



Flood Consequence Assessment for Planning

Prepared for:

Castell Construction Ltd

June 2021

Our reference:

90617-CastellGrp-EagleHs

Location:

Eagle House

Port Talbot

Wales

SA13 1DH



Document Issue Record

Project: Flood Consequence Assessment for Planning
Client: Castell Construction Ltd
Location: Eagle House, Port Talbot, Wales, SA13 1DH
Application: Demolition of the Eagle House and the construction of 4 retail units, and 20 apartments for social housing
Our reference: 90617-CastellGrp-EagleHs
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Key Facts

Flood Risk Posed:

- Flood Zone C1 as defined by Natural Resource Wales (NRW).
- Demolition of the Eagle House and the construction of 4 retail units, and 20 apartments for social housing
- "Less vulnerable" development on the ground floor, and "More vulnerable" development on the above floors.
- The site itself is shown to be predominantly outside of area of Low, Medium and High risk of flooding from surface water and small watercourses.
- Risk of groundwater and sewer surcharge flooding would appear to be low.
- The site is shown to be entirely outside of the modelled 1:200 year and 1:1000 year tidal flood extents provided for 2116. As such, the site is not considered to be at significant risk from tidal flooding.
- The site is shown to be entirely outside of the present day 1:100 year extent, but within the modelled 1:100 year plus climate change and 1:1000 year extents.
- For the present day 1:1000 year scenario the maximum flood depth on site is shown to be 1.00m.
- For the 1:100 year event, with allowance for climate change, the maximum flood depth on site is 0.63m.

Flood Risk Management:

- All residential uses are at first floor level and above, which is 3.45m above ground floor level. Therefore, all residential uses are entirely flood free for the present day 1:1000 year event, and 1:100 year event with allowance for climate change. No habitable residential uses will be located at ground floor level.
- It is recommended that the finished ground floor level for the commercial/retail units is raised above the modelled 1:100 year flood level with allowance for climate change (7.79mAOD).
- It is recommended that the proposed cycle store and bin store are rendered floodable, the specification for the areas to be rendered floodable will involve having openings on all sides, extending from the existing ground level to 300mm above the design flood level.
- Safe escape can however be provided during the 1:100 year flood event with allowance for climate change.
- Flood proofing of the building will be incorporated as appropriate.
- A flood warning and evacuation plan will be implemented post development.

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

Introduction

Unda Consulting Limited have been appointed Castell Construction Ltd (hereinafter referred to as “the applicant”) to undertake a Site Specific Flood Consequence Assessment (FCA) for Planning at Eagle House, Port Talbot, Wales, SA13 1DH . (hereinafter referred to as “the site”). The FCA has been undertaken in accordance with Technical Advice Note 15 (TAN 15) and the associated technical guidance.

The site appears to be located within Flood Zone C1 as defined by Natural Resource Wales (NRW) on their Development Advice Map. Under Technical Advice Note 15 (TAN 15), a FCA is required if a proposed development:

- includes building or engineering works in Flood Zone C1 or C2;
- includes building or engineering works on land classified as having critical drainage problem;
- changes the use of land or buildings in a location at risk of flooding from rivers or the sea, or with critical drainage problems;
- changes the use of land or buildings in a way that increases the flood vulnerability of the development where it may be subject to other sources of flooding;
- is in Flood Zone B, but larger than 1 hectare.

Given that the proposed application site is located in Flood Zone C1 (Risk of flooding from rivers or the sea, served by significant flood defence infrastructure, including flood defences), and includes building works, the applicant is required to submit a FCA under TAN 15. The assessment should demonstrate to the Local Planning Authority (LPA) and NRW how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its potential users.

The objectives of a FCA to support a planning application are to establish:

- whether the proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate.

Existing Situation

Site Usage:

The site comprises of an existing building, which is used for offices.

