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MERTHYR TUDFUL
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County Borough Council

New 3-16 VA Catholic School

Galon Uchaf Park Site Feasibility Report

November 2020

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"...The children and young people of today are entering a fast-changing world that is increasingly competitive, globally connected and technologically advanced. . .

...Education has never been more important. Education reform is our national mission"...

Education in Wales: Our national mission
Welsh Government

1. Introduction

1.1. Brief

1.1.1. Introduction

On behalf of Merthyr Tydfil County Borough Council, Atkins have been asked to investigate potential options for a new All-through School at Merthyr Tydfil, Galon Uchaf Park site. The following feasibility report provides a study of existing site constraints and explores four potential options for site layout.

This feasibility study investigates the proposal to create a new all-through 3 to 16 school in Galon Uchaf Park, Merthyr Tydfil. The existing St Aloysius RC Primary School, the Federation of St Illtyd's RC and St Mary's RC Primary Schools and Bishop Hedley High School will be discontinued.

Atkins have been asked to consider the brief within the context of site layout, proposed requirements and site /environmental constraints. These factors have been analysed to develop the potential options for the new development at the site.

The proposed new-build all-through school will accommodate a 525-pupil place primary school with 100 full time equivalent pupil place nursery, and a 600 pupil (4 form entry) secondary school. The design proposals shall also consider use outside of school hours, allowing the school to act as a supportive hub of the local community.

As well as proposing the all-through 3-16 school at the Galon Uchaf Park site, other options have also been considered in response to the site constraints at Galon Uchaf Park; including re-developing the existing Bishop Hedley Catholic High School sites.

Proposals for the new 3-16 VA Catholic School should consider the new Curriculum for Wales guidance, following its publication in January 2020 as Welsh Government advise it is expected to be used throughout Wales from 2022.

1.1.2. External Area

The proposed pupil numbers have been used to calculate the recommended site and building areas in accordance with the Building Bulletin 98 (BB98) and Building Bulletin 99 (BB99) guidance; these calculations are outlined in the tables on the right. Please note that the likely site area for the new primary school is estimated based on the total number of students of 625, which includes 100FTE nursery pupils. These areas are indicative only at this stage and will require further discussion with the project stakeholders as proposals develop.

The combined total likely site area for the primary and secondary pupil numbers outlined above is from 69,900 to 78,900m.

Actual site area: *The entire Galon Uchaf Park site is approximately 122,390m², however, this is inclusive of areas of designated as Open Space within the replacement Local Development Plan 2016-2031 and steep terrain where construction may not be viable or could incur significant extra cost. This, along with the existing Bishop Hedley High School sites identified within the blue boundary line in Section 2.3. Note: The site boundary lines have been drawn indicatively around the existing fences present on site based on the information currently available; the site boundary line is to be confirmed during the next design stage.*

An exercise should be undertaken with the relevant stakeholders to determine any potential sharing of spaces, and operational efficiencies between the primary and secondary accommodation. Externally this may include areas for deliveries, bus and parental drop-off (particularly if start times are staggered), plant and bin stores and maintenance storage. In addition other external areas may be merged or facilities grouped, for example to create a single set of sports facilities that can be easily accessed out of hours.

Extra consideration should be given to the division of external spaces as the Building Bulletin 98 and 99 guidance pre-date the current SAB legislation regarding sustainable drainage strategies, as well as emerging active travel guidance; both of which can have a significant impact on external area usage and design.

BB98 Base Areas Guidance Tables (For 600-Pupil Secondary School)

EXTERNAL AREA SCHEDULE

Externals	Pupil Numbers	Area
Pitches	10000 + 35N	31,000
Soft Informal & Social	800 + 2.5N	2,300
Games Courts Hard Surface	600 + 2.0N	1,800
Hard Informal & Social	400 + 1.5N	1,300
Habitat	200 + 1.0N	800
'Float'	1000 + 5.0N	4,000
Total Net Site Area	**13,000 + 47N**	**41,200 m²**
Likely Site Area: from	**14,000 + 52N**	**45,200 m²**
to	**16,000 + 59N**	**51,400 m²**

BB99 Base Areas Guidance Tables (For 525 +100-Pupil Primary School)

EXTERNAL AREA SCHEDULE

Externals	Pupil Numbers	Area
Pitches	20N	12,500
Soft Informal & Social	800 + 2.5N	2,362.5
Games Courts Hard Surface	600 + 2.0N	1,850
Hard Informal & Social	400 + 1.5N	1,337.5
Habitat	200 + 1.0N	825
'Float'	5.0N	3,125
Total Net Site Area	**2000 + 32N**	**22,000 m²**
Likely Site Area: from	**2200 + 36N**	**24,700 m²**
to	**2500 + 40N**	**27,500 m²**

1.2. Accommodation Schedule (600 pupil place Secondary School)

The Accommodation Schedule has been developed using the Building Bulletin 98 guidance for a 600 pupil place Secondary School.

In addition to the standard BB98 accommodation a Chapel has been included.

Undertaking stakeholder engagement workshops at an early stage of the project will enable the accommodation schedules to be developed to suit the school and local authority's specific requirements, with particular emphasis teaching methods in the context of the new Curriculum for Wales Framework.

			11 to 16		
	Room reference	Room Name	BB98 Room Area (m^2)	BB98 6FE No.of Rooms (577-642 pupils)	BB98 6FE Total Area (m^2)
	Teaching (timetabled)				
1	**General Teaching**				
		Seminar	-	-	-
		Classroom	56	14	784
		Further classroom area	4	14	56
2	**IT**				
		IT/Business Studies	-	-	-
		IT room	77	1	77
3	**Science**				
		Science Lab	90	5	450
4	**Design and Technology**				
		Food room	101	1	101
		Resistant Materials	112	1	112
		Electronics and control	90	1	90
		Constructional textiles	90	1	90
		Graphics	77	0	0
5	**Art (Creative & Design)**				
		Large art room	105	1	105
6	**Music**				
		Music recital	90	1	90
		Music classroom	67	0	0

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			11 to 16		
	Room reference	Room Name	BB98 Room Area (m^2)	BB98 6FE No.of Rooms (577-642 pupils)	BB98 6FE Total Area (m^2)
7	**Halls**				
	BB98:18m x 33m x 7.6m high	4-Court sports hall	594	1	594
		Activity studio	150	1	150
		Main hall (Assembly)	200	1	200
		Total Timetabled Spaces		**29**	**2,899**
	Teaching Support Areas				
8	**Learning Resource**				
		Small group/interview room	10	2	20
		Music group/practice	7	4	28
		Music ensemble room	20	1	20
		Recording/control room	12	1	12
		Kiln room	4	1	4
		Darkroom	12	1	12
		Library resource & Careers	124	1	124
		SEN/ALN resource base	20	1	20
		Small group rooms (SEN)	16	1	16
		Chapel	60	1	60
		Total Teaching Area			**3155**
9	**Staff & Admin**				
		Heads office	12	1	12
		Meeting room	16	1	16
		Senior management offices	8	10	80
		Community & other offices	8	4	32
		SEN/ ALN therapy/MI	18	1	18
		Entrance/reception/adjacent sick bay	13	1	13
		General office	33	1	33
		Staff room (social)	50	1	50
		Staff work room	14	5	70
		Reprographics	20	1	20
		ICT technician	8	1	8
10	**Storage (teaching)**				
		General teaching/IT/Library stores	3	6	18
		Practical/music/drama	6	7	42
		Instrument & external store	10	2	20
		PE stores (various)	43.5	2	87
		Science prep & chemical store	65	1	65
		Food prep	12	1	12
		Resistant material prep	50	1	50
11	**Storage (non-teaching)**				
		Central stock/Bulk	12	1	12
		SENco/Wheelchair/Appliances	12	1	12
		Secure/exam/community	8	2	16
		Lockers	42	1	42
		Community lockers	4	1	4
		Chair store	12	1	12
		Maintenance store	8	1	8
		Cleaners store	1.5	4	6

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			11 to 16		
	Room reference	Room Name	BB98 Room Area (m^2)	BB98 6FE No.of Rooms (577-642 pupils)	BB98 6FE Total Area (m^2)
12	**Dining/social areas**				
		Dining area	160	1	160
		social and sandwich areas	30	1	30
	Total Net Area				**4,103**
13	**Catering Facilities**				
		Kitchen (inc. staff & stores)	68	1	68
14	**Toilets**				
		Pupil Dry change & showers	50	2	100
		Hygiene facilities	30	1	30
		Pupil toilets	90	1	90
		Staff toilets	3.5	6	21
15	**Circulation (figure as per BB98)**				
				Min 25% comp	1,026
		Circulation	1,128	1	1,128
				Max 30% comp	1,231
16	**Plant (figure as per BB98)**				
				Min 2% compa	82
		Plant inc. server	118	1	118
				Max 3% compa	123
17	**Partitions (figure as per BB98)**				
				Min 3% compa	123
		Partitions	187	1	187
				Max 6% compa	246
	Total Gross Internal Area				**5,845**

1.3. Accommodation Schedule (625 pupil place Primary School)

	Room reference	Room Name	BB99 Room Area (420 students) (m^2)	BB99 2FE (420 Students) No.of Rooms	BB99 2FE Total Area (420 students) (m^2)	BB99 Room Area (525+100 students) (m^2)	BB99 2.5FE (525 + 100 Students) No.of Rooms	BB99 2.5FE Total Area (525 +100 students) (m^2)
	2FE areas below currently populated as per BB99 standard area schedules for 2FE primary schools.							
	420 pupils (2FE)							
1	Classrooms/bases			14			22	
		Nursery	-	-	-	66	4	264
		Reception	66	2	132	66	3	198
		Infant classbase	60	4	240	60	5	300
		Junior classbase	60	8	480	60	10	600
2	Practical Spaces			2			2	
		food/science/D&T	38	1	38	38	1	38
		ICT suite: (no. of computers)	68	1	68	68	1	68
3	Halls & Dining			2			2	
		main hall (used for dining)	150	1	150	177.5	1	178
		small hall	80	1	80	80	1	80
		studio	-	-	-	-	1	
	Total Timetabled spaces			18			27	
4	Learning resources spaces							
		Library resource centre	40	1	40	52	1	52
		small group room (SENco)	12	1	12	12	1	12
		small group rooms	9	3	27	9	5	45
		prayer room				30	1	30
	Total Teaching Area				1,267			1,865
5	Staff & admin areas							
		head's office/meeting room	16	1	16	16	1	16
		senior management offices	8	1	8	8	1	8
		staff room/	58	1	58	84	1	84
		general office/repro/interview	14	1	14	14	1	14
		sick bay (adjacent)	3	1	3	3	1	3
		entrance/reception	5	1	5	5	1	5
		copier/reprographics	8	1	8	8	1	8
		SEN therapy/MI room	12	1	12	12	1	12
		interview/social services	8	1	8	8	1	8

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The draft Accommodation Schedule on the left has been developed using the Building Bulletin 99 guidance for Primary Schools to suit 525 5-11year old pupils + 100 full time equivalent nursery places.

The area estimation is based on the adaptation of a BB99 example schedule of accommodation for a 2FE, 420 pupil primary school, which has been modified to suit the 625 pupil number required, using the key formulae below to generate a likely gross building area.

Undertaking stakeholder engagement workshops at an early stage of the project will enable the accommodation schedules to be developed to suit the school and local authority's specific requirements, with particular emphasis teaching methods in the context of the new Curriculum for Wales Framework.

An exercise should be undertaken with the relevant stakeholders to determine any potential sharing of spaces, and operational efficiencies between the primary and secondary accommodation. An initial exercise has been undertaken as part of this study however it has not been incorporated in to the report at this time. Examples of areas that could be considered for shared use may include halls, kitchen and dining (through staggered timetables and use), staff and administration spaces and chapel/prayer rooms.

BB99 Key Formulae for all primary schools, N = 625

INTERNAL AREA SCHEDULE

INTERNAL	Pupil Numbers	Area
Basic Teaching	2.1N	1,312.5
Halls	100 + 0.3N	287.5
Learning Resources	15 + 0.15N	108.75
Staff & Admin.	30 + 0.2N	155
Storage	45 + 0.25N	201.25
Dining & Social	-	-
'Float'	60 + 0.1N	122.5
Total Net Building Area:	**250 + 3.1N**	**2187.5m²**
Likely Gross Building Area:	**340 + 4.5N**	**3152.5m²**

	Room reference	Room Name	BB99 Room Area (420 students) (m^2)	BB99 2FE (420 Students) No.of Rooms	BB99 2FE Total Area (420 students) (m^2)	BB99 Room Area (525+100 students) (m^2)	BB99 2.5FE (525 + 100 Students) No.of Rooms	BB99 2.5FE Total Area (525 +100 students) (m^2)
6	**Storage**							
		class storage (nursery)				3	4	12
		class storage (reception)	3	2	6	3	3	9
		class storage (infant and junior)	1.5	12	18	1.5	15	22.5
		specialist stores	8	3	24	8	3	24
		PE store (adjacent to hall)	12	1	12	12	1	12
		PE store (external)	4	1	4	4	1	4
	non teaching storage	central stock/community	8	1	8	8	1	8
		cloakrooms/lunch box storage	3	14	42	3	22	66
		dining chair/table store (no of sittings)	5.33	3	16.0	6.67	3	20.0
		staging/appliance store	8	1	8	8	1	8
		community store	4	1	4	4	1	4
		caretakers/maintenance store	7	1	7	7	1	7
		cleaner's store	1.5	3	4.5	1.5	4	6
	Total Net Area				1,552			2,225
7	**Toilets and changing**							
		nursery toilets				4	5	20
		reception toilets	4	3	12	4	5	20
		other pupil toilets	60	1	60	75	1	75
		accessible toilets/hygiene facilities	16	1	16	20	1	20
		staff toilets	14	1	14	21	1	21
8	**Kitchen**							
		Kitchen (full service)	77	1	77	109	1	109
		Servery	8	1	8	10	1	10
9	**Plant (figure as per BB99)**							
		Plant (3% x net)	48	1	48	68	1	68
10	**Circulation (figure as per BB99)**							
		Circulation		23% x net	351		23% x net	512
11	**Partitions (figure as per BB99)**							
		Partitions		5% x net	78		5% x net	111
	Total Non Net Area				664			966
	Total Gross area				2,216			3,191

1.4. Accommodation Schedule (Combined facilities)

A high level analysis is conducted to explore the possibility of combining certain facilities of the primary and secondary schools elements.

The draft Accommodation Schedule below illustrates a potential saving of 454sqm of area. Refer to the notes on the Accommodation Schedule for the indicative combined facilities strategies. Please note that the Accommodation Schedule demonstrates potential space saving strategies that could be targeted in the design development. Any options to be taken forward to the next stage will require further design considerations and subject to inputs from the client, stakeholders and end users.

			11 to 16 years old					3 to 11 years old			
	Room reference	BB98 Room Name	Room Area (m^2)	No.of Rooms	Total Area (m^2)	Notes	BB99 Room Name	Room Area (m^2)	No.of Rooms	Total Area	Notes
	Teaching (timetabled)										
1	**General Teaching**							22			625pupils divided by 30class sizes = 20.8
		Classroom (inc further classrooms area)	60	14	840	Standardise grid across primary and secondary classrooms by integrating further classroom area	Nursery	66	4	264	Potential to share/reduce by 1no class
							Reception	66	3	198	
							Infant classbase	60	5	300	
							Junior classbase	60	10	600	
2	**IT**										
		IT room	77	1	77	No capacity for sharing - 1200 pupils require 3no	ICT suite: (no. of computers)	68	1	68	
3	**Science**										
		Science Lab	90	5	450		food/science/D&T	38	1	38	This may be able to be accommodated within the secondary school accommodation
4	**Design and Technology**										
		Food room	101	1	101						
		Resistant Materials	112	1	112						
		Electronics and control	90	1	90						
		Constructional textiles	90	1	90						
5	**Art (Creative & Design)**										
		Large art room	105	1	105						
6	**Music**										
		Music recital	90	1	90						
7	**Halls**										
		4-Court sports hall BB98:18m x 33m x 7.6m high	594	1	594	This is a BB98 compliant hall and not to Sports England revised guidence - some smaller secondary schools have 3 court halls. Some capacity assumed for primary schools as no. of sports halls do not increase to accommodate pupil number.					
		Activity studio	180	1	180	These have been uplifted to suit 1200pupil BB98 SoA example (original total 350m2)	~~Small hall~~	~~80~~	~~1~~	~~80~~	These areas have been omitted as there are efficiencies in increasing BB98 accommodation to suit combined pupil numbers
		Main hall (Assembly)	290	1	290		~~Main hall (used for dining)~~	~~177.5~~	~~1~~	~~178~~	

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			11 to 16 years old					3 to 11 years old			
	Room reference	BB98 Room Name	Room Area (m^2)	No.of Rooms	Total Area (m^2)	Notes	BB99 Room Name	Room Area (m^2)	No.of Rooms	Total Area	Notes
12	**Dining/social areas**										
		Dining area	160	1	160	Areas could be used by primary school if lunchtimes are staggered					
		social and sandwich areas	30	1	30						
	Teaching Support Areas										
8	**Learning Resource**										
		SEN/ALN resource base	20	1	20						
		Small group rooms (SEN)	16	1	16		Small group room (SENco)	12	1	12	
		Small group/interview room	10	2	20		Small group rooms	9	5	45	
		Music group/practice	7	4	28						
		Music ensemble room	20	1	20						
		Recording/control room	12	1	12						
		Kiln room	4	1	4						
		Darkroom	12	1	12						
		Library resource & Careers	124	1	124	No capacity for sharing - 1200 pupils require larger area than combined total	Library resource centre	52	1	52	
		Chapel*	60	1	60	*not part of BB98 SoA	~~Prayer room~~	~~30~~	~~1~~	~~30~~	*not part of BB99 SoA. Prayer room omitted, shared use of chapel required
9	**Staff & Admin**										
		Heads office	12	1	12		~~head's office/meeting room~~	~~16~~	~~1~~	~~16~~	Duplicate omitted
		Meeting room	16	1	16		interview/social services	8	1	8	
		Senior management offices	8	10	80		senior management offices	8	1	8	
		Community & other offices	8	4	32						
		SEN/ ALN therapy/MI	18	1	18		~~SEN therapy/MI room~~	~~12~~	~~1~~	~~12~~	Duplicate omitted
		Entrance/reception/adjacent sick bay	13	1	13		~~sick bay (adjacent), entrance/reception~~	~~8~~	~~1~~	~~8~~	Duplicate omitted
		General office	33	1	33		general office	14	1	14	Area assumed to be additional rather than duplicate
		Staff room (social)	50	1	50		staff room	84	1	84	Some reduction in combined area may be possible with staggered lunch/break times
		Staff work room	14	5	70						
		Reprographics	20	1	20		~~copier/reprographics~~	~~8~~	~~1~~	~~8~~	Duplicate omitted
		ICT technician	8	1	8						
10	**Storage (teaching)**										
		General teaching/IT/Library stores	3	6	18		class storage (nursery and reception)	3	7	21	
		Practical/music/drama	6	7	42		specialist stores	8	3	24	
		Instrument & external store	10	2	20		class storage (infant and junior)	1.5	15	22.5	
		PE stores (various)	43.5	2	87		~~PE store (adjacent to hall)~~	~~12~~	~~1~~	~~12~~	Duplicate omitted
		Science prep & chemical store	65	1	65		PE store (external)	4	1	4	
		Food prep	12	1	12						
		Resistant material prep	50	1	50						

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			11 to 16 years old					3 to 11 years old			
	Room reference	BB98 Room Name	Room Area (m^2)	No.of Rooms	Total Area (m^2)	Notes	BB99 Room Name	Room Area (m^2)	No.of Rooms	Total Area	Notes
11	**Storage (non-teaching)**										
		Central stock/Bulk	12	1	12		central stock/community	8	1	8	Area assumed to be additional rather than duplicate
		SENco/Wheelchair/Appliances	12	1	12		cloakrooms/lunch box storage	3	22	66	
		Secure/exam/community	8	2	16		~~community store~~	~~4~~	~~1~~	~~4~~	Duplicate omitted
		Lockers	42	1	42		~~staging/appliance store~~	~~8~~	~~1~~	~~8~~	Duplicate omitted
		Community lockers	4	1	4						
		Chair store	12	1	12		dining chair/table store (no of sittings)	6.67	3	20.0	Area assumed to be additional rather than duplicate
		Maintenance store	8	1	8		caretakers/maintenance store	7	1	7	Area assumed to be additional rather than duplicate
		Cleaners store	1.5	4	6		cleaner's store	1.5	4	6	Area assumed to be additional rather than duplicate
											Area added - 120m2, area omitted - 355.5m2
	Total Net Area				**4,283**					**1,870**	
13	**Catering Facilities**										
		Kitchen (inc. staff & stores)	68	1	68		Kitchen (full service)	~~109~~	~~1~~	~~109~~	If lunchtimes are staggered a single kitchen can be used
							Servery	~~10~~	~~1~~	~~10~~	
14	**Toilets**										
							nursery toilets	4	5	20	
		Pupil Dry change & showers	50	2	100		reception toilets	4	5	20	
		Hygiene facilities	30	1	30		other pupil toilets	75	1	75	
		Pupil toilets	90	1	90		accessible toilets/hygiene facilities	20	1	20	Hygiene area retained as duplicate due to high nursery pupil number; laundry etc may be required
		Staff toilets	3.5	6	21		staff toilets	21	1	21	
15	**Circulation (figure as per BB98)**										
				Min 25% comp	1,071						
		Circulation	1,128	1	1,128		Circulation		23% x net	430	
				Max 30% comp	1,285						
16	**Plant (figure as per BB98)**										
				Min 2% compa	86						
		Plant inc. server	118	1	118		Plant (3% x net)	68	1	68	
				Max 3% compa	128						
17	**Partitions (figure as per BB98)**										
				Min 3% compa	128						
		Partitions	187	1	187		Partitions		5% x net	93	
				Max 6% compa	257						
	Gross Internal Area				**6,025**		**Gross Internal Area**			**2,617**	
							Combined Gross Internal Area			**8,642**	
	Calculations			min							
		% Circulation	25-30% of net	25%			**BB98 area + BB99 area Total**			**9096**	
		% Partitions	3-6% of net	3%			**Area saved**			**454**	
		% Plant	2-3% of net	2%							

2. Contextual Appraisal

2.1. Overview

This section provides an overview of the site constraints that will need to be considered during the design and construction phases of the project.

2.1.1. Existing Site

Galon Uchaf Park is located north of Merthyr Tydfil town centre. The site is surrounded by the residential areas of Pen-y-Darren and Galon-Uchaf, which are typically made up of two and three storey semi-detached and terrace housing.

The park is bordered by Galon Uchaf Road to the East, and a residential street, the Fifth Avenue, to the North. The residential development south of the site is located at a lower level and consists of two-storey semi-detached housing in a cul-de-sac arrangement. There is a stretch of densely vegetated land running parallel to the western boundary of Galon Uchaf Park. Beyond the stretch of vegetated area is a residential area composed predominantly of terraced houses.

Previously the site for the Pen-y-bryn Water Works, the park is partially used as amenity green space. Currently, the northern zone of the park consists of a MUGA, playing fields and natural vegetated areas with a few walking trails. The southern zone of the site remains unoccupied and left to vegetate with a mix of trees and scrub.

2.1.2. Potential Areas for Development

The site covers a large area and for the purpose of identifying sites suitable for potential school development (an all-through school), the study investigates three distinct development zones: the development zone within the Galon Uchaf Park site (Zone A), the existing site for the Phase 2 of Bishop Hedley Catholic High School (Zone B), and the existing site for the Phase 1 of Bishop Hedley Catholic High School (Zone C).

The client's preferred option is to create an all-through school on the Galon Uchaf Park site. The extent of the development zone within the Galon Uchaf Park site (Zone A) is defined by the existing fences on site (refer to Section 2.3).

2.2. Existing Site

Site Map

Site photograph - A

Site photograph - B

Site photograph - C

Site photograph - D

Images extracted from Google Map

2.3. Identified Potential Development Areas

Site Map - Potential Development Areas

2.4. Site Accessibility

2.4.1. Pedestrian & Vehicle Circulation

Currently, most of the pedestrian points of access are located at the northern part of the park. There are currently a few walking trails connecting Galon Uchaf Road to the Northeast, Fifth Avenue to the North and Sycamore Road to the Northwest. These pathways provide a through access across the park, from East to West. In addition, a paved pathway, spanning across the northern zone of Galon Uchaf Park from East to West, connects the existing playing fields and MUGA to Galon Uchaf Road. The paved pathway is currently designated as a public's right of way. Meanwhile, the southern zone of the site appears to be off-limit to pedestrian. It is currently fenced off and access is controlled by gates located along Galon Uchaf Road.

Galon Uchaf Park is framed by Galon Uchaf Road to the East . However, there is currently no vehicular access to the site. Two potential access via Galon Uchaf Road are identified along the eastern site boundary.

Pedestrian and vehicle circulation on site to be managed by design & layout. The Equality Act will be used to guide design principles in order to provide ease of access for all.

Depending on how the site is utilised, compound set up may be required to take in to account any impact to the local residents. During the construction phase, subject to further traffic assessment, the main entrance to the site will be via Galon Uchaf Road. In addition, a management plan for construction traffic should be formalised to ensure minimal impact on neighbouring residents during construction.

Map indicates Public's rights of way (Source: https://www.rowmaps.com/)

2.4.2. Highways & Routes to School

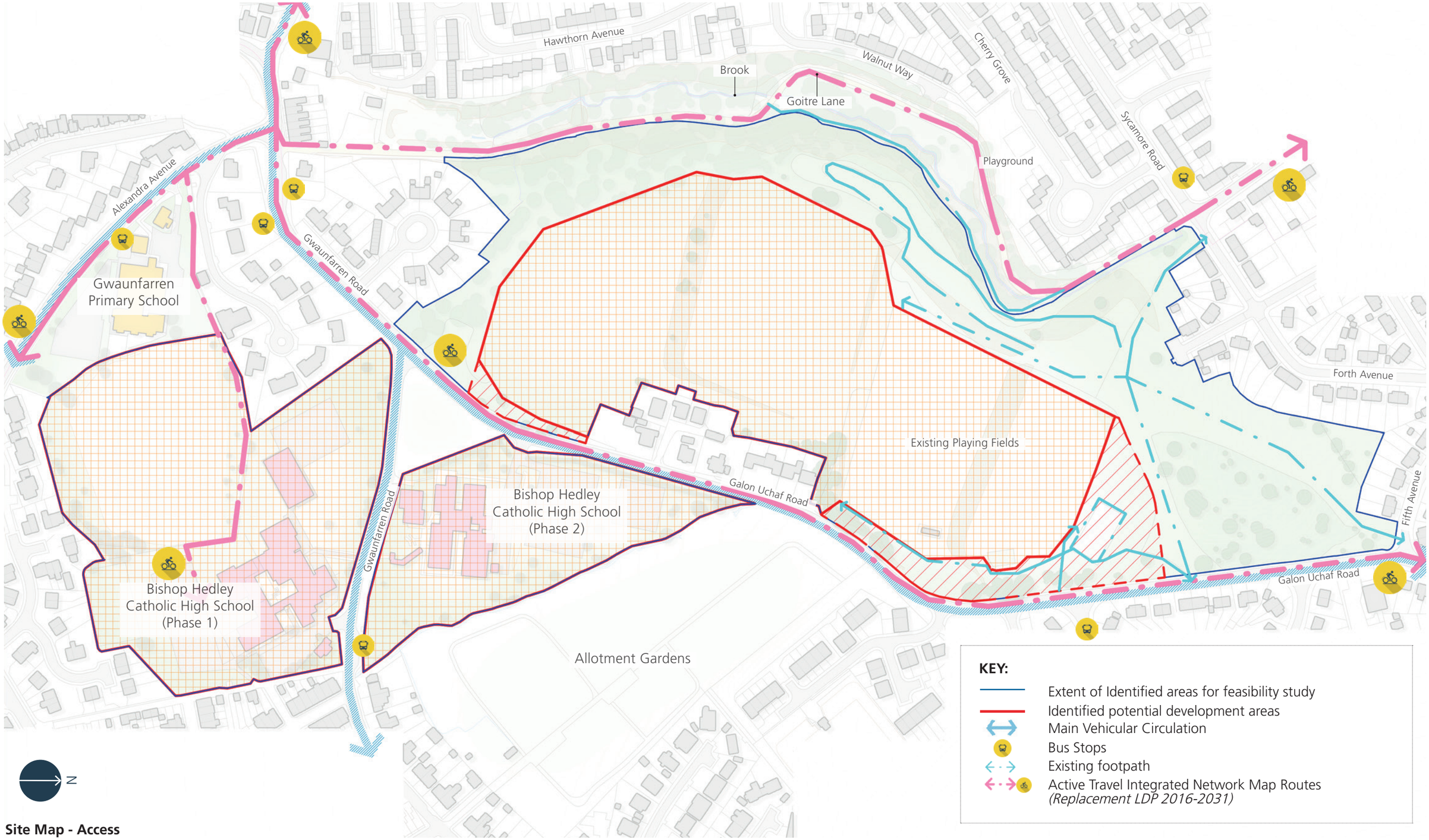
Change in traffic volume and impact to adjacent roads to be considered both for construction and completion phases, particularly at peak hours.

There is currently no vehicular access at the Galon Uchaf Park site. Two potential access via Galon Uchaf Road are identified along the eastern site boundary. Galon Uchaf Road is a single carriageway connecting the neighbourhood of Galon Uchaf to Merthyr Tydfil town centre.

The amount of drop-off provision for cars and coaches will need to be appropriate to the large catchment area. The adjacent roads should be reviewed in order to ensure local residents are not negatively impacted by the relocation of the school.

