



Queen Elizabeth High School

Preliminary Flood Risk Appraisal

November 2016

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This document has been prepared and checked in accordance with Waterman Group's IMS (BS EN ISO 9001: 2009 and BS EN ISO 14001: 2004)

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Comments



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1. Introduction

Waterman Infrastructure & Environment Limited (“Waterman”) has been instructed by the Education Funding Agency to prepare a Preliminary Flood Risk Appraisal for the proposed redevelopment of the Queen Elizabeth High School (hereafter termed “the Site”), located off Allendale Road in Hexham, Northumberland.

The purpose of the report is ‘*To assess the risk of the site flooding and any specific drainage challenges as well as an indication of likely attenuation requirements. The assessment is an initial high level appraisal of the issues that will be raised when (and if) a full Flood Risk Assessment is undertaken by the successful Contractor for submission to the Local Planning Authority.*’

The impact of the development on other surrounding properties will be assessed along with any potential impact on floodplain storage.

The Local Planning Authority (LPA) and Lead Local Flood Authority (LLFA) for the area is Northumberland County Council (NCC) and the sewerage undertaker is Northumbrian Water (NW).

Site Description

The Site is approximately 9.1 hectares in size and centred on Ordnance Survey (OS) Grid Reference 392400, 563950. The Site is bound by Allendale Road to the south, Whetstone Bridge Road to the east, by an access track and farmland to the west, and by an unnamed watercourse and residential properties to the north. The main entrance to the school is off Whetstone Bridge Road, a secondary access to the Site is via Allendale Road. A site location plan is included in Appendix A.

The Site currently consists of two separate school blocks comprising a total of 11 buildings of varying sizes and ages, located primarily in the central and eastern part of the Site. The western portion of the Site is occupied by playing fields and associated facilities for changing.

The central part of the Site is occupied by one of the school blocks, which includes three Grade II listed buildings, these are the Hydro Building, Winter Garden area, and Garden Buildings, referred to as EFAA, EFAC and EFAD on the architect’s layout plan in Appendix B, this area also includes buildings EFAB and EFAE. The eastern part of the Site is occupied by the other school block (including EFAG) and hardstanding and playgrounds, including tennis courts.

Development Proposals

The development proposals (hereafter referred to as the ‘Development’) are shown in Appendix B and comprise of two options.

Option 1 comprises:

- Refurbishment of buildings referenced EFAA, EFAB and EFAE.

Option 2 comprises:

- Refurbishment of Building EFAA, EFAB, EFAE and EFAG.

Scope of Report

This report comprises a Preliminary Flood Risk Appraisal in accordance with the scope of works provided by Turner and Townsend. The scope comprises:

- A review of the Envirocheck (or similar) report information provided with the Geo environmental desk top study including historic land use and high level flood mapping (desktop study reports not provided for this Site, this report uses Environment Agency (EA) mapping and Council documents);

- A review of the statutory utility searches drainage information available on the Priority Schools Building Programme file sharing site (information not provided);
- Discussion with the local planning authority to determine the flood zone, the compatibility of the proposed control option and matters to be addressed in the planning application;
- Review of the local planning policies in relation to flooding and drainage;
- An assessment of the potential constraints to the development (including estimates of likely attenuation volumes and the proposed technical solutions to providing them); and
- Consultation with the school over any known issues on the site.

The appraisal does not include dialogue with the Statutory Undertaker, but should include a detailed review of all published guidance, statutory requirements and utilises existing services information.

2. Planning Policy and Guidance

National Planning Policy

The National Planning Policy Framework¹ (NPPF) sets out Government policy on development and flood risk. It aims to ensure that flood risk is taken into account at all stages of the planning process, to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. Where new development is exceptionally necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere, and where possible reduce flood risk overall. The NPPF advocates the use of the risk-based 'Sequential Test', in which new development is steered towards the areas at lowest probability of flooding which are identified by Flood Zones:

- Flood Zone 1 – low probability of flooding (less than 1 in 1,000 annual probability of river or sea flooding in any year);
- Flood Zone 2 – medium probability of flooding (between a 1 in 100 and 1 in 1,000 annual probability of river flooding and between a 1 in 200 and 1 in 1,000 annual probability of sea flooding in any year);
- Flood Zone 3a – high probability of flooding (1 in 100 or greater annual probability of river flooding or 1 in 200 or greater annual probability of sea flooding in any year);
- Flood Zone 3b – the functional floodplain (where water is stored in times of flood, including water conveyance routes, annual probability of flooding of 1 in 20 or greater in any given year).

The NPPF states that the overall aim of decision-makers should be to steer all new development to Flood Zone 1 (land assessed as having a less than 1 in 1,000 chance of river and sea flooding in any year).

The NPPF is a material consideration in the assessment of the application. Further guidance is provided in the national Planning Practice Guidance², extracts of which are presented in Appendix C.

Sequential Test

The NPPF gives guidance on the aim of the Sequential Test, which states:

“Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. The Strategic Flood Risk Assessment will provide the basis for applying this test. A sequential approach should be used in areas known to be at risk from any form of flooding.”

The Environment Agency's (EA) Flood Zone Map, as shown in Appendix D, indicates that the Site falls within Flood Zone 1 and is therefore deemed sequentially appropriate for development.

Climate Change

Recently published Environment Agency Climate Change Guidelines³ suggests that for developments with a lifespan in the order of 50 years (i.e. the proposed development), increasing peak rainfall intensity by 20% may provide an appropriate precautionary response to the uncertainty of climate change impacts.

Under the new guidance, the developer should design the surface water attenuation on-site to accommodate the 1 in 100 year plus a 20% allowance for Climate Change (CC) and undertake a sensitivity analysis to understand the flooding implication for the 1 in 100 year plus a 40% allowance for CC. If the implications are significant i.e. the site could flood existing development (additional flow of runoff from the Site) or put people at risk (by increase hazard levels within or off the Site, then a view may be taken to provide more attenuation working up towards 40% CC, or to provide additional mitigation allowances, for

¹ National Planning Policy Framework – Department for Communities and Local Government – 27th March 2012

² National Planning Practice Guidance to the National Planning Policy Framework – Flood Risk and Coastal Change – 5th April 2015

³ Flood Risk Assessments - Climate Change Allowances – The Environment Agency – 19th February 2016



example a higher freeboard to ensure no risk to third parties/onsite users for the extreme 1 in 100 year plus a 40% allowance for CC scenario. This will tie into existing principals for designing for exceedance.

Local Planning Policy

NCC, as the designated LLFA, has specific responsibilities, powers and duties in relation to flood prevention matters. This includes the role of implementing controls to ensure development proposals have adequate surface water runoff controls and flood prevention controls.

NCC has been consulted with regards to the drainage requirements for the Development, flooding on the Site and within the vicinity of the Site. However, a response has not yet been received.

3. Sources of Potential Flooding

Fluvial

Based on the EA Flood Map, as seen in Appendix D, the Site is located within Flood Zone 1 (less than 1 in 1,000 annual probability of river or sea flooding in any year) which is defined as having a low probability of flooding in the Planning Practice Guidance to the National Planning Policy Framework (NPPF).

The nearest main river to the Site is the Cockshaw Burn, which is located to the south of the Site. An area of Flood Zone 3 associated with the Cockshaw Burn is located approximately 15m to the southeast of the school Site boundary. It is recommended that the EA are consulted to obtain the associated flood levels this will confirm this exact location of this floodplain.

Local OS mapping records indicate the presence of an ordinary watercourse passing along the northern boundary of the Site. The EA's Flood Map for Planning shows that this river has not been modelled. In lieu of this information the EA's Risk of Flooding from Surface Water maps (Appendix D) have been interrogated. This mapping indicates that the majority of floodplain associated with the unnamed watercourse is unlikely to extend onto the Site.

The risk of flooding from fluvial sources is considered to be low.