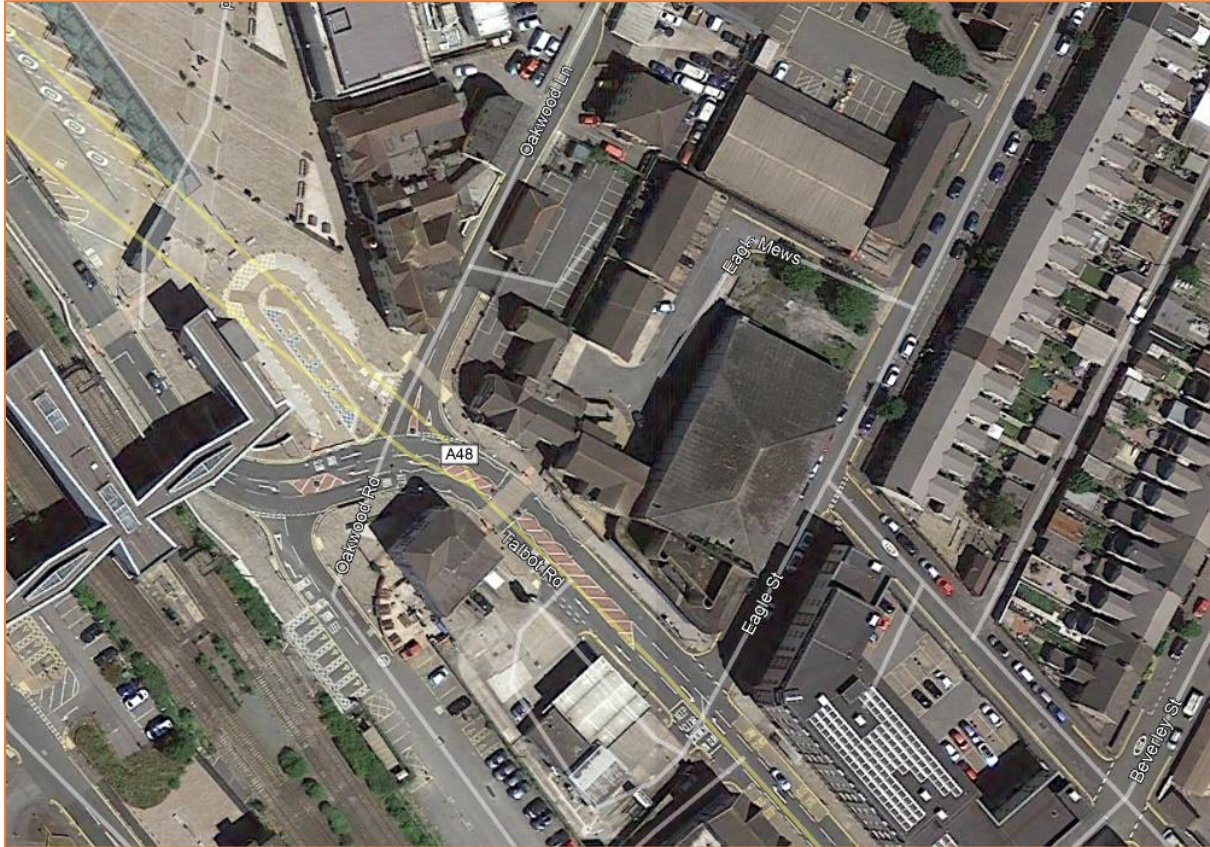


Figure 1: Aerial view of the site and immediate surrounding area (Source: Google Earth)

Topography:

A topographical site survey has been undertaken by healer surveys in April 202, which shows that site levels range between approximately 7.14mAOD and 7.71mAOD.

Topographic levels in the area of the proposed new building range between approximately 7.48mAOD to 7.69mAOD.

The topographical survey can be found in the report Appendix.