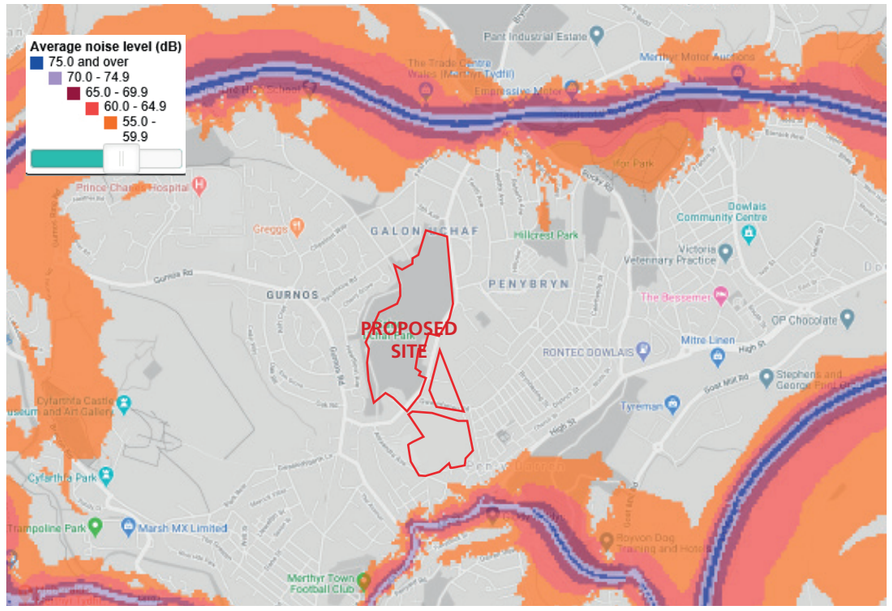
Pedestrian access should be encouraged to any of the proposed sites and suitable width pavements provided to entrance points. The use of existing footpaths is to be encouraged and a suitable secure line will have to be developed to suit primary and secondary age pupil travel to school.

Although a considerable part of the new school is currently operational in the vicinity, incorporating primary school aged pupils in to the new development will inevitably impact the way that pupils access the site, for example, parents of primary school pupils are more likely to park cars and escort their children on to the site and in some circumstances in to the classrooms. The 100FTE pupil place nursery will also change the journey profile to the site, as parents will be arriving twice as often to bring pupils to morning and afternoon sessions.



Site Map - Access

2.5. Acoustic

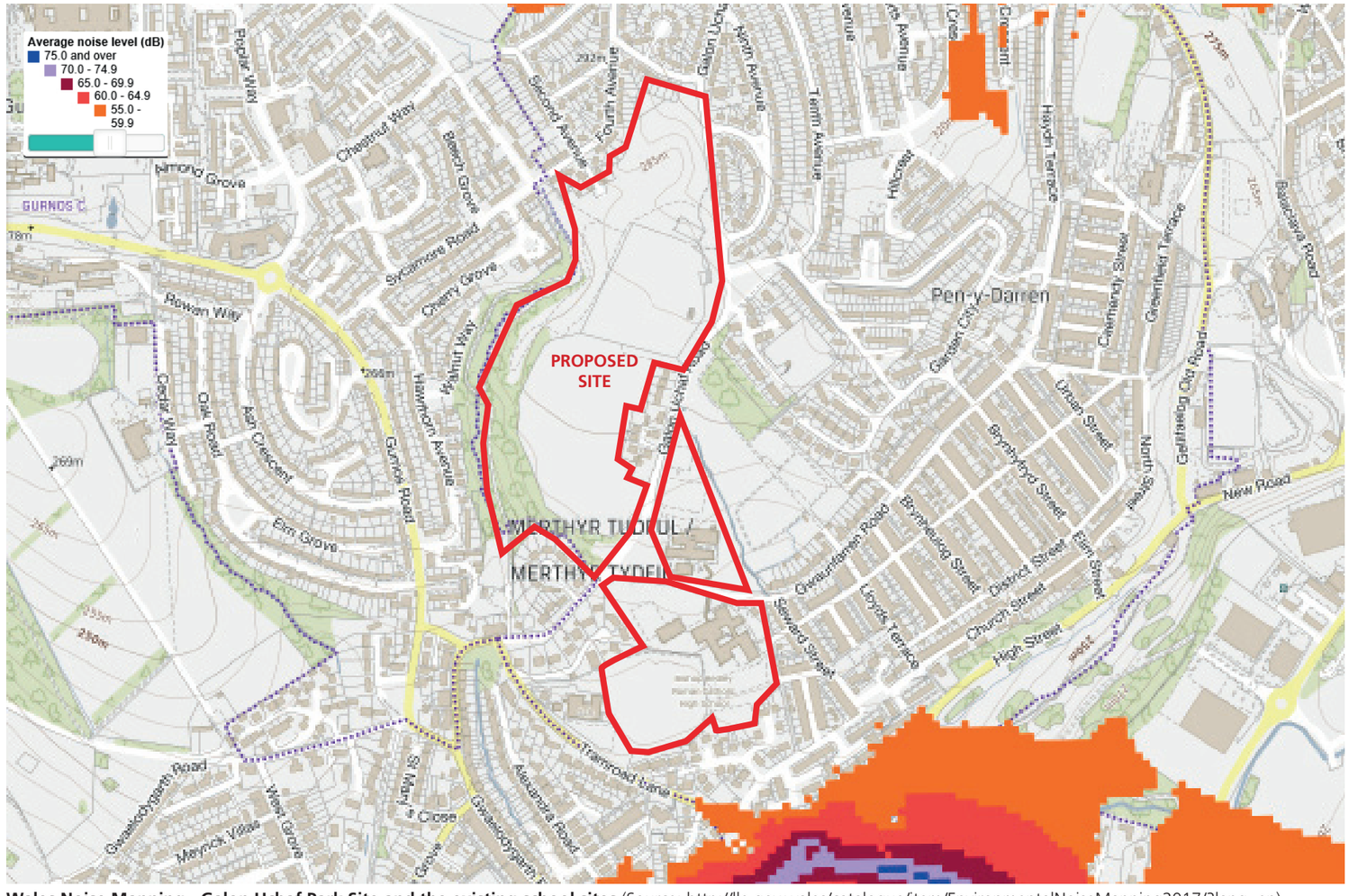


Wales Noise Mapping - Wider Context (Source: http://lle.gov.wales/catalogue/item/EnvironmentalNoiseMapping2017/?lang=en)

The Welsh Government Noise Map highlights that sources of noise stem from nearby roads.

Data from the Welsh Government Noise Map indicates that the nearest source of noise in excess of 55dB stems from the A4102, which is located approximately 200m south of the existing Bishop Hedley Catholic High School (Phase 1) site. Meanwhile, the A465 (Heads of the Valleys Road) which is located roughly 375m away from the northern tip of the Galon Uchaf park site, forms the other major source of noise. With the information currently available sources of noise above 55dB have not been identified on the Galon Uchaf Park site or existing school sites for Bishop Hedley Catholic High School.

A measured site acoustic survey should be conducted to confirm noise levels throughout the operational hours of the school. An acoustician should be consulted early in the design process to advise on compliance with Building Bulletin 93 guidance.



Wales Noise Mapping - Galon Uchaf Park Site and the existing school sites (Source: http://lle.gov.wales/catalogue/item/EnvironmentalNoiseMapping2017/?lang=en)

2.6. Flood Risk

The study provides an overview of the potential flooding issues and implications associated with the development at the Galon Uchaf Park site. The flood map on page 26, left, available from Natural Resource Wales, indicate that the development sites lie within Flood Zone 1, i.e. considered to be at little or no risk of fluvial or coastal/tidal flooding.

The flood map on page 26, right, from NRW's website, showing risks of surface water flooding on site. There are two locations where localised surface water flooding may occur. In the northern section of the site, there is an area of low and medium risks of surface water flooding. The area running parallel to the brook, along the western boundary of the Galon Uchaf Park site also has a low to medium risk of surface water flooding.

For the purposes of planning, NRW produces Development Advice Maps (DAMs), which take account of flood defences and are used to inform the application of Technical Advice Note (TAN) 15- Development and Flood Risk. The Site falls into Flood Zone A within the DAMs. According to TAN 15, Zone A is considered to be at little or no risk of fluvial or tidal/coastal flooding.

The projected impact of climate change on the site would need to be assessed during the next design stages.

Figure 1: Natural Resources Wales TAN15 Development Advice Map

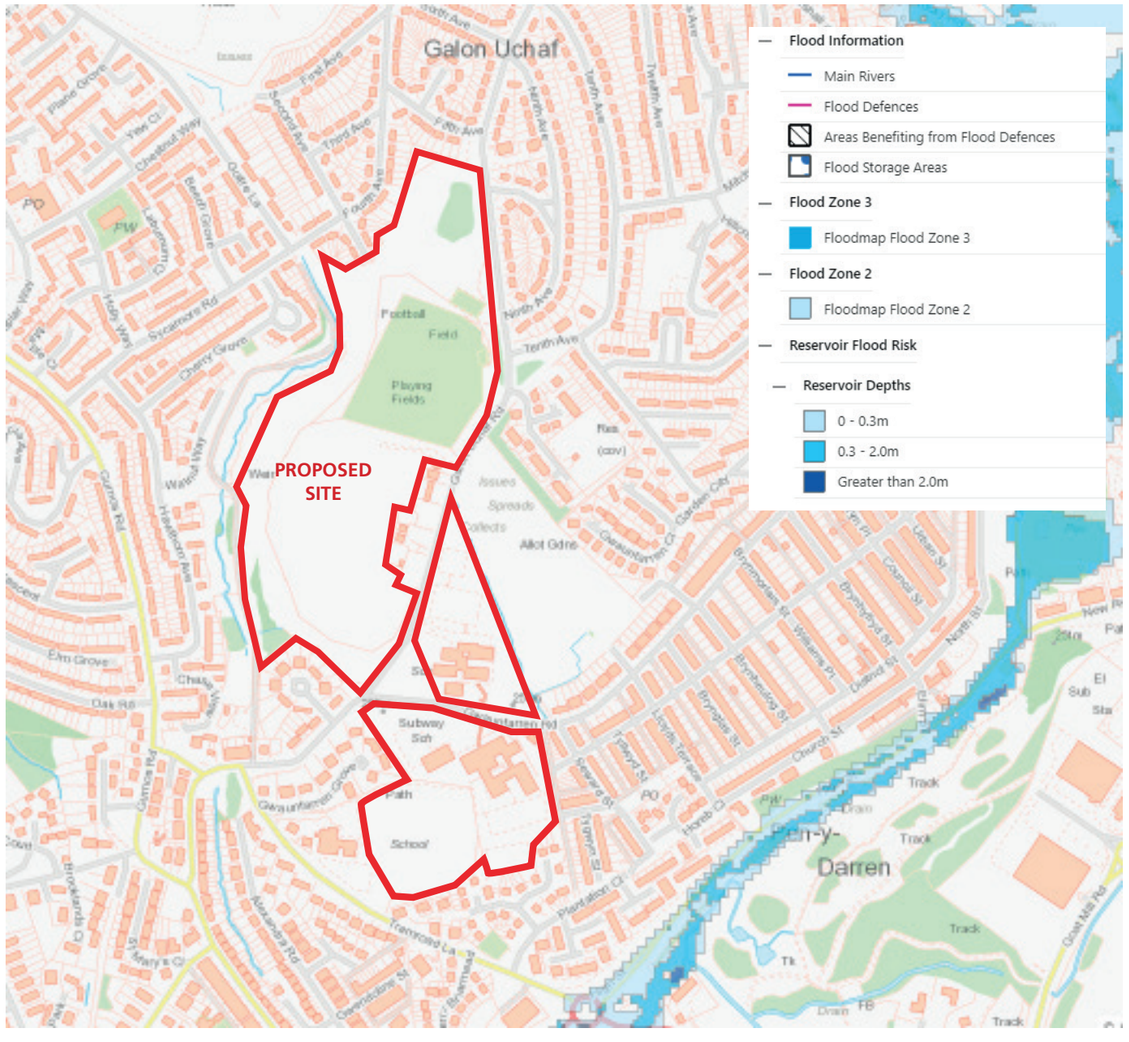


Figure 2: Natural Resources Wales Rivers and Sea, and Reservoir Flood Risk Map

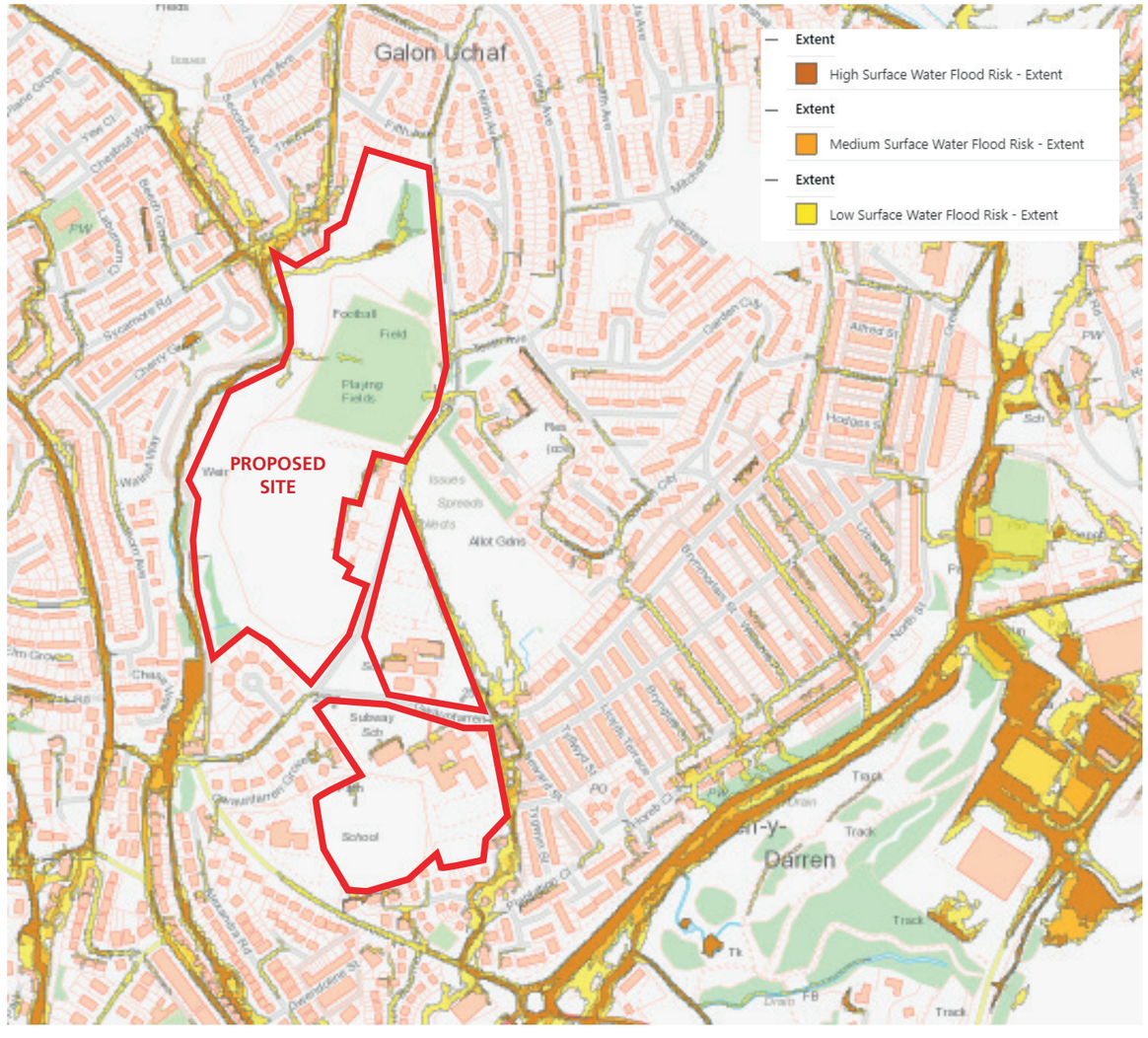


Figure 3: Natural Resources Wales Surface Water Flood Risk Map

2.7. Drainage & Sustainable Urban Drainage Systems

2.7.1. Existing Drainage & Sewerage

This preliminary assessment is based on Dwr Cymru Welsh Water (DCWW) GIS information supplied in the Utility Search Report. All GIS information included below should be confirmed by on site survey work.

The area is mainly served by combined sewers, however there are separated foul and surface water sewer systems shown in the vicinity of the site.

Along the western boundary of the Galon Uchaf park site, a 225 mm diameter vitrified clay sewer flows from north to south. In the northern part of the site there is also a 225 mm diameter crossing the site running from east to west.

A combined sewer overflow (CSO) is located to the west of the site where the two sewers meet, discharging to the small water course located to the west of the site.

The existing drainage arrangements within the existing Bishop Hedley RC School and Gwaunfarren Primary School sites is unknown. There is a small watercourse along the eastern boundary which may be used for surface water discharge.

Refer to the Utility Search Report for full water and sewer maps.

Diversion

The existing sewers within the Galon Uchaf Park site may be impacted by the proposed building footprint, in which case they should be diverted. Early engagement with DCWW should be organised as soon as possible in the next stage of design. As diverting the sewer is likely to reduce the gradient of the sewer, capacity will be reduced, and a larger pipe may be required.

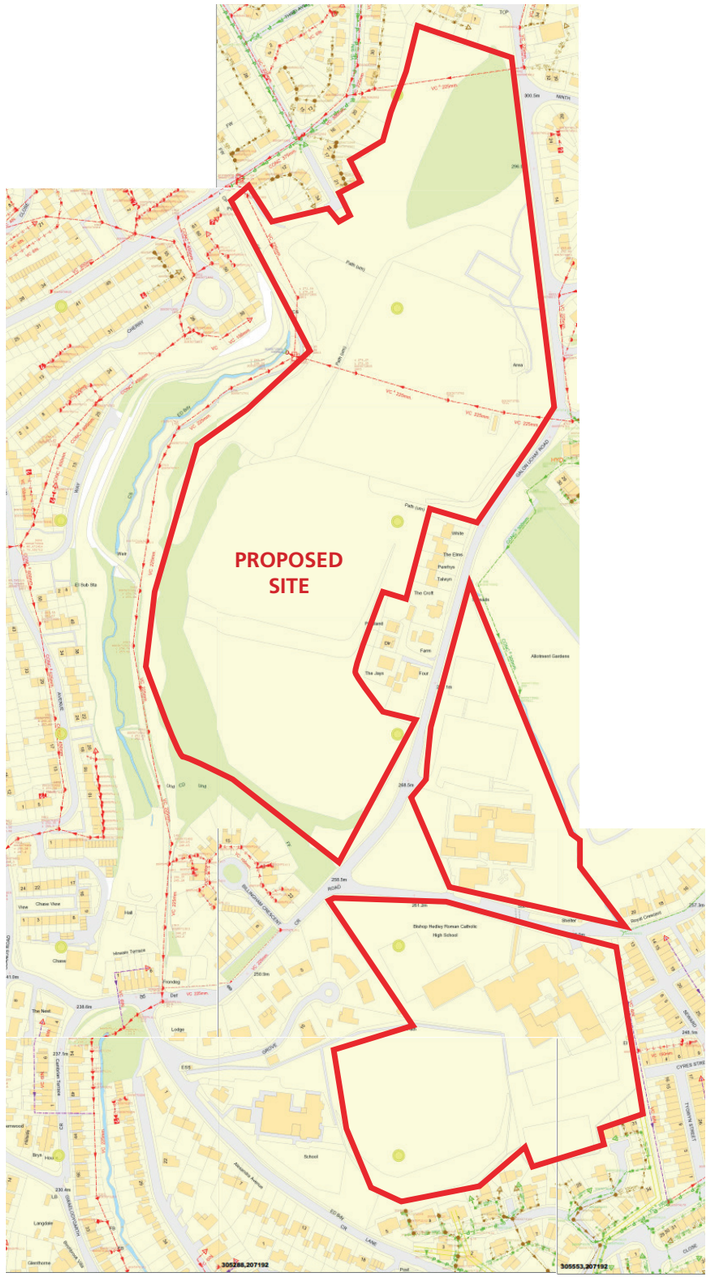
2.7.2. Foul Drainage Design

A new drainage system will be required to serve the development. It is expected to be possible to discharge via gravity to the existing sewers in the vicinity, subject to confirmation of levels following surveys.

The proposed school will represent an increase in flow rates being discharged from the site to the public sewer system. It will be necessary to obtain agreement from DCWW of a suitable point of connection to the public sewer network. There is a risk that the flows resulting from the proposed site will cause an increase in spills at the CSO therefore hydraulic modelling exercise may need to be undertaken to ensure that the existing sewers have enough capacity to withstand the new flows generated from the proposed site and do not exceed the CSO consented rate.

Alternative arrangements may need to be discussed, such as (but not limited to): requisition a new sewer to serve the development site; surface water removal in the upstream combined catchment to alleviate capacity; time-constrained pumped discharge at an agreed rate.

Any new connection made to the public sewer will require a Section 106 agreement and approval by DCWW. If a new lateral sewer connecting the development to the public sewer off the site footprint is required, then it will be subject to the approval of DCWW and require completion of a Section 104 agreement for the adoption of the lateral connection.



Dwr Cymru Welsh Water GIS plans showing sewage drainage assets. Please refer to Utility Search plans for wider network details.

2.7.3. Surface Water Drainage Design

In January 2019, and as result of the commencement of schedule 3 of the Flood and Water Management Act 2010, all developments of area greater than 100m2 in Wales are required to use sustainable drainage systems (SuDS) to manage on-site surface water. Surface water drainage systems must be designed and built in accordance with statutory standards for sustainable drainage published by Welsh Ministers.

The proposed sustainable drainage system will need to be discussed with and approved by the SuDS Approval Body (SAB) officer. It is recommended that pre-application discussions with the SAB are held as early as possible during the design stage, to inform this process.

A new surface water drainage system will be required to serve the development. SuDS features should be designed to intercept, convey and store surface water runoff on site. In addition, SuDS features should be used to improve the water quality (remove pollutants) of surface water runoff discharged from the site, provide amenity and biodiversity benefits to the site.

A new outfall to the existing watercourse to the west of the Galon Uchaf Park site will be required. The new outfall will need consent from the Lead Local Flood Authority (LLFA) and that should be reflected in the programme.

As the site is currently unoccupied, undeveloped and is not believed to have any operational drainage system it should be considered as a greenfield development.

The destination of runoff should be considered at the earliest opportunity and the suitability of rainwater harvesting assessed in the first instance. Any water which cannot be collected for re-use will need to be disposed of by another means; either infiltration, an outfall to a watercourse or into a surface water or combined sewer (in order of preference).

Coordinated infiltration testing and ground investigations throughout the site should be undertaken in advance of the next design stage so that this can be properly assessed. The infiltration capacity as well as the suitability of, and risks associated with, the ground conditions should be taken into account and may require specialist input with regards to hydrogeology, contaminated land and ground stability.

Any runoff that cannot be managed on site, should be discharged from the site at greenfield runoff rates to ensure that flood risk is not increased by the development. The runoff volume discharged from the site should not exceed greenfield runoff volumes if possible. Where this is not possible, the additional volume should be discharged at an agreed rate (normally the greater value of 2 l/s/ha or QBAR).

QBAR has been calculated using HR Wallingford Greenfield Runoff Rate Estimation Tool using the IH124 method as 93.9 l/s, based on the 6.15 hectare development site

Quick Storage Estimates in MicroDrainage indicate that following ranges of attenuation storage volume would be required if the runoff volume cannot be reduced by collection or infiltration:

- 1 in 100 year (+40% climate change): 3957—7100 m3

There should not be a presumption for the use of below ground storage tanks, so opportunities for the surface water runoff to be stored in surface features on the site, such as wide swales, rain gardens and infiltration basins, should be explored in detail. Opportunities for rainwater harvesting, green roofs and infiltration also need to be appraised at an early stage.

Example - Grassed swales in a primary school

Example - Bioretention system in road build out, Llanelli

Example - Small pond with overflow via rill to the swale in a primary school

2.7.4. Information for checking purposes

www.uksuds.com | Greenfield runoff tool

Calculated by: Hala samour
Site name:
Site location:

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude: 51.75980° N
Longitude: 3.37472° W
Reference: 3887583885
Date: Jul 15 2020 16:19

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 6.1490

Methodology

Q_{BAR} estimation method: Calculate from SPR and SAAR
SPR estimation method: Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	5	5
HOST class:	N/A	N/A
SPR/SPRHOST:	0.53	0.53

Hydrological characteristics

	Default	Edited
SAAR (mm):	1499	1499
Hydrological region:	9	9
Growth curve factor 1 year:	0.88	0.88
Growth curve factor 30 years:	1.78	1.78
Growth curve factor 100 years:	2.18	2.18
Growth curve factor 200 years:	2.46	2.46

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	93.91	93.91
1 in 1 year (l/s):	82.64	82.64
1 in 30 years (l/s):	167.16	167.16
1 in 100 year (l/s):	204.72	204.72
1 in 200 years (l/s):	231.02	231.02

Variables

FSR Rainfall
Return Period (years): 100
Region: England and Wales
Map
M5-60 (mm): 20.000
Ratio R: 0.200

Cv (Summer): 0.750
Cv (Winter): 0.840
Impermeable Area (ha): 6.150
Maximum Allowable Discharge (l/s): 93.9
Infiltration Coefficient (m/hr): 0.00000
Safety Factor: 2.0
Climate Change (%): 40

Results

Global Variables require approximate storage of between 3957 m³ and 7100 m³.

These values are estimates only and should not be used for design purposes.

Variables

FSR Rainfall
Return Period (years): 30
Region: England and Wales
Map
M5-60 (mm): 20.000
Ratio R: 0.200

Cv (Summer): 0.750
Cv (Winter): 0.840
Impermeable Area (ha): 6.150
Maximum Allowable Discharge (l/s): 93.9
Infiltration Coefficient (m/hr): 0.00000
Safety Factor: 2.0
Climate Change (%): 40

Results

Global Variables require approximate storage of between 2771 m³ and 5513 m³.

These values are estimates only and should not be used for design purposes.

2.8. Public Utilities

The diagram, right, identifies the existing public utilities infrastructure in the Galon Uchaf Park Site vicinity. A Utility Search Report has been commissioned and provided in full and should be read in conjunction with this feasibility study.

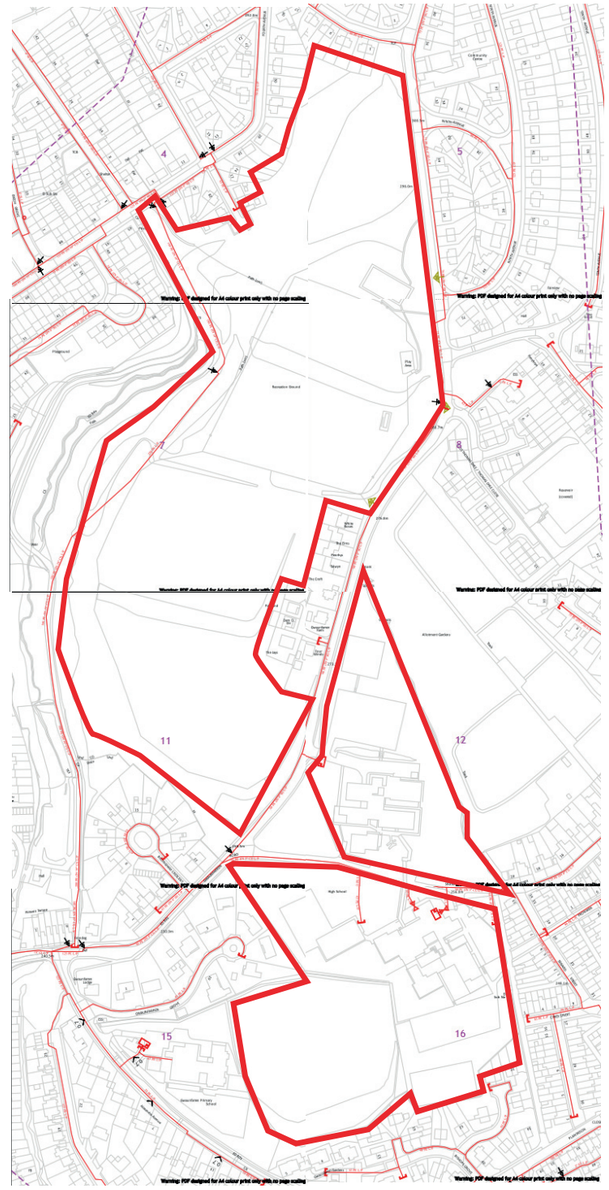
2.8.1. Western Power Distribution

High voltage underground cables (11kV) cut across the site from East to the West, north and in-between the existing playing fields and MUGA.

Re-routing of the cables could incur higher cost and longer lead time and subject to approvals from relevant authority.