Pluvial

Pluvial flooding occurs when natural and engineered systems have insufficient capacity to deal with the volume of rainfall. Pluvial flooding can sometimes occur in urban areas during extreme, high intensity, low duration summer rainfall events which overwhelm the local surface water drainage system, or in rural areas during medium intensity, long duration events where saturated ground conditions prevent infiltration into the subsoil. This flood water would then be conveyed via overland flow routes as dictated by the local topography.

The EA's Flood Risk from Surface Water maps (Appendix D) show that the Site is generally at a 'very low' risk of surface water flooding (i.e. less than 1 in 1000). However, there are some small areas of ponding shown to have 'low' (1 in 100 to 1 in 100 year), 'medium' (1 in 30 to 1 in 100), and 'high' risk (greater than 1 in 30).

The area to the southwest of building EFAB is shown to have a 'high' risk of surface water flooding. Further interrogation of the EA's mapping indicates the following flood depths:

- Greater than 1 in 30 – 300mm to 600mm;
- 1 in 30 to 1 in 100 – 300mm to 600mm;
- 1 in 100 to 1 in 1000 – 300mm to 600mm.

Review of the topographic survey (Appendix F) indicates that the minimum ground level in the area to the southwest of building EFAB is 94.29m AOD. This is approximately 0.53m to 1.21m lower than the surrounding area. The EA states that this mapping is coarse in nature and should not be used for property level assessments, however it does give a good indication of areas that may be at risk. It is recommended that this area of flooding is further investigated to confirm if this mapping is accurate.

A small area between buildings EFAD and EFAA is shown to have a 'low' risk of flooding. Further interrogation of the EA's mapping indicates the following flood depths:

- Greater than 1 in 30 – no flooding;
- 1 in 30 to 1 in 100 – no flooding;
- 1 in 100 to 1 in 1,000 – 300mm to 900mm.

As the area between buildings EFAD and EFAA would only be affected in the 'low' chance scenario it is not considered that it requires further investigation or mitigation.

An area to the west of building EFAG is shown to have a 'low' to 'medium' risk of surface water flooding. Further interrogation of the EA's mapping indicates the following flood depths:

- Greater than 1 in 30 – no flooding;
- 1 in 30 to 1 in 100 – 300mm to 900mm;
- 1 in 100 to 1 in 1,000 – 300mm to 900mm.

Review of the topographic survey (Appendix F) indicates that the ground levels fall in an easterly direction towards building EFAG to a minimum of 83.25m AOD. It is therefore possible that flooding could occur in this area as the building may block a natural flow route. It is recommended that this area of flooding is further investigated to confirm if this mapping is accurate.

There is also an area located to the southeast of building EFAA shown to have a 'medium' risk of surface water flooding. However, this appears to relate to an area of lowered ground and would have no impact on the buildings themselves.

However, the EA mapping shows some flooding could potentially occur in the northwest of the playing field, it should be noted that it is not clear if this flooding is fluvial or pluvial. This potential for flooding is corroborated by the PSBP2 Scoping Study Report⁴ which notes that the playfields tend to flood during winter months, it is also shown the constraints plan, which can be found in Appendix E.

If it is desired to mitigate the flooding of the playing fields it would need to be further investigated to determine the available options. One potential option would be to introduce land drainage.

Where a risk of flooding from surface water has been identified it is recommended this is further investigated to determine the appropriate mitigation steps that may be available. This could include temporary defences, additional drainage, improved maintenance of drainage network.

Coastal and Tidal Sources

Given the Site's location it is considered there is no coastal or tidal flood risk.

Groundwater

The natural geological sequence beneath the Site has been established from the British Geological Survey (BGS) borehole records in the vicinity. These indicate that the Site is likely to be immediately underlain by Clay. The history of flooding on the playing fields confirms that this is likely due to the impermeable nature of clay.

Due to the impermeable nature of clay it is likely to act as an aquiclude and prevent groundwater from rising to the surface. Furthermore, as the proposals only comprise refurbishment works it is unlikely to have an adverse effect on groundwater levels in the area.

Reservoir, Canal and Artificial Sources

Mapping shown on the EA website indicates the largest area that may be affected by flooding if a reservoir were to fail. The EA note that this is a worst case prediction and any flood event is unlikely to be this large.

⁴ PSBP2 Scoping Study Report Queen Elizabeth High School – AECOM – June 2015

EA mapping (Appendix D) shows that the Site would not be subject to flooding due to failure of any reservoir in the area.

There are no other artificial bodies of water close to the Site, and the risk of flooding from artificial sources is therefore considered to be low.

Flooding from Drainage Systems

Review of mapping contained within the NCC Strategic Flood Risk Assessment⁵ (SFRA, Appendix G) indicates that Hexham is located within an area with a 'high incidence' of sewer flooding. However, it is unclear from this mapping whether the Site itself was affected.

It is recommended that NW are consulted at the planning stage to see if they have more Site specific records of sewer flooding.

⁵ Northumberland County Council Level 1 Strategic Flood Risk Assessment – Scott Wilson – September 2010

4. Surface Water Drainage Strategy

As the proposals comprise refurbishment of existing buildings there would be no changes to the existing drainage regime. It would therefore not be commensurate with the nature of the proposals to provide attenuation or SuDS. This has been confirmed in consultation with NCC (Appendix H).

5. Conclusions and Recommendations

The Site lies within Flood Zone 1 indicating that the risk of tidal and fluvial flooding is low. There is an unnamed watercourse that runs along the northern boundary of the Site which has not been modelled. However, using the EA's Flood Risk from Surface Water map in lieu of any modelling it is considered that the fluvial flood risk from this watercourse is also low.

The EA's Flood Risk from Surface Water maps show that the Site is generally at a 'very low' risk of surface water flooding (i.e. less than 1 in 1,000). However, there are some small areas of ponding shown to have 'low' (1 in 100 to 1 in 100 year), 'medium' (1 in 30 to 1 in 100 year), and 'high' risk (greater than 1 in 30 year).

As a risk of flooding from surface water has been identified it is recommended this is further investigated at the planning stage to determine the appropriate mitigation steps that may be available. This could include temporary defences, additional drainage, improved maintenance of drainage network.

Flood risk from groundwater, sewerage or artificial sources has also been assessed and is considered to be low.

