and the contractor formally agree performance targets.</i> 2. Have the client and contractor formally agreed performance targets 3. Will the principal contractor evaluate the risks (on site and off site) and implement actions to minimise through responsible construction management in accordance with BREEAM criteria? 4. Will site energy consumption be metered / monitored? 5. Will site water consumption be metered / monitored? 6. Will the transport of construction materials and waste to / from site be measured / monitored? NOTE: Minimum standards apply for Excellent		
Man 04	Commissioning & handover	Up to 4 credits are available where the following is achieved: 1. Will a schedule of commissioning be prepared and included in programme? 2. Will an appropriate team member be nominated to monitor and programme commissioning? 3. Will the building fabric be tested and inspected post construction, with all defects rectified?	4	4

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
		4. Will building user guides and relevant user information be provided? 5. Will a building technical and non-technical training schedule be prepared? NOTE: Minimum standards apply for Excellent		
Man 05	Aftercare	Up to 3 credits are available where the following is achieved: 1. Will aftercare support be provided? Will water and energy use be monitored for 12 months? 2. Will seasonal commissioning be undertaken? 3. Will a post occupancy evaluation be carried out? NOTE: Minimum standards apply for Excellent	3	3

Note: Strikethrough text indicates this portion of the credit is not targeted.

3.2 Health and Well-being

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
Hea 01	Visual Comfort	Up to 5 credits available where the following is achieved: 1. Will the design provide adequate glare control for building users? 2. Will all relevant building areas be designed to achieve the appropriate daylight factor(s) and uniformity? 3. Will the design provide a compliant view out for building users? 4. Will internal / external lighting be specified in accordance with the relevant CIBSE / British Standards? 5. Will internal lighting have the appropriate zoning and occupant control?	5 (+2 <i>Innovation</i>)	5
Hea 02	Indoor Air Quality	Up to 4 credits available where the following is achieved: <i>Pre-Requisite - Will an air quality plan be produced and building designed to minimise air pollution?</i> 1. Will the building be designed to minimise the concentration and recirculation of pollutants? 2. ~~Will the building be designed to, or have the potential to provide, natural ventilation?~~ 3. Will the relevant products be specified to meet the VOC testing and emission levels required? 4. ~~Will formaldehyde and total VOC levels be measured post construction?~~	4 (+1 <i>Innovation</i>)	2
Hea 04	Thermal Comfort	Up to 3 credits are available where the following is achieved: 1. Will thermal modelling of the design be carried out? 2. Will thermal modelling demonstrate that the relevant requirements are achieved for a projected climate change environment? 3. Will the modelling inform the development of a thermal zoning and control strategy?	3	3

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
Hea 05	Acoustic Performance	Up to 3 credits are available where the following is achieved: 1. Will a suitably qualified acoustician be appointed to provide appropriate design advice? 2. Will the building meet the relevant acoustic performance standards and testing requirements?	3	2
Hea 06	Safety and Security	One credit is available where the following is achieved: 1. Will a suitably qualified security consultant be appointed, and security considerations accounted for?	1 (+1 Innovation)	1
Hea 07	Safe and healthy surroundings	Up to 2 credits are available where the following is achieved: 1. Where vehicle delivery access and drop-off areas form part of the assessed development the appropriate BREEAM criteria is to be met. 2. Is there an outside space providing building users with an external amenity area?	2	2

Note: Strikethrough text indicates this portion of the credit is not targeted.