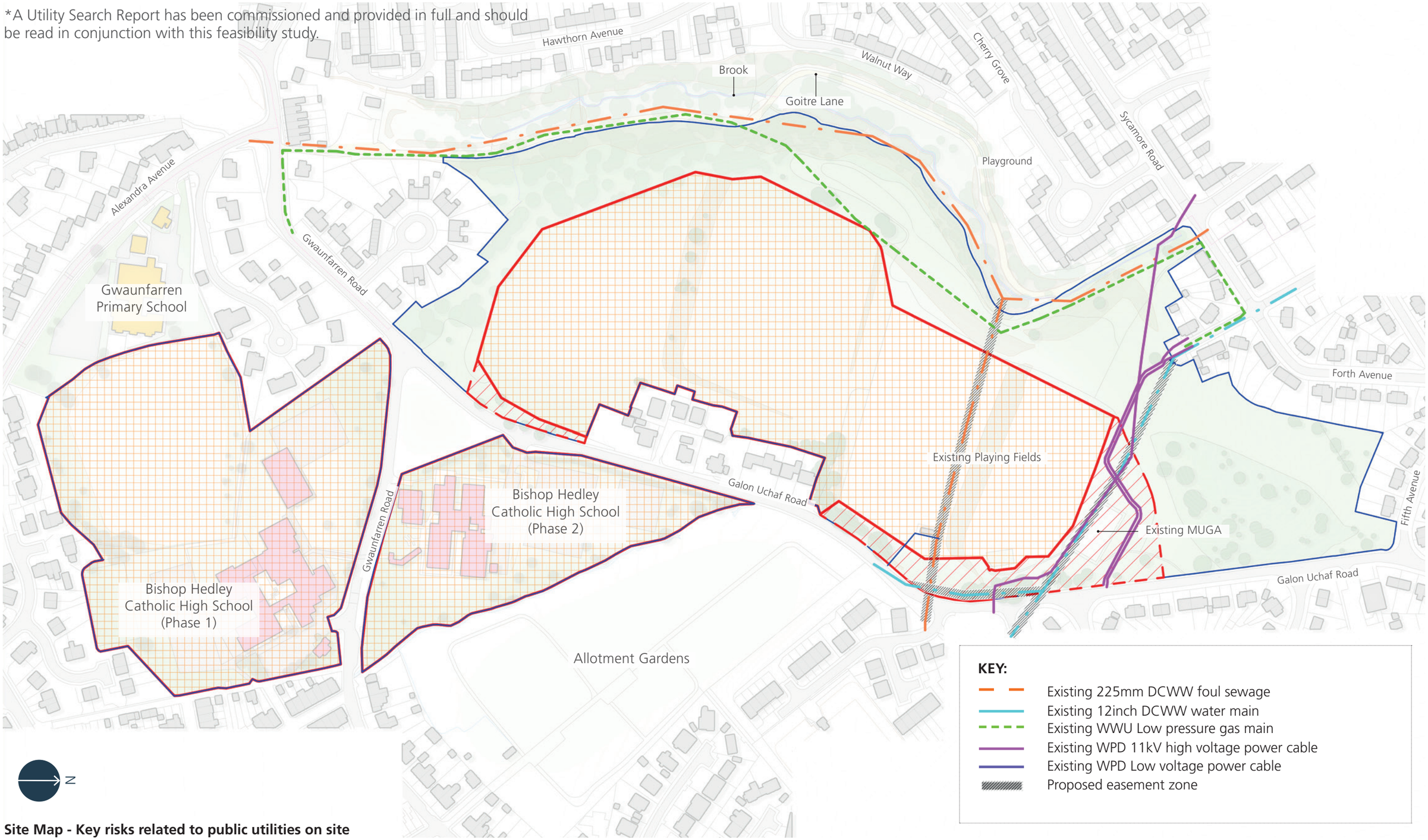
2.8.2. Wales & West Utilities

The report indicates the presence of low pressure gas supply along the western site boundary.



Wales & West Utilities

*A Utility Search Report has been commissioned and provided in full and should be read in conjunction with this feasibility study.

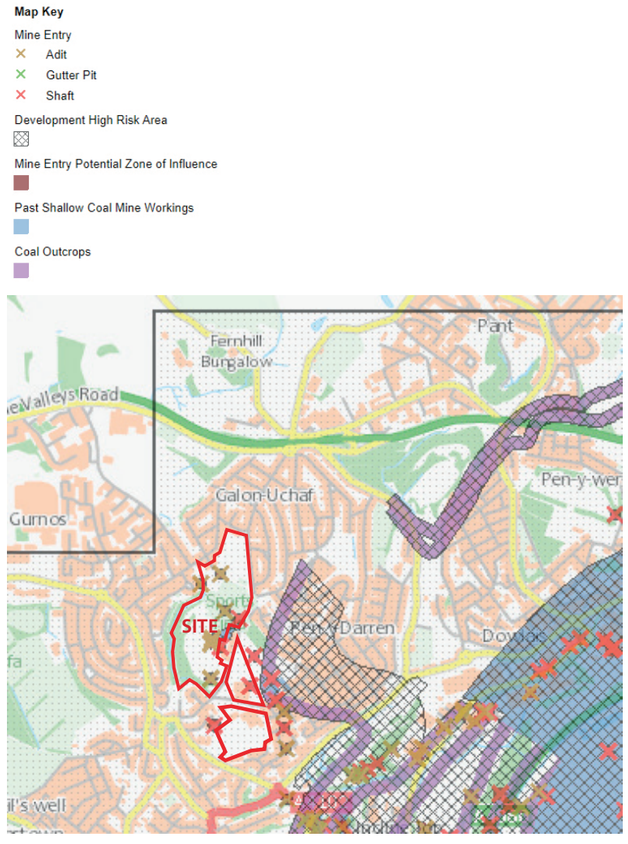


Site Map - Key risks related to public utilities on site

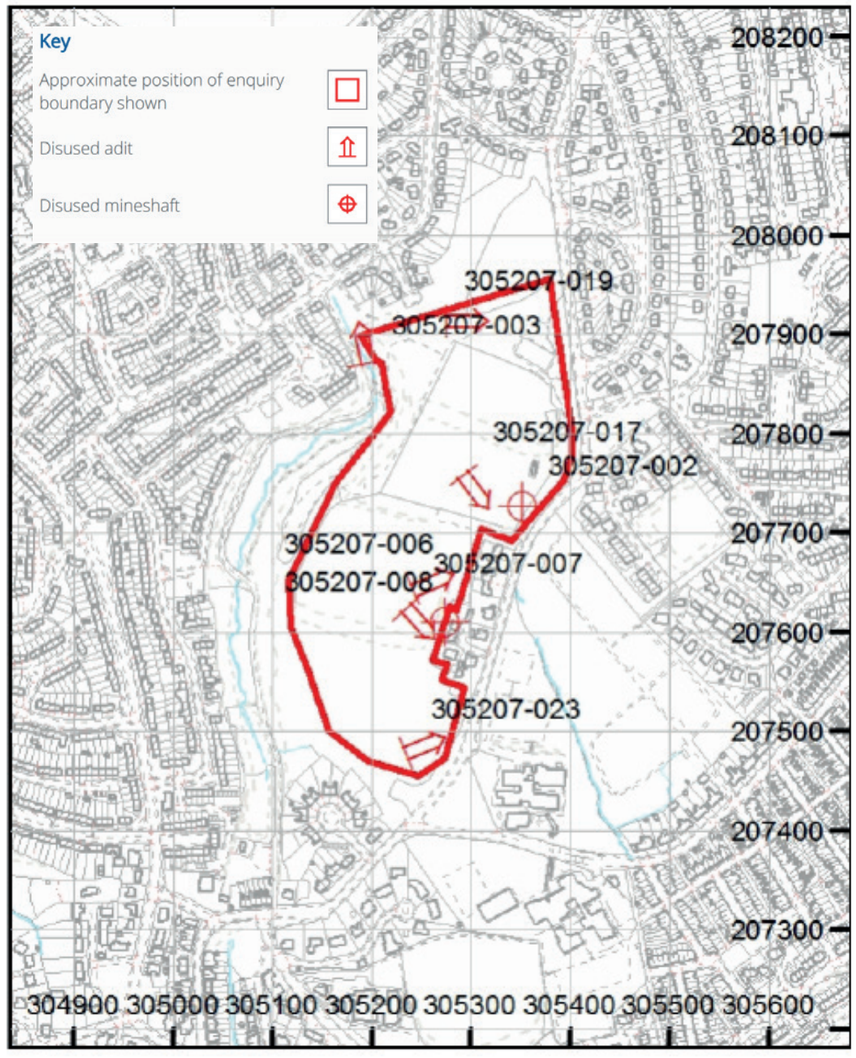
2.9. Geo-technical & Ground conditions

A Geo-technical Desk Study has been undertaken as part of this feasibility study and should be referred to in full. Key issues that have been identified include but are not limited to:

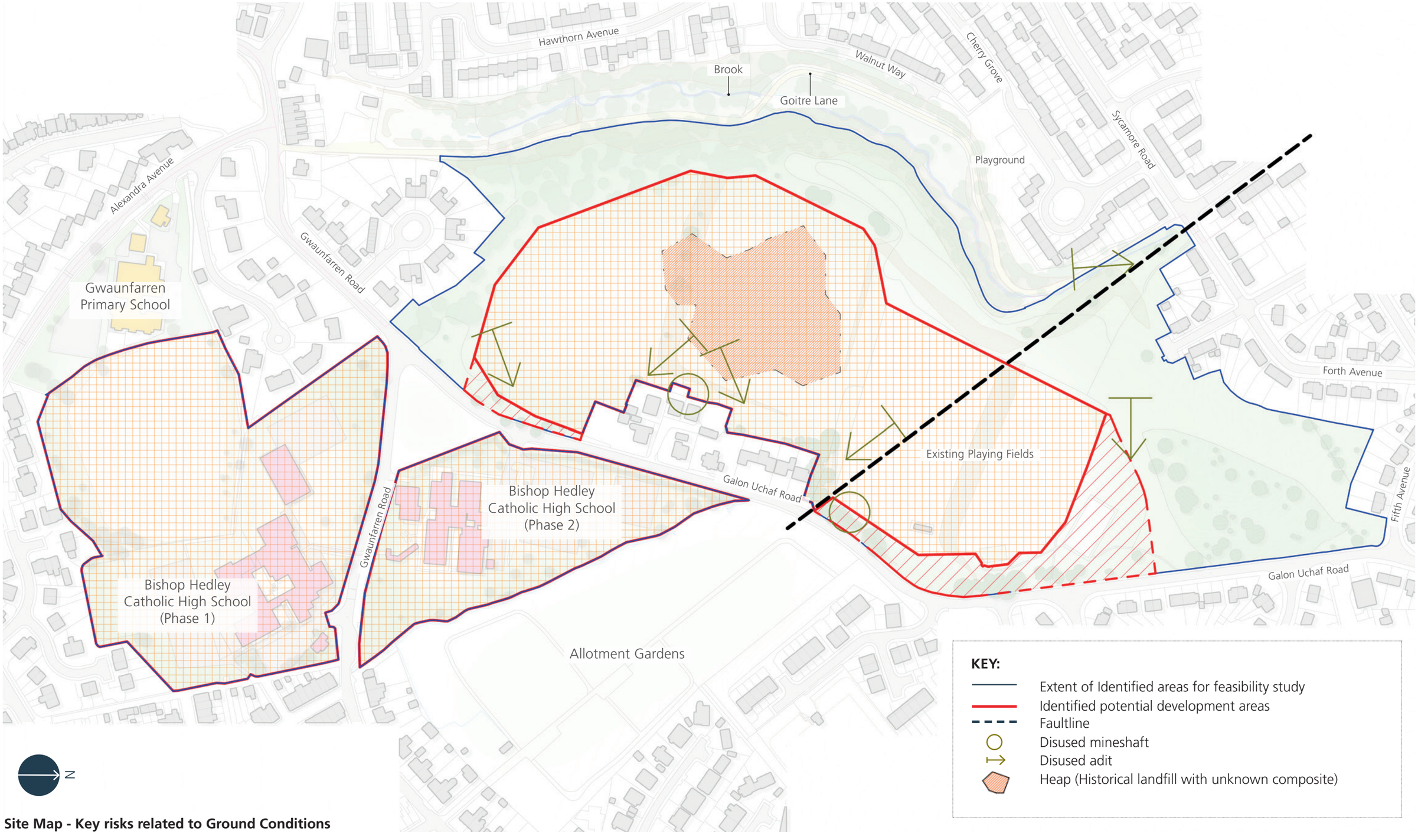
- Made Ground is shown to be present, which indicates the site levels have been raised. I suspect this may have been done to level the site.
- Site is underlain by Coal Measures.
- The Coal Authority report indicates the site is at risk of shallow mine workings.
- The Coal Authority records show 2no. shafts and 5no adits on the site.
- A fault crosses the northern half of the site trending northwest to the southeast. Another fault is shown approximately 160m north of the site trending northwest to the southeast. These features could be linked and may effect the ground between both faults.
- Clay pits were shown to be present on site on the historic maps.
- Contamination may be present associated with the Made Ground and historic mine workings.



Coal Authority Mapping of Site (http://mapapps2.bgs.ac.uk/coalauthority/home.html)

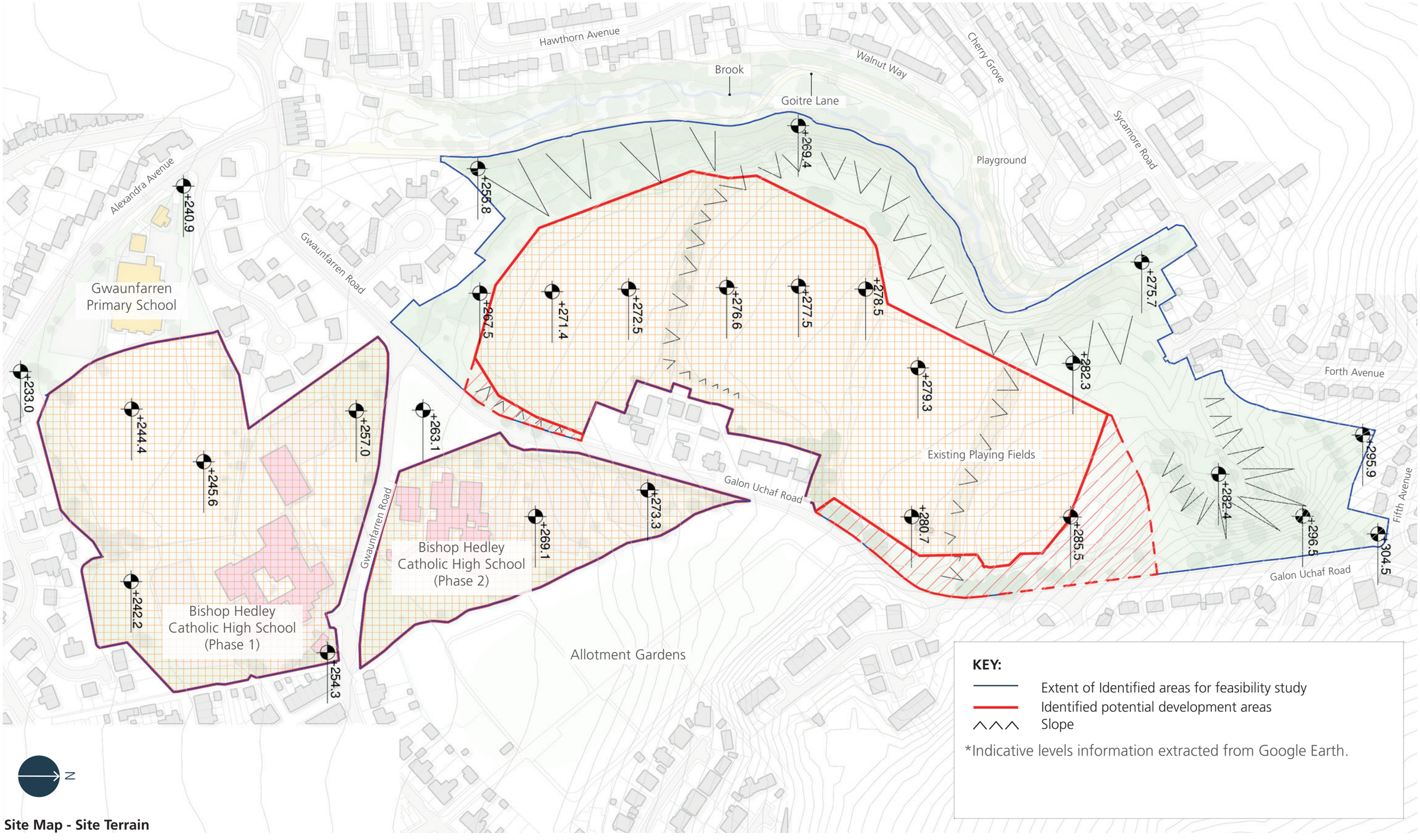


Coal Authority Mapping of Site highlighting disused mineshafts and adits (extracted from CON29M Coal Mining Report)



Site Map - Key risks related to Ground Conditions

2.10. Site Terrain



Site Map - Site Terrain

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2.11. Ecology

There is a stretch of densely vegetated land running parallel to the western boundary of Galon Uchaf Park. There is also a waterway, running in the North-West direction. The southern zone of the site remains unoccupied and left to vegetate with a mix of trees and scrub. The presence of protected species and their natural habitats on site cannot be ruled out.

In addition, the site is located within the Merthyr Tydfil Landscape of Outstanding Historic Interest in Wales. As part of the planning policies requirements, an Environmental Impact Assessment (EIA) will be required.

The site is not located within Sites of Importance for Nature Conservation (SINC). The nearest SINC, Cyfarthfa Park (SINC18) is located to the southwest of the site.

A Preliminary Ecological Appraisal was undertaken by Wildwood Ecology and the section below contains the conclusions and recommendations extracted from the study. For the full desktop study please refer to the Preliminary Ecological Appraisal Report in the Appendices to this document.

Designated sites

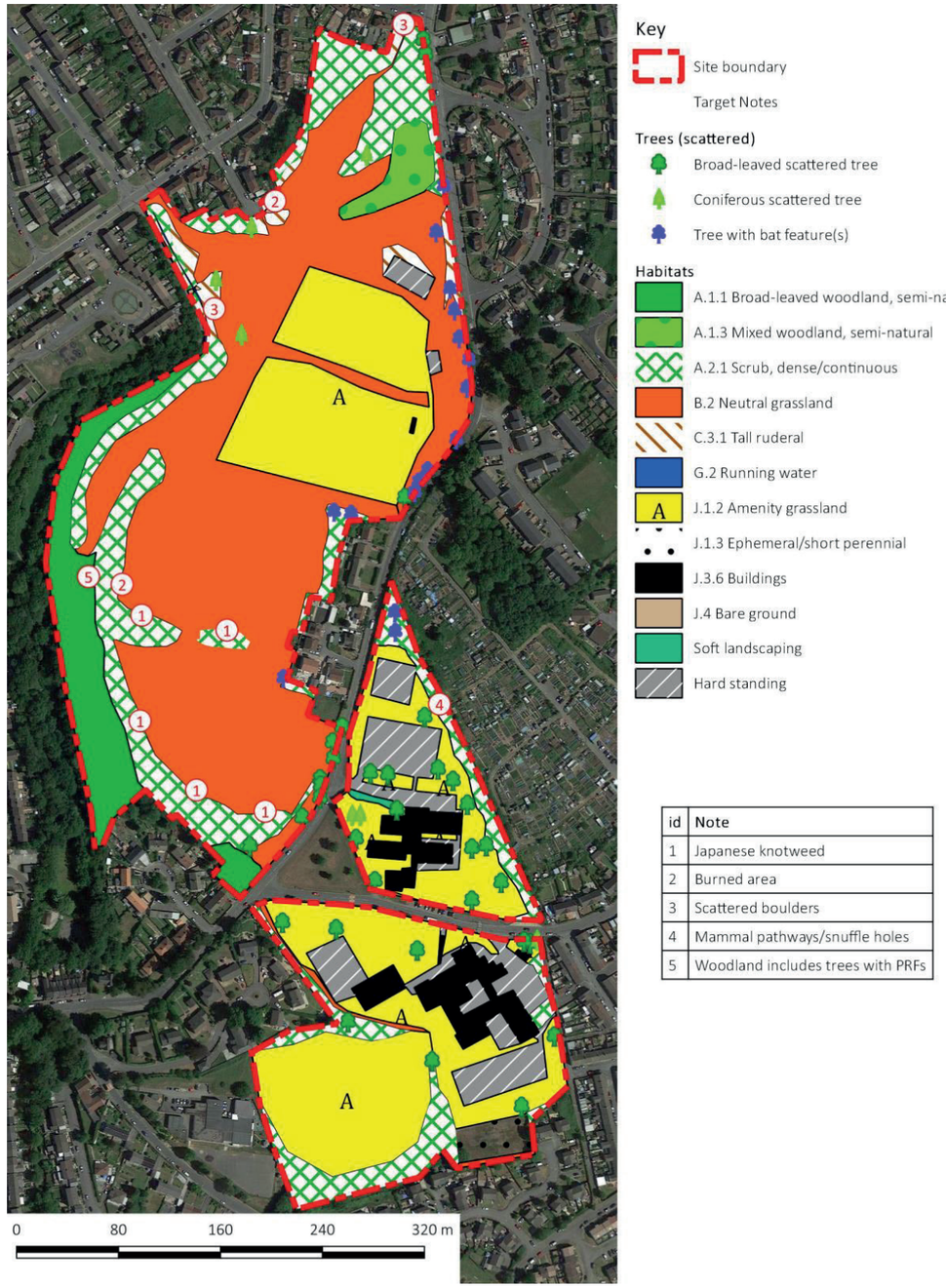
- Designated sites in the vicinity of the site are sufficiently well separated so that no impacts on their designated features are anticipated as a result of the proposed development.

Protected species and habitat

- Recommendations regarding protected species are shown in Table 7.
- In addition, an eradication scheme will be necessary for Japanese knotweed, snowberry, montbretia and cotoneaster. Specialist advice from an invasives consultant is advised to be sought.

Biodiversity enhancement

- Local Authorities have a duty (known as the 'Biodiversity and resilience of ecosystems duty') under the Environment (Wales) Act 2016 to seek to maintain and enhance biodiversity in the exercise of their functions.
- Where possible the existing onsite habitat will be retained to ensure that species are not adversely affected by the development. Native species of local provenance will be used for any new planting on the site to support The Action Plan for Pollinators in Wales, 2013 (http://gov.wales/docs/desh/publications/130723pollinator-action-plan-en.pdf).
- Inclusion of raingardens or ponds onsite will aid biodiversity onsite, with their planting to be native species only. Similarly, new native species-rich hedgerows would be welcomed.



Preliminary Ecological Appraisal Plan (extracted from Preliminary Ecological Appraisal Report)

- Bird nesting boxes and bat roosting boxes will be incorporated within the proposed building and wherever possible, boundary features. A range of types should be used in order to cover a variety of species. Many designs are available and we would initially recommend the following for this site, though the designs will be influenced by the construction fabric:
  - Schwegler bat tube 1FR or similar x 4
  - Greenwood's Ecohabitats double crevice box x 2 (tree hanging)
  - Greenwood's Ecohabitats cavity box x 1 (tree hanging)
  - Soffit bat boxes
  - 32mm hole bird box (woodcrete type)
  - 28mm hole bird box (woodcrete type)Atkins New 3-16 VA Catholic School, Merthyr Tydfil
  - Open fronted bird box (woodcrete type)

Overall conclusion

The full ecological impacts of the proposed development cannot be fully assessed following the PEA survey alone and further survey work is required.

Table 7 – Recommendations.

Species	Recommendations
Bats	• Further bat surveys are required of any tree with PRFs and any structure to be demolished or impacted by the proposals. These will include a full PRA and any subsequent surveys inline with the BCT Survey Guidelines (2016). Static monitoring may also be required to assess the sites use of bats at night for foraging and commuting.
Common dormouse	• No further surveys required.
European otter	• No further surveys required. • Precautionary measures required due to proximity of watercourse – as for badger.
Great crested newt and amphibians	• No further surveys required. • Vegetation removal strategy to be followed as for reptiles.
Reptiles	• A reptile presence or likely absence survey is required. • Depending on the outcome of this, a reptile mitigation strategy may be required.
Nesting birds	• If habitats suitable for nesting birds are to be removed, then any vegetation clearance will take place outside of the bird nesting season. In the event that clearance work has to be undertaken during the nesting season (generally from 1st March until 31st August, although birds are known to nest outside of these dates in suitable conditions), a breeding bird survey will be required and must be carried out by a suitably qualified person. Any active nests identified should be protected until the young have fledged. Where a Schedule 1 species (as defined in the Wildlife and Countryside Act - http://www.jncc.gov.uk/page-3614 is involved, compensation for impacts, e.g., loss of nesting sites, should be devised and implemented.
European badger	• No further surveys required. • Precautionary measures will be followed – no open trenches or excavations will be left overnight without a means of escape (such as a plank set at 30°); no fuel, chemicals or materials will be left accessible for animal interference.
West European hedgehog	• No further surveys required. • Regular gaps (13cm x13cm) should be left at the bases of all on-site fences/walls including site boundaries to allow passage of hedgehogs across the site. • In addition, cautious working is advised to prevent killing or injury to this species, with removal of scrub done gradually and with the contractor maintaining full vigilance of the cutting arc. Each layer will be inspected (especially leaf litter or brash layers) before continuing. • Brash piles (habitat piles) will be formed to provide refuge for hedgehogs.
Invertebrates	• No further surveys required. • Compensation for the loss of species-rich grassland will be required with landscaping to include native species only, and with plants replicated from those onsite, and enhanced with further MG5 species. These will be required to be documented and agreed within a landscaping plan.
Grassland fungi	• A discussion with the LPA ecologist may be required to ascertain the need for fungal surveys. These may be traditional autumnal surveys or eDNA (possible at any time of year).
Neutral grassland	• We recommend that the areas marked as "habitat" on the option plans are either planted with translocated turves of the species-rich areas of MG5; or are seeded with a MG5 species-rich mix. Subsequent management plans will be required with associated monitoring. • To fully accommodate sufficient compensation, additional areas of land will be required to be enhanced for this grassland type or created nearby (within the wider site or offsite); or through the use of green roofs for the new buildings.

Table 7: Recommendations (extracted from Preliminary Ecological Appraisal Report)

2.12. Statutory Design Considerations

There are a number of statutory stakeholders that will need to be consulted during the design process for any potential development on the site. Some of the key design considerations and consultation bodies have been identified in the previous pages of this section and additional information is included below:

2.12.1. Planning Policy Wales

The national planning policy for Wales is formed by a number of guidance documents including Planning Policy Wales (PPW), which sets out the land use planning policies of the Welsh Government, and Technical Advice Notes (TANs), including TAN 12: Design. These documents have been referred to throughout the production of this feasibility study.

TAN 12 proposes five objectives of Good Design, which are as follows:

1. Access

2. Environmental Sustainability

3. Character

4. Community Safety

5. Movement

Building on the objectives above, some of the key planning considerations for this type of development include:

Ensuring ease of access for all: this relates to getting to the school, for example local connectivity and travel, as well as full access for pupils, staff and visitors to all of the facilities on the site, taking in to account mobility and sensory impairments, as well as learning difficulties.

Achieving efficient use and protection of natural resources, enhancing biodiversity, and designing for change: This includes the conservation of wildlife and habitats and also improving diversity, extent and connectivity of ecological networks. These areas of habitat can also be incorporated in to sustainable drainage and water efficiency strategies. With regards to energy, the school design should minimise energy demand/carbon emissions, and consider sustainable and adaptable materials.

Sustaining or enhancing local character, promoting legible development, a successful relationship between public and private space, quality, choice and variety, and innovative design: Schools are identified as key opportunities to create viable, sustainable places that connect communities together.

Ensuring attractive, safe public spaces, and Security through natural surveillance: linking to the point above, promoting a sense of ownership and responsibility in the community can be used as a tool for crime prevention.

Promoting sustainable means of travel: Active Travel (Wales) Act 2013 makes walking and cycling the preferred option for shorter journeys, particularly for regular journeys, such as to or from school.

2.12.2. The Well-being of Future Generations (Wales) Act 2015

The Well Being of Future Generations Act responds to challenges by improving the social,economic, environmental and cultural well-being of Wales. The project identifies the seven well-being goals and 5 ways of working as the basis of its development.

The 5 ways of working in tandem with the 7 well being goals are:

Long-term, Prevention, Integration, Collaboration and Involvement, as well as;

A Prosperous Wales: The proposal of a school promotes education and learning. It creates a skilled society that is well-educated helping to improve the economy and provide employment opportunities.

A Resilient Wales: The ecological value of the site will likely be improved via the landscaped external areas. The careful selection of planting could create a bio-diverse landscape for wildlife allowing pupils to learn in the outdoors and connect with the environment.

A Healthier Wales: The design should ensure that the external and social spaces promote multiple uses supporting pupils social, emotional, mental health and growth into adulthood. This aligns with physical activity and the provision of an environment that allows children to maximise their physical and mental well-being.

A More Equal Wales: The proposal will provide an opportunity to adopt inclusive design principles & secure by design for the new school environment. The regeneration of the site will create a contemporary, welcoming feel suitable for the learning of future generations and those from within the community. New facilities will allow for better community access and links.

A Wales of Cohesive Communities: Existing walking routes, public rights of way and facilities should be designed from a perspective of ensuring environmental responsibility and inclusive community connection.

A Wales of Vibrant Culture and Thriving Welsh Language: The selection of the site is based on it's current use (close proximity to existing Bishop Hedley Catholic High School sites) as it's well embedded into the cultural fabric of the surrounding community.

A Globally Responsible Wales: Flexibility and future proofing are being considered throughout this report to ensure the maximum proposal life and variety of use. Recycle, Re-use and Reduce principles will be applied to establish a circular economy principle. Wherever possible, local manufacturers should be considered to reduce the carbon footprint created from bringing materials to site.

These should be closely considered to ensure that the proposal meets the Act and considers future commitments to creating a sustainably holistic development.

2.12.3. Sport Wales / Fields in Trust

Due to the area considered for potential development in this report the following Acts and Policies should be considered from the outset of the project. As a Statutory Consultee for the planning process Sports Wales/Fields in Trust set out their policy on the Safeguarding of Facilities, taken from 'Beyond the Six-acre Standard', in the extract below:

'Fields in Trust objects to the loss of existing open space for sport, play and recreation unless exceptional circumstances can be demonstrated. The development of community playing fields and school playing fields should be refused unless replacement facilities of equal quality and quantity can be provided.'

The policy document references a number of sources of policy context including Planning Policy Wales, TAN 16 Sport, Recreation and Open Space and the Well-being of Future Generations (Wales) Act 2015. Planning Policy Wales states the following with regards to playing field protection:

'4.5.4 All playing fields whether owned by public, private or voluntary organisations, should be protected from development except where:

- Facilities can best be retained and enhanced through the redevelopment of a small part of the site;
- Alternative provision of equivalent community benefit is made available locally, avoiding any temporary loss of provision; or
- There is an excess of such provision in the area.

4.5.5 Planning authorities should protect playing fields and open spaces which have significant amenity or recreational value to local communities from development. They should indicate the ways in which previously developed or disused land and water bodies can be used for sport and recreation uses, particularly in relation to urban regeneration.

4.5.6 Planning authorities should encourage the multiple use of open space and facilities, where appropriate, to increase their effective use. 'Beyond the Six-acre Standard'42, produced by Fields in Trust, is a source of helpful advice to planning authorities on providing open space and outdoor sport and play through the planning system.'