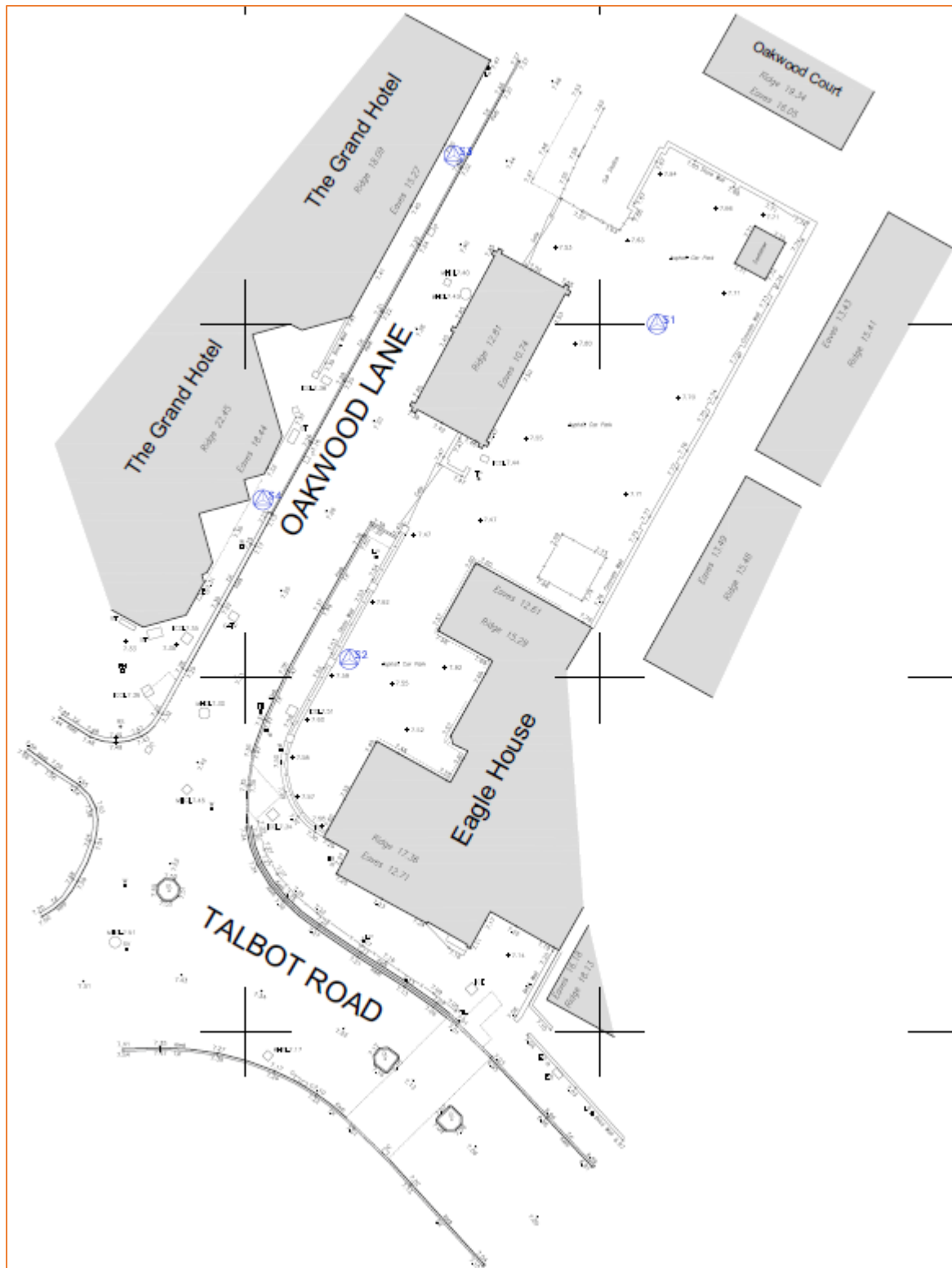


Figure 2: Extract from topographical site survey (Source: healer surveys)

Proposed Development

The proposed planning application is for the Demolition of the Eagle House and the construction of 4 retail units, and 20 apartments for social housing.

Based on the plans provided, the ground floor will consist of 4 retail/commercial units, as well as bin and cycle stores, flats and meter room for the flats above. The first to fourth floors will comprise of a total of 20 residential flats.

Proposed site plans can be found in the report Appendix.