3.3 Energy

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed																								
Ene 01	Reduction of energy use and carbon emissions	Up to 13 credits are available where the following is achieved:	13 (+5 Innovation)	6 (+4 Innovation)																								
		1. Calculate an Energy Performance Ratio Reduction of carbon dioxide emissions:																										
		<table><tr><th>BREEAM credits</th><th>EPR_{NC}</th><th>Minimum requirements</th></tr><tr><td>1</td><td>0.1</td><td rowspan="3">Requires a performance improvement progressively better than the relevant national building regulations compliant standard</td></tr><tr><td>2</td><td>0.2</td></tr><tr><td>3</td><td>0.3</td></tr><tr><td>4</td><td>0.4</td><td rowspan="2">Excellent Requires 5 credits to be achieved (equivalent to an EPR of at least 0.375).</td></tr><tr><td>5</td><td>0.5</td></tr><tr><td>6</td><td>0.6</td><td rowspan="4">Outstanding Requires 6 credits to be achieved (equivalent to an EPRNC of at least 0.6) and 4 credits for Energy Modelling and reporting.</td></tr><tr><td>7</td><td>0.7</td></tr><tr><td>8</td><td>0.8</td></tr><tr><td>9</td><td>0.90 and zero net regulated CO2 emissions</td></tr></table>			BREEAM credits	EPR _{NC}	Minimum requirements	1	0.1	Requires a performance improvement progressively better than the relevant national building regulations compliant standard	2	0.2	3	0.3	4	0.4	Excellent Requires 5 credits to be achieved (equivalent to an EPR of at least 0.375).	5	0.5	6	0.6	Outstanding Requires 6 credits to be achieved (equivalent to an EPRNC of at least 0.6) and 4 credits for Energy Modelling and reporting.	7	0.7	8	0.8	9	0.90 and zero net regulated CO2 emissions
		BREEAM credits			EPR _{NC}	Minimum requirements																						
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		8			0.8																							
		9			0.90 and zero net regulated CO2 emissions																							
		2. <i>Pre-Requisite - Prior to completion of the Concept Design, relevant members of the design team hold a preliminary design workshop focusing on operational energy performance.</i>																										
		3. Will additional energy modelling during the design and post-construction stage be carried out to																										

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
		generate predicted operational energy consumption figures? NOTE: Minimum standards apply for Excellent		
Ene 02	Energy Monitoring	Up to 2 credits are available for the inclusion of BMS and or sub-metering: 1. Will a BMS or sub-meters be specified to monitor energy use from major building services systems? 2. Will a BMS or sub-meters be specified to monitor energy use by tenant / high energy load building function areas? NOTE: Minimum standards apply for Excellent	2	2
Ene 03	External Lighting	One credit is available where external light fittings and controls will be specified in accordance with BREEAM criteria?	1	1
Ene 04	Low Carbon Design	Up to 3 credits available for Low carbon design. ~~1. Will a passive design analysis be undertaken?~~ ~~2. Can free cooling be achieved for the building?~~ 3. Will a low carbon feasibility study be carried out?	3	1
Ene 06	Energy Efficient Transportation Systems	Up to 2 credits are available for efficient lifts: 1. Will a transportation analysis be carried out to determine the optimum number and size of lifts, escalators or moving walks? 2. Will three energy-efficient features for each lift offering the greatest potential energy savings be part of the system?	2	2
Ene 08	Energy efficient equipment	Up to 2 credits are available for the specification of energy efficient equipment, for the project this will consider:	2	2

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
		▪ Domestic Scale Appliances ▪ Kitchen and Catering Facilities ▪ Process equipment		

Note: Strikethrough text indicates this portion of the credit is not targeted.

3.4 Transport

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
Tra 01	Transport assessment and travel plan	Up to 2 credits where the following is achieved: - Has a travel plan based on site specific travel assessment been done? - Does the travel plan cover the minimum BREEAM criteria?	2	2
Tra 02	Sustainable transport measures	Up to 10 credits are available where the following is achieved: <i>Pre-Requisite - Achieve the Tra 01 Transport assessment and travel plan credits.</i> - Have any sustainable transport measures been implemented? - What is the building's indicative Accessibility Index?	10	4

Note: Strikethrough text indicates this portion of the credit is not targeted.