2.12.4. Highways and Transportation

Sufficient assessment and analysis should be undertaken at an early stage to ensure that any impact from the proposed development existing site users and/or local area can be minimised. Merthyr Tydfil County Borough Council Highways Department should be consulted regarding the proposals at an early stage to review any impact on highways and transportation outside of the site boundary; see below:

- New access points/junctions on to Galon Uchaf Park
- Typical traffic calming measures associated with primary schools
- Increase in journey numbers to the local area; both with the increase in pupil numbers and diversification of pupil ages
- Safe pedestrian and cycle routes to and around the site, including from public transport hubs or set-down points
- Additional traffic calming measures; these may also be required if some school facilities are arranged off-site due to spatial constraints on-site

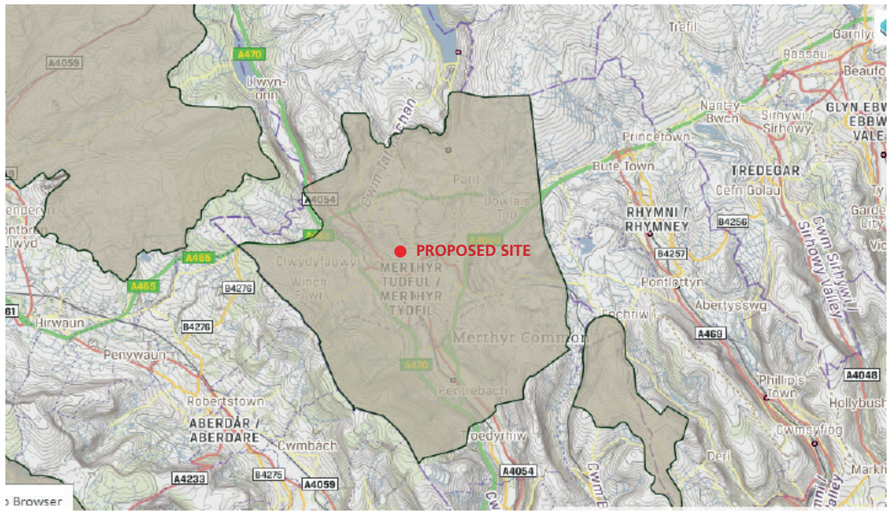
Future designs should be developed using the latest available Merthyr Tydfil County Borough Council transport guidance, for parking at active travel.

2.12.5. Merthyr Tydfil Replacement Local Development Plan 2016-2031

The Replacement Local Development Plan 2016-2031 was adopted by Merthyr Tydfil County Borough Council on the 29th January 2020.

Policy CW1: The Historic Environment

- The existing Bishop Hedley High School sites and Galon Uchaf Park site are located within an area identified as the Merthyr Tydfil Landscape of Outstanding Historic Interest in Wales. The Register is a non-statutory advisory register. Welsh Government advises that when considering the implications of developments which meet the criteria for Environmental Impact Assessment (EIA) that would have more than local impact on the registered area, the register should be taken into account. Green infrastructure, historic, cultural and landscape character assessments should be used where appropriate to identify the historic landscape.
- The Galon Uchaf Park Site is bounded to the east and south-east by the Penydarren Urban Character Area. Although the Galon Uchaf Park Site is not located within the Area, the existing school sites are located within the Urban Character Area.
- The Galon Uchaf Park Site and the existing school sites are not located within a Heritage Conservation Area. The Cyfarthfa Heritage Area is located approximately 400m west of the Galon Uchaf Park site.
- There are currently no listed buildings located within the Galon Uchaf Park site and the existing school sites.



Map of the Merthyr Tydfil Landscape of Outstanding Historic Interest in Wales

(https://lle.gov.wales/catalogue/item/RegisteredLandscapesOfOutstandingHistoricInterestInWales/?lang=en)

Policy SW10: Protecting and Improving Open Spaces

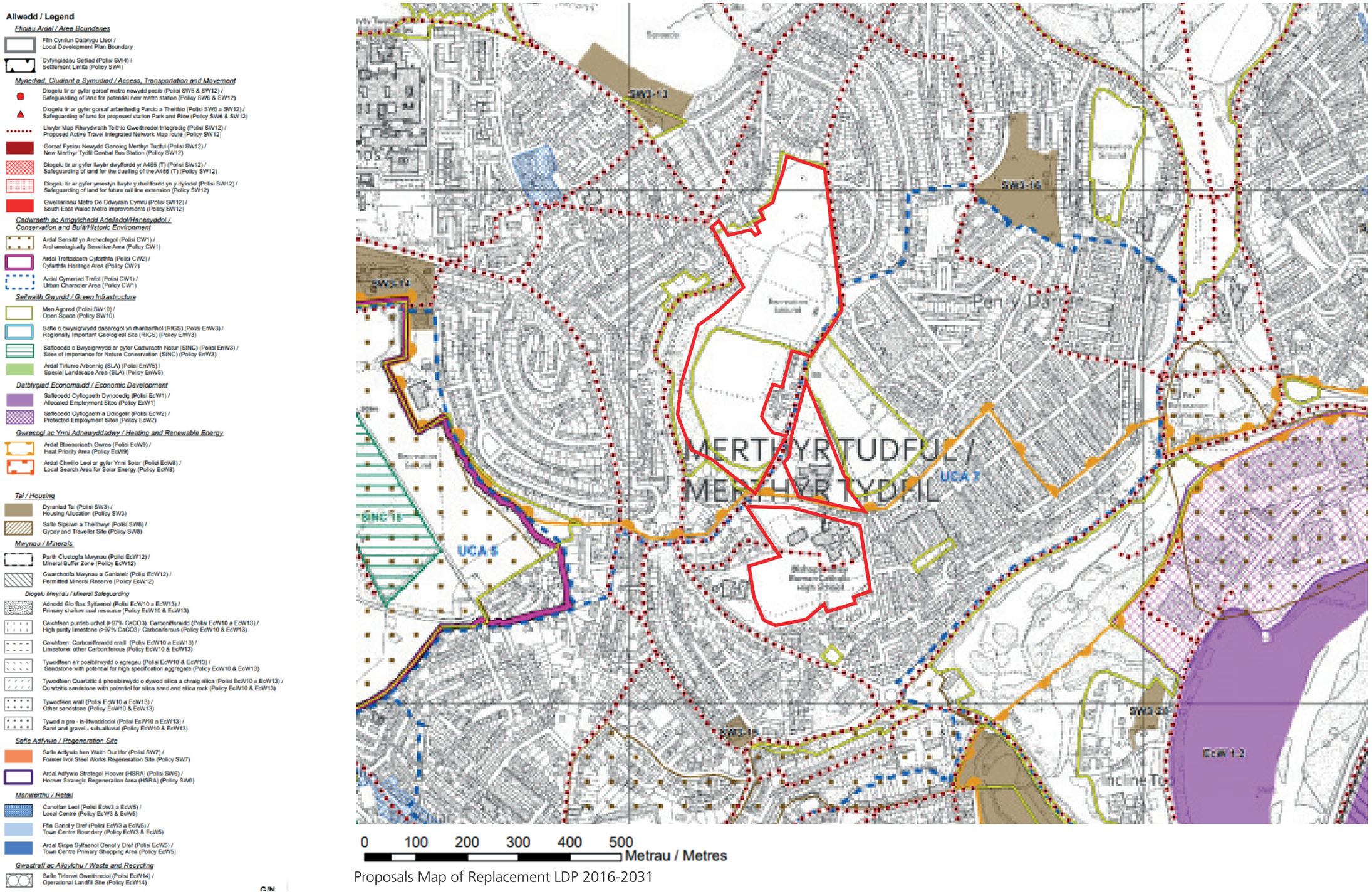
- The northern and western sections of the Galon Uchaf Park sites are designated as Open Space within the replacement LDP 2016-2031.
- Development proposals that would have an unacceptable adverse impact on or result in a loss of open space will not be permitted.
- Exceptions may include the new development would not cause a deficiency of open space, or majority of open space can be retained and enhanced through the redevelopment of a small part of the site or satisfactory equivalent community benefit of enhanced compensatory provision can be provided. In all cases, the open space has no significant nature of historic conservation importance.

Policy SW12: Improving the Transport Network

- Galon Uchaf Park site is framed to the east by Galon Uchaf Road, which forms part of the Proposed Active Travel Integrated Network Map Route (INM Route) identified in the replacement LDP 2016-2031. In addition, the path running parallel to the brook (along the western boundary of the Galon Uchaf Road) is also designated as part of the proposed Active Travel INM Route.
- Meanwhile, an Active Travel INM Route is also proposed along Alexandra Avenue, south of the existing Gwaunfarren Primary School. The proposed Active Travel INM route extends into the existing Bishop Hedley Catholic High School (South Campus) via Gwaunfarren Grove.
- The replacement LDP 2016-2031 recognises the Transport Hierarchy by promoting a shift in commuting modes from private motor vehicles to healthy and sustainable transport options. Proposals that encourage a change towards sustainable transport modes and build upon opportunities for better integration will be supported.

Policy EcW9: District Heating

- The use of combined heat and power (CHP), combined cooling, heat and power (CCHP) and district heating will be encouraged.
- The Galon Uchaf Park site is located within the Heat Priority Area, major development will be expected to incorporate, where viable and technically feasible, infrastructure for district heating and to connect to existing systems where available.
- An energy strategy should be submitted.

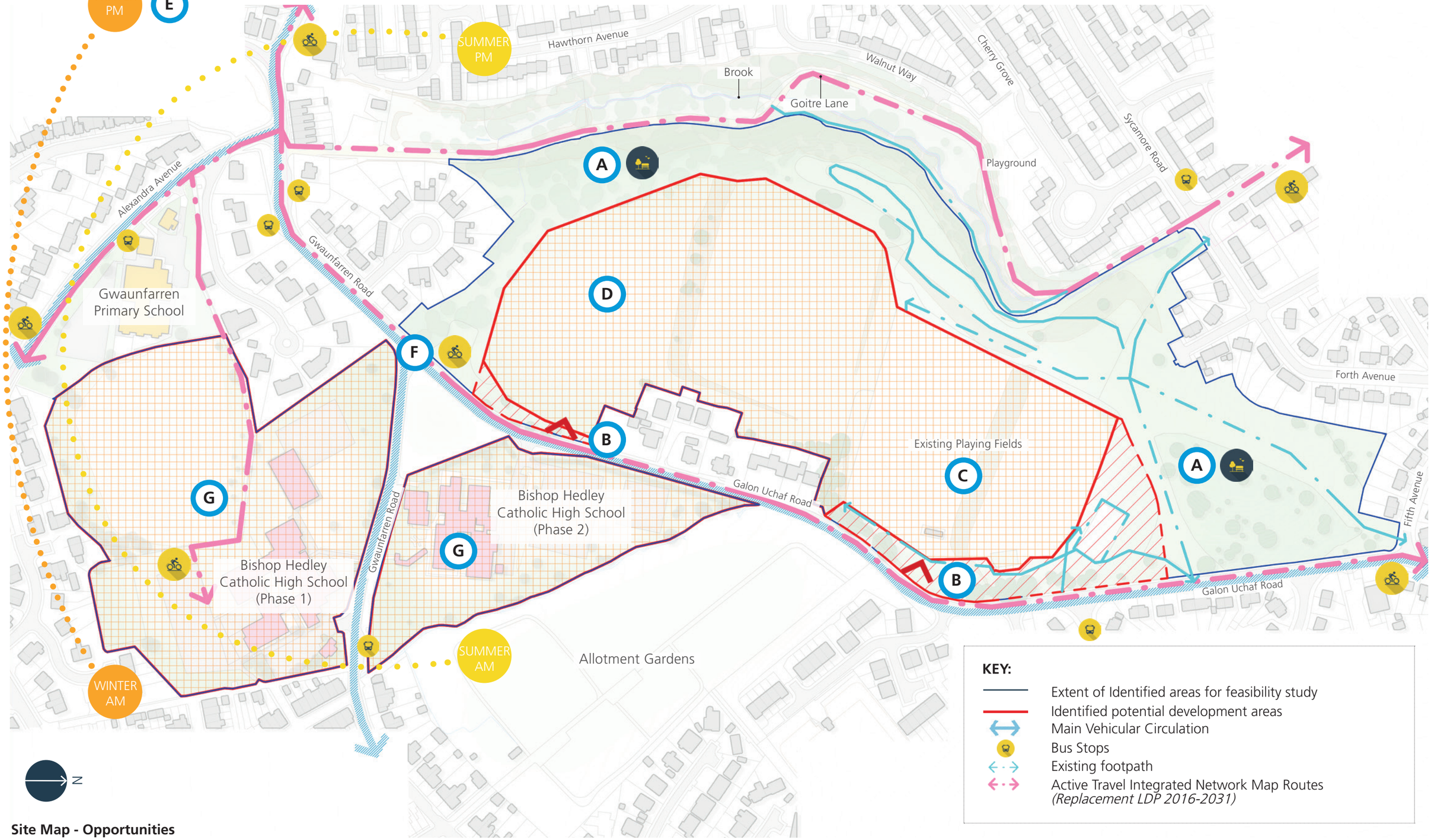


Proposals Map of Replacement LDP 2016-2031

2.13. Site Opportunities

The following is a summary of the key opportunities associated with the Galon Uchaf Park site:

- **A** The ecological and drainage value of the open amenity space and watercourse to the North and West could form part of a site wide strategy.
- **B** Two potential entrances are identified along the eastern boundary of the site, providing vehicular access via Galon Uchaf Park road.
- **C** The existing playing fields and MUGA could be retained and used by the community out of school hours.
- **D** The southern part of the site contains allows a relative flat are for the new school buildings.
- **E** The site has adequate exposure to winter sun from the south, allowing the use of solar gain for passive heating strategies.
- **F** There is a potential to connect the site with the proposed Active Travel Integrated Network Map Routes (along Galon Uchaf road). This provides opportunity to promote healthier and more sustainable transport options.
- **G** The relocation of the Bishop Hedley Catholic High School allows the current sites to be developed for other uses, including residential and community developments, subject to planning permissions.



Site Map - Opportunities

2.14. Site Constraints

The following is a summary of the key risks and constraints associated with the Galon Uchaf Park site:

Planning

A The Galon Uchaf Park site and the three existing school sites are located within the Merthyr Tydfil Landscape of Outstanding Historic Interest in Wales. Environmental Impact Assessment (EIA) is required.

B Part of the Galon Uchaf Park site is located within an area designated as Open Space (LDP Policy SW10).

C The Galon Uchaf Park site is located within the Heat Priority Area (LDP Policy EcW9).

D The existing three school sites are located within the Penydarren Urban Character Area (LDP Policy CW1)

E The pathway in between the existing playing fields and MUGA is designated as a Right of Way route. Any impact to the public's right of way should be mitigated.

Physical Site Constraints - Terrains

F Uneven site with sharp drops in level along the western edge of the Galon Uchaf Park site.

G There are two embankments/ landform areas within the identified development area.

H There is a noticeable level change between the eastern edge of the Galon Uchaf Park site and Galon Uchaf road.

Physical Site Constraints - Public Utilities

I Public utilities infrastructure located at the northern part of the Galon Uchaf Park site.

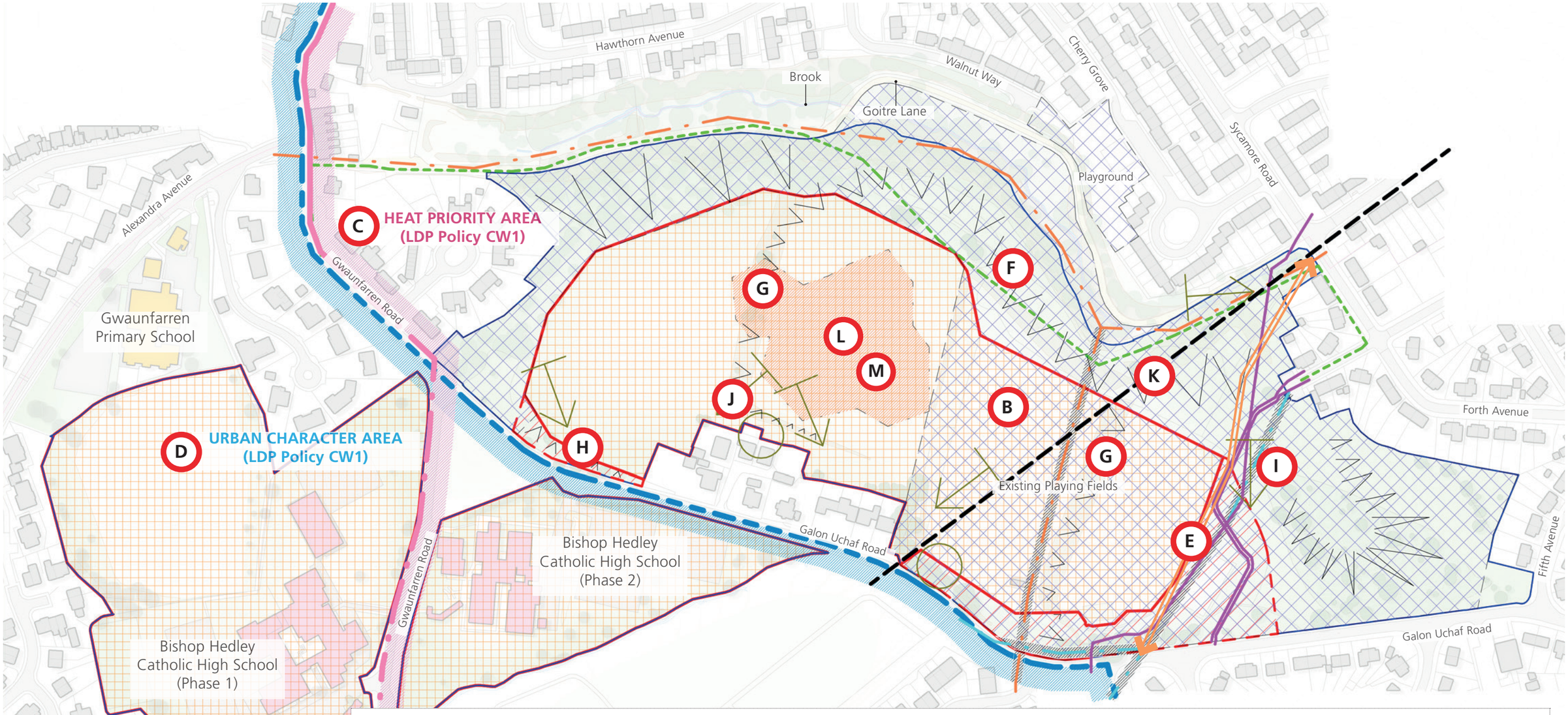
Physical Site Constraints - Ground conditions

J Presence of disused adits and disused mineshafts on site.

K Presence of fault line on site.

L Heap identified on site; depth and composite is unknown.

M Potential ground contamination on site.



KEY:

- Extent of Identified areas for feasibility study
- Identified potential development areas
- Faultline
- Disused mineshaft
- Disused adit
- Heap (Historical landfill with unknown composite)
- Existing 225mm DCWW foul sewage
- Existing 12inch DCWW water main
- Existing WWU Low pressure gas main
- Existing WPD 11kV high voltage power cable
- Existing WPD Low voltage power cable
- Proposed easement zone
- Slope
- Open Space (LDP Policy SW10)
- Heat Priority Area (LDP Policy EcW9)
- Urban Character Area (LDP Policy CW1)
- Rights of way

N

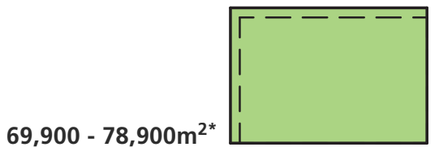
Site Map - Constraints

3. Site Arrangement

3.1. Site Strategies

In the following section the initial thoughts in response to the site constraints identified in the previous chapter are captured, alongside diagrammatic depictions of the areas required and areas available across the three zones. A summary of pro's and con's of each of the site scenarios are also provided.

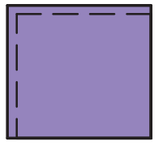
3.1.1. Likely site areas according to BB98 and BB99 Guidance



All-through school

Student Numbers: 600 students (Secondary)
525 +100 students (Primary)

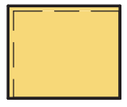
69,900 - 78,900m²*



Secondary school

Student Numbers: 600 students (Secondary)

45,200 - 51,400m²



Primary school

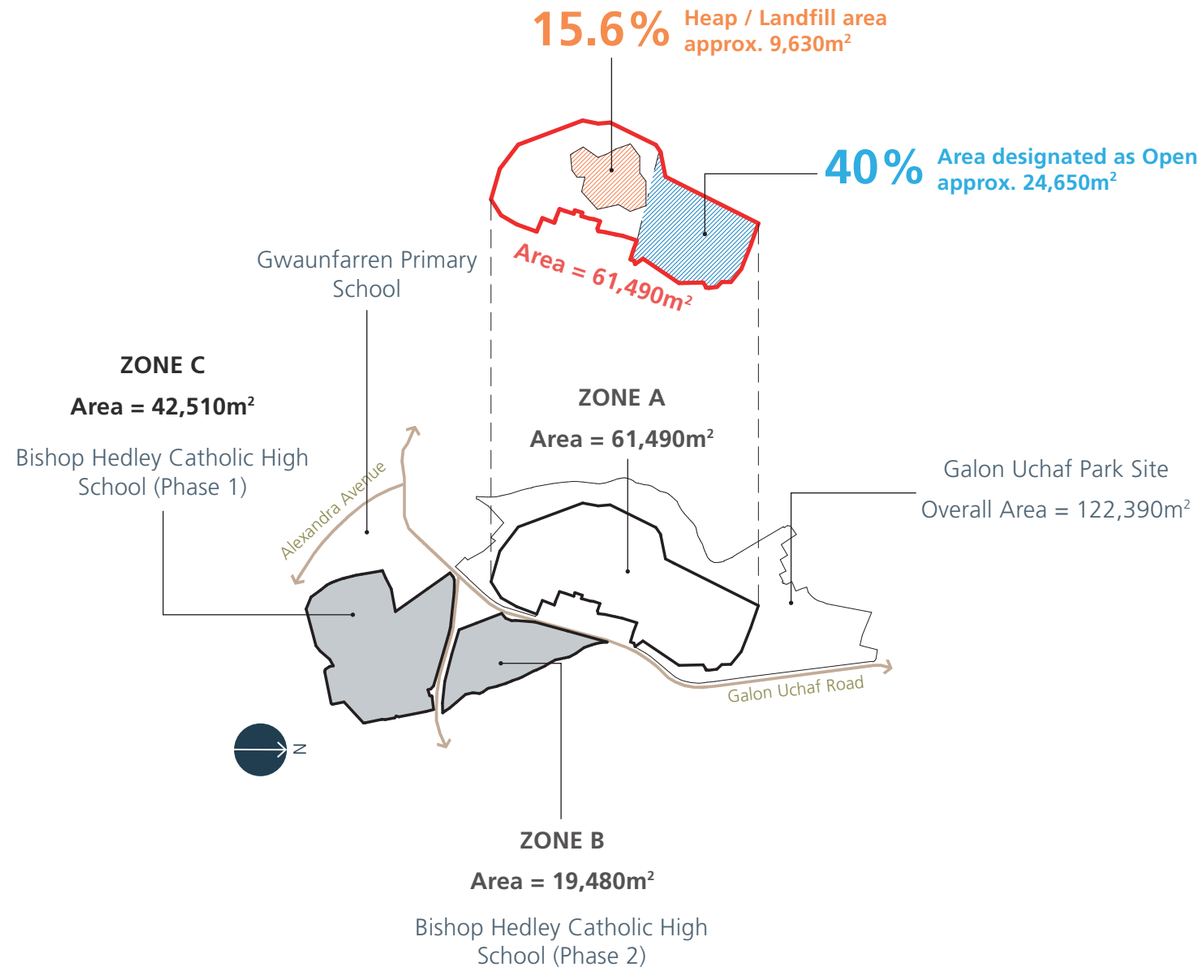
Student Numbers: 525 +100 students (Primary)

24,700 - 27,500m²**

** The site areas for an all-through school is based on the total combined site areas for a Primary School and a Secondary School, in accordance to the BB98 & BB99 Guidance. The calculation does not take into account any potential sharing of facilities between the age groups.*

*** The site area for the new primary school is estimated based on the total number of students of 625, including 100fte nursery students.*

3.1.2. Identified potential development zones



3.1.3. Scenario 1

All-through school at Zone A (using existing fencelines and constraints to generate area)

Pros

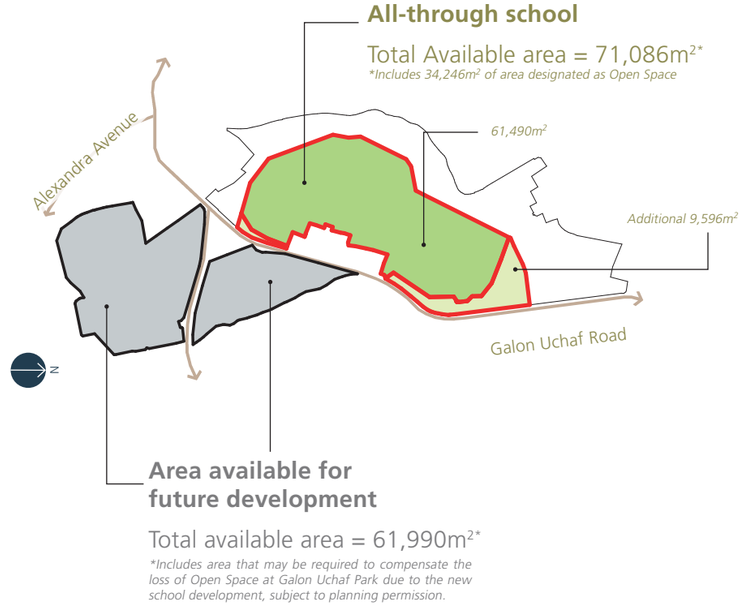
- Impact on the school operation is minimal during construction stage.
- An all-through school allows shared facilities and resources, and can facilitate efficiencies in the design.
- Existing school sites are available for other uses, subject to planning permission.
- Existing leisure facilities can remain accessible to public outside of school hours.

Cons

- Available area falls short of the minimum likely site area recommended by BB98 and BB99 guidance.
- 40% of the site area is designated as Open Space. Part of the existing school sites identified for other development might be required to compensate the loss of Open Space due to the new school development at Galon Uchaf Park.
- Risks related to ground condition (coal mining, heap, contamination) remain. Currently, approximately 15.6% of the site is made up of landfill area.

3.1.4. Scenario 2

All-through school at Zone A (with expanded boundaries, to meet BB98/BB98 likely site area)



Pros

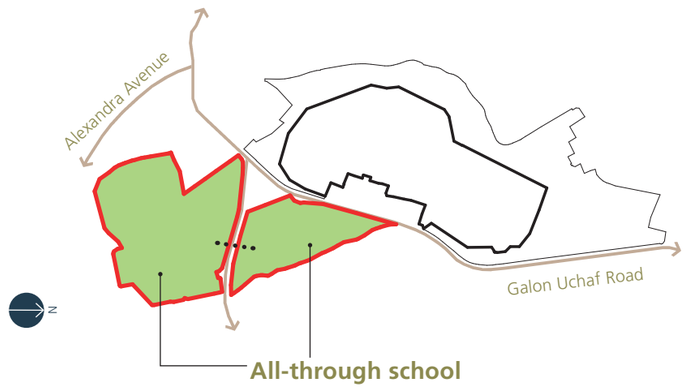
- The boundaries of the development zone is expanded to include the existing MUGA and walking trails north of the playing fields to align the proposed site area with the likely site area recommended by BB98 and BB99 Guidance.
- Impact on the school operation is minimal during construction stage.
- An all-through school allows shared facilities and resources, and can facilitate efficiencies in the design.
- Existing school sites are available for other uses, subject to planning permission.
- Existing leisure facilities (playing fields and MUGA) to remain accessible to public out of school hours.

Cons

- 48% of the site area is designated as Open Space. Part of the existing school sites identified for other development might be required to compensate the loss of Open Space due to the new school development at Galon Uchaf Park.
- Risks related to ground condition (coal mining, heap, contamination) remain. Currently, approximately 13.5% of the site is made up of landfill area.

3.1.5. Scenario 3

All through school at existing Bishop Hedley Catholic High School sites



Pros

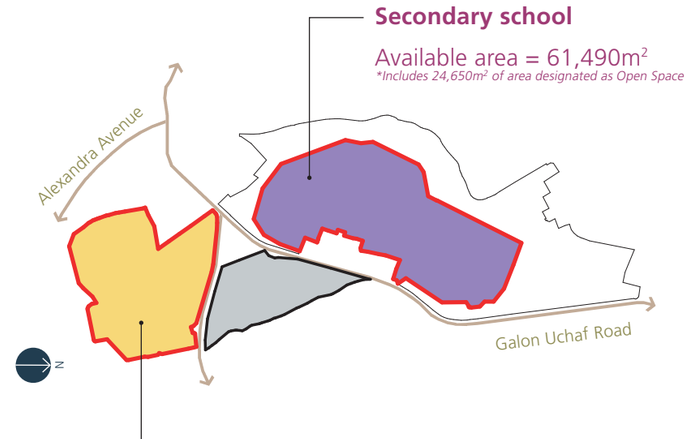
- An all-through school allows shared facilities and resources, and can facilitate efficiencies in the design.
- The development does not involve any change of use of the site, and no impact on the Open Space at Galon Uchaf Park.
- Development zone excludes existing community leisure facilities and therefore impact on community is reduced.
- Development on previous built land means risks related to ground condition is reduced.

Cons

- Impact on the school operation is high during construction stage. Temporary accommodation would be required and may result in significant cost. One existing school site could remain operational, whilst the other is redeveloped.
- Available area falls short of the minimum likely site area recommended by BB98 and BB99 Guidance.
- The existing physical barrier between the existing school sites remains.
- Retaining status quo means no opportunities to redevelop the existing school sites for other uses.
- Programme prolongation by phasing scheme.