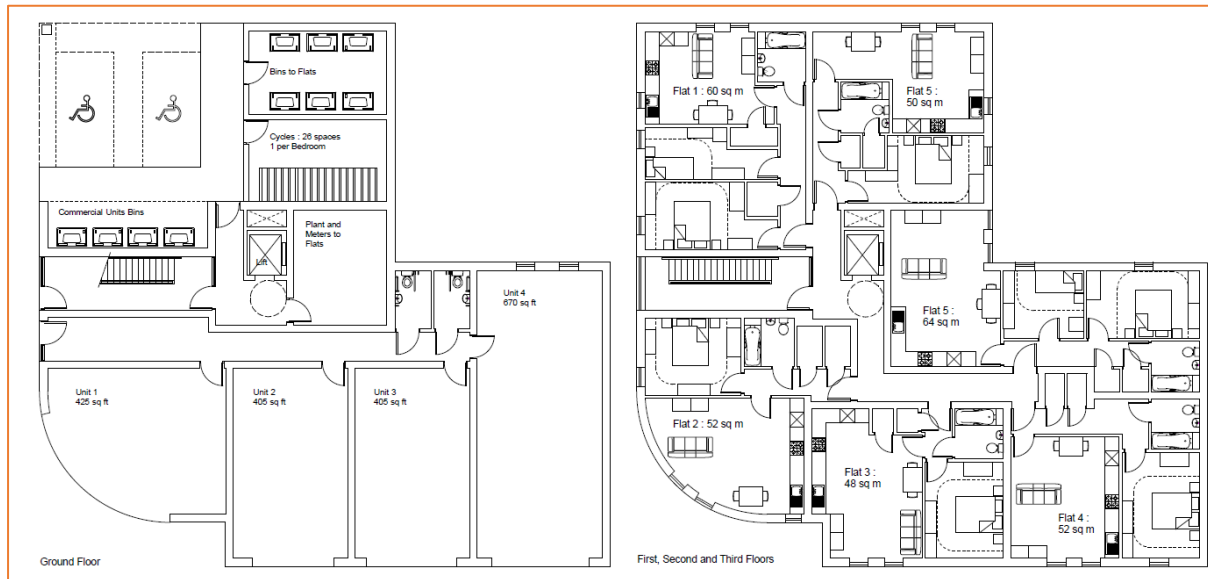


Figure 3: Proposed Ground, First, Second and Third Floor Plans (Source: Kennedy James Griffiths)

Assessment of Flood Risk

Flood Zones:

Within planning, Flood Zones refer to the probability of river and sea flooding. They are shown on the Natural Resource Wales Development Advice Map, available on Natural Resource Wales' web site.

Description of Zone	Zone Name	Use within the precautionary framework
Considered to be at little or no risk of fluvial or tidal/coastal flooding.	A	Used to indicate that justification test is not applicable and no need to consider flood risk further.
Areas known to have been flooded in the past evidenced by sedimentary deposits.	B	Used as part of a precautionary approach to indicate where site levels should be checked against the extreme (0.1%) flood level. If site levels are greater than the flood levels used to define adjacent extreme flood outline there is no need to consider flood risk further.
Based on Environment Agency extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal)	C	Used to indicate that flooding issues should be considered as an integral part of decision making by the application of the justification test including assessment of consequences.
Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.	C1	Used to indicate that development can take place subject to application of justification test, including acceptability of consequences
Areas of the floodplain without significant flood defence infrastructure.	C2	Used to indicate that only less vulnerable development should be considered subject to application of justification test, including acceptability of consequences. Emergency services and highly vulnerable development should not be considered.

Table 1: Flood Zones

The Flood Zones shown on the Natural Resource Wales Development Advice Map do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.



Figure 4: Natural Resource Wales Development Advice Map (Source: NRW)

The site is located within Flood Zone C1 (Risk of flooding from rivers or the sea, served by significant flood defence infrastructure, including flood defences), which means it is defined as land having a 1 in 1000 annual probability of tidal flooding.

The risk would appear to be predominantly fluvial and originate from the River Afan, approximately 550m to the north west of the site at its closest proximity. The Ffrwd Wyllt also flows in a broadly southwesterly direction approximately 700m to the east of the site.

The tidal Swansea Bay is located approximately 2km to the southwest of the site, and the lock-controlled Port Talbot Docks is approximately 300m to the southwest of the site.

Fluvial (River Afan):

The River Afan (Welsh: Afon Afan) is a river in Wales whose valley formed the territory of the medieval Lords of Afan. The Afan Valley encompasses the upper reaches of the river. The valley is traversed by the A4107 road. Settlements in the area include Cwmafan, Pontrhydyfen and Cymmer. The town of Aberavon, whose name in Welsh Aberafan means 'mouth of the Afan', grew up on the banks of the river and was later subsumed by town of Port Talbot.

The Afan rises on the northern slopes of Mynydd Llangeinwyr to the east of Blaengwynfi, and flows in a generally south-westerly direction roughly parallel to the River Neath with which it shares its western watershed.

The river passes the Afan Argoed Country Park in its middle reaches. It converges with the river Pelenna at Pontrhydyfen. From here it turns southward towards Port Talbot.

To aid the construction of the docks at Port Talbot, the river was impounded and a diversion channel built that now forms the lower reaches of this river. There are two weirs in this final tidal reach of the Afan; Greenpark Weir at the upstream tidal limit, which has been reconstructed in 2017 and provides headwaters for the dock feeder channel that approximately follows the river's original route, and Newbridge Weir, which is the most downstream weir, presents a barrier to fish passage and is in a poor state of repair.

Modelled flood levels and extents:

Modelled flood levels and flood extents have been received from the NRW as part of a flood data request (NRW ref: ATI-21394a). Modelled flood data has been provided from the Port Talbot Harbourside model (JBA Consulting, 2017).

Natural Resources Wales (NRW) has provided the Port Talbot Harbourside Hydraulic Model, which provides flood risk modelling for the area and takes account of fluvial and tidal sources, and their interaction. The Port Talbot Harbourside PAR Project Report confirms that the modelling takes account of existing flood defences / maintained bank levels, and applies climate change allowances in accordance with latest guidance, i.e. tidal flood risk considered to 2116, and fluvial flows increased by 30%.

In order to produce on site modelled data, a shape was drawn around the site and was used to query the height, depth, velocity and hazard grids to provide the results. NULL indicates site is flood free during this scenario. The hazard rating below relates to the Hazard to People Classification using the hazard matrix.

The site is shown to be entirely outside of the modelled 1:200 year and 1:1000 year tidal flood extents provided for 2116. As such, the site is not considered to be at significant risk from tidal flooding.



Figure 5: Modelled 1:200 year and 1:1000 year tidal flood extents in 2116 (Source: NRW, OS Mapping)

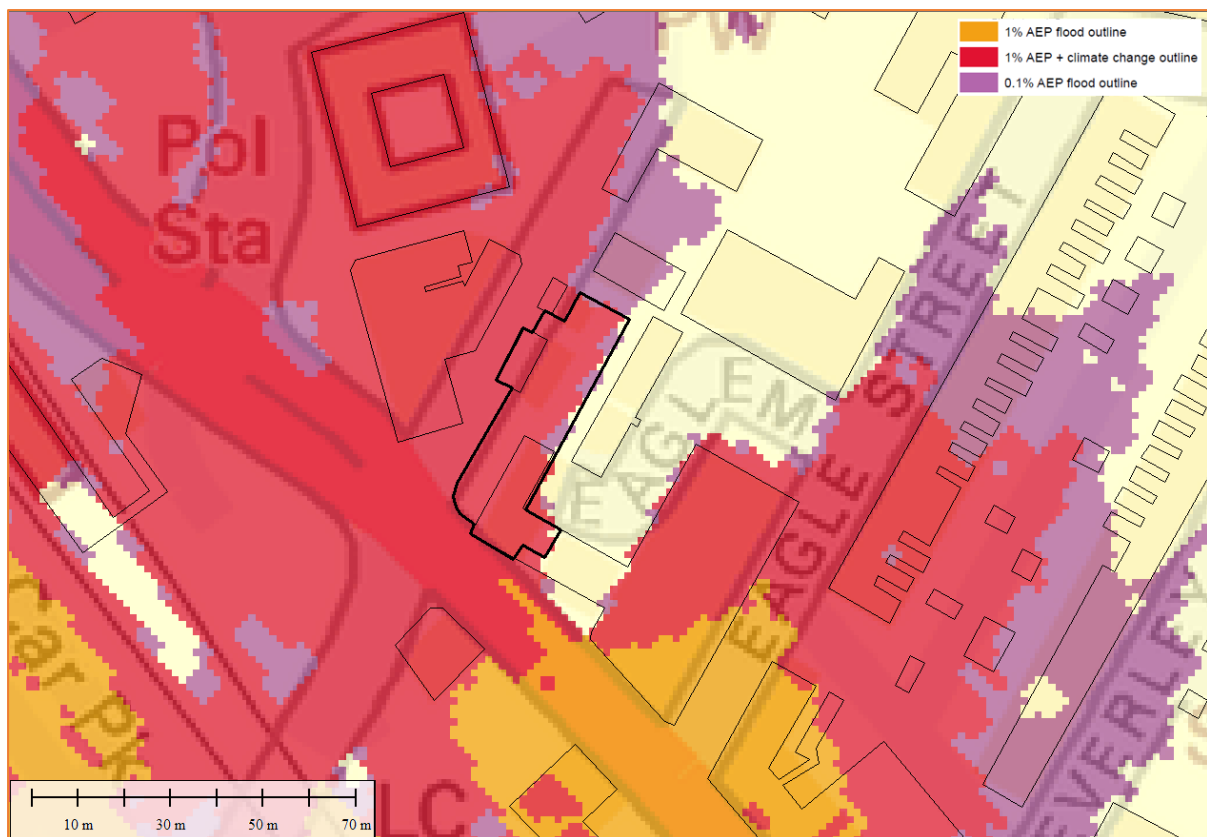


Figure 6: Modelled 1:100 year, 1:100 year + CC and 1:1000 year fluvial flood extents (Source: NRW, OS Mapping)

The site is shown to be entirely outside of the present day 1:100 year extent, but within the modelled 1:100 year plus climate change and 1:1000 year extents.

The site lies within the West Wales River Basin District, where the Change Factor / Central Estimate climate change allowance is a 30% increase in fluvial flows. The Port Talbot Harbourside model report states that a 30% increase in fluvial flows is used to represent climate change.

For the present day 1:1000 year scenario the maximum flood depth on site is shown to be 1.00m.

For the 1:100 year event, with allowance for climate change, the maximum flood depth on site is 0.63m.

Flood Hazard	Colour	Hazard to People Classification
Less than 0.75	Green	Very low hazard - Caution
0.75 to 1.25	Yellow	Danger for some - includes children, the elderly and the infirm
1.25 to 2.0	Orange	Danger for most - includes the general public
More than 2.0	Red	Danger for all - includes the emergency services

Table 2: Hazard to People Classification (Source: NRW)

	1:100 year (present day)	1:100 year climate change	1:1000 year (present day)
Maximum flood level (mAOD)	Outside	7.79mAOD	8.25mAOD
Maximum flood depth on site (m)	Outside	0.63m	1.00m
Maximum flood velocity (m/s)	Outside	0.20m/s	0.85m/s
Maximum flood hazard	Outside	Very Low to Danger for Most	Danger for most

Tables 3: Defended modelled flood data (excluding upper confidence interval) (Source: NRW)

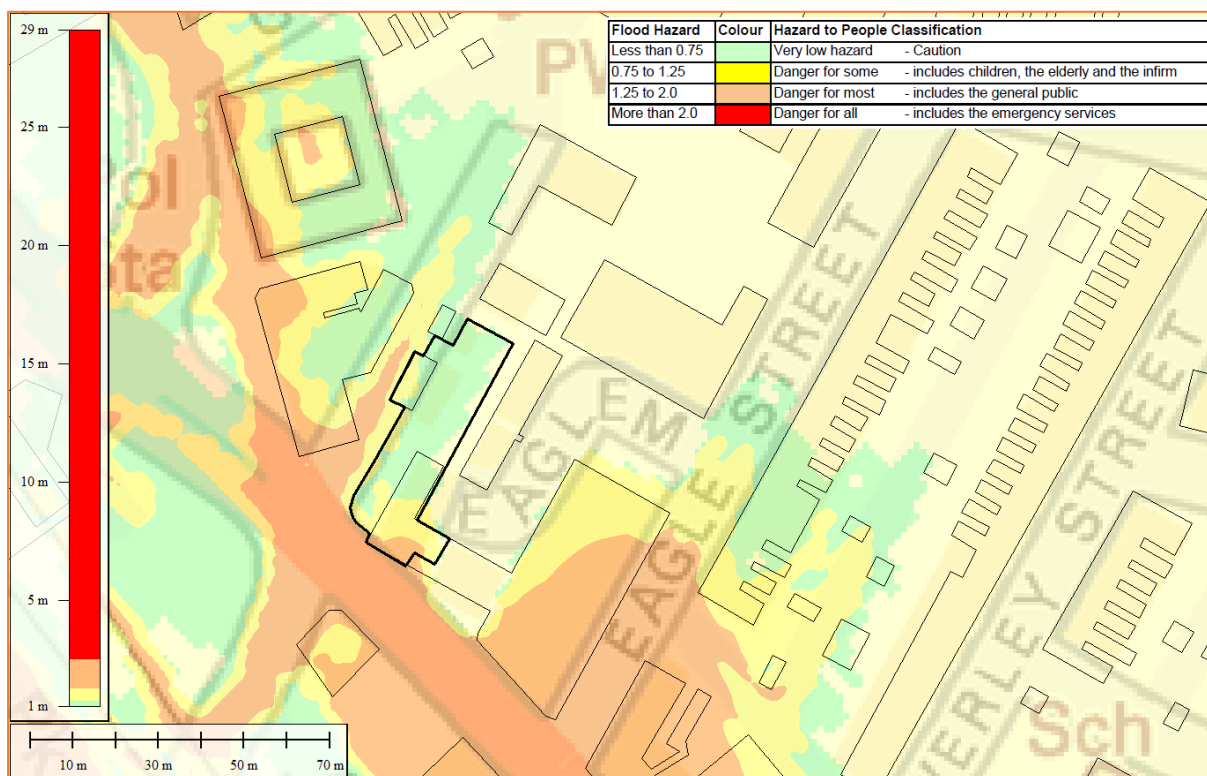


Figure 7: Modelled Flood Hazard for 1:100 year + CC fluvial flood event (Source: NRW, OS Mapping)