3.5 Water

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed														
Wat 01	Water Consumption	Up to 5 credits are available for domestic water-consuming components that reduce the water consumption for the building:	5 (+1 Innovation)	3														
		<table><tr><th>% Improvement</th><th>No. of BREEAM credits</th></tr><tr><td>12.5</td><td>1</td></tr><tr><td>25</td><td>2</td></tr><tr><td>40</td><td>3</td></tr><tr><td>50</td><td>4</td></tr><tr><td>55</td><td>5</td></tr><tr><td>65</td><td>Exemplary credit</td></tr></table>			% Improvement	No. of BREEAM credits	12.5	1	25	2	40	3	50	4	55	5	65	Exemplary credit
		% Improvement			No. of BREEAM credits													
		12.5			1													
		25			2													
		40			3													
		50			4													
		55			5													
		65			Exemplary credit													
Is a greywater or rainwater system to be specified and installed?																		
NOTE: Minimum standards apply for Excellent																		
Wat 02	Water Monitoring	One credit can be awarded where the following is met:	1	1														
		1. Will there be a water meter on the mains water supply to the building(s)? 2. Will metering / monitoring equipment be specified on the water supply to any relevant plant/building areas? 3. Will all specified water meters have a pulsed output? 4. If the site / building has an existing BMS connection, will all pulsed meters be connected to the BMS? NOTE: Minimum standards apply for Excellent																
Wat 03	Water Leak Detection	Up to 2 credits are available:	2	1														
		1. Will a mains leak detection system be installed on the building's mains water supply? 2. Will flow control devices be installed in each sanitary area/facility?																

Note: Strikethrough text indicates this portion of the credit is not targeted.

3.6 Materials

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
Mat 01	Environmental impacts from construction products - Building life cycle assessment (LCA)	Up to 7 credits are available where the following is provided: 1. Will a Building Low Carbon Assessment (LCA) of the superstructure design be carried out? 2. Will a Building Low Carbon Assessment (LCA) of at least 6 significantly different substructure and hard landscaping design options be carried out?	7 (+3 Innovation)	4 (+1 Innovation)
Mat 02	Environmental impacts from construction products	One credit is available when the Specification of products with a recognised environmental product declaration (EPD) achieve a total EPD points score of at least 20.	1	1
Mat 03	Responsible sourcing of construction products	Up to 4 credits are available where the following is provided: <i>Pre-requisite - Are all timber and timber-based products used on the project legally harvested and traded?</i> 1. Will materials be sourced in accordance with a documented sustainable procurement plan? 2. Can applicable building elements demonstrate they have been responsibly resourced? NOTE: Minimum standards apply for Excellent	4 (+1 Innovation)	2
Mat 05	Designing for Durability and Resilience	One credit is available where the following is provided: 1. Are protection measures incorporated into the building's design and construction to reduce damage to the building's fabric or materials in case of accidental or malicious damage occurring? 2. Have key exposed building elements been designed and specified to limit long and short-	1	1

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
		term degradation due to environmental factors?		
Mat 06	Material efficiency Assessment scope	One credit is available where opportunities have been identified, and measures investigated and implemented, to optimise the use of materials in building design, procurement, construction, maintenance, and end of life.	1	1

Note: Strikethrough text indicates this portion of the credit is not targeted.

3.7 Waste

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
Wst 01	Construction Waste Management	Up to 4 credits are available where the following is provided: 1. Will a compliant RMP be produced? 2. What level of Non-hazardous construction waste will be targeted? 3. What level of Non-hazardous construction waste, demolition waste and excavation waste will be diverted from landfill?	4 (+1 Innovation)	4
Wst 02	Use of recycled and sustainably sourced aggregates	One credit is available where the following is provided: 1. What aggregate uses and types will be present? 2. Have the aggregates sourced location and distance travelled been identified?	1 (+1 Innovation)	0
Wst 03	Operational Waste	One credit is available for the provision of dedicated storage facilities for operational waste streams. NOTE: Minimum standards apply for Excellent	1	1
Wst 05	Adaption to Climate Change	One credit is available where the following is provided: 1. Will a compliant climate change adaptation strategy appraisal for structural and fabric resilience be produced at concept stage?	1 (+1 Innovation)	1
Wst 06	Design for disassembly and adaptability	Up to 2 credits are available where the following is provided: 1. Will a building-specific functional adaptation strategy study be carried out at concept stage which includes recommendations for measures to be incorporated to facilitate future adaptation? ~~2. Will the measures be implemented in the design?~~	2	1

Note: Strikethrough text indicates this portion of the credit is not targeted.