3.1.6. Scenario 4

Secondary school at Zone A, Primary School at Zone C



Pros

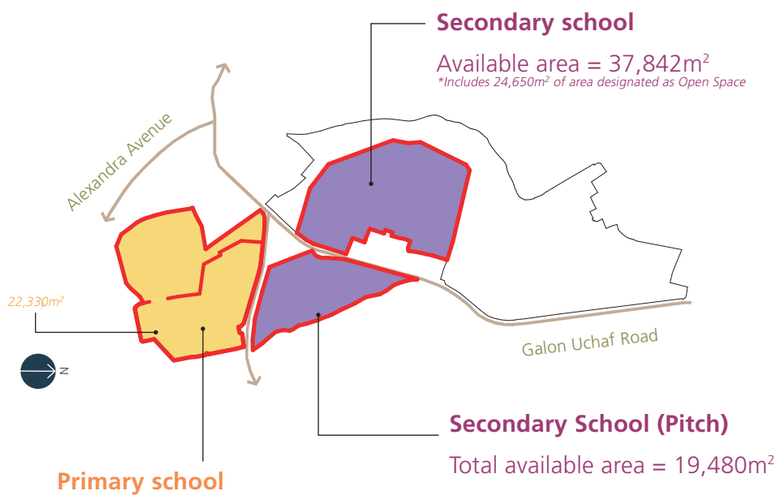
- Locating primary school elsewhere would enable area identified for secondary school on Galon Uchaf park to be reduced (in line with BB98 guidance) reducing the impact on community use.
- Careful phasing reduces the impact on school operation. Temporary accommodation may not be required if primary school is located on secondary school site once secondary pupils have decanted in to new school.
- Remaining existing school site is available for other development subject to planning permission.

Cons

- As shown, available areas exceed the maximum likely site area recommended by BB98 and BB99 Guidance.
- Loss of opportunity to create an all-through school and the efficiencies that may be enabled.
- Physical separation between the new primary and secondary schools.
- Risks related to ground condition at Galon Uchaf Park site (coal mining, heap, contamination) remain. However, the maximum likely site area for a secondary school is lower than the available site area at Galon Uchaf Park. The additional areas act as a 'buffer' to mitigate any loss of construction area due to undesirable ground conditions.
- Programme prolongation by phasing scheme.
-

3.1.7. Scenario 5

Secondary School at Zone A (excludes Existing Playing Fields), Primary School at Zone C



Pros

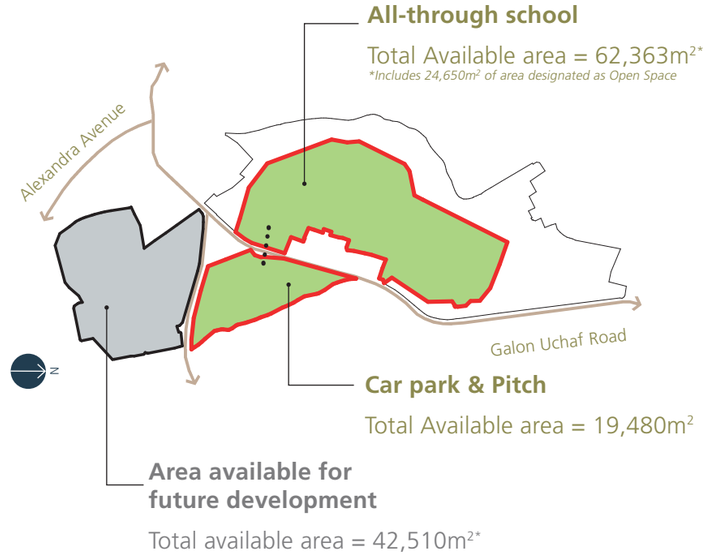
- Development zone excludes existing community playing fields, MUGA and some walking trails; reducing the impact on community use.
- Careful phasing reduces the impact on school operation. Temporary accommodation may not be required if primary school is located on secondary school site once secondary pupils have decanted in to new school on Galon Uchaf Park.

Cons

- Available areas exceed the maximum likely site area recommended by BB98 and BB99 Guidance, though this could be reconsidered at a later date once more site information is available i.e. topographical surveys.
- Split site development and loss of opportunity to create an all-through school and the efficiencies that may be enabled.
- Programme prolongation by phasing scheme.
- Risks related to ground condition at Galon Uchaf Park site (coal mining, heap, contamination) remain.
- Re-profiling of some areas, such as zone B, may be required to provide pitches. This may have cost and time implications.

3.1.8. Scenario 6

All-through School at Zone A + car park & pitch at Zone B



Pros

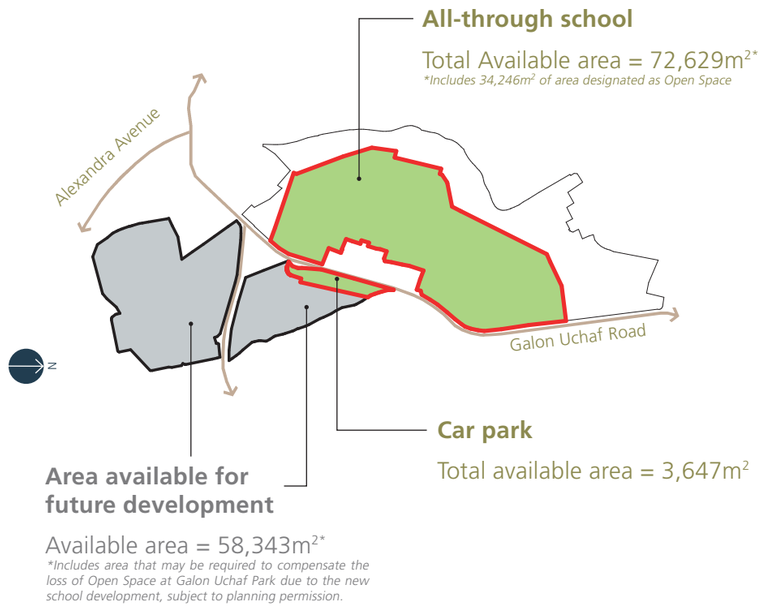
- An all-through school allows shared facilities and resources, and can facilitate efficiencies in the design.
- One existing school site is available for other development, including residential developments subject to planning permission.
- Existing leisure facilities to remain accessible to public outside of school hours.

Cons

- Programme prolongation in using Zone B, even if there is not impact on school during new building construction on Galon Uchaf Park site.
- 40% of the site area is designated as Open Space. Part of the existing school site might be required to compensate the loss of Open Space
- Risks related to ground condition (coal mining, heap, contamination) remain. Currently, approximately 15.6% of the site is made up of landfill area.
- Re-profiling of some areas, such as zone B, may be required to provide pitches. This may have cost and time implications.
- Split site development.
- Programme prolongation by phasing scheme.

3.1.9. Scenario 7

All-through School (with shared facilities) at Zone A + Car park at Zone B



Pros

- Impact on the school operation is minimal during construction stage.
- An all-through school allows shared facilities and resources, and can facilitate efficiencies in the design.
- Existing school sites are available for other uses, subject to planning permission.

Cons

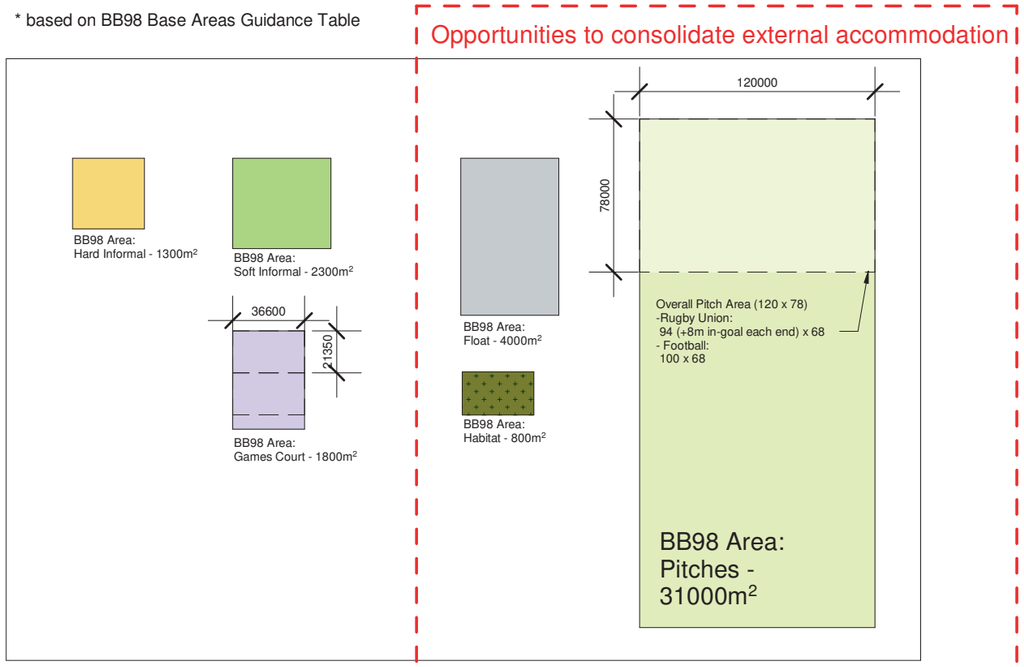
- Split site development: car park is located at (Zone B).
- Community use is impacted with the school site incorporating existing MUGA, playing fields and some walking trails.
- Risks related to ground condition at Galon Uchaf Park site (coal mining, heap, contamination) remain.
- A significant area of the site is designated as Open Space. Part of the existing school sites identified for other development may be required to compensate the loss of Open Space due to the new school development at Galon Uchaf Park.

3.2. Site Accommodation

3.2.1. BB98 & 99 Recommended Areas

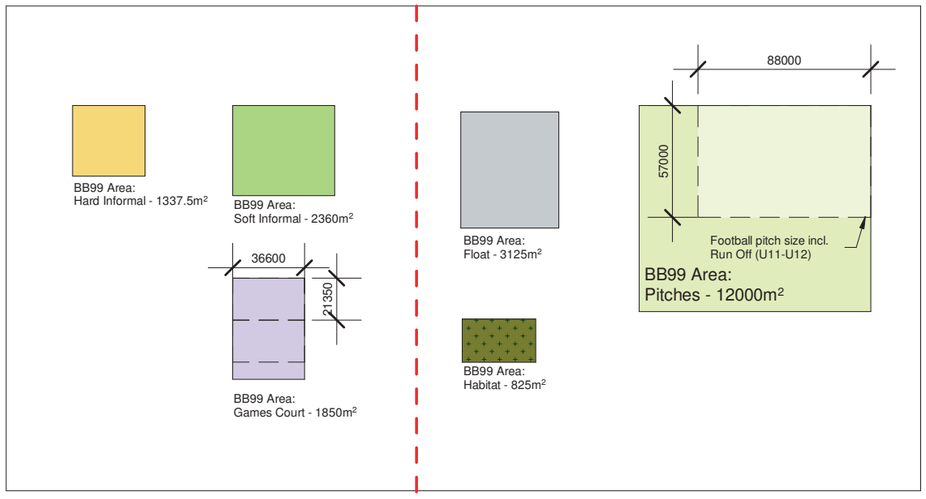
External Accommodation for 600-pupil Secondary School

* based on BB98 Base Areas Guidance Table



External Accommodation for 625-pupil Primary School

* based on BB99 Base Areas Guidance Table



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3.3. Initial Options Diagrams

In the following section, different site arrangements have been explored based on the scenarios identified in Section 3.1 and discussion with Merthyr Tydfil County Borough Council during the design development stage.

The design team has explored options such as creating an all-through school within one site (Zone A), separating the primary and secondary school elements in two different sites, and options avoiding the use of existing community playing fields. The diagrams on the left illustrate initial options developed during the early design stage and have been discounted due to various considerations.

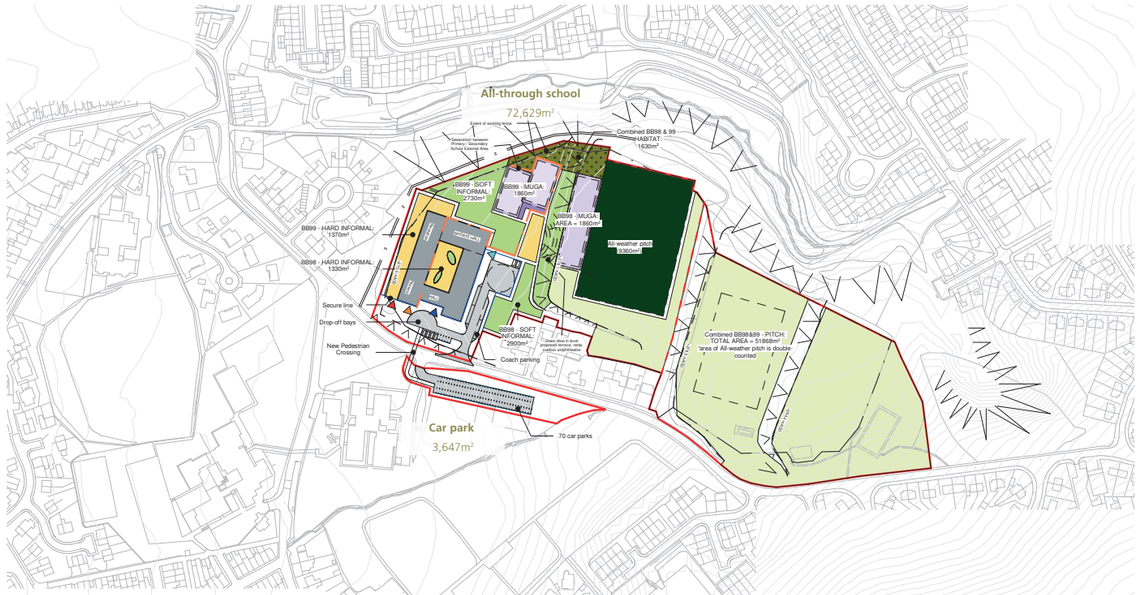
The preferred options are outlined in Section 3.4. of this report.

Option A - Based on Scenario 5: Secondary school at Zone A (excludes community playing fields) + pitches at Zone B; Primary school at Zone C

Option D - Based on Scenario 2 : Separate Primary and Secondary Schools at Zone A (includes community playing fields)

Option B - Based on Scenario 6 : All-through school at Zone A (includes community playing fields), car park & pitches at Zone B

Option C - Based on Scenario 7: All-through school at Zone A (includes community playing fields) + car park at Zone B



Option G - Secondary school at Zone A (excludes community playing fields) + pitches at Zone C; Primary school at zone C + drop-off parking on undeveloped land

Option I - All-through school at Zone A (excludes community playing fields) + pitches and car park at Zone B + drop-off parking on undeveloped land

3.4. Preferred Options

The following section outlines the preferred site arrangement options. The 4 options are developed based on 2 massing forms for an all-through school at the southern zone of Galon Uchaf Park (Zone A).

- Option F(i): Includes one community playing field at Zone A; car park and pitches at Zone B, drop-off parking on undeveloped land
- Option F(ii): Includes one community playing field at Zone A; car park at Zone B, drop-off parking on undeveloped land
- Option H(i): Includes one community playing field at Zone A; car park and pitches at Zone B, drop-off parking on undeveloped land
- Option H(ii): Excludes all community playing field; car park and pitches at Zone B, drop-off parking on undeveloped land

A summary of pro's and con's of each scenario has been provided.

3.4.1. Option F(i) - All-through school at Zone A, includes one community playing field + car park and pitches at Zone B + drop-off parking on undeveloped land

Overview:

Most of the external accommodation is located within Zone A. This option includes one of the existing community playing fields as part of the school boundary. In addition, an all-weather pitch is proposed and is available for out-of-hour use by the local community. Pitches are also provided at Zone B, though due to level constraints these would be mainly small pitches for primary school pupils use. A new pedestrian crossing is proposed to provide safe pedestrian connection between the main teaching block and the pitches at Zone B.

The proposed massing is 'U' shaped with teaching blocks connected by a central zone that houses hall and dining areas. To minimise footprint and separate different age groups the teaching facilities are spread across two three-storey wings. The 4-Court sports hall is housed in a separate block immediately west of the main building and has a separate community entrance for out-of-hours hired use. Refer to Section 5.1 of this report for the 3D view of the massing.

Pros:

- The introduction of an all-weather pitch for out-of-hours hire presents an opportunity to compensate the loss of one community playing field.
- The main school buildings are located at the Southern Zone of Zone A, away from the identified landfill/ heap area. Minimal works are proposed to the heap area for MUGAs and grass pitch.
- The proposed massing allows for centralised shared facilities and resources. A combined building may allow for efficiencies in area.
- The main building has a prominent street frontage. This presents an opportunity to create a prominent presence within the local community, as well as a strong sense of arrival for the pupils and staffs.
- Zone C is available for future development.
- Primary and secondary school teaching wings can have separate identities if required. Arranging teaching either side of a central core and entrance facilitates a clear way finding strategy.
- Primary and secondary school internal and external accommodation is identified separately as a starting point for the school to generate its own methodologies for managing an all-through school.
- The central core is able to have a neutral design that represents the primary and secondary age groups.

Cons:

- The proposed school boundary includes one of the existing community playing fields. This may create interruption to the use of community sports facilities during the construction stage.
- Physical separation between the main school site and pitches at Zone B.
- Level changes on Zone B would likely require a combination of the use of small pitches and ground engineering works for the area to be usable for sports. Smaller pitches would be utilised more by younger pupils, and suitable crossing points would be required.
- Utilising Zone B will require the demolition of the existing school to be within the construction contract. This may have time and cost implications.
- Staff parking and parent drop-off are located off-site. Appropriate crossing and traffic calming measures required.


KEY:
Nursery Entrance
Primary School Entrance
Secondary School Entrance
Sports Facilities Community Entrance
School Compound Boundaries
Secure Line
'Separation' of Primary & Secondary External Accommodation
Zone A: School Campus
56,420m²
Parking
2,500m²
Zone B: School Parking
3,640m²
Zone B: Pitches
15,840m²
Zone C: Area for future development
42510m²
BB99 - SOFT INFORMAL: 2370m²
Extent of existing fence
Combined BB98 & 99 - HABITAT: 1630m²
BB99 - MUGA: 1860m²
BB98 - MUGA: AREA = 1860m²
BB99 - HARD INFORMAL: 1570m²
BB98 - HARD INFORMAL: 1960m²
Reception
Nursery
SPORTS HALL
HALL/ DINING
Secure line
Visitor parking
staff parking (56 spaces)
New Pedestrian Crossing
Coach parking
BB98 - SOFT INFORMAL: 3630m²
Change in level proposed terrace, ramp, outdoor amphitheatre
Combined BB98&99 - PITCH: TOTAL AREA = 53130m²
*area of All-weather pitch is double-counted, inclusive of Zone B (15840m²)
Football (Community) U17/U18 / Senior
Rugby (RFL-Community) U12 - Adult
Overflow staff parking (10 spaces) + 60 drop-off bays, as required.
Rugby (RU-Community) U11/U12
Football (Community) U11/U12
Football (Mini Soccer) U7/U8
Rugby (RU-Community) U8
Rugby (RU-Community) U7
+270.4 mAOD
+276.1 mAOD
+276.5 mAOD
+284.4 mAOD
N

3.4.2. Option F(ii) - All-through school at Zone A, includes one community playing field + car park at Zone B + drop-off parking on undeveloped land

Overview:

All of the external accommodation is located within Zone A. This option includes one of the existing community playing fields as part of the school compound. An all-weather pitch and a Macadam pitch / courts are proposed, with areas to be twice counted in order to meet the BB98 and BB99 guidance for pitch area.

The proposed massing is 'U' shaped with teaching blocks connected by a central zone that houses hall and dining areas. To minimise footprint and separate different age groups the teaching facilities are spread across two three-storey wings. The 4-Court sports hall is housed in a separate block immediately west of the main building and has a separate community entrance for out-of-hours hired use. Refer to Section 5.1 of this report for the 3D view of the massing.

Pros:

- The introduction of one all-weather pitch for out-of-hours hire presents an opportunity to compensate the loss of one community playing field.
- The proposed development has no impact on the operation of the existing school. The area of Zone B identified for drop-off can be designed to avoid the existing building and built within the single construction phase.
- The main school buildings are located at the Southern Zone of Zone A, away from the identified landfill/ heap area.
- The proposed massing allows for centralised shared facilities and resources. A combined building may allow for efficiencies in area.
- The main building has a prominent street frontage. This presents an opportunity to create a prominent presence within the local community, as well as a strong sense of arrival for the pupils and staffs.
- Most external accommodations (apart from drop-off parking and staff parking) are located within Zone A. This eliminates physical barriers between main teaching facilities and external school facilities.
- Both Zone B and Zone C are available for future development.
- Primary and secondary school internal and external accommodation is identified separately as a starting point for the school to generate its own methodologies for managing an all-through school.
- The central core is able to have a neutral design that represents the primary and secondary age groups. Primary and secondary school teaching wings can have separate identities if required.

Cons:

- The proposed school compound includes one of the existing community playing fields. This may create interruption to the use of community sports facilities during the construction stage.
- The introduction of an all-weather pitch and a Macadam pitch will incur extra cost. Some sports might have preference for natural grass pitches over artificial playing field. Macadam pitch can be coloured and marked out for key sports such as Netball, Tennis, Hockey and Basketball but is not advisable for full contact sports such as rugby and football. However, there is a potential for the school to use the remaining community playing field, if required.
- All weather pitches and Macadam pitch are often fenced and gated for the purposes of maintenance. The flow of the site and utilisation during break times should be considered.
- A Macadam pitch and hard-surfaced courts are proposed to be sited on the land-fill area.
- Staff parking and parent drop-off are located off-site. Appropriate crossing and traffic calming measures required.


KEY:
Nursery Entrance
Primary School Entrance
Secondary School Entrance
Sports Facilities Community Entrance
School Compound Boundaries
Secure Line
'Separation' of Primary & Secondary External Accommodation
Zone A: School Campus
56,420m²
BB99 - SOFT INFORMAL: 2370m²
Extent of existing fence
Combined BB98 & 99 - HABITAT: 1630m²
BB99 - MUGA: 1860m²
Macadam Pitch / Courts
BB99 - HARD INFORMAL: 1570m²
Reception
SPORTS HALL
BB98 - HARD INFORMAL: 1960m²
Nursery
Parking
2,500m²
HALL/ DINING
BB98 - MUGA: AREA = 1860m²
Combined BB98&99 - PITCH: TOTAL AREA = 44000m²
*area of Macadam pitch and All-weather pitch is double-counted
Secure line
Visitor parking
BB98 - SOFT INFORMAL: 3630m²
Change in level proposed terrace, ramp, outdoor amphitheatre
Football U17/U18 / Senior
Rugby (RFL) U12 - Adult
Available for out-of-hours hire (Community use)
staff parking (56 spaces)
Coach parking
New Pedestrian Crossing
Zone C: Area for future development
42510m²
Zone B: Area for future development
15840m²
Overflow staff parking (10 spaces) + 60 drop-off bays, as required
Zone B: School Parking
3,640m²
N

3.4.3. Option H(i) - All-through school at Zone A, includes one community playing field + pitches at Zone B + drop-off parking on undeveloped land

Overview:

Most of the external accommodation is located within Zone A. This option includes one of the existing community playing fields as part of the school compound. In addition, an all-weather pitch is proposed and is available for out-of-hour use by the local community. Pitches are also provided at Zone B, though due to level constraints these would be mainly small pitches for primary school pupil use. A new pedestrian crossing is also proposed to provide safe pedestrian connection between the main teaching block and the pitches at Zone B.

The main buildings are located at the southern zone of Zone A and are further set back from the main road, beyond a large parking area for staff and coach drop-off. The proposed L-shaped massing minimises footprint and separates different age groups by locating teaching facilities across two three-storey teaching blocks that are connected by a central zone housing the hall and dining areas. One of the teaching block sits at the slope, where the lower and upper plateaus meet, creating a split level building and linking the two levels together. The 4-Court sports hall is housed in a separate block immediately west of the main building, at the higher plateau. It has a separate community entrance for out-of-hours hired use and a potential connection to the first floor of the main teaching block.

Pros:

- The introduction of an all-weather pitch for out-of-hours hire presents an opportunity to compensate the loss of one community playing field.
- The proposed massing allows for centralised shared facilities and resources. A combined building may allow for efficiencies in area.
- Zone C is available for future development.
- Primary and secondary school teaching wings can have separate identities if required. Arranging teaching either side of a central core and entrance facilitates a clear way finding strategy.
- Staff parking is accommodated on the main site.
- The split level building better connects the different levels on site.
- Primary and secondary external areas have been consolidated in this option as a starting point for the school to generate its own methodologies for managing an all-through school.
- Early years provision is located at the front of the school to be easily accessible for parents and pupils.

Cons:

- The sports block is located within close proximity to the identified landfill/ heap area. Further ground investigation is required to determine risk.
- The proposed school compound includes one of the existing community playing fields. This may create interruption to the use of community sports facilities during the construction stage.
- Physical separation between the main teaching block and pitches at Zone B.
- The main buildings are set back from the main road.
- Level changes on Zone B would likely require a combination of the use of small pitches and ground engineering works for the area to be usable for sports. Smaller pitches would be utilised more by younger pupils, and suitable crossing points would be required.
- Utilising Zone B will require the demolition of the existing school to be within the construction contract. This may have time and cost implications.
- Parent drop-off is located off-site. Appropriate crossing and traffic calming measures required.


KEY:
Nursery Entrance
Primary School Entrance
Secondary School Entrance
Sports Facilities Community Entrance
School Compound Boundaries
Secure Line
'Separation' of Primary & Secondary External Accommodation
Zone A: School Campus
56,390m2
Zone B: Pitch
19500m2
Zone C: Area for future development
42500m2
Drop-off
2,500m2
Extent of existing fence
Ramped/stepped access to sports
Combined BB98 & 99 - HABITAT: Combined 5511m2
SPORTS HALL
BB98 & 99 - MUGA: AREA = 3650m2
BB98 & 99 - SOFT INFORMAL: 5580m2
BB98 & 99 - HARD INFORMAL: 2638m2
Two storey primary wing
Reception
Nursery
HALL/ DINING
+270.4 mAOD
+278.1 mAOD
Combined BB98&99 - PITCH: TOTAL AREA = 52,960m2
Secure line
Staff and visitor parking - 73 bays
drop-off parking - up to 56 bays, as required
Coach parking
Split level building to incorporate change in level
3 storey secondary wing, at higher level
+270.5 mAOD
Football (Community) U17/U18 / Senior
Rugby (RFL-Community) U12 - Adult
+284.4 mAOD
New Pedestrian Crossing
Rugby (RU-Community) U7
Football (Mini Soccer) U7/U8
Rugby (RU-Community) U8
Rugby (RU-Community) U11/U12
Football (Community) U11/U12
N

3.4.4. Option H(ii) - All-through school at Zone A, excludes community playing fields + pitches at Zone B + drop-off parking on undeveloped land

Summary:

Most of the external accommodation are located within Zone A. This option excludes the use of existing community playing fields. In addition, an all-weather pitch is proposed and is available for out-of-hour use by the local community. Pitches are also provided at Zone B, though due to level constraints these would be mainly small pitches for primary school pupil use. A new pedestrian crossing is also proposed to provide safe pedestrian connection between the main teaching block and the pitches at Zone B.

The main buildings are located at the southern zone of Zone A and are further set back from the main road, beyond a large parking area for staff and coach drop-off. The proposed L-shaped massing minimises footprint and separates different age groups by locating teaching facilities across two three-storey teaching blocks that are connected by a central zone housing the hall and dining areas. One of the teaching block sits at the slope, where the lower and upper plateaus meet, creating a split level building and linking the two levels together. The 4-Court sports hall is housed in a separate block immediately west of the main building, at the higher plateau. It has a separate community entrance for out-of-hours hire and a potential connection to the first floor of the main teaching block.

Pros:

- The introduction of an all-weather pitch allows for out-of-hours hire.
- Zone C is available for future development.
- The proposed school compound excludes the existing community playing fields and eliminates impact on community use of the site.
- The proposed massing allows for centralised shared facilities and resources. A combined building may allow for efficiencies in area.
- Primary and secondary school teaching wings can have separate identities if required. Arranging teaching either side of a central core and entrance facilitates a clear way finding strategy.
- Staff parking is accommodated on the main site.
- The split level building better connects the different levels on site.
- Primary and secondary external areas have been consolidated in this option as a starting point for the school to generate its own methodologies for managing an all-through school.
- Early years provision is located at the front of the school to be easily accessible for parents and pupils.

Cons:

- Available area for pitches falls short of the minimum likely site area recommended by BB98 and BB99 Guidance. The all-weather pitch, which is twice counted, is located close to the secondary school teaching wing. This pitch could be reduced in size to better fit the space, however, this would further reduce the pitch area provided.
- The sports block is located within close proximity to the identified landfill/ heap area. Further ground investigation is required to determine risk.
- The proposed school compound includes one of the existing community playing fields. This may create interruption to the use of community sports facilities during the construction stage.
- Physical separation between the main teaching block and pitches at Zone B.
- The main buildings are set back from the main road.
- Level changes on Zone B would likely require a combination of the use of small pitches and ground engineering works for the area to be usable for sports. Smaller pitches would be utilised more by younger pupils, and suitable crossing points would be required.
- Utilising Zone B will require the demolition of the existing school to be within the construction contract. This may have time and cost implications.
- Parent drop-off is located off-site. Appropriate crossing and traffic calming measures required.