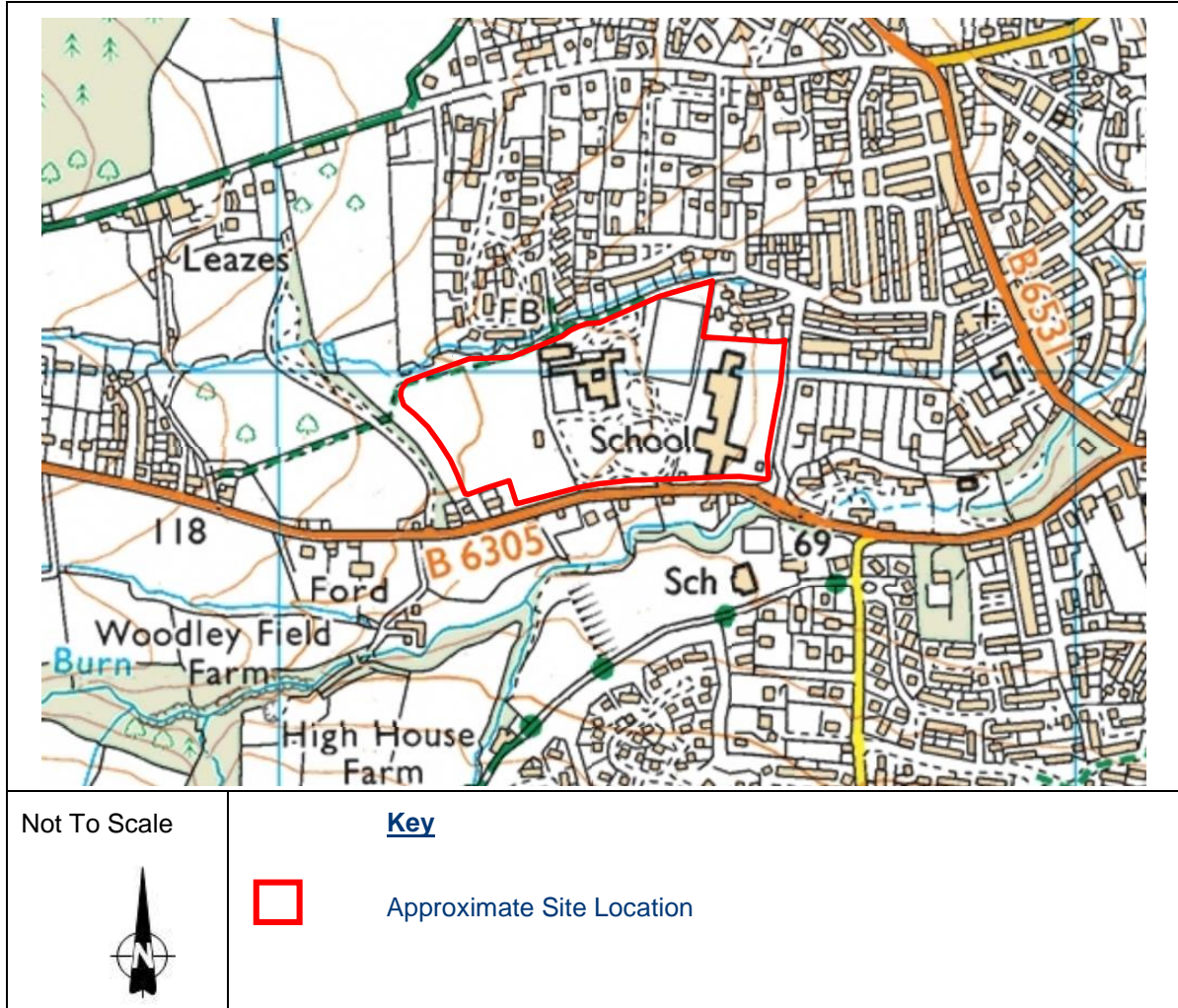
As the proposals comprise refurbishment of existing buildings there would be no changes to the existing drainage regime. It would therefore not be commensurate with the nature of the proposals to provide attenuation or SuDS.



APPENDICES

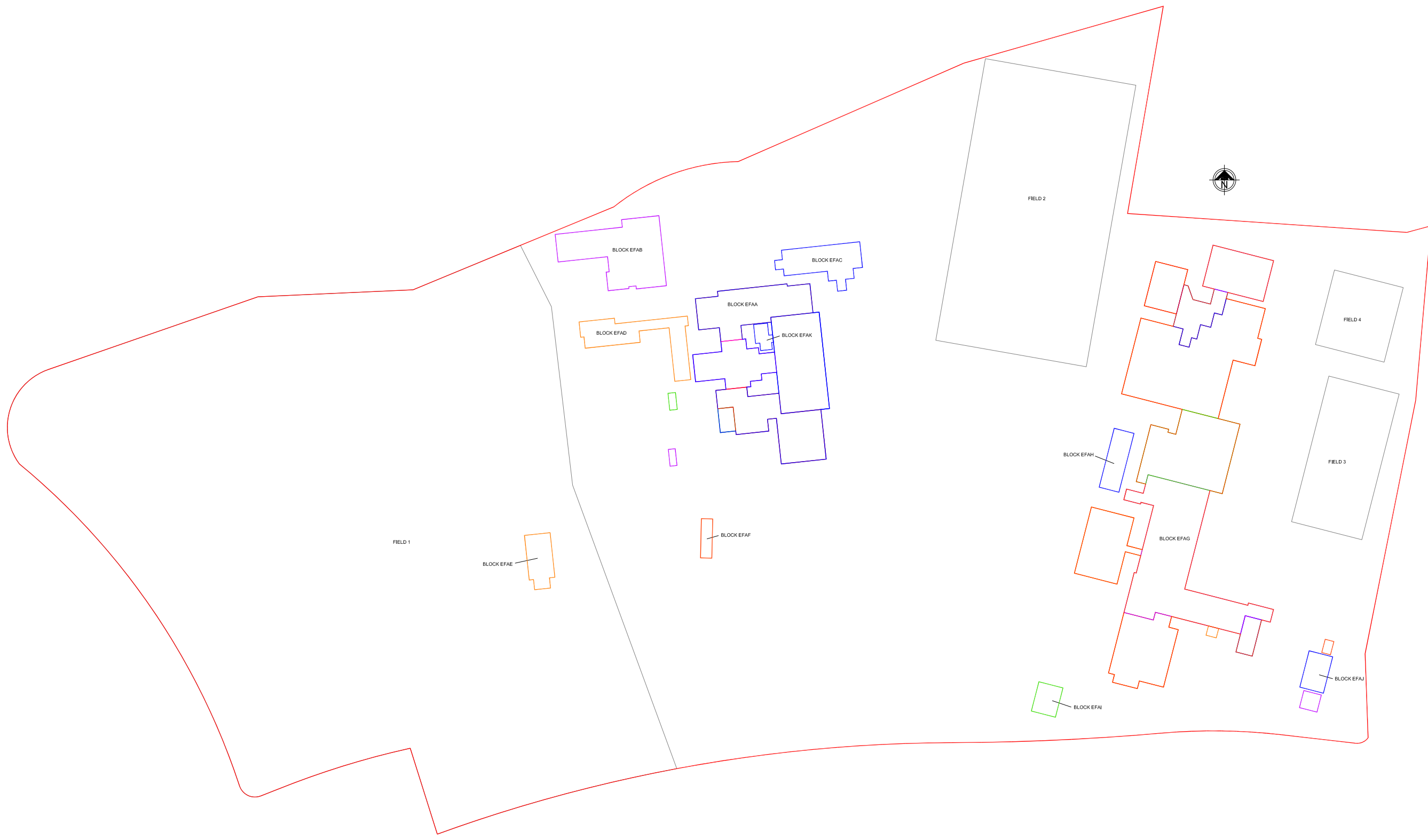
A. Site Location and Layout Plans

Figure 1: Site Location Plan





B. Architects Layouts



Queen Elizabeth High School
Northumberland
122356
929/4417

Queen Elizabeth High School (SCOPING STUDY)

| NOR | Existg GIFA | Demo | Retain | Refurb | New | GIFA |
|------|-------------|------|--------|--------|-----|------|
| 1366 | 13850 | ? | ? | 4379 | ? | ? |



Queen Elizabeth High School (VARIANT)

| NOR | Existg GIFA | Demo | Retain | Refurb | New | GIFA |
|------|-------------|------|--------|--------|-----|------|
| 1366 | 13850 | ? | ? | 4379 | ? | ? |





C. Extracts from the National Planning Practice Guidance - Flood Risk and Coastal Change

Table 1: Flood Zones

In accordance with the sequential test in the National Planning Policy Framework, sites are to be classed as follows:

| Flood Risk Vulnerability | Definition | Appropriate Uses | FRA Requirements | Policy Aims |
|--|---|--|--|--|
| Zone 1 – Low Probability | This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%). | All uses of land are appropriate in this zone. | For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a FRA. This need only be brief unless the factors above or other local considerations require particular attention. | In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage systems. |
| Flood Zone 2 – Medium Probability | This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year. | Essential infrastructure and the water-compatible, less vulnerable and more vulnerable uses as set out in table 2 are appropriate in this zone. The highly vulnerable uses are only appropriate in this zone if the Exception Test is passed. | All development proposals in this zone should be accompanied by a FRA. | In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage systems. |
| Zone 3a - High Probability | This zone comprises land assessed as having a 1 in 100 or greater annual probability of river (>1%) or a 1 in 200-year greater annual probability of flooding from the sea (>0.5%) in any year. | The water-compatible and less vulnerable uses of land (table 2) are appropriate in this zone. The highly vulnerable uses in the table below should not be permitted in this zone. The more vulnerable uses and essential infrastructure should only be permitted in this zone if the Exception Test is passed. | All development in this zone should be accompanied by a FRA. | In this zone, developers and local authorities should seek opportunities to: <ul style="list-style-type: none"> i. reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage systems; ii. relocate existing development to land in zones with a lower probability of flooding; and |