3.8 Land Use and Ecology

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
LE 01	Site Selection	Up to 2 credits are available where the following is achieved: 1. Will at least 75% of the proposed development's footprint be located on previously developed land? 2. ~~Is the site deemed to be significantly contaminated?~~	2	1
LE 02	Identifying and understanding the risks and opportunities for the project	Up to 2 credits are available where the following is achieved: <i>Pre-requisite: The client or Contractor to confirm compliance is monitored against all relevant UK and EU or international legislation relating to the ecology of the site.</i> 1. Will a suitably qualified ecologist be appointed to report on enhancing and protecting site ecology? 2. Has an appropriate level of survey and evaluation been carried out at the early stages to determine the ecological baseline value of the site? 3. Have specific solutions and measures been identified, appraised, and selected in the early stages to influence key project planning decisions? 4. Has the optimal ecological outcome for the site been selected?	2 (+1 Innovation)	2 (+1 Innovation)
LE 03	Managing negative impacts on ecology	Up to 3 credits are available where the following is met: <i>Pre-Requisite – LE 02's 'Survey and evaluation and determining ecological outcomes' criteria have been achieved.</i> 1. Have the roles and responsibilities been clearly defined, allocated and implemented to support successful delivery of project outcomes? 2. Site preparation and construction works have been planned for and implemented at a stage that is	3	2

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
		sufficiently early in the project to optimise benefits and outputs. 3. Will a suitably qualified ecologist be appointed to report on the negative impacts of the project? 4. Have negative impacts from site preparation and construction been identified and managed?		
LE 04	Change and enhancement of ecological value	Up to 4 credits are available where the following is met: <i>Prerequisite - LE 03 Criterion 6 has been achieved and the client or contractor has confirmed that compliance is monitored against all relevant UK, and EU or International legislation relating to the ecology of the site.</i> 1. Will a suitably qualified ecologist be appointed to report on enhancing and protecting site ecology? 2. Will the suitably qualified ecologist's general recommendations be implemented? 3. Will the improvement in ecological value increase as targeted as a result of the enhancement actions?	4 (+1 Innovation)	2
LE 05	Long term ecology management and maintenance	Up to 2 credits are available where the following is met: <i>Prerequisite - The client or contractor has confirmed that compliance is being monitored against all relevant UK, EU and International standards relating to the ecology of the site. And where pursued, LE 03 Criterion 8 has been achieved and 1 credit under LE 04 has been awarded.</i> 1. Will the project team liaise and collaborate with representative stakeholders, taking into consideration data collated on solutions and measures implemented and insure the continued relevance over the project life? 2. Has an ecology and biodiversity section been included in the building user/owner information?	2	1

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
		3. Will a landscape and ecology management plan be produced for the first 5 years after completion? 4. Will the landscape and ecology management plan be updated to support maintenance of the ecological value of the site?		

Note: Strikethrough text indicates this portion of the credit is not targeted.

3.9 Pollution

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
Pol 01	Impact of refrigerants	Up to 3 Credits are available where the following is met: - Will refrigerant containing system be installed in the assessed building? <i>Pre-requisite: All systems (with electric compressors) comply with BS EN 378:2016 (parts 2 and 3) and (where applicable) Institute of Refrigeration Ammonia Refrigeration Systems code of practice.</i> - Will the systems have a Direct Effect Life Cycle CO₂eq. emissions ≤ 100CO₂eq/kW cooling/heating capacity or have a Global warming potential ≤10? Or will the systems using refrigerants have a DELC of ≤ 1000 kgCO₂eq/kW cooling and heating capacity. Will a refrigerant leak detection and containment system be specified/installed?	3	0
Pol 02	Local air quality	Up to 2 credits where all heating and hot water is supplied by non-combustion systems. For example, only powered by electricity.	2	1
Pol 03	Flood and surface water management	Up to 5 credits are available where the surface water run-off of the site is restricted: <i>Pre-Requisite - An appropriate consultant is appointed to carry out and demonstrate the development's compliance with all criteria.</i> - Will a Flood Risk Assessment be undertaken, and ground level of the building / access meets BREEAM criteria? - Will the site meeting meet the BREEAM criteria for peak rate surface water run-off? - Will the site meet the criteria for surface water run-off volume,	5	5