All-through school
72,629m²
Zone A: School Campus
42,660m²
Extent of existing fence
Ramped/stepped access to sports
Combined BB98 & 99 - HABITAT: Combined 5511m²
SPORTS HALL
BB98 & 99 - MUGA: AREA = 3650m²
BB98 & 99 - SOFT INFORMAL: 5580m²
BB98 & 99 - HARD INFORMAL: 2638m²
Two storey primary wing
Reception
Nursery
HALL/ DINING
Combined BB98&99 - PITCH: TOTAL AREA = 42500m² *area of All-weather pitch is double-counted, inclusive of Zone B (19500m²)
Football (Community) U17/U18 / Senior
Rugby (RFL-Community) U12 - Adult
Drop-off 2,500m²
Secure line
Staff and visitor parking - 73 bays
Car park
3,647m²
drop-off parking - up to 56 bays, as required
Coach parking
Split level building to incorporate change in level
3 storey secondary wing, at higher level
New Pedestrian Crossing
Rugby (RU-Community) U7
Football (Mini Soccer) U7/U8
Rugby (RU-Community) U8
Rugby (RU-Community) U11/U12
Football (Community) U11/U12
Zone C: Area for future development
42500m²
Zone B: Pitch
19,500m²
+210.4 mOD
+216.1 mOD
+219.3 mOD
+204.4 mOD
KEY:
Nursery Entrance
Primary School Entrance
Secondary School Entrance
Sports Facilities Community Entrance
School Compound Boundaries
Secure Line
'Separation' of Primary & Secondary External Accommodation
N

4. Design Considerations

4.1. All-through School Case Studies

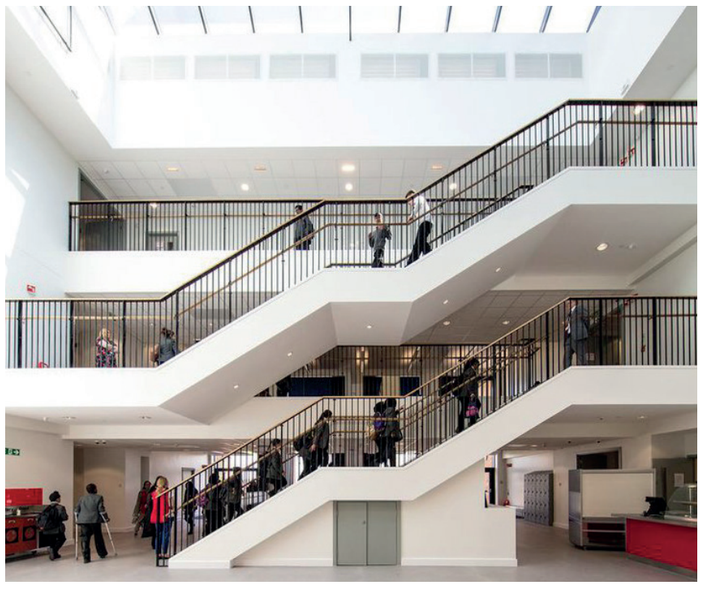
4.1.1. Ysgol Bro Hyddgen, Machynlleth

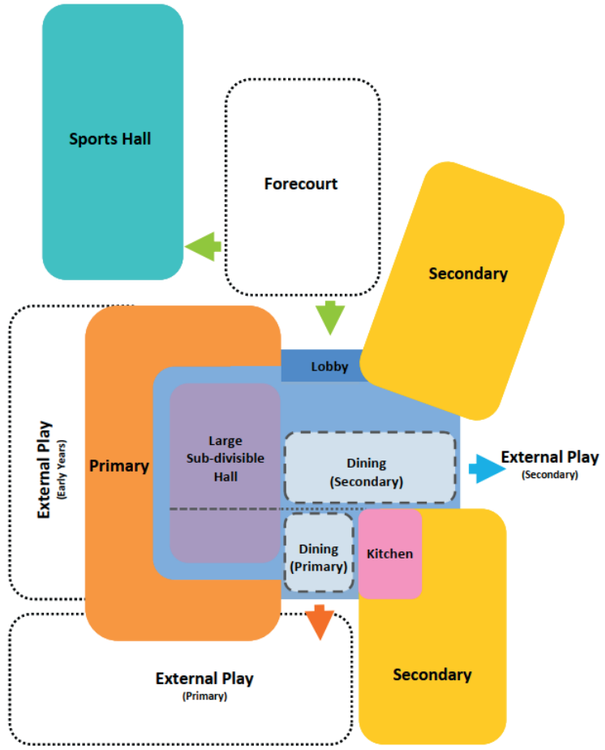
- Architect: Architype
- Status: Design Stage / Planning
- Mainstream Education from Nursery to Sixth Form:
  - 75 early-years (nursery) children
  - 270 primary pupils
  - 350 secondary & 6th form pupils
- Gross Internal Floor area = 6,500qm
- The centre of the school consists of a main hall and activity studio for primary pupils and dining areas. This arrangement creates a central 'heart' to the main building and promote flexibility of use. In addition, the close proximity of the halls to the main entrance allows for out-of-hours hired use.
- The 4-Court Sports Hall is connected to the 'central' zone. It has a separate designated entrance for hire or direct access to the playing fields and external sports facilities.
- The teaching accommodation is spread across building blocks of 1-3 storeys, to minimise footprint and segregate different age-groups. Nursery classrooms are located within a single-storey block while the Primary School block consists of two levels. The 3-storey block which houses the secondary school is the tallest element within the proposed design.

Proposed Ground Floor Plan (Copyright: Architype)

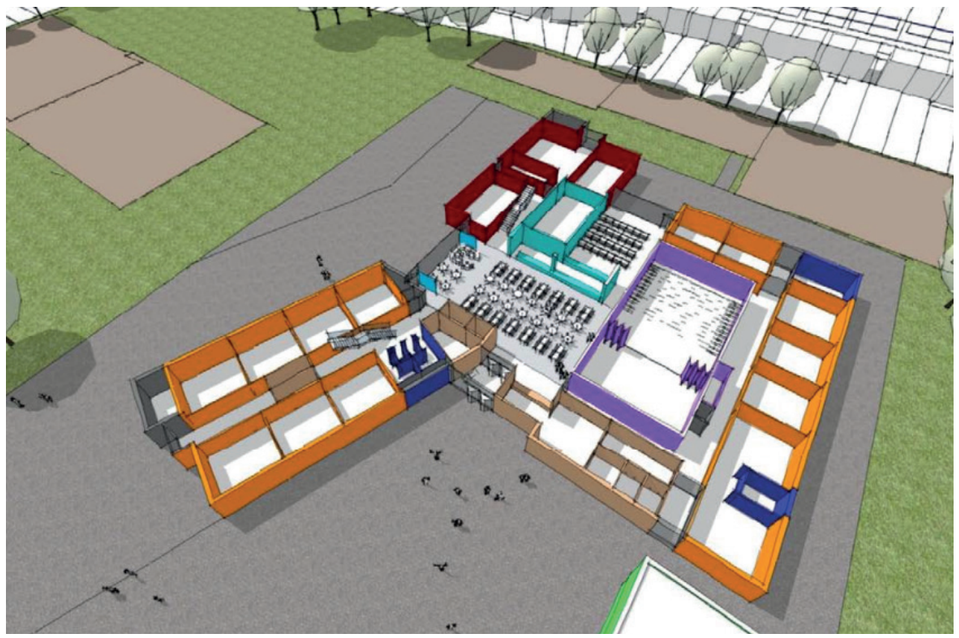
4.1.2. Starbank All-through School, Birmingham

- Architect: Associated Architects
- Status: Completed in 2016
- Cost: £17.9 million - New build
- Mainstream Education from Primary to Sixth Form:
  - 420 primary pupils
  - 900 secondary & 6th form pupils
- Gross Internal Floor area = 8,945sqm
- The school consists of a two-storey Primary School teaching wing and three-storey Secondary School teaching wing. Both teaching accommodation are joined together by a central zone that houses the school's shared halls, dining and kitchen facilities. The double-height central zone forms the social heart of the building.
- The 4-Court Sports Hall are located in a separated building, allowing out-of-hours hired use. A covered link is proved to link the sports block and the main teaching block.





Spatial Arrangement (Copyright: Associated Architects)



Axonometric (Copyright: Associated Architects)

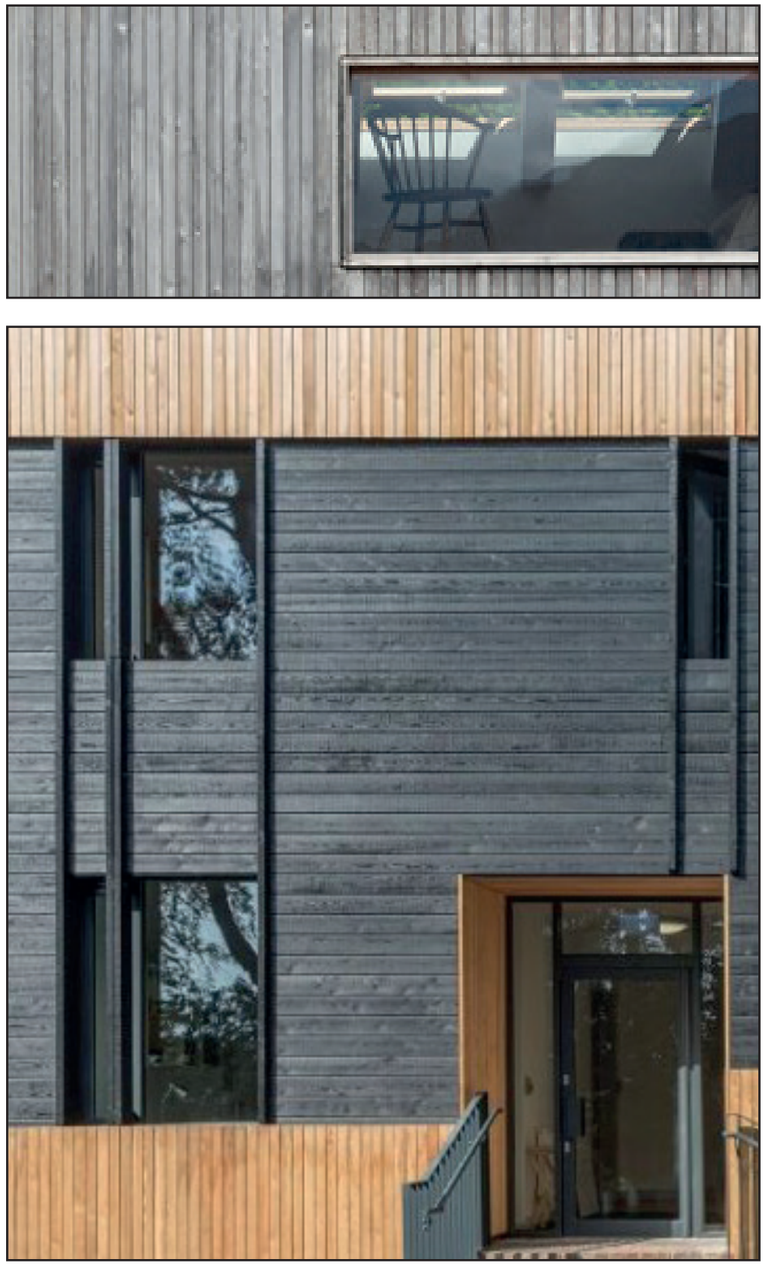
Proposed Ground Floor Plan (Copyright: Associated Architects)

4.2. Proposed Material Palette

The inspiration for the facade design is scale and context. With regards to scale familiar domestic design traits, such as using brick and designing a two storey structure have been incorporated into the design. The surrounding context is largely green, soft and wooded, which have been incorporated in to the landscape and facade design; in the elevations opposite timber accents and canopies can be identified.

The images, right, represent the following material palette:

- Timber Accents
- Brick
- Metal cladding to sports hall
- Coloured door and window reveals



Timber Accents

Brick

Coloured window and door reveals

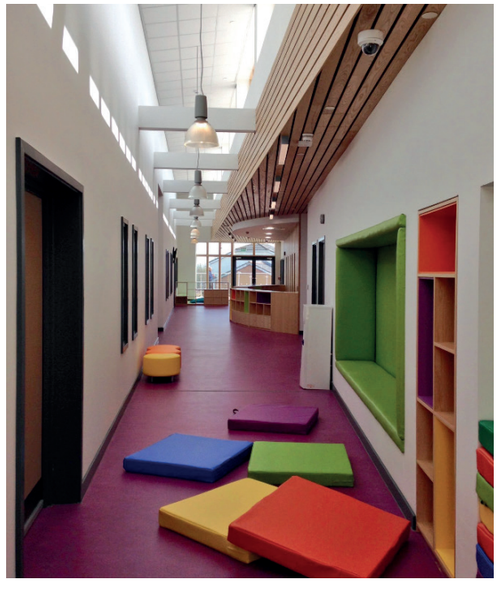
4.3. Exterior Design Precedents

4.4. Interior Design Precedents

4.4.1. Primary School Element

The design of the interior spaces aims to create a fun learning environment by introducing:

- Large usable corridor areas
- Timber accents
- Large windows and roof lights
- Use of colours in signage, carpets and furniture
- Feature walls
- Window seats



4.4.2. Secondary School Element

The design of the interior spaces aims to promote collaboration and socialisation by introducing:

- Presentation staircases
- Large corridors with discussion areas / resources areas
- Large windows and roof lights
- Open plan dining area with large openings / skylights

4.5. Landscape and External Design Considerations

4.5.1. General Landscape Principles

The landscape design should connect with and respond to the existing site conditions, orientation, surrounding area and new buildings, creating a cohesive and positive environment. The setting of Galon Uchaf park should be reflected in the landscape design for the new school, retaining trees and other habitat areas where possible. Areas for outdoor teaching should be introduced as well as sport, play, socialising, and relaxation.

New landscape areas and features should be attractive and dynamic whist being robust and practical to maintain and adapt to the seasons, times of day and weather conditions. Careful consideration of these requirements will require a comprehensive and considered approach to specification to influence the overall design and the choice of hard and soft landscape materials and ensure that the scheme is sensitive to the natural surroundings.

It is important that the landscape design takes in to account the full age range of pupils on site; tailoring different spaces to the needs of different key stages to maximise opportunities for social interaction and learning.

Sustainable drainage strategies should be designed in conjunction with the landscape from the outset of the design.

Access and Movement

Access will be provided for all, providing a legible route and opportunity for free movement through the landscape, with each space within it accessed via level or ramped entry points where necessary. Existing footpaths adjacent to the site will be connected to new entry points and our proposed site layout. The hard landscape materials used, combined with a sensitive design will encourage users to take advantage of the opportunities to be within the landscape, not simply observing it from a distance.

Security and Safety

Aesthetics, durability and sustainability should be considered in material selection with colour and texture employed to create a rich, diverse and stimulating palette that enhances the remaining features of Galon Uchaf Park. Fabric canopies or timber features such as pergolas may be used to provide outdoor teaching spaces and shelter from the elements. Seating will be positioned to suit sun, shade and shelter and cater for both large and small groups. Seats including backs and armrests should be included to provide assistance to all abilities, with seat slats being made of timber rather than metal as they are more pleasant to use.

Surfacing will be permeable where appropriate (and ground conditions allow) and aligned to current Sustainable Urban Drainage principles in line with the Sustainable Drainage Approval Body (SAB) requirements, whilst being durable and attractive.

Drainage and Site Levels

Site levels and drainage will influence the design and the possibility of incorporating sustainable drainage will be considered. Rainfall could potentially be captured and stored on site for irrigation. Hard surfaces such as car parking bays may be permeable to reduce potential standing water. Where a sustainable drainage system could be incorporated this may take the form of a seasonal pond or swale system.

Lighting

Lighting should be considered in terms of safety and of aesthetics, also taking into consideration proximity to residential properties, ensuring cut off on lights as appropriate. Light levels should be adequate enough to provide a safe environment and highlight circulation routes whilst adding to the character of each space during the winter months and at night where necessary. Uplighting could be used to highlight tree canopies or building form, and solar lighting could be investigated for its suitability at each location.

Sustainability

Sustainability should be a priority in design and in the choice of materials along with their adaptability and future-proofing.

4.5.2. Soft Landscape Strategy

The soft, planting design strategy should be used to create a framework to connect the development with the external context of the site and create a cohesive landscape character within the site. Existing trees will be retained where possible to integrate the new buildings within their environment and maintain established vegetation for screening and wildlife.

Native planting should be an integral part of the proposals with habitat areas offering areas of woodland planting and swathes of wild flower meadow. Planting should provide seasonal and sensory diversity with chosen species providing visual interest, through form, colour, texture and movement providing a range of areas that respond differently ages and requirements of pupils.

Tree and shrub planting could provide shelter from the weather and create a sense of enclosure. Planting areas will be used to subdivide areas of surfacing and tree planting will be sited in planting beds to ensure access to adequate air and water and reduce reliance on artificial irrigation. Existing trees will be retained where possible and supplemented. New planting species will be selected to diversify existing species on-site and encourage wildlife such as birds, bees and other insects. The habitat area could include specific features for wildlife such as bird nesting boxes, insect hotels and log piles to further encourage wildlife, increase biodiversity and offer the opportunity for study. Proposed tree planting will be used to provide varying degrees of formality and informality within the site and be used to offset the height of the new buildings and filter views of the boundary and sports fencing. Key pedestrian routes will be highlighted by boulevard planting and the central courtyard will have an urban character with feature planting. Hedge planting will be used where possible to soften fencing, direct pedestrian flow and screen views.

The soft landscape for the school should provide opportunities for play and exploration for the younger pupils particularly, and increase the biodiversity of the site and provide:

- Areas of tree and shrub planting for shelter, seasonal interest and biodiversity
- Wild flower meadow planting to reduce maintenance and encourage wildlife;
- Habitat areas using natural materials such as logs, boulders and landform
- More mature settings to socialise for older pupils;
- Areas for congregation for assembly/ teaching/ outdoor performance;
- Places for relaxation and calm with seating and shelter from the elements;
- Safe, easily accessible areas with fencing where appropriate for early years pupils;
- Opportunities for learning outdoors;
- Grass pitch(es) for formal sports
- Easily accessible grass areas for informal games and sports use in break times

4.5.3. Hard Landscape Strategy

The external landscape should aim to function as an extension to the school building by offering teaching/ study spaces as well as areas for sport, play, socialising, relaxation and reflection. These external spaces should incorporate entrance points providing access to the building, circulatory spaces across the site and areas for congregation during break times. The areas will have to cater for the full age range of pupils, whilst providing a variety of scales of space and types of activity. The external school environment will include:

- Exercise and play provision to encourage pupils into activity;
- All-weather pitch(es) and Multi-Use Games Areas to ensure playable surfaces for sport throughout the year;
- A range of scales of space allowing for informal activity and/ or social areas including seating for varying sizes of group;
- A safe, secure and inclusive environment;
- Opportunities for pupils to be calm and quiet and also where they may be able to interact with others;
- A hierarchy of diverse and interesting places including sensory elements, play features for the younger pupils and places just to sit and relax. The external spaces will be centred on creating a broad range of experiences and environments;
- Shelter from the elements, such as a canopy sail or pergola for sun, rain or wind protection;
- Areas of hard surfacing subdivided by planting to provide interest, shelter and seasonal change;
- Sheltered external dining area, particularly for secondary pupils
- A variety of provision available to cater for a range of ages including more social settings with a more mature design aesthetic.

4.5.4. Travel Provision

In the options outlined in the previous section a variety of solutions were considered with regards to travel strategy on and around the site. At present the revised parking strategy for Merthyr Tydfil County Borough Council is unavailable. In lieu of this information the latest parking guidance for nearby local authorities have been consulted to provide some context for these proposals (see numbers generated based on RCT parking guidance below).

Secondary School:
- 14x1.5 = 21 carparks
- 0 x 1per 20 16+ students
- 3 visitor spaces
- 1 commercial

TOTAL: 25 car parks

Primary School:
- 22 x 2 = 44 carparks
- 3 visitor spaces
- 1 commercial

TOTAL: 48 car parks

It is currently understood that the following is required to be provided for the school, though these are subject to change/development through stakeholder engagement at the next design stages:

- Coach turning and drop-off spaces on site - an exercise should be undertaken to calculate coach sizes and numbers resulting from the merger of primary schools in particular
- Parental car drop-off zone - projected vehicle numbers, location and layout should be developed to allow for significant number of nursery places
- Staff car park - given the high number of parent vehicles coming to the site, resulting from the large catchment area and broad age range, consideration should be given to access controls to the staff car park
- Active travel facilities - The emphasis placed on active travel by Welsh Government (see Active Travel (Wales) Act 2013), in conjunction with the project's BREEAM strategy, may require facilities for cyclists in excess of what is currently allowed for within the Building Bulletin Guidance. The following points should be considered once the Local Authority and School's active travel requirements are understood.

1. Layout and design of cycle park, for example extent of covered areas, specification of cycle stand (durability, compactness, longevity, etc) and division of spaces. The latter could include smaller cycle parks at each site entrance, for example, or a single large cycle park to consolidate facilities.
2. Storage, for example for helmets, wet gear and change of clothes. Differing user requirements may result in some being located internally (i.e. with changing facilities) or externally, in close proximity to the cycle stands.
3. Shower and changing facilities; at present pupils have increased shower and changing provision compared to teachers. To accommodate staff cycling could the timetabled sharing of some of these facilities, for example, could be investigated utilising timed electronic access.
4. Anticipated user groups; there may be a difference in use or expectation of associated cycling provision between staff and pupils, or a difference in uptake between the groups.
5. Maintaining safe routes to and on-site for pedestrians and cyclists.

4.5.5. External Sports Provision

The largest of the external areas outlined in Building Bulletin guidance is identified for pitches (see BB98 example below). This area assumes pitches are provided on grass and according to The Education (School Premises) Regulations 1999 (England and Wales) 'the grassed area of team game playing fields provided for any school shall be such that it can sustain the playing of team games thereon by pupils at the school for 7 hours a week during school terms.' Building Bulletin guidance, however, states that the area of all-weather pitches (AWP) can be counted twice as they are able to accommodate twice the required usage of 7 hours per week.

Pitch proposals should be developed with the school to ensure they can accommodate the school's curriculum requirements and sport preferences as well as meet the area guidance. Some of the key considerations in determining layout, size adjacencies and surfaces of pitch area include:

- Seasonal change - The pitch markings/areas that the school require in the winter months compared to summer months so that types of pitches can be sized accordingly
- Surface preference - Preferences for different surfaces may change for difference sports
- Availability of appropriate footwear for different types or surfaces - incorrect footwear on 3G/4G pitches can be hazardous in wet conditions and also lead to increased maintenance costs
- Availability for use during break and lunch times - some surfaces tend to be gated and therefore non-timetabled use should be considered
- Age ranges for pitches - pitches sized to suit 16 year olds are often larger than pitches sized to suit 11 year olds. A mix of sizes may be easier to accommodate on the site

BB98 Base Areas Guidance Tables (For 600-Pupil Secondary School)

EXTERNAL AREA SCHEDULE

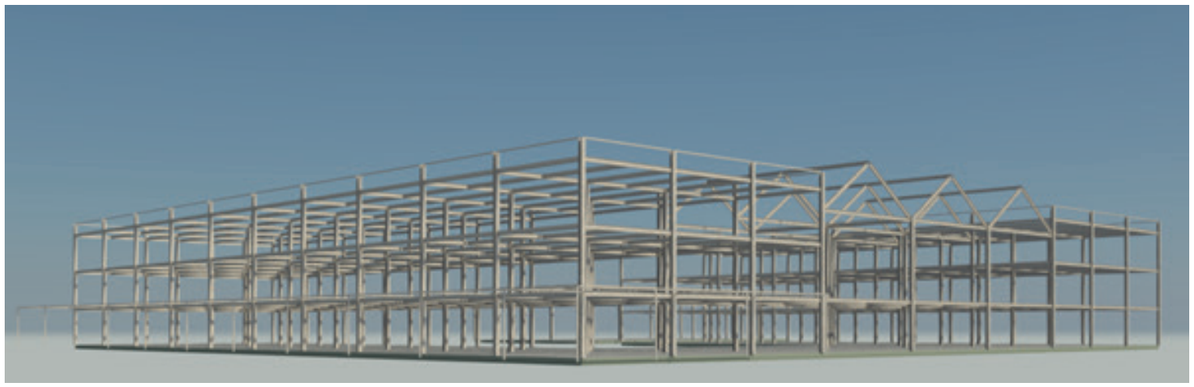
Externals	Pupil Numbers	Area
Pitches	10000 + 35N	31,000
Soft Informal & Social	800 + 2.5N	2,300
Games Courts Hard Surface	600 + 2.0N	1,800
Hard Informal & Social	400 + 1.5N	1,300
Habitat	200 + 1.0N	800
'Float'	1000 + 5.0N	4,000
Total Net Site Area	**13,000 + 47N**	**41,200 m²**
Likely Site Area: from	**14,000 + 52N**	**45,200 m²**
to	**16,000 + 59N**	**51,400 m²**

4.6. Structural and Civil Design Considerations

4.6.1. Structural Considerations

The objective of the structural design is to produce a suitable, cost effective, structural form taking into account the following:

- Intended use.
- Loading.
- Stability.
- Existing ground conditions.
- Thermal movement.
- Design life.
- Site restrictions.
- Construction programme.
- Architectural intent.
- Vibrations.
- Carbon Content within design
- Sustainability



4.6.2. Design Standards and Codes of Practice

The detailed design works should be carried out in accordance with the relevant Building Regulations, British Standards, Eurocodes with associated National annexes, Codes of Practice and relevant Design Guides will be used. The key design standards are as follows:

- BS EN 1990 Eurocode - Basis of structural design.
- BS EN 1991 Eurocode 1: Actions on structures – Part 1-1: General actions – Densities, self-weight, imposed loads for buildings.
- BS EN 1991 Eurocode 1: Actions on structures – Part 1-3: General actions - Snow loads.
- BS EN 1991 Eurocode 1: Actions on structures – Part 1-4: General actions - Wind actions.
- BS EN 1992 Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings.
- BS EN 1993 Eurocode 3: Design of steel structures – Part 1-1: General rules and rules for buildings.
- BS EN 1994 Eurocode 4: Design of composite steel and concrete structures – Part 1-1: General rules and rules for buildings.
- BS EN 1994 Eurocode 4: Design of composite steel and concrete structures – Part 1-2: General rules – Structural fire design.
- BS EN 1995 Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings.
- BS EN 1996 Eurocode 6: Design of masonry structures – Part 1-1: General rules for reinforced and unreinforced masonry.
- BS EN 1997 Eurocode 7: Geotechnical design – Part 1: General rules.
- BS EN 752:2008 - Drain and sewer systems outside buildings.
- Building Regulations 2002 – Part H – Drainage and waste disposal.

4.6.3. Structural Loading

Dead Loads – Superimposed

Superimposed dead loads comprise the weights of permanent fixtures such as screeds, floor finishes and permanent suspended building services. The following allowances are proposed where weights cannot be calculated directly:

- Finishes (carpets etc): 0.10 kN/m2
- Masonry Walls 1.96 kN/m2
- Structural Screed (75mm) 1.88 kN/m2
- Suspended Ceiling 0.20 kN/m2
- Mechanical & Electrical services 0.30 kN/m2
- Insulated roof decking 0.25 kN/m2

**Masonry is assumed to be 1 skin thick brickwork (103mm) with a density of 19kN/m3.*

Imposed Loads

Imposed loads are non-permanent loads that the structure is designed to experience. These are generally developed with reference to the Eurocode EC1, as listed below:

- General Classroom Areas: 3.0 kN/m2
- Non - loadbearing walls (Stud Partitions) 1.0 kN/m2
- Stairs & landing subject to crowds 4.0 kN/m2
- Plant Room Areas 7.5 kN/m2
- Roof areas (No Access/ Only Maintenance) 0.6 kN/m2
- Hall 4.0 kN/m2

Lateral Loads

Lateral loads comprise those imparted by wind loading and to allow for construction tolerances.

4.6.4. Serviceability

Deflections shall be calculated based on full, un-factored imposed loading. The maximum deflections of the building structure shall not exceed the following:

Vertical

- Cantilevers - length/180
- Beams under imposed loading - span/360
- Beams under dead and imposed loading - span/250
- Beams carrying glazing - span/500.

Horizontal

- Column deflection (per storey) - height/300. More onerous limits shall be considered where dictated by tolerance requirements or certain types of brittle finishes.

Vibration

- The dynamic response of the floor construction shall be considered in the design. The dynamic response to normal usage shall not cause alarm or discomfort to occupants. The dynamic response of the floor construction shall be calculated by reference to the guidance in the Steel Construction Institute - Design of Floors for Vibration - ref. P354, 2007 and the Steel Construction Institute - Design of composite and non-composite cellular beams - ref. P100, 1990.

In the assessment of the dynamic response of the floor the following shall be considered:

- the combination of the natural frequencies of the relevant system components
- the mass and damping characteristics of the floor and other relevant components.
- Natural frequencies of individual beam elements shall not be lower than 5 Hz. In areas subject to “rhythmic activities” such as dancing or aerobics the limit will be 8.4Hz.

4.6.5. Design Life and Adaptability

The design is based on the assumption of a design life of 60 years and period to first maintenance of 20 years. This will need to be discussed and confirmed with the end user and maintenance team.

4.6.6. Building Class

With Building Regulation Approved Document A 2010 the building is categorised as building class 2B; "Educational buildings greater than 1 storey but not exceeding 15 storeys".

4.6.7. Robustness and the Prevention of Disproportionate Collapse

As there is an expectation the building is to be constructed from steel, the requirement for this building class is to provide effective horizontal and vertical ties in accordance with current codes of practice for framed structures to align with Building Class.

As diaphragm action of the slab is being utilised for stability purposes, shear studs are required around the perimeter of the building, which act as ties between the slab and steel frame.

4.6.8. Site Conditions / GI Report

No ground investigation data is available within the site boundaries, therefore, it is not possible to determine the exact ground conditions underling the site. This section summarises the anticipated ground conditions underlying the site based on the BGS 1:50,000 sheet 231 Merthyr Tydfil [2], the closest, most appropriate borehole records [3] and historical mapping information.

For the full GI desktop study please refer to the Geotechnical Desktop Study in the Appendices to this document.

Made Ground

Made Ground is expected to be present across the site associated with the historic mine works, historic landfill and terracing of the site to create the playing fields. The historical maps identified a coal and ironstone workings in the northwest of the site and two clay pits, all of which are no longer present. It is anticipated that Made Ground, including waste associated with the historic landfill has been used to infill these workings and level the site so that it is appropriate for public use. An accurate thickness of the Made Ground cannot be established as no ground investigation information is available for the site.