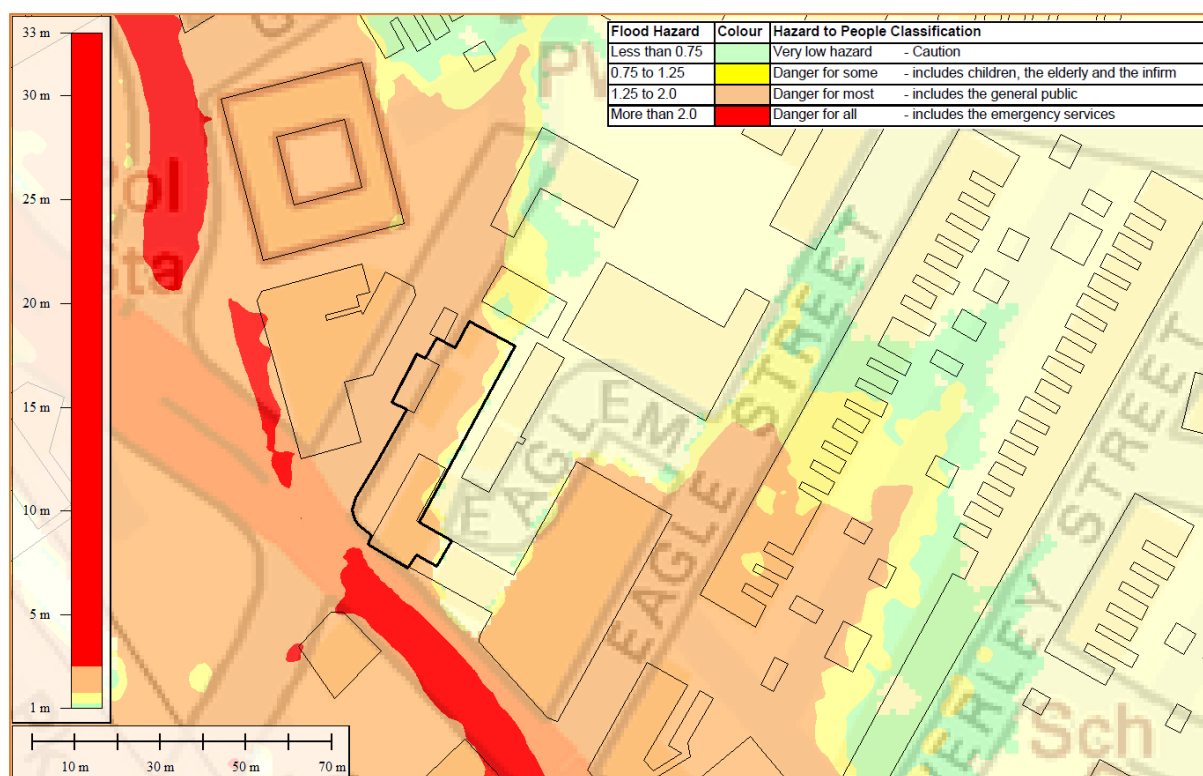


Figure 8: Modelled Flood Hazard for 1:1000 year fluvial flood event (Source: NRW, OS Mapping)

It should be noted that all residential uses – and therefore all habitable rooms are located at first floor level and above – which is entirely above the modelled 1:100 year flood level with allowance for climate change, and the modelled 1:1000 year flood level.

Flood defences:

The site is shown to be within Flood Zone C1- served by significant infrastructure, including flood defences. The flood defences along the River Afan in this reach are flood defence walls and embankments – to the 1:100 year design standard, with a condition rating of 2 - Good.

Historical flood records:

According to NRW they hold no historic flooding information in this area.

Pluvial (Surface Water):

Pluvial (surface water) flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

In 2013 the EA and NRW, working with Lead Local Flood Authorities (LLFAs), produced an updated Flood Map for Surface Water. It is considered to represent a significant improvement on the previous surface water flood maps available, both in terms of method and representation of the risk of flooding. The modelling techniques and data used are considerably improved, and also incorporated locally produced mapping where this is available to represent features best modelled at a local scale.

The Flood Map for Surface Water assesses flooding scenarios as a result of rainfall with the following chance of occurring in any given year (annual probability of flooding is shown in brackets):

- 1:30 (3.3%)
- 1:100 (1%)

- 1:1000 (0.1%)

The mapping below shows the Risk of Flooding from Surface Water and Small Watercourses centred on the site. Please note that NRW do not consider this information suitable to be used to identify the risk to individual properties or sites. It is useful to raise awareness in areas which may be at risk and may require additional investigation.

The Natural Resources Wales Surface Water and Small Watercourses Flood Map suggests that the rounds surrounding site lie partially within areas of “Low”, “Medium” and “High” risk of flooding from surface water.

Talbot Road / A48 is shown to be at High – Medium risk of flooding from surface water, with Oakwood Lane shown to be at Medium – Low risk of flooding from surface water.

The site itself is shown to be predominantly outside of area of Low, Medium and High risk of flooding from surface water and small watercourses.



Figure 9: Extract from Natural Resources Wales Surface Water and Small Watercourses