Ref.	Issue Title	BREEAM Criteria	No. Credits Available	No. Credits Proposed
		attenuation and/or limiting discharge? 4. Will the site be designed to minimise watercourse pollution in accordance with the BREEAM criteria?		
Pol 04	Reduction of Night-time Light Pollution	One credit is available where the external lighting has been eliminated or if present designed to reduce light pollution.	1	1
Pol 05	Noise Attenuation	Will there be, or are there noise-sensitive areas/buildings within 800m radius of the development? One credit is available where a noise impact assessment is completed and where the site is compliant with all the relevant noise criteria in order to reduce the likelihood of noise from fixed installations on the new development affecting nearby noise-sensitive buildings.	1	1

Note: Strikethrough text indicates this portion of the credit is not targeted.

3.10 Innovation

Up to a maximum of 10 credits are available in aggregate from a combination of the following:

Ref.	Issue Title	No. Credits Available	No. Credits Proposed
Man 03	Responsible construction practices	1	1
Hea 01	Visual comfort	2	0
Hea 02	Indoor air quality	1	0
Hea 06	Security	1	0
Ene 01	Reduction of energy use and carbon emissions	5	4
Wat 01	Water consumption	1	0
Mat 01	Environmental impacts from construction products - Building life cycle assessment (LCA)	3	1
Mat 03	Responsible sourcing of construction products	1	0
Wst 01	Construction waste management	1	0
Wst 02	Use of recycled and sustainably sourced aggregates	1	0
Wst 05	Adaptation to climate change	1	0
Le 02	Ecological risks and opportunities	1	1
Le 04	Ecological change and enhancement	1	0

4.0 Summary

The results of the initial pre-assessment indicate a predicted BREEAM score for the North Wales Fire Training Centre development of **76.71%** a 'Excellent' rating.

The information below summarises the scoring and results of the Pre-Assessment exercise.


 BREEAM UK New Construction Version 6
 

Pre-assessment : Design (Interim) : North Wales (TBC)

BREEAM Rating					
	Credits available	Credits achieved	% Credits achieved	Weighting	Category score
Man	21.0	21.0	100.00%	11.00%	11.00%
Hea	18.0	15.0	83.33%	14.00%	11.66%
Ene	23.0	14.0	60.87%	16.00%	9.73%
Tra	12.0	6.0	50.00%	10.00%	5.00%
Wat	9.0	6.0	66.67%	7.00%	4.66%
Mat	14.0	9.0	64.29%	15.00%	9.64%
Wst	9.0	7.0	77.78%	6.00%	4.66%
LE	13.0	8.0	61.54%	13.00%	8.00%
Pol	12.0	8.0	66.67%	8.00%	5.33%
Inn	10.0	7.0	70.00%	10.00%	7.00%
Total	141.0	101.0	71.63%	-	76.71%
Rating	-	-	-	-	★★★★★ Excellent

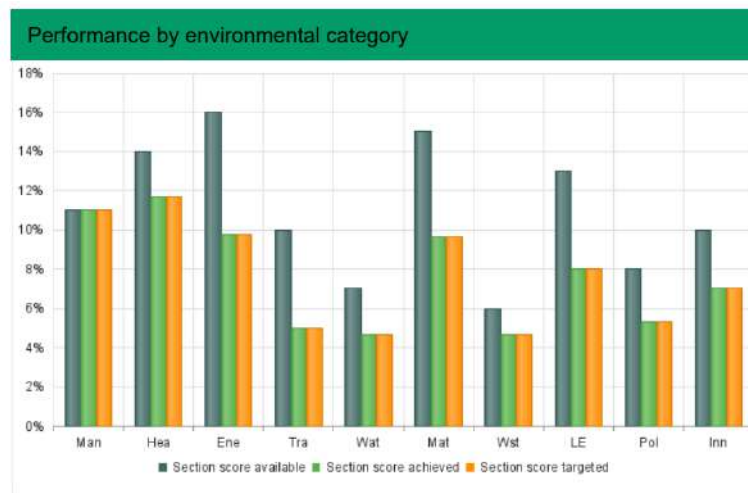


Figure 4: Predicted BREEAM score