Superficial Deposits

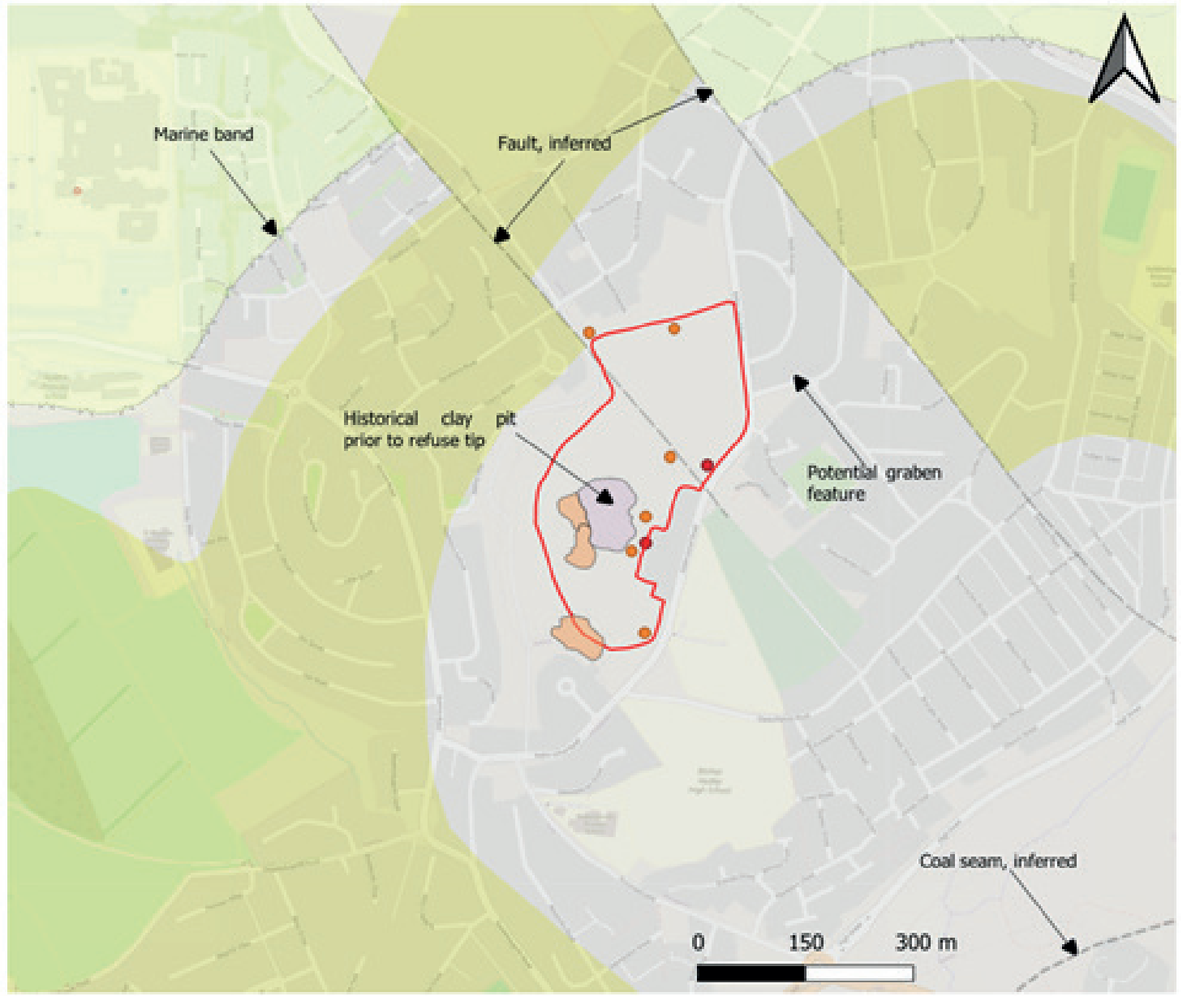
The superficial deposit anticipated to underlie the Made Ground is Glacial Till. All boreholes in close proximity to the site record a sandy gravelly clay and clayey gravel layers with the presence of cobbles and boulders, which is indicative of Glacial Till as mapped by the BGS. In additions, the presence of clay pits recorded in the historical maps indicate that clay, from the Glacial Till, can be expected on site. The thickness of the deposit cannot be accurately established as will likely vary across site as a result of the excavation activity associated with the clay pits. However, based on the historical borehole information the thickness of glacial Till is expected to vary from 2 to 4 m thick where encountered.

Bedrock Geology

Based on the BGS mapping and nearby historical boreholes, it is expected that the bedrock geology of the site will comprise mostly of silty mudstone with bands of siltstone and sandstone of the South Wales Lower Coal Measures Formation. The mudstone is expected to be highly weathered and weak near the surface, becoming less weathered with increasing strength with depth. Beds of sandstone are expected to be encountered with greater depth. Based on nearby boreholes, and the regional dip of the strata, bedrock is expected at a relatively shallow depth, approximately 4 to 5 mbgl. The seven boreholes located approximately 105 to 180 m east of the site, which reached a maximum depth of 6.35 mbgl, and the four boreholes located approximately 385 to 425 m south of the site, which reached a maximum depth of 27.60 mbgl, did not encounter coal or evidence of mine workings.

Groundwater

Historic boreholes SO00NE330, SO00NE331 and SO00NE332 located to the east of the site record groundwater levels of between 3.20 and 4.80 mbgl in October 1989. However, the groundwater levels do not account for seasonal variation and are unlikely to be representative of those on site.



4.6.9. Form of Construction - Substructure

Foundations

Given that the bedrock is expected to be 4-5 mbgl and the requirement for cutting in the site to allow a level slab through the building. We would expect the foundation solution to be deep trench foundations bearing onto the bedrock layer.

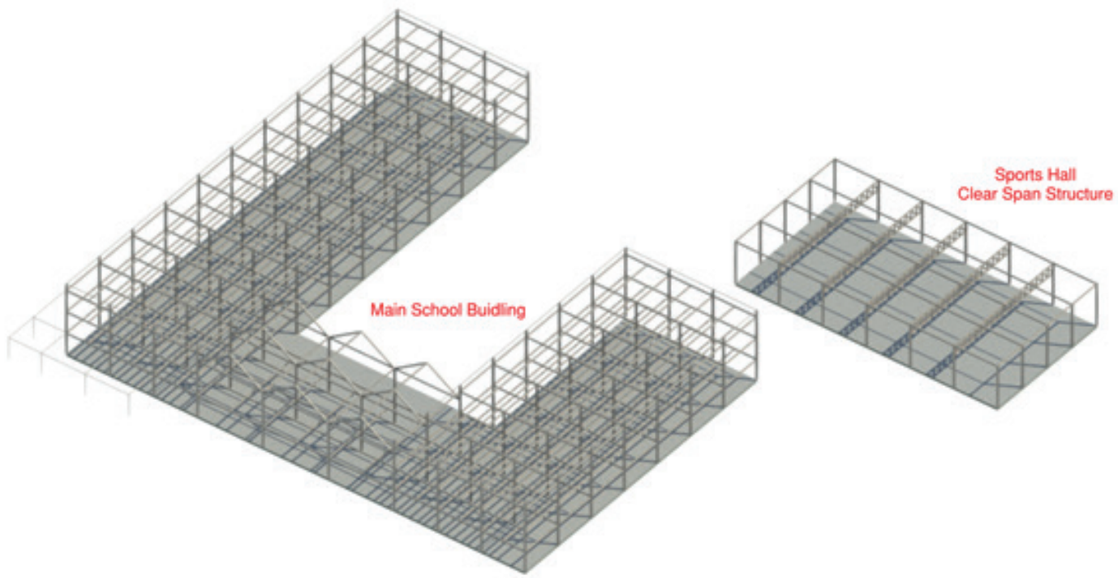
Suspended Ground Slab

A suspended ground reinforced concrete slab spanning between strip foundations is currently proposed as the easiest solution to construct on site. The slab will be 250mm thick / RC35 Grade.

Retaining Structures

The design of the external works is, where possible, being carried out such as to avoid the need for retaining walls. However, should soil retention prove to be required these will be designed in accordance with the requirements of BS EN 1997.

4.6.10. Form of Construction - Superstructure



Option 1 – Steel Frame with Composite Metal Decking and In-situ Reinforced Concrete Slab

Proposal: Construct the frame from hot rolled steel sections forming the floor plates by means of a permanent composite metal decking and in-situ concrete for the first floor. Composite action between the steel and concrete sections would be easily achieved by means of welded shear studs and would reduce the weight and depth of the steel beams required. The metal decking will typically span up to 3.0m, supported by secondary beams at 356mm deep and primary beams at 457mm deep approximately.

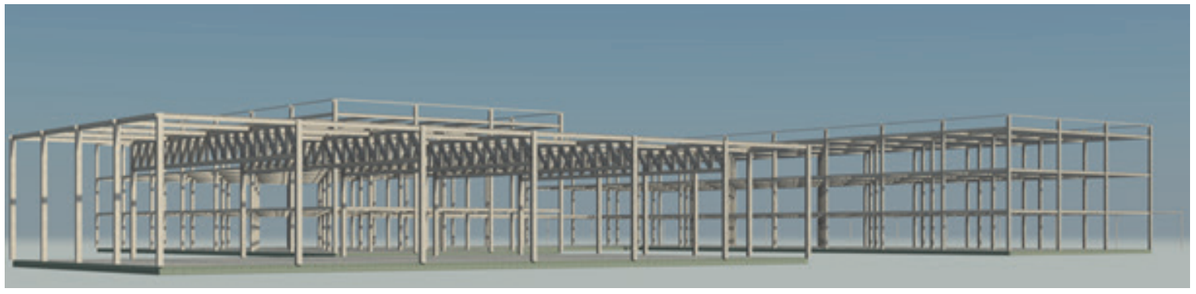
Columns will be located at the intersections of a typical 8m x 6m structural grid, provisionally sized at 254 UC sections.

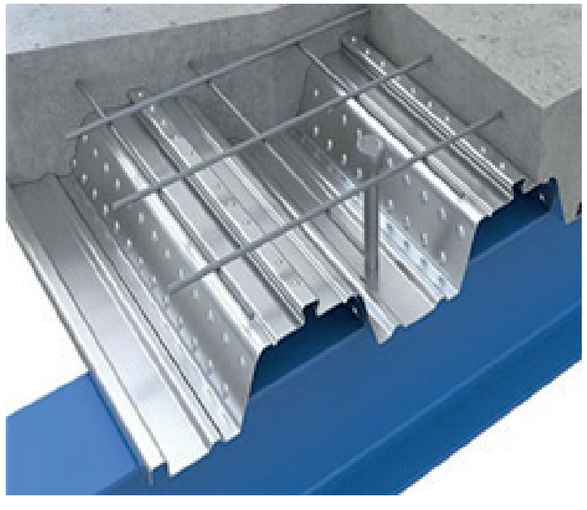
Stability of the building would be achieved by either the use of diagonal bracing hidden within walls (or specifically exposed feature bracing – Macalloy tension cables or similar), with diaphragm action through the in-situ composite deck and shear studs transferring the horizontal forces to the bracing members which in turn will transfer these to the foundations.

The structure will require 1 hour fire protection. Steelwork fire protection will be achieved by the use of adequate boarding or intumescent paint. The slabs will have an inherent fire rating, and this will be upgraded via additional reinforcement if required.

Options within this form of construction include:

- Use of different profile shapes in decking (re-entrant dovetail type or more open trapezoidal).
- Increase deck gauge to achieve greater spans.
- Integrate beams within deck depth for a shallow floor construction.
- Use of fibre reinforced concrete rather than standard mesh reinforcement that can have health and safety benefits but may incur additional material costs.
- Use of cellular steel beams to allow services distribution within the structural zone.





Option 2 – Steel Frame with Precast Concrete Slab

Proposal: Construct the frame from hot rolled steelwork and use precast concrete slabs to form the floor plates. Column centres would be the same as option 1 in 1.10.1 above. Steel beams would generally be provided on column lines and would typically downstand from the concrete soffit. The precast planks would provisionally be 150mm thick and would require a structural topping, 75mm thick to both achieve a flat level and also to provide the necessary structural tying of the diaphragm slab to provide lateral load transfer and satisfy the avoidance of disproportionate collapse requirements of Part A of the Building Regulations. Solid precast planks with a structural topping weigh more than in-situ concrete on permanent decking, therefore greater primary beam sizes will be required in comparison to option 1 in 1.10.1 above. However, precast concrete planks can span further than composite metal decks so there would be a reduction in secondary beams. Consideration should also be given to the crane requirements in order to lift the precast concrete elements.

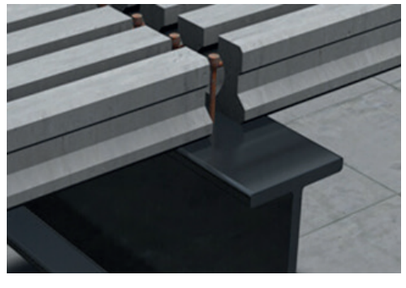
Stability of the building would be achieved by either the use of diagonal bracing hidden within walls (or specifically exposed feature bracing – Macalloy tension cables or similar), with diaphragm action through the precas slab structural topping transferring the horizontal forces to the bracing members via diaphragm action. Shear studs to all perimeter beams would also be required to achieve the tying requirements for disproportionate collapse and ensure adequate diaphragm action.

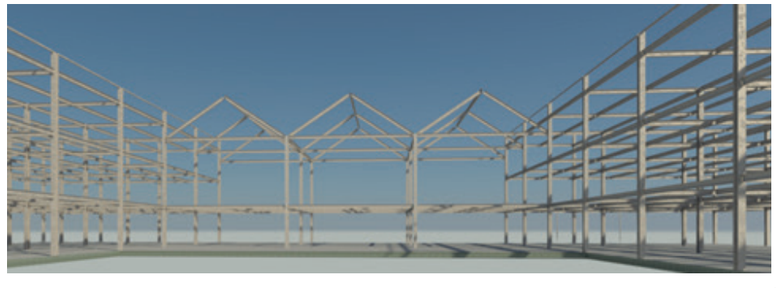
Columns will be located at the intersections of a typical 8m x 6m structural grid, preliminary sized at 254 UC sections.

Options within this scheme are:

- Consideration of the use of shelf angles or asymmetric steel sections that would reduce the depth of the downstand required. This would be likely to attract additional cost to the frame.
- Use of cellular beams both for aesthetics and easier building services integration.

The structure will require 1 hour fire protection . Steelwork fire protection will be achieved by the use of adequate boarding or intumescent paint. The slabs will have an inherent 1 hour fire rating.





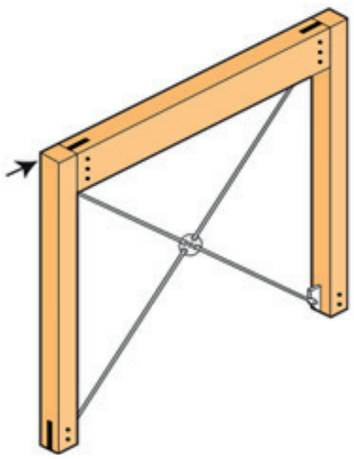
Option 3 – Glulam Timber Frame

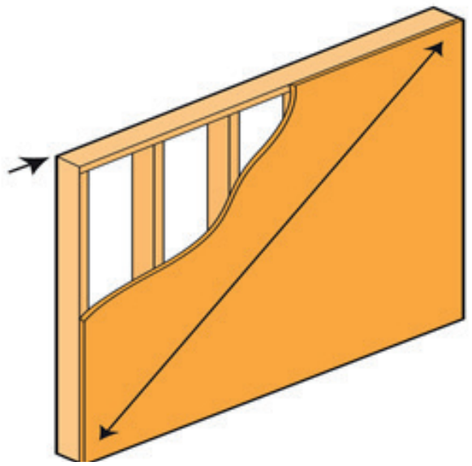
Proposal: Construct the hybrid glulam frame consisting of load bearing timber walls and timber columns, supporting primary glulam beams and secondary glulam joists. With the current room arrangement, 360mm floor joists would span onto 150mm wide load bearing walls. At locations where the room is greater than 6.5m wide, primary beams at 600mm deep will support the glulam joists. This would occur for both the first floor and roof. Column sizes for this option are likely to be 240mm square.

Stability of the building would be achieved by either the use of bracing hidden within walls (or specifically exposed feature bracing – Macalloy tension cables) or the use of stress skin racking panels, plywood on stud wall, to resist lateral loads. Diaphragm action through the timber floor will transfer horizontal forces to the bracing members.

Options within the scheme:

- Use of alternative timber materials such as CLT (Cross Laminated Timber), LVL (Laminated Veneer Lumber), or traditional sawn timber.
- Combine the use of the light weight glulam timber floor with a steel frame to reduce dead load on the founding substructure.





Options Summary

Option	Advantages	Disadvantages	Preference 1 – high 3 – low
Option 1 - Steel frame with composite metal decking and in-situ concrete slab. in-situ concrete slab on permanent decking	Rapid frame erection but floor construction slower than for precast slab option. Relative ease of installing a first floor in the welding workshop. Number of crane lifts greatly reduced in comparison to precast planks.	Downstand beams that may complicate building services installation. On-site welding of shear studs to steel beams required.	1
Option 2 - Steel frame with precast concrete slab	Rapid frame and floor erection. High quality soffit to slabs if exposed structure is desired. Relative ease of installing a first floor in the welding workshop. Greater spans achieved with precast planks. Reducing the number of secondary beams.	Downstand beams that may complicate building services installation. In-situ topping required to slabs. On-site welding of shear studs to steel beams required.	2
Option 3 - Glulam timber frame	Rapid frame and floor erection. Quicker than steel. Quick and easy to connect to; eg suspended services. Lighter material reducing substructure material. Single trade on site for the primary structure. Greater sustainability.	Primarily imported from Europe, therefore longer lead times. Greater care required on-site with manual handling and temporary weather proofing. Additional acoustic considerations required. Vibration through floors is increased compared to concrete floors.	3

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4.7. Mechanical and Electrical Design Considerations

4.7.1. Building Services Design Philosophy

This section of the report summarises the design philosophies for the Mechanical, Electrical and Public Health (MEP) engineering systems design & installations for the proposed development of the new all-through school at Merthyr Tydfil on the Galon Uchaf park site.

The proposals detailed herein represent Atkins understanding of the Client's brief for the engineering services requirements for the project and unless instructed otherwise, all installations shall be in accordance with the relevant Building Bulletins, Building Regulations, British Standards, EN's, ISO's, CIBSE Guidelines and Codes of Practice.

4.7.2. Sustainable Approach

The new Merthyr Tydfil all-through school is to be designed as a sustainable development, utilising low energy passive means of heating, cooling, ventilation and lighting where possible.

To accomplish this the Atkins MEP team will adopt a three-tier approach; firstly to reduce the building loads through good design; then consider the production of energy from low or zero carbon technologies and finally maximising the efficiency of systems installed so resources are not wasted.

Cost effective, practical ways of reducing energy consumption and production of CO2 emissions will be a key driver in the design and the development of the services strategy. In practical terms this means the design team will aim to maximise the use of passive cooling, ventilation and lighting using proven effective and cost-efficient methods.

An energy efficient approach will be carried through all aspects of design including key environmental criteria as follows:

- Passive solar design to maximise the use of natural daylight whilst minimising solar gains and providing a balanced and glare-free luminance across the classrooms and teaching spaces;
- Use of thermal mass, night-time cooling and cross ventilation to prevent summertime overheating;
- Acoustics to provide good listening conditions;
- Naturally ventilated spaces wherever possible and where not, consideration to be given to hybrid ventilation utilising the benefits of natural cross ventilation with no cold drafts in the summer months and mechanical ventilation with heat recovery in the winter months;
- Appropriately zoned and thermostatically controlled heating systems utilising energy efficient and low NOx heating plant;
- Efficient lighting and automatic controls to reduce energy consumption whilst maintaining luminance across the classrooms;
- Low and Zero Carbon (LZC) technologies where suitable. A low and zero carbon technologies assessment will be undertaken during the RIBA Stage 2 design to identify and recommend sustainable and renewable energy technologies that could be incorporated into the proposed works. Initial consideration suggests that Photovoltaic technology and Heat pumps could be adopted;
- An efficient building envelope including high levels of insulation and low air permeability; and
- Energy and water efficiency, that is easy to monitor through the building BMS for the end user.

4.7.3. Environmental Simulation and Carbon Performance Reductions

The carbon performance of the building will be assessed utilising IES thermal modelling software as part of the Building Regulations Part L2A 2013 requirements to assist the RIBA Stage 2 Design development, and to achieve any minimum reduction in carbon emissions as required by planning.

The results from the modelling process will form part of the integrated design to help reduce the buildings carbon emissions. The emphasis will be to passively design, as part of an integrated approach with the architects to ensure that the buildings energy consumption and building CO2 emissions rate are reduced to a suitable level below the Part L2A target emissions rate.

This needs to be carried out in conjunction with Client and Architect to understand and develop the environmental expectations. To help achieve this, the building will be thermally modelled via proprietary 'approved' software. This shall incorporate the proposed architectural designs to ensure optimum passive strategies are realised where possible. The thermal modelling exercise shall run real time weather simulations on the proposed new buildings with data derived from the MET office for the given location.

The proposed thermal properties of the buildings will be analysed to determine optimum heat losses and heat gains and associated occupant use. In addition, analysis of the environmental modelling results will inform the following:

- Ventilation strategies – ensuring adequate fresh air is provided to the occupants via natural / mechanical means and provide a prediction of actual 'simulated' ventilation levels;
- Room Conditions – Providing a prediction of actual 'simulated' environmental temperatures which will allow analysis of external / internal heat gains and ventilation strategies. This should identify spaces, which overheat in excess of Building Regulations and / or CIBSE Guidelines.

4.7.4. Commissioning and Maintenance

Building management is crucial to the building's performance as it has an impact throughout the building's life e.g. from the commissioning stage through the maintenance, monitoring and setting targets for improvements.

Commissioning is a vital stage of most construction projects in ensuring the building services and fabric operate as intended by the design, i.e. in an efficient and effective way. A poorly commissioned building can consume significantly more resources and is likely to provide a significantly poorer indoor environment than that which is properly commissioned.

The MEP design team will propose the relevant appointment(s) within their Tender documentation and commissioning will be carried out in line with current Building Regulations and BSRIA/CIBSE guidelines where applicable.

Once the building is occupied, the actual internal environmental conditions may be different from those anticipated at the design stage, and seasonal commissioning of the building allows the building services to be fine-tuned to provide optimum conditions under all actual weather/occupancy conditions.

4.7.5. Plant Rooms

It is preferred to install plant in central locations, within each school main building, and generally co-locate plant wherever possible. This approach reduces distribution routes which in turn will reduces the heat and energy loses associated with longer routes.

The proposed construction / structural elements should provide allowance for the location of alternative plant such as Photovoltaic Cells / Condensing Units on the roof and potentially, hybrid ventilation plant at high level within the teaching spaces.

The plant room locations will be co-ordinated with the vertical cores and horizontal distribution which accommodates the services distribution risers. All exposed roof mounted plant will be suitably weatherproofed to withstand local climate conditions.

4.7.6. Site Restrictions

The site is not located adjacent to any known flight paths, train tracks or major trunk routes and therefore the MEP design, especially natural ventilation, will not be restricted due to external noise or pollution issues.

4.7.7. Site Wide Services

Gas

The utilities search has indicted that there are is an existing 180mm Polyethylene (PE) gas supply pipeline running along the western edge of the park, a 90mm PE pipe running along Galon Uchaf road, with another 90mm PE pipe running beneath Gwaunfarren road which is the road which runs between the 2 existing school buildings.

Until such time that an existing site supply is confirmed available, an application for a natural gas supply should be made during RIBA Stage 2, to establish principal of connection into the Statutory Authorities mains, based on an initial load assessment. The Natural Gas Supply Authority shall install up to a service isolation valve/emergency control valve at the schools site boundary.

The natural gas supply shall terminate in a GRP enclosure in a location to be agreed with the Landscape Architect and Architect. The Client shall contact their preferred natural gas shipper/supplier for the installation of a suitable natural gas meter.

The new incoming supply shall provide natural gas at a flow rate capable of serving the required peak demand of energy whilst maintaining a minimum pressure of 20mBar at the receiving plant equipment.

The gas meter governor set shall be regulated to ensure that at least the minimum outlet pressure required by the manufacturer(s) at all necessary devices is achieved.

All external site distribution pipework shall be Medium Density Polyethylene (MDPE) tube in a yellow ochre colour suitable for natural gas services.

Detailed calculations and assessments will be carried out in the next project stage to establish the approximate loads and gas consumption.

Water

Existing mains water feeds, of various sizes but generally in 6inch cast iron pipes, surround the perimeter of the proposed school sites.

Until such time that an existing site supply is confirmed available, an application for a metered supply should be made during the next design stage to get a cost estimate for a new metered connection.

The new connection shall be provided with a pulsed output meter to record and monitor the water usage of this building. A pulsed output enabled water sub-meter will also be provided at point of entry into the building, the BMS system shall monitor water usage at all meters and shall warn of any potential underground water leaks by monitoring usage of all meters.

All mains cold water pipework shall be installed in accordance with the WRAS Guidelines. The incoming pipework shall be sealed against the entry of fluids, vermin and insects and the space between the outside of the mains cold water incoming pipe and the inside of the duct shall be insulated.

The site wide mains cold water distribution shall be laid below ground at a depth of 900mm in accordance with the National Joint Utilities Group standard details.

All external site distribution pipework shall be Medium Density Polyethylene (MDPE) barrier pipe in a blue colour suitable for potable water services. Joints on all concealed pipework shall be kept to a minimum, utilising swept bends formed from pipework where needed. Pipework joints shall be kept to a minimum.

Electric

The utility search has revealed that an existing 11kV cable is located between the two existing school building, this can be utilised to feed any proposed new substation, if required. This requirement as well as existing spare network capacity and future site loadings will have to be ascertained during the next phase of development. The DNO, Western Power Distribution, will need to be engaged into the process to obtain their approval and buy in to any proposal for the future site feeds.

Special consideration will need to be taken if Electric Vehicle charging is to be provided as this may require a separate dedicated utility metered supply to be provided by the DNO.

It is anticipated that the source for the LV supply to the site shall be further determined during the design development once load estimates and the preferred school option has be ascertained.

Buried services shall be laid below ground depth at a minimum of 450mm for LV cabling and 600mm for HV cabling, increasing to 600mm and 750mm respectively where crossing carriageway locations.

Lighting, Power and Mechanical services shall be separately served and metered from within the main plant space and for dedicated specialist systems.

ICT/Telecoms

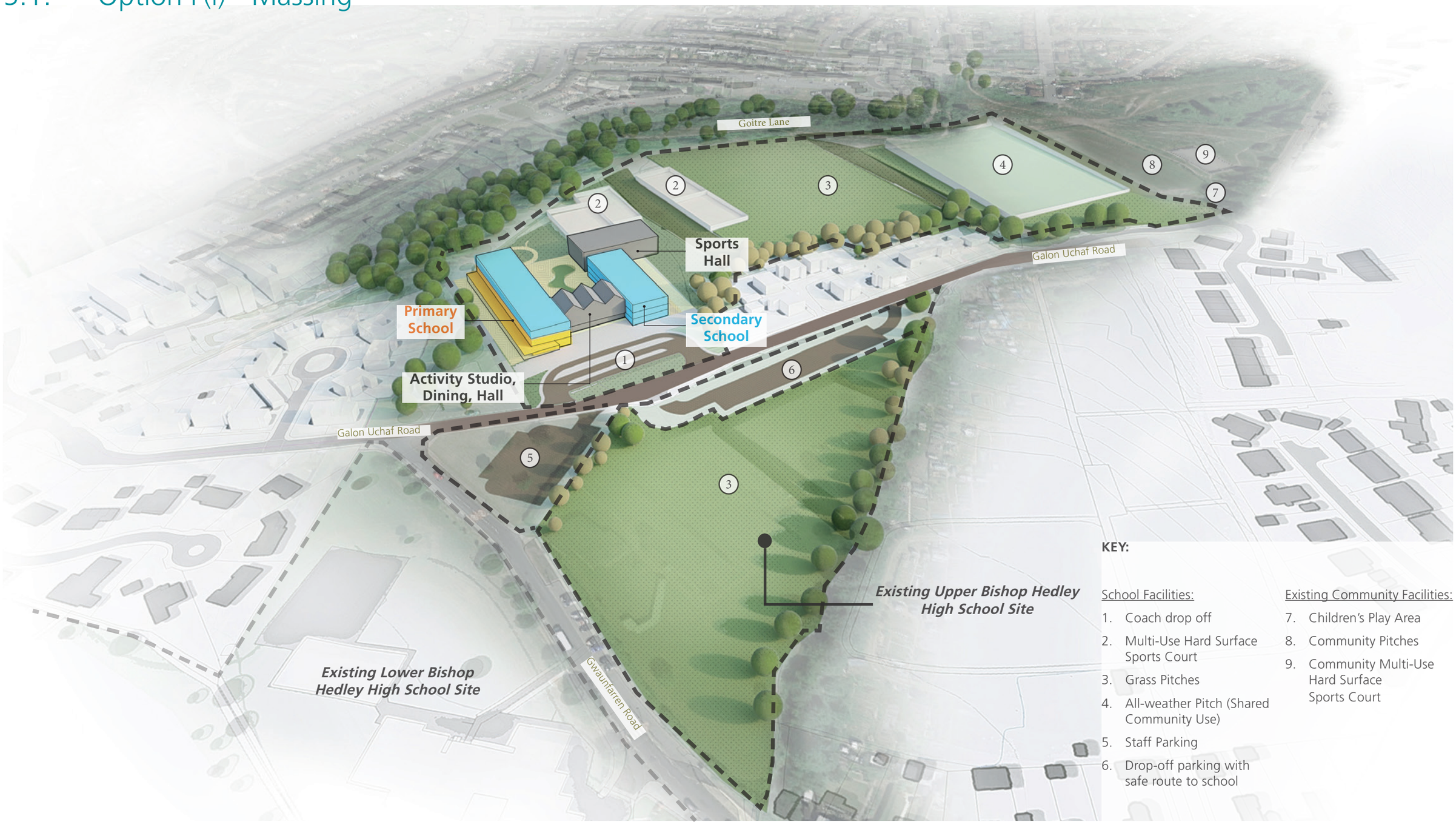
The development of the building preparation and brief shall further develop the ICT and telecoms requirements it is anticipated that a local network operator serving the existing site may be approached to serve the expansion works area and the quantity and arrangement of these services shall be developed at a later stage.