| Flood Risk Vulnerability | Definition | Appropriate Uses | FRA Requirements | Policy Aims |
|--|---|--|---|--|
| Zone 3b - The Functional Floodplain | <p>This zone comprises land where water has to flow or be stored in times of flood.</p> <p>Local Planning Authorities should identify in their SFRAs areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. But land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, should provide a starting point for consideration and discussions to identify the functional floodplain.</p> | <p>Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.</p> <p>Only the water-compatible uses and essential infrastructure listed in table 2 that has to be there should be permitted in this zone. It should be designed and constructed to:</p> <ul style="list-style-type: none"> • remain operational and safe for users in times of flood; • result in no net loss of floodplain storage; • not impede water flows; and • not increase flood risk elsewhere. <p>Essential infrastructure in this zone should pass the Exception Test.</p> | <p>All development in this zone should be accompanied by a FRA.</p> | <p>iii. create a space for flooding to occur by restoring functional and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.</p> <p>In this zone, developers and local authorities should seek opportunities to:</p> <ol style="list-style-type: none"> i. reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage techniques; and ii. relocate existing development to land with a lower probability of flooding. |

Table 2 - Flood Risk Vulnerability Classification

| Vulnerability | Land Use Types |
|------------------------------|--|
| Essential Infrastructure | <ul style="list-style-type: none"> Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk; Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary stations; water treatment works that need to remain operational in times of flood; Wind turbines. |
| Highly Vulnerable | <ul style="list-style-type: none"> Police stations, Ambulance stations and Fire stations and Command Centres and telecommunications installations required to be operational during flooding; Emergency dispersal points; Basement dwellings; Caravans, mobile homes and park homes intended for permanent residential use; Installations requiring hazardous substances consent. |
| More Vulnerable | <ul style="list-style-type: none"> Hospitals; Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels; Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels; Non-residential uses for health services, nurseries and educational establishments; Landfill and sites used for waste management facilities for hazardous waste; Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan. |
| Less Vulnerable | <ul style="list-style-type: none"> Police stations, Ambulance stations and Fire stations which are not required to be operational during flooding; Buildings used for: shops; financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non-residential institutions not included in 'more vulnerable'; and assembly and leisure; Land and buildings used for agriculture and forestry; Waste treatment (except landfill and hazardous waste facilities); Minerals working and processing (except for sand and gravel working); Water treatment plants which are not required to be operational during flooding; Sewage treatment plants (if adequate measures to control pollution and manage sewage during flooding events are in place). |
| Water-compatible Development | <ul style="list-style-type: none"> Flood control infrastructure; Water transmission infrastructure and pumping stations; Sewage transmission infrastructure and pumping stations; Sand and gravel workings; Docks, marinas and wharves; Navigation facilities; MOD defence installations; Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location Water-based recreation (excluding sleeping accommodation); Lifeguard and coastguard stations; Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms; |

Vulnerability Land Use Types

- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, **subject to a specific warning and evacuation plan.**

Notes:

1. This classification is based partly on Department for Environment, Food and Rural Affairs and Environment Agency research on "Flood Risks to People (FD2321/TR2) and also on the need of some uses to keep functioning during flooding.
2. Buildings that combine a mixture of uses should be placed into the higher of the relevant classes of flood risk sensitivity. Developments that allow uses to be distributed over the site may fall within several classes of flood risk sensitivity.
3. The impact of a flood on the particular uses identified within the flood risk vulnerability classification will vary within each vulnerability class. Therefore, the flood risk management infrastructure and other risk mitigation measures needed to ensure the development is safe may differ between uses within a particular vulnerability classification.

Table 3 - Flood Risk Vulnerability and Flood Zone Compatibility

| Flood Risk Vulnerability | Essential Infrastructure | Water Compatible | Highly Vulnerable | More Vulnerable | Less Vulnerable |
|---------------------------------|---------------------------------|-------------------------|--------------------------|-------------------------|------------------------|
| Zone 1 | √ | √ | √ | √ | √ |
| Zone 2 | √ | √ | Exception Test Required | √ | √ |
| Zone 3a | Exception Test Required | √ | X | Exception Test Required | √ |
| Zone 3b | Exception Test Required | √ | X | X | X |

√ - Development is appropriate.

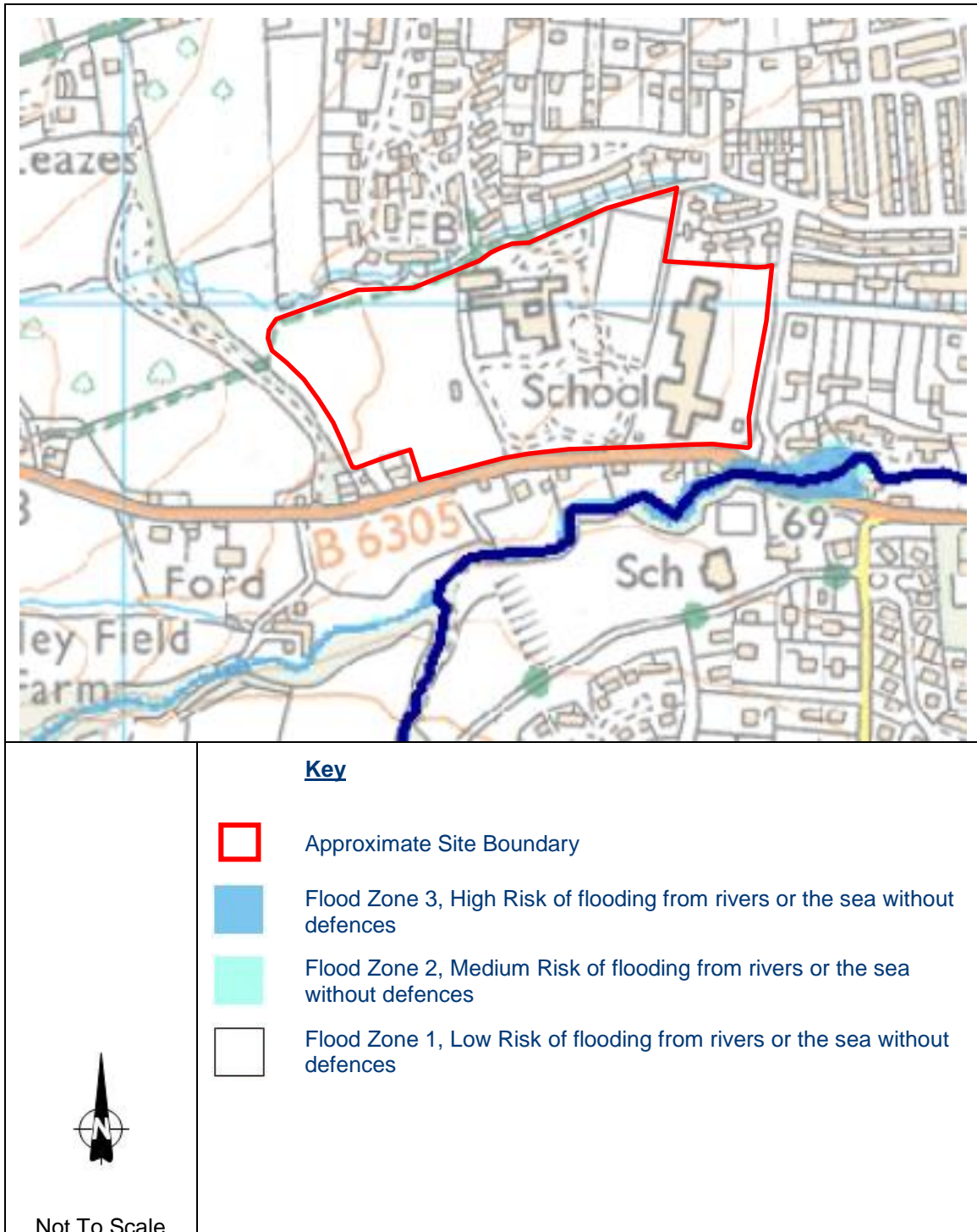
X – Development should not be permitted.

Notes: This table does not show:

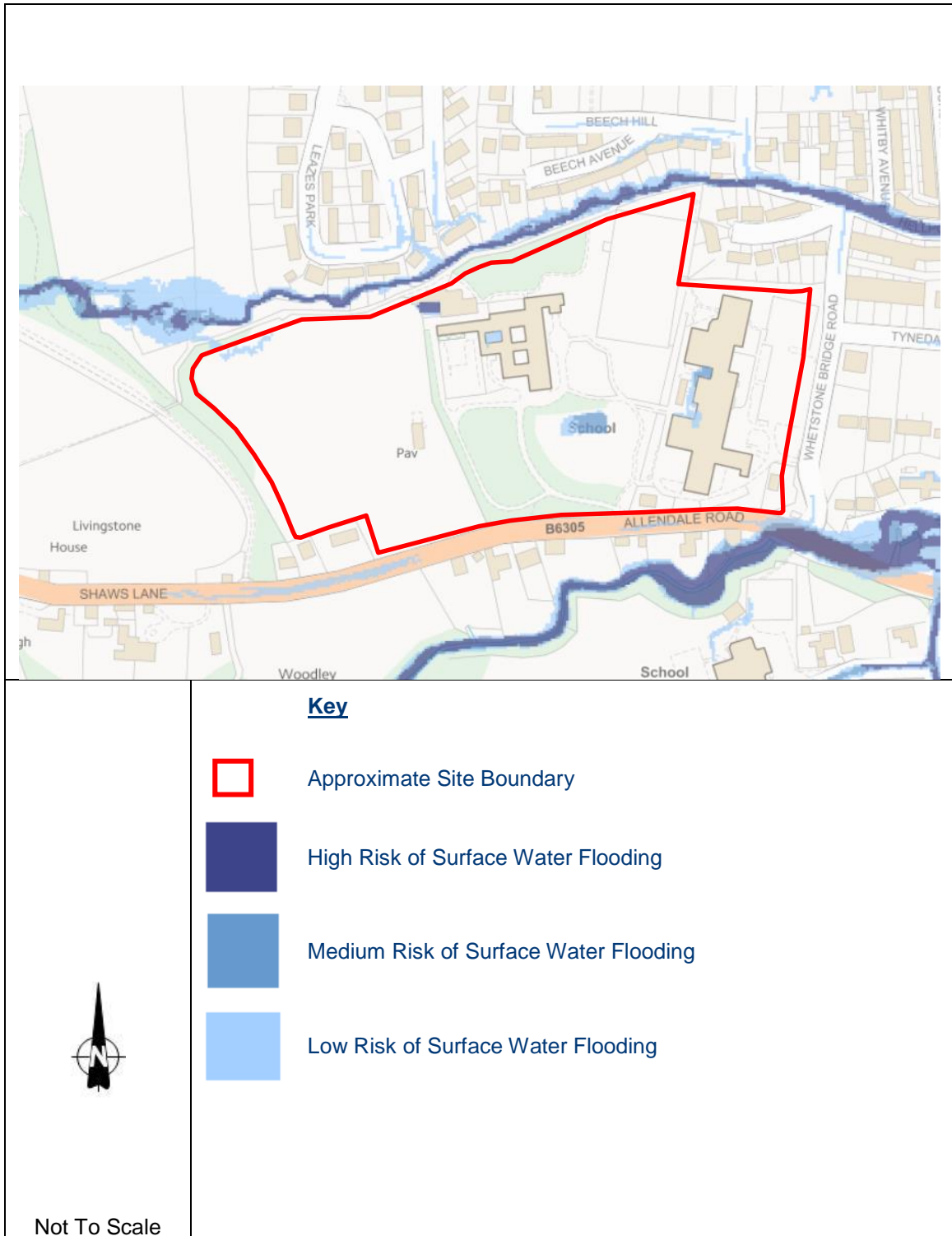
1. The application of the Sequential Test which gives development to Flood Zone 1 first, then Zone 2, and then Zone 3;
2. Flood risk assessment requirements; or
3. The policy aims for each flood zone.

D. Environment Agency Flood Maps

Environment Agency Flood Map for Planning



Environment Agency Risk of Flood Risk from Surface Water Map



Environment Agency Flood Risk from Reservoirs



Key

-  Approximate Site Boundary
-  Flood Zone 3, High Risk of flooding from rivers or the sea without defences
-  Flood Zone 2, Medium Risk of flooding from rivers or the sea without defences
-  Flood Zone 1, Low Risk of flooding from rivers or the sea without defences



Not To Scale



E. Constraints Plan

BLOCKS: F = Funded P = Pulled up U = Unsuccessful

EFAA: (F) (GIFA 3672m²)
EFAB: (U) (GIFA 558m²)

EFAC: (F) (GIFA 267m²)
EFAG: (U) (GIFA 8508m²)

EFAD: (F) (GIFA 297m²)
EFAH: (U) (GIFA 135m²)

EFAE: (F) (GIFA 143m²)

EFAK: (P) (GIFA 42m²)

PHOTOS:



KEY:

| | | | |
|--|---------------------|--|---|
| | North Point | | Sun Path |
| | Site Boundary | | Bus Routes + Stops |
| | Existing Building | | Pedestrian Traffic |
| | Existing Plant | | Vehicular Traffic |
| | Car Park | | Slope |
| | Hard Landscape | | Watercourse |
| | Games Courts | | Flooding / Waterlogged |
| | Soft Landscape | | Noise |
| | Habitat / Woodland | | Noise Sensitive Zone |
| | Congestion Zone | | Adjacent Neighbours |
| | Vehicle Entrance | | Secure Fence Line |
| | Pedestrian Entrance | | Cable |
| | Trees | | Overhead BT Cable |
| | View into Site | | Water Main |
| | View from Site | | Sewer / Drain (Unknown Site Distribution) |
| | Photo + Number | | Phase 1 Refurbish blocks A, C & D |
| | Hedges | | Phase 2 EFAE to be demolished and rebuilt |
| | Public Right of Way | | Possible area for contractors welfare/office cabins |
| | | | Temporary Accommodation |
| | | | Temporary access road |

PD Preliminary Issue

NOTES:

| | | | |
|--|-------------|--|--|
| | PAVILLION | | PLAYING FIELDS SUSCEPTIBLE TO FLOODING |
| | TANK | | GREENBELT LAND |
| | HYDRO LODGE | | |
| | CAR PARK | | |

TOTAL SITE AREA:
All information on these layouts has been provided from OS maps and prior surveys. Areas, line & hatch locations are indicative only - refer to surveys for more detailed information.

**EDUCATION FUNDING AGENCY
PRIORITY SCHOOL BUILDING PROGRAMME
QUEEN ELIZABETH HIGH SCHOOL
PHASING DRAWING
EXISTING SITE ANALYSIS**

dwg no. 122356 - 02
revision 01 date 10/08/15 URN: 122356

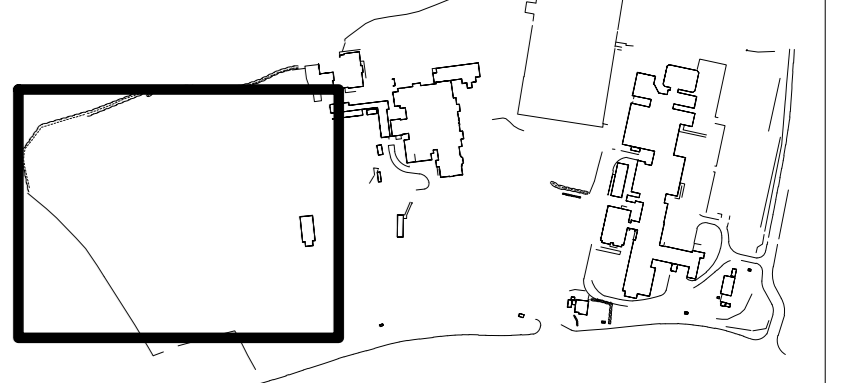
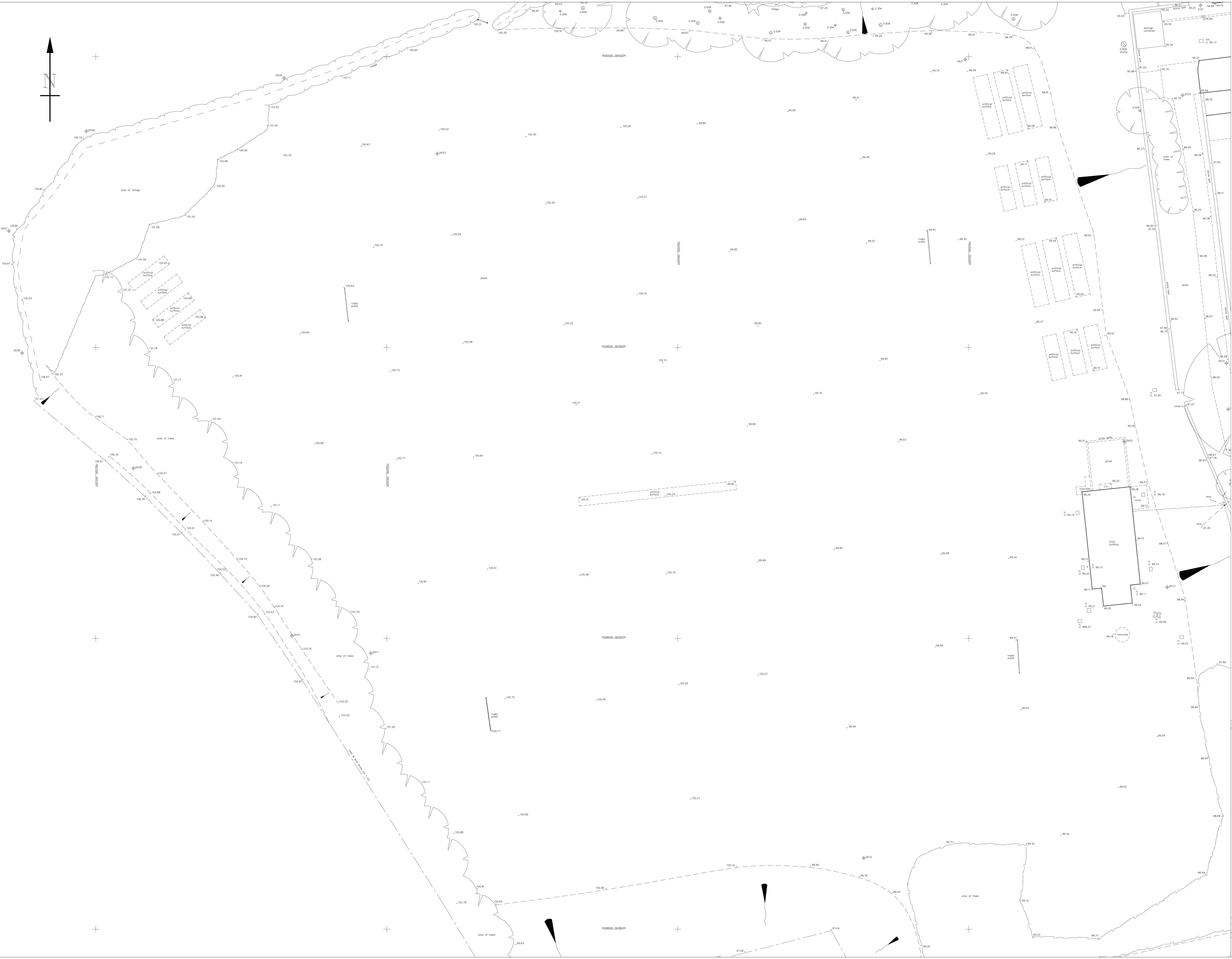


F. Topographic Survey

- Notes
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TOPOGRAPHICAL SURVEY/UTILITY KEY :-

| | |
|---------------------------|-----------------------|
| (h) = height | off = off set |
| g = gnomon | off = off survey area |
| peo = peg top | off = off survey area |
| ab = above ground | off = off survey area |
| as/- = assumed route | off = off survey area |
| av = air valve | off = off survey area |
| bb = ball and beam | off = off survey area |
| bd = ball drop | off = off survey area |
| bl = ball level | off = off survey area |
| bol = bolt | off = off survey area |
| bot = bottom of shaft | off = off survey area |
| br = brick | off = off survey area |
| bt = bottom of tank | off = off survey area |
| bu = bottom of well | off = off survey area |
| ca = cable | off = off survey area |
| cb = cable box | off = off survey area |
| cc = cable television | off = off survey area |
| cd = cover level | off = off survey area |
| ce = cover | off = off survey area |
| cf = combined water sewer | off = off survey area |
| ch = channel | off = off survey area |
| ci = cover | off = off survey area |
| cl = cover level | off = off survey area |
| cm = combined water sewer | off = off survey area |
| cn = cover | off = off survey area |
| co = cover | off = off survey area |
| cp = cover | off = off survey area |
| cs = cover | off = off survey area |
| ct = cover | off = off survey area |
| cu = cover | off = off survey area |
| cv = cover | off = off survey area |
| cw = cover | off = off survey area |
| cx = cover | off = off survey area |
| cy = cover | off = off survey area |
| cz = cover | off = off survey area |
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| db = drainage | off = off survey area |
| dc = drainage | off = off survey area |
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| de = drainage | off = off survey area |
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| ht = height | off = off survey area |
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| hv = height | off = off survey area |
| hw = height | off = off survey area |
| hx = height | off = off survey area |
| hy = height | off = off survey area |
| hz = height | off = off survey area |



| Rev | Description | By | Chk | Date |
|-----|-------------|----|-----|------|
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Client **TURNER & TOWNSEND**

Project **QUEEN ELIZABETH HIGH SCHOOL, HEXHAM, NE46 3JB**

Title **TOPOGRAPHICAL SURVEY**

| | | |
|----------------|------------|--------------|
| Status | Scale | Date Created |
| FINAL | 1:200 @ A0 | 19.10.16 |
| Project Leader | Drawn By | Checked By |
| NB | MSL | AHP |

| | | |
|-----------------|----------|----------|
| Document Number | Revision | Quantity |
| JJK9299 - 01 | A | |



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TOPOGRAPHICAL SURVEY/UTILITY KEY :-

| | |
|---------------------------------|----------------------------------|
| (H) = height | OL = off set |
| # = diemeter | OSD = ordnance survey bench mark |
| ▲ = peg top | PA = fence = post & rail fence |
| △/▽ = above ground | PG = pit depth |
| A/- = assumed route | PF = pipe riser |
| ▲ = air valve | PL = pipe to ground |
| BB = building beacon | PLS = pipe to surface |
| BL = back slope | PLT = manhole |
| BL = ball level | PLW = retaining wall |
| BOL = bollard | PR = road sign |
| BOB = bottom of shaft | RRW = non water pipe |
| B = telecom | S/DITCH = sewer trench |
| B/W fence = cross-hatched fence | S/S = safety paving |
| C/S = control box | SSP = stepping |
| CTV = cable television | SSE = security fence |
| CI = cover level | SSE = security fence |
| COM = corridor | ST = steel chamber |
| CR = combined water sewer | SU = soil pipe |
| CWS = combined water sewer | SV = stop valve |
| CH = drainage channel | SW = storm water pipe |
| CH = electric junction box | STB = temporary bench mark |
| CH = electric pole | TR = taken from records |
| CH = earth rod | U = unlevel |
| CH = flower head | U/S = underlay |
| CH = fire hydrant | U/S = unable to fit |
| CH = fire switch | U/S = unable to read |
| CH = four water sewer | U/S = unable to survey |
| CH = gully | U/S = unable to trace |
| CH = gully run | U/S = vent pipe |
| CH = gas riser | U/S = water level chamber |
| CH/Chashtul = horse chestnut | UM = water meter |
| CH/Thom = Hawthorn | W = waste pipe |
| IC = inspection cover | W = water riser |
| IL = invert level | |
| IL = illuminated | |
| IL = manhole | |
| IL = lamp post | |
| IL = manhole cover | |
| IL = marker | |
| IL = over head | |

Rev Description By Cnt Date

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Client TURNER & TOWNSEND

Project QUEEN ELIZABETH HIGH SCHOOL,
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Title TOPOGRAPHICAL SURVEY

Status Scale Date Created
FINAL 1:200 @ A0 19.10.16

Project Leader Drawn By Checked by
NB MSL AHP

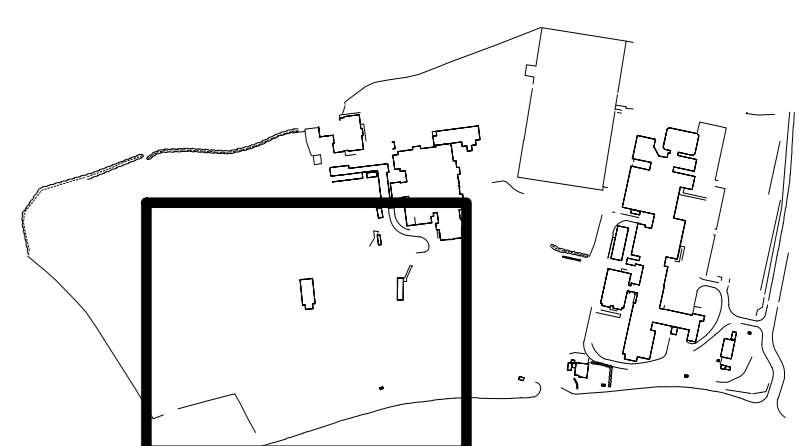
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TOPOGRAPHICAL SURVEY/UTILITY KEY :-

- | | |
|---------------------|-----------------------|
| (h) = height | o/s = off set |
| h = spot height | o/s - off survey area |
| h/a = above ground | o/s - off survey area |
| h/b = assumed route | o/s - off survey area |
| h/c = assumed route | o/s - off survey area |
| h/d = assumed route | o/s - off survey area |
| h/e = assumed route | o/s - off survey area |
| h/f = assumed route | o/s - off survey area |
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| h/o = assumed route | o/s - off survey area |
| h/p = assumed route | o/s - off survey area |
| h/q = assumed route | o/s - off survey area |
| h/r = assumed route | o/s - off survey area |
| h/s = assumed route | o/s - off survey area |
| h/t = assumed route | o/s - off survey area |
| h/u = assumed route | o/s - off survey area |
| h/v = assumed route | o/s - off survey area |
| h/w = assumed route | o/s - off survey area |
| h/x = assumed route | o/s - off survey area |
| h/y = assumed route | o/s - off survey area |
| h/z = assumed route | o/s - off survey area |



| Rev | Description | By | Out | Date |
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Client **TURNER & TOWNSEND**

Project **QUEEN ELIZABETH HIGH SCHOOL, HEXHAM, NE46 3JB**

Title **TOPOGRAPHICAL SURVEY**

| | | |
|----------------|------------|--------------|
| Status | Scale | Date Created |
| FINAL | 1:200 @ A0 | 19.10.16 |
| Project Leader | Drawn By | Checked By |
| NB | MSL | AHP |

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| Drawn/Checked | Author | Quantity |
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TOPOGRAPHICAL SURVEY/UTILITY KEY :-

| | |
|---------------------|-----------------------------------|
| (h) = height | ol = off set |
| g = spot level | OSB = Ordnance Survey bench mark |
| g/ = above ground | g & r = fence - post & rail fence |
| a/r = assumed route | g/ = gull |
| ae = air vent | g/ = gull |
| bb = balcony | g/ = gull |
| bc = back | g/ = gull |
| bd = ball | g/ = gull |
| be = ball level | g/ = gull |
| bf = ball | g/ = gull |
| bg = ball | g/ = gull |
| bh = ball | g/ = gull |
| bi = ball | g/ = gull |
| bj = ball | g/ = gull |
| bk = ball | g/ = gull |
| bl = ball | g/ = gull |
| bm = ball | g/ = gull |
| bn = ball | g/ = gull |
| bo = ball | g/ = gull |
| bp = ball | g/ = gull |
| bq = ball | g/ = gull |
| br = ball | g/ = gull |
| bs = ball | g/ = gull |
| bt = ball | g/ = gull |
| bu = ball | g/ = gull |
| bv = ball | g/ = gull |
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| by = ball | g/ = gull |
| bz = ball | g/ = gull |
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| hz = hot water | g/ = gull |
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| ic = inspection | g/ = gull |
| id = inspection | g/ = gull |
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| lb = lamp | g/ = gull |
| lc = lamp | g/ = gull |
| ld = lamp | g/ = gull |
| le = lamp | g/ = gull |
| lf = lamp | g/ = gull |
| lg = lamp | g/ = gull |
| lh = lamp | g/ = gull |
| li = lamp | g/ = gull |
| lj = lamp | g/ = gull |
| lk = lamp | g/ = gull |
| ll = lamp | g/ = gull |
| lm = lamp | g/ = gull |
| ln = lamp | g/ = gull |
| lo = lamp | g/ = gull |
| lp = lamp | g/ = gull |
| lq = lamp | g/ = gull |
| lr = lamp | g/ = gull |
| ls = lamp | g/ = gull |
| lt = lamp | g/ = gull |
| lu = lamp | g/ = gull |
| lv = lamp | g/ = gull |
| lw = lamp | g/ = gull |
| lx = lamp | g/ = gull |
| ly = lamp | g/ = gull |
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| ms = manhole | g/ = gull |
| mt = manhole | g/ = gull |
| mu = manhole | g/ = gull |
| mv = manhole | g/ = gull |
| mw = manhole | g/ = gull |
| mx = manhole | g/ = gull |
| my = manhole | g/ = gull |
| mz = manhole | g/ = gull |
| na = north arrow | g/ = gull |
| nb = north arrow | g/ = gull |
| nc = north arrow | g/ = gull |
| nd = north arrow | g/ = gull |
| ne = north arrow | g/ = gull |
| nf = north arrow | g/ = gull |
| ng = north arrow | g/ = gull |
| nh = north arrow | g/ = gull |
| ni = north arrow | g/ = gull |
| nj = north arrow | g/ = gull |
| nk = north arrow | g/ = gull |
| nl = north arrow | g/ = gull |
| nm = north arrow | g/ = gull |
| no = north arrow | g/ = gull |
| np = north arrow | g/ = gull |
| nq = north arrow | g/ = gull |
| nr = north arrow | g/ = gull |
| ns = north arrow | g/ = gull |
| nt = north arrow | g/ = gull |
| nu = north arrow | g/ = gull |
| nv = north arrow | g/ = gull |
| nw = north arrow | g/ = gull |
| nx = north arrow | g/ = gull |
| ny = north arrow | g/ = gull |
| nz = north arrow | g/ = gull |
| oa = other | g/ = gull |
| ob = other | g/ = gull |
| oc = other | g/ = gull |
| od = other | g/ = gull |
| oe = other | g/ = gull |
| of = other | g/ = gull |
| og = other | g/ = gull |
| oh = other | g/ = gull |
| oi = other | g/ = gull |
| oj = other | g/ = gull |
| ok = other | g/ = gull |
| ol = other | g/ = gull |
| om = other | g/ = gull |
| on = other | g/ = gull |
| oo = other | g/ = gull |
| op = other | g/ = gull |
| oq = other | g/ = gull |
| or = other | g/ = gull |
| os = other | g/ = gull |
| ot = other | g/ = gull |
| ou = other | g/ = gull |
| ov = other | g/ = gull |
| ow = other | g/ = gull |
| ox = other | g/ = gull |
| oy = other | g/ = gull |
| oz = other | g/ = gull |



| Rev | Description | By | Chk | Date |
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| | | | | |



Client **TURNER & TOWNSEND**

Project **QUEEN ELIZABETH HIGH SCHOOL, HEXHAM, NE46 3JB**

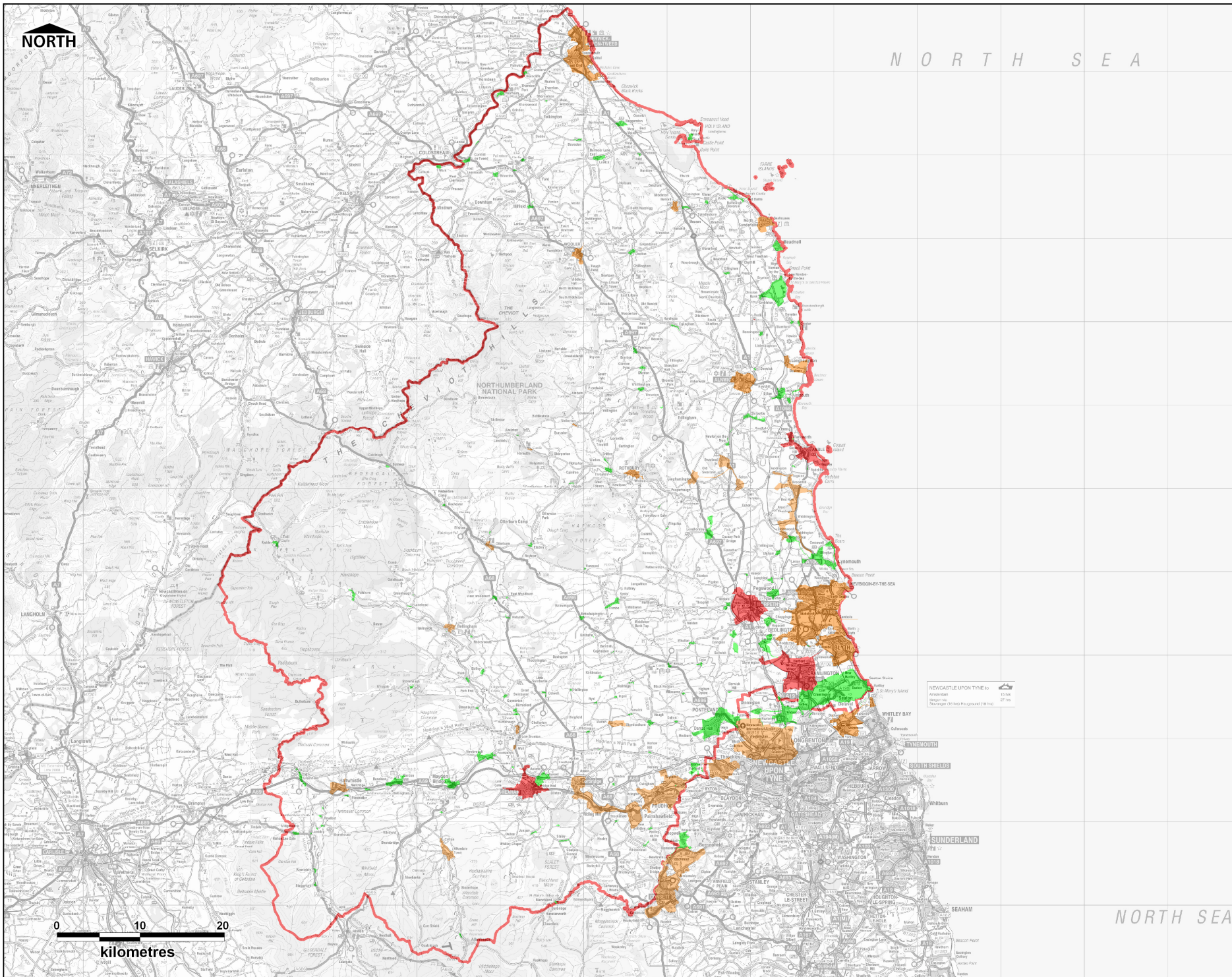
Title **TOPOGRAPHICAL SURVEY**

| | | |
|----------------|------------|--------------|
| Status | Scale | Date Created |
| FINAL | 1:200 @ A0 | 19.10.16 |
| Project Leader | Drawn By | Checked by |
| NB | MSL | AHP |

| | |
|--------------|---|
| JKK9299 - 05 | A |
|--------------|---|






G. Strategic Flood Risk Assessment Mapping



 Northumberland Boundary

Reported Incidents of Sewer Flooding

-  Medium Incidence
-  Low Incidence
-  High Incidence

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Northumberland County Council - 100019593 - 2009.

Revision Details

| By | Date | Surf |
|----|------|------|
| | | |

Drawing Status: **FINAL**

Job Title:
**Northumberland County Council
Level 1 Strategic
Flood Risk Assessment**

Drawing Title:
Sewer Flooding Risk

Scale at A3: **AS SHOWN**

| | | | |
|-------|-----|----------|-----|
| Drawn | CAB | Approved | LNO |
|-------|-----|----------|-----|

| | | | | | | | |
|---------------|----|---------------|-----|---------|-----|------|----------|
| Stage 1 Check | SA | Stage 2 Check | SJA | Created | CAB | Date | 09-04-10 |
|---------------|----|---------------|-----|---------|-----|------|----------|

Scott Wilson
Royal Court
Basil Close, Chesterfield
Derbyshire, S44 7SL
Telephone: (01463) 209221
Fax: (01463) 209229
www.scotwilson.com



Drawing Number:
S106308-B4



H. Northumberland County Council Correspondence

From: alex.fraser@northumberland.gov.uk on behalf of [FCERM Unknown](#)
To: [O'Donovan, Donal](#)
Subject: Re: Queen Elizabeth High School Flood/Drainage Enquiry
Date: 03 November 2016 13:26:21

Dear Donal,

Reviewing your email it is likely more function to respond inline rather than prose.

We have been tasked with producing a scoping FRA report for the Site.

To assist with the FRA report, I would appreciate any information that you may have regarding the Site including:

- Any local planning policy that we should be aware of that would need to be acknowledged within the report?

Regarding drainage, flooding and surface water there is no specific local planning policy, we expect drainage information to follow LASOO guidance attached.

- Any known flooding problems (occurring from any source) within the vicinity of the Site.

We aren't aware of any flooding events impacting the site to date. Reviewing the Environment Agency Surface Water flood map there appears to be areas of surface water flood risk within the site that you should consider within any FRA.

- As the proposals comprise refurbishment and no new buildings the drainage would remain as existing.

That is suitable however if there are any changes to the drainage system including changes to the draining area this should all be considered.

Kind Regards,

Alex Fraser

On 3 November 2016 at 11:32, O'Donovan, Donal
<Donal.O'Donovan@watermangroup.com> wrote:

Dear Sir/Madam,

I am writing to inform you of a proposed school refurbishment situated within the Northumberland County Council administrative area and to request drainage/flood risk information with respect to this site. Please find attached the location plan for the school.

Please feel free to request any further information that you may require.

The Site in question is:

Queen Elizabeth High School – Hexham, NE46 3JB

We have been tasked with producing a scoping FRA report for the Site.

To assist with the FRA report, I would appreciate any information that you may have regarding the Site including:

- Any local planning policy that we should be aware of that would need to be acknowledged within the report?
- Any known flooding problems (occurring from any source) within the vicinity of the Site.
- As the proposals comprise refurbishment and no new buildings the drainage would remain as existing.

Many thanks in anticipation of your response. If you have any questions or would like to discuss anything please get in touch using the contact details outlined below.

Cheers,

C. Donal O'Donovan

Engineer

Waterman Infrastructure & Environment Ltd

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Flood & Coastal Erosion Risk Management

Northumberland County Council

<http://www.northumberland.gov.uk/Campaigns/Flood-support.aspx>

UK and Ireland Office Locations