It is anticipated that several ICT lines shall be required to serve the new facility, including fibre where available. The cabling shall be run in a dedicated server room location with localised cooling/ventilation. It would be assumed at this point several 42U cabinets will be required to satisfy the requirements of the facility, however this will be developed further with the school or council's ICT specialist.

5. Design Development

In the following section, one of the preferred options (Option F (I)) is further developed. The design development takes into consideration 3D Massing, landscape elements and elevation studies.

5.1. Option F(i) - Massing



5.2. Option F(i) - Landscape Plan

KEY:

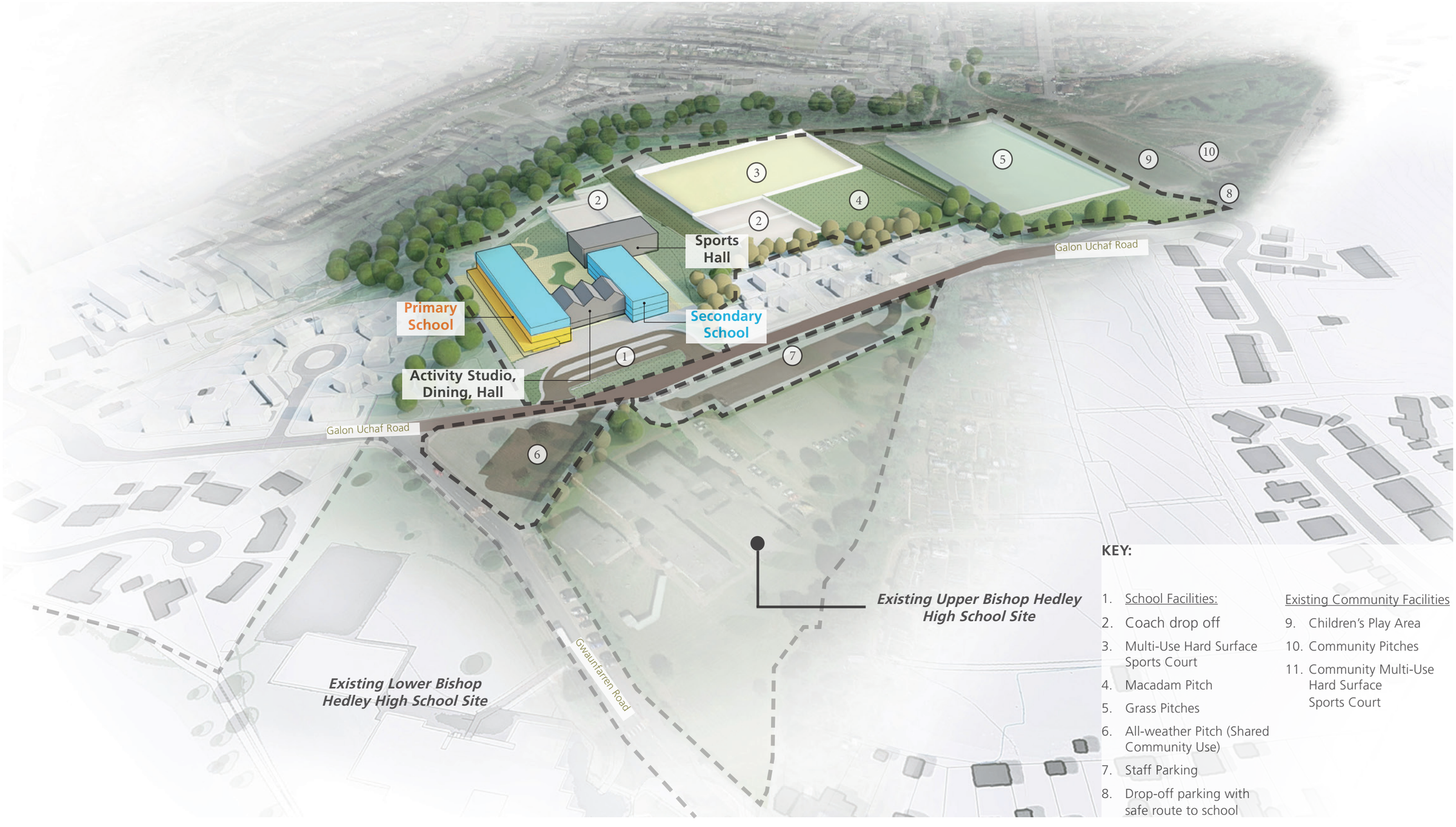
School Facilities:

1. All through school with separate entrances for primary and secondary pupils
1a. Primary pupil teaching wing (at ground and first floors)
1b. Secondary pupil teaching wing
2. Sports Hall
3. Coach drop off
4. Multi-Use Hard Surface Sports Court
5. Grass Pitches
6. All-weather Pitch (Shared Community Use)
7. Staff Parking
8. Drop-off parking with safe route to school
9. Nursery & Reception Class Playing Area
10. Primary Pupil Play Area
11. Secondary Pupil Recreational Area
12. Forest School
13. Outdoor Dining Area
14. School Chapel
15. Traffic calming measures to be introduced, for example school crossings and a 20mph zone. A transport impact assessment is being undertaken

Existing Community Facilities:

16. Children's Play Area
17. Community Pitches
18. Community Multi-Use Hard Surface Sports Court

5.3. Option F(ii) - Massing



KEY:

1. School Facilities:
2. Coach drop off
3. Multi-Use Hard Surface Sports Court
4. Macadam Pitch
5. Grass Pitches
6. All-weather Pitch (Shared Community Use)
7. Staff Parking
8. Drop-off parking with safe route to school

Existing Community Facilities

9. Children's Play Area
10. Community Pitches
11. Community Multi-Use Hard Surface Sports Court

5.4. Option F(ii) - Landscape Plan

KEY:

School Facilities:

1. All through school with separate entrances for primary and secondary pupils

1a. Primary pupil teaching wing (at ground and first floors)

1b. Secondary pupil teaching wing

2. Sports Hall

3. Coach drop off

4. Macadam Pitch

5. Multi-Use Hard Surface Sports Court

6. Grass Pitches

7. All-weather Pitch (Shared Community Use)

8. Staff Parking

9. Drop-off parking with safe route to school

10. Nursery & Reception Class Playing Area

11. Primary Pupil Play Area

12. Secondary Pupil Recreational Area

13. Forest School

14. Outdoor Dining Area

15. School Chapel

16. Traffic calming measures to be introduced, for example school crossings and a 20mph zone. A transport impact assessment is being undertaken

Existing Community Facilities:

17. Children's Play Area

18. Community Pitches

19. Community Multi-Use Hard Surface Sports court

5.5. Option F(i) / Option F(ii) - Proposed Main Entrance Visual

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6. Project Risks by AECOM

6.1. Early Warning Register

The following section contains extracts from the early warning register prepared by AECOM, dated 07/09/2020.

New 3-16 VA School Merthyr Tydfil
Early Warning Register

LIKELIHOOD				EFFECT			
Description	Code Number	Scenario	Guide Probability	Objectives (Projects)	Cost	Time	Other Objectives Guide (Sustainability, Benefits etc.)
Very High (VH)	5	Almost certain to occur	>75%	Critical impact on the achievement of objectives and overall performance. Huge impact on costs and/or reputation. Very difficult and possibly long-term to recover.	>£1000k	12 Months +	Failure to achieve all CSF/ objectives
High (H)	4	More likely to occur than not	50-75%	Major impact on costs, objectives. Serious impact on output and/or quality and reputation. Medium to long-term effect and expensive to recover.	£700k-£1000k	6-12 Months	Failure to achieve more than one CSF/ objective
Medium (M)	3	Fairly likely to happen	20-50%	Reduces viability significant waste of time and resources and impact on operational efficiency, output, and quality. Medium term effect, which may be expensive to recover.	£400k - £700k	3-6 Months	Failure to achieve project objectives
Low (L)	2	Low but not impossible	1-20%	Minor loss, delay, inconvenience or interruption. Short to medium term effect.	£200K - £400K	1-3 Months	Failure to achieve one project objective
Very Low (VL)	1	Extremely unlikely to happen	<1%	Minimal loss, delay, inconvenience or interruption. Can be easily and quickly remedied.	<£200K	<1 Month	Minor impact on one project objective

5 T's Rating	
Tolerate	Take little to no action, just be aware and monitor
Treat	Take mitigation action to reduce impact or chance of impact.
Transfer	Transfer risk elsewhere, for example take out insurance or pass on to contractor as part of contract agreement.
Terminate	Take action to remove any chance of impact - for example, include in cost plan so there is no uncertainty.
Take (Opportunity)	Take all steps to ensure an opportunity is realised

Risk Ratings

Date: 07.09.20
Revision: Draft 1

New 3-16 VA School Merthyr Tydfil

Risk Identification											Current Risk Assessment (1=VL, 2=L, 3=M, 4=H, 5=VH)						Risk Response						
Proj Risk Number	Status	Risk, Opportunity or Issue	Title	Risk Description (Threat / Opportunity)	Cause	Consequence / Effect	Category	Risk Owner	Date Raised	Raised By	Probability	Time	Cost	Objectives	Max Assessment	ROAG Status (Red Orange Amber Green)	ROAG	Response Strategy (5 T's) Tolerate, Treat, Transfer, Terminate, Take Opp	Management Actions Taken	Management Actions Planned	Action Owner	Action Due Date	Notes / Current Position
8	Open	Risk	Planning	Implications on SAB approval.	SAB not properly programmed, application delayed due to late appointment/design/stage sign off.	Client not happy with SAB implications, delays to approvals or SAB do not accept SW proposals by design team.	Planning	Design Team		Project Team	5	3	3	4	5	125	RED	Treat		Early engagement of MTCBC SAB officers and pre-application advice from SAB.	Design Team	TBC	
11	Open	Risk	Site Conditions	Unknown geotechnical and ground condition risk linked to site.	Lack of SI/GI information.	Potential site contaminates, poor ground conditions and remediation measures required. Additional cost and programme.	Ground Conditions	TBC		Project Team	5	4	4	5	5	125	RED	Treat		Thorough site investigations should take place as soon as reasonably possible to uncover all unknowns. Trial holes should dug where necessary. RIBA stages 1-2.	TBC	TBC	
14	Open	Risk	Change	Client changing Scope of works throughout project.	No sign off of accommodation schedules and option appraisals. Change of requirements and stakeholder input.	Increased costs and programme delays.	Change	MTCBC		Project Team	5	3	3	2	5	125	RED	Treat		Robust change control mechanism in place to deal with change and workshops to be held with Client. Stage sign off required.	MTCBC	TBC	
16	Open	Risk	Asbestos	Excessive asbestos within existing buildings (dependant on option chosen.	Lack of survey information. The current asbestos registers do not adequately capture the extent of the asbestos within the buildings scheduled for demolition or refurb.	Potential delays and cost due to unforeseen asbestos issues.	Asbestos	MTCBC		Project Team	5	3	5	5	5	125	RED	Treat		Early engagement of MTCBC Asbestos team and d R&D survey to eliminate risks. Obtained existing building registers and supporting drawings.	MTCBC	TBC	
1	Open	Risk	Education	Projects not delivered (occupiable) by September 2023.	Initial programme not achievable, sign off delayed, contractor not able to deliver to the required programme - choice of procurement.	Unable to deliver scheme with MTCBC. Implications with consultation document.	Programme	Project Team		MTCBC	4	2	3	5	5	100	RED	Treat	Procurement review required.	Critical review of master programme early in RIBA stages 1-2. Robust review of project programme throughout each RIBA stages of work, Client / Service Manager to be updated on progress. Key programme dates for approval and commencement to next stage.	Project Team	TBC	Key/critical dates to be determined.
3	Open	Risk	Infrastructure	Upgrade of existing site wide mechanical and electrical infrastructure.	Lack of capacity within existing utilities infrastructure.	Increase to costs and delays from upgrading infrastructure.	Infrastructure	Project Team		MTCBC	4	3	5	5	5	100	RED	Treat		Early engagement with statutory authorities. Desktop study and site investigation to take place as soon as possible. Initial analysis of potential loading to	Project Team	TBC	
31	Open	Risk	Market	There is a risk that market conditions will impact the cost of materials and labour.		Additional cost	Market	Project Team		Project Team	3	3	4	5	5	75	RED	Transfer		Ongoing review and monitoring of current legislation. Consider the impact Brexit may have on the supply chain.		TBC	
12	Open	Risk	Highways	Increase in the extent of the required highway infrastructure improvements.	Highways requirements.	Cost issues requiring a potential re-design with delays.	Highways	MTCBC		Project Team	4	2	3	3	4	64	RED	Treat		Early stakeholder engagement in order to fully establish the scope of the required highway infrastructure works including safe routes to school. RIBA stages 1-2.	MTCBC	TBC	
15	Open	Risk	Environmental	Unknown environmental and ecological issues relating to the site.	Late investigations.	Potential programme delays due to unforeseen ecological / environmental issues.	Environmental	MTCBC		Project Team	4	2	2	1	4	64	RED	Treat		Early appointment of environmental / ecological consultants. Thorough ecological and environmental surveys to be undertaken as soon as reasonably possible to uncover all unknowns.	MTCBC	TBC	
30	Open	Risk	Utilities	There is a risk that the statutory authority agreements have programme implications.		Delay	Utilities	Project Team		Project Team	4	4	3	4	4	64	RED	Transfer	Establish in detail the service requirements and discuss potential lead in and challenges at an early stage with the statutory authorities to minimise programme impact.	Early discussions held with regard the STAT requirements for the schemes. Establish in detail the service requirements and discuss potential lead in and challenges at an early stage with the statutory authorities to minimise programme impact.		TBC	

Proj Risk Number	Status	Risk, Opportunity or Issue	Title	Risk Description (Threat / Opportunity)	Cause	Consequence / Effect	Category	Risk Owner	Date Raised	Raised By	Probability	Time	Cost	Objectives	Max Assessment	ROAG Status (Red Orange Amber Green)	ROAG	Response Strategy (5 T's) Tolerate, Treat, Transfer, Terminate, Take Opp	Management Actions Taken	Management Actions Planned	Action Owner	Action Due Date	Notes / Current Position
9	Open	Risk	Budget	Insufficient budget to meet Clients/Stakeholders expectations.	late consultation with Education, inadequate budget.	Increased costs and programme delays.	Budget	MTCBC		Project Team	2	2	2	5	5	50	ORANGE	Treat	High level cost planning undertaken as part of the option appraisal process.	Robust cost plan with strong change management and governance processes at each stage. Value Management and Value Engineering to be regular features during delivery.	Project Team	TBC	
26	Open	Risk	Site Conditions	There is a risk that the site conditions differ from the survey results obtained to date, including contamination, buried structures and ecology.	Inaccurate results, lack of scope in surveys.	Delay, increase cost	Site Conditions	MTCBC		Project Team	2	2	1	5	5	50	ORANGE	Transfer		Survey information to be reviewed. Establish the requirement for any further survey work or site investigations.	MTCBC	TBC	
27	Open	Risk	Budget	There is a risk that an agreed budget can not be met with the Contractor, delaying the FBC submission and approval process.	Contractors late inclusions.	Delay and cost implications.	Budget	MTCBC		Project Team	2	5	5	5	5	50	ORANGE	Treat		On going cost appraisals undertaken as the design progresses.	Project Team	TBC	
33	Open	Risk	Flood Risk	Flood Risk – Development Control		Potential delays in the Planning process and added costs with alterative solution proposed.	Flood Risk	Project Team		Project Team	2	2	3	5	5	50	ORANGE	Treat		Design team to review and flood modelling to be undertaken asap to determine risk.		TBC	
35	Open	Risk	Supply chain	Main, Sub-contractor failure		Potential delays to the project and increased costs	Supply chain	MTCBC		Project Team	2	3	5	5	5	50	ORANGE	Tolerate		Financial checks, bonds, payment reviews.		TBC	
37	Open	Risk	BREXIT	BREXIT		Unexpected changes in inflation, political situation or procurement of materials	BREXIT	MTCBC		Project Team	2	2	3	5	5	50	ORANGE	Transfer	Regular review of the economic climate, new regulations or trading policies in the UK.	Regular review of the economic climate, new regulations or trading policies in the UK.		TBC	
4	Open	Risk	Education	It is not possible for the existing school to remain fully operational during the construction of the new building (depending of final location).	Position of new build has major effect on the school operation and cause's unacceptable disruption (assumed no temporary accommodation to be used). Programme and cost impact.	Careful consideration is required to the planning and phasing of the works including externals and carparking etc. The need to close any section of the school that should have remained open could cause a very negative public image of the project. Temporary Accommodation may be needed for some of the duration of the works. The sites may also be open to the public during school holidays which will need to be considered.	Education	Project Team		MTCBC	3	3	3	4	4	48	ORANGE	Treat	Consideration given at the procurement workshop.	Phasing and Construction programmes to be reviewed during procurement and the first stage. Regular contact with the school staff regarding the programming, planning and separation of the works. Phasing plan to be developed and informing contractor submissions and programmes.	Project Team	TBC	
20	Open	Risk	Planning	Onerous planning conditions are imposed on the project.		Possible delays to start on site, increased costs and programme delays from closing out conditions.	Planning	MTCBC		Project Team	3	2	4	1	4	48	ORANGE	Treat		Early consultation to take place with LPA/NRW/Statutory authorities in order to influence what conditions are imposed as much as possible. Early sight of pre-commencement conditions that should be targeted first	MTCBC	01-Aug-20	
2	Open	Risk	BREEAM	Failure to achieve BREEAM Excellent.	Inadequate BREEAM Planning and loss of free credits, BREEAM consultant not employed at an early stage.	Key project requirement not achieved, and potential loss of WG funding. Additional costs to secure alternative credits.	BREEAM	Project Team		MTCBC	2	2	1	4	4	32	ORANGE	Transfer	Close monitoring of design with sign off procedure to comply with BREEAM assessment and cost impact.	BREEAM Consultant to be appointed asap	Project Team	TBC	
5	Open	Issue	Neighbours	The proposed delivery routes cause disruption to the residents as cars are parked along access road. This could cause an issue for large construction vehicles. Inefficient phasing will compound this risk.	Restricted access.	Complaints are received from residents and a negative public image of the project is developed.	Neighbours	MTCBC		Project Team	3	1	1	1	3	27	ORANGE	Transfer	Information to be provided as part of the Contractors tender documentation and ER.	The principal contractor is to fully develop a delivery strategy with limits on times for deliveries. A Traffic Management plan and construction phase plan is required. The phasing of the site logistics should be carefully reviewed as there may be a requirement for access routes to change during the construction period.	Contractor	TBC	
8	Open	Issue	Parking	Limited space on site results in a reduction of available car parking for the operational school.	limited site area.	Discontented School staff users. Negative PR impact.	Parking	MTCBC		Project Team	3	2	2	1	3	27	ORANGE	Treat	Consideration given as part of the option appraisal.	A site logistics plan to be fully developed with all affected stakeholders consulted and agreed. Limited space for staff on site will need to be provided.	MTCBC	TBC	
7	Open	Issue	Neighbours/School	Complaints are received from the neighbours and existing live operational school.	Position of new build has major effect on the school operation and causes unacceptable disruption (no temporary accommodation to be used). Programme and cost impact.	A high number of complaints will lead to a poor public image for the project. It could also affect the planning process, causing programme delays and impact on cost.	Neighbours/school	MTCBC		Project Team	3	1	1	1	3	27	ORANGE	Treat		Early and regular consultation/updates should be provided to the existing neighbours by way of letter drops and consultations. A procedure for voicing complaints/concerns should be made available to the public i.e. Community liaison officer.	Contractor	TBC	

Proj Risk Number	Status	Risk, Opportunity or Issue	Title	Risk Description (Threat / Opportunity)	Cause	Consequence / Effect	Category	Risk Owner	Date Raised	Raised By	Probability	Time	Cost	Objectives	Max Assessment	ROAG Status (Red Orange Amber Green)	ROAG	Response Strategy (5 T's) Tolerate, Treat, Transfer, Terminate, Take Opp	Management Actions Taken	Management Actions Planned	Action Owner	Action Due Date	Notes / Current Position
22	Open	Risk	Change	Change in Employer brief and/or Stakeholder requirements affecting design production.		Potential delay in completing key stages and additional fees. Potential new planning application required arising out of fundamental brief/design changes.	Change	MTCBC		Project Team	3	2	1	2	3	27	ORANGE	Treat		Early sign off and buy in at key stages with stakeholders. Design freeze is obtained at Stage 3.	MTCBC	TBC	
18	Open	Risk	Location	Proposed foundation solution impacts on neighbouring properties retaining / party wall.	location of build.	Potential part wall issues required and negative impact on neighbouring areas.	Location	MTCBC		Project Team	2	3	3	1	3	18	AMBER		Initial option appraisal to mitigate any issues.	Early engagement and liaising with engineers to highlight issue, sign off of stage report.	MTCBC	TBC	
25	Open	Risk	Budget	There is a risk that the current ICT budget allowance may not be sufficient to deliver the client aspirations.	Stakeholder requirements.	Additional costs	Budget	MTCBC		Project Team	2	1	1	3	3	18	AMBER	Treat		Initial discussions to take place with the school SLT teams requesting that a clearly defined ICT strategy is defined.	MTCBC	TBC	
28	Open	Risk	Education	There is a risk that the curriculum analysis carried out results in the requirement for additional class rooms.	Non sign off of the curriculum analysis and accommodation schedules.	Operational, delay and additional costs	Education	MTCBC		Project Team	2	3	2	2	3	18	AMBER	Treat		Schedule of accommodation review and initial curriculum requirements of the school have been analysed and form part of the RIBA stage 2 information.	MTCBC	TBC	
13	Open	Risk	BIM	Consultants that may not be experienced with the use of BIM may not sign up to the use of it or implement it inefficiently.	Information not supplied as required by the Client.	Potential delays to the project and increased costs from required training sessions.	BIM	MTCBC		Project Team	1	1	1	4	4	16	AMBER	Transfer		Procurement process to include evidence of BIM including knowledge and past experience of the use of BIM throughout construction project.	MTCBC	TBC	
10	Open	Issue	Site Logistics	Materials are delivered to the site in an unorganised manner.	Timing of deliveries	Confusion over delivery of materials to site or a lack of available space could cause abortive deliveries and delays / increase costs would follow from this.	Site Logistics	Contractor		Project Team	2	1	1	1	2	8	GREEN	Transfer		A Site Delivery Strategy is to be established prior to the construction phase and implemented throughout the remainder of the project.	Contractor	TBC	
17	Open	Risk	Access	Alternative construction site access is not available due to Neighbouring buildings.	Restricted site access.	Potential delays and added costs with alterative solution proposed.	Access	MTCBC		Project Team	2	2	2	2	2	8	8	Treat		Early engagement of MTCBC planning and local residents.	MTCBC	TBC	
19	Open	Risk	Secure by Design	Scheme fails to achieve Secured by Design status.	Secure by design overlooked during design stage.	Increased cost as redesign of elements will be required.	Secure by Design	Design Team		Project Team	2	1	1	1	2	8	GREEN	Transfer		Early and regular liaison with Architectural Officer through all RIBA Stages 2-3	Design Team	TBC	
34	Open	Risk	School	Astro turf, playing field and hard play areas unable to be completed at school handover in existing location (dependant on option chosen).	Build and laydown areas.	Delay in planning or phasing process. Potential negative public opinion.	School	Project Team		Project Team	2	2	2	1	2	8	GREEN	Treat		Areas required to be detailed in ER.		TBC	
36	Open	Risk	Security	The security of the site boundary is compromised.		This could have serious implications given that the location of the site is near public footpaths, residential properties etc.	Security	Contractor		Project Team	2	2	1	1	2	8	GREEN	Transfer		Careful consideration to be given by the main contractor to provide works that are as safe and secure as possible. Security to be considered for out of hours/weekends. Access points manned at times when open. Proposals for site security to be reviewed.		TBC	
21	Open	Risk	Temporary Accommodation	Risk of temporary accommodation being required instead of using surplus accommodation within existing school whilst buildings are being demolished or refurbished.	Lack of existing capacity.	Increased costs to budget as current cost plan excludes the provision of any temporary accommodation, impact on site area.	Temporary Accommodation	MTCBC		Project Team	1	1	1	1	1	1	GREEN	Treat		MTCBC to confirm that temp accommodation will not be required. Review of school capacities against pupil numbers to establish the spare teaching space within the existing buildings. Dependant on programme and option chosen.	MTCBC	TBC	
29	Open	Risk	Education	There is a risk that the proposed governance for the new school has not been agreed resulting in conflict in relation to the new school design .		Delay and additional costs	Education	MTCBC		Project Team	1	1	1	1	1	1	GREEN	Treat		Consultation to be held with the schools and SLT to agree main school contact and consultation strategy.	MTCBC	TBC	
32	Open	Risk	Market	No suitable contractor sourced via SEWSCAP3.		No contactor, lack of competition.	Market	Project Team		Project Team	1	1	1	1	1	1	GREEN	Treat		Early engagement and liaising, make scheme as attractive as possible to market and sell scheme		TBC	

7. Summary & Key Next Steps

7.1. Summary

The report gives an overview of the potential development area(s) including the constraints/risks and opportunities of the sites based on the information currently available. The report highlights a number of constraints that should be investigated further if any development proposals are to be taken forward; including:

- Ground stability - made-up land and mining infrastructure is believed to be present on Galon Uchaf Park
- Ground contamination - a previous use as landfill has been identified on part of Galon Uchaf Park
- Site contours - there appear to be significant level changes across the sites
- Current use - the Local Development Plan designated much of Galon Uchaf Park as Open Space and currently the community use the park for walking and other sports/activities
- Highways - the increase in pupil numbers in the vicinity and change in pupil age range may have significant impact on traffic in the area. Vehicular traffic will also be introduced to Galon Uchaf Park impacting junctions and roads

The report also includes a number of indicative master plan options that respond to the site analysis. One preferred massing option has been explored in more detail, with associated costs by Aecom included. The costed options are based on a single option with individual strategies for pitch provision. These are summarised below:

Both versions of Option F locate the school within Zone A (Galon Uchaf Park). The 'U' shaped school connects two teaching wings (one primary and one secondary) by a central zone that houses large and shared spaces, including the hall and dining areas.

The existing community facilities are partly incorporated in to the school boundary, though out of hours access would remain. One sports pitch and court remain as community facilities outside of the school boundary though there may be opportunities for the school to share.

Pitches are located on the higher plateaus of the site, with the school building and adjacent informal external areas located at the lower level, towards the south of Galon Uchaf Park. Staff parking and parent drop-off are both located across the road from Galon Uchaf Park and would require appropriate crossing and traffic calming measures.

Option F(i) situates some of the school's pitch provision on Zone B. Zone B has level changes on site such that the area may be suitable for smaller sized pitches, better suited to younger pupils, and/or may require cut and fill exercises to suit.

Option F(ii) locates parking only at Zone B, with the rest of the school facilities located within Zone A. In order to meet the pitch area set out in the Building Bulletin guidance two all-weather pitches are required, enabling the area to be double counted in line with their increased use. The available suitable area for pitches on Zone A may require shared use of the remaining community grass pitch outside of the school's boundary line.

In siting the new school on the Galon Uchaf Park site the existing Bishop Hedley Catholic High School will remain largely unaffected during the construction phase. Once the pupils have decanted in to their new school premises Merthyr Tydfil County Borough Council will have the opportunity to sell the existing school sites with or without the existing buildings, as required.

7.2. Key Next Steps

The following subject areas capture the key next steps in developing proposals for this site:

Ground Investigation and Contamination

A Geotechnical Desk study has been completed and is included in the Appendix of this document in full. Intrusive Ground Investigation should now be undertaken to on the site, focused particularly on areas highlighted as risks for the new development in Section 2; such as the previous landfill site and mining remnants.

Acoustics

An external acoustic survey should be commissioned to determine noise audible on site throughout the school day. Noise transfer to neighbouring sites should also be investigated.

Ecology

The disruption/removal of trees and vegetation is likely to be required in any development proposal and therefore additional ecology and arboricultural reports should be obtained within the appropriate seasons. The presence of tree protection orders on site should also be investigated.

Utilities

A utility report has been included with this report highlighting known utilities in the vicinity, however, this information should be reviewed on site. Thorough investigation on-site should also be undertaken to identify any unknown services and utilities.

Flood Risk

Although no significant flood risk has been identified in a desk study, more detailed flood risk analysis should be undertaken to take into consideration the impact of climate change, for example.

Consultation

Engagement events with the schools and local residents should be organised to identify any opportunities and concerns.

Topographical Survey

A full topographical survey is required for the site to inform of the levels changes on site around the site boundary. This will be required to best site any development, and also for the proposed new site access point.

Planning and Design

Pre-application advice with should be sought with planning officers from Merthyr Tydfil County Borough Council to discuss any proposals being taken forward. Consideration should be given to the Open Space designation within the preferred site. The design should be developed in line with the Well being and Future Generations Act, Wales as outlined in Section 2.

SuDS

New legislation in Wales regarding the implementation of sustainable drainage systems on new developments should be considered at the next stages. On-site infiltration testing should be undertaken to inform the subsequent design stages, with respect to SuDS. SuDS design should be developed together with the landscape and architectural design to provide a holistic approach.

Transport

A Transport Assessment should be undertaken at the early stages of design and feedback from the local authority's Transportation and Highways departments should be sought. Highways in particular should be consulted regarding the proposed vehicular access points.

Energy

Any on-site energy generation, such as a Photovoltaic array, would need to be discussed with the distribution network operator at the earliest opportunity to ensure that no onerous terms are imposed.

Drainage

A full survey of existing site drainage should be undertaken, to include CCTV and connectivity with inspection chambers surveyed and photographed.

BREEAM

Merthyr Tydfil County Borough Council's requirements for BREEAM are to be confirmed at the next design stage and incorporated in to designs from the earliest opportunity.

Asbestos

If the existing Bishop Hedley Catholic High School sites are to be re-developed Refurbishment & Demolition Surveys should be undertaken to assess the extent of existing asbestos containing materials.

SNC·LAVALIN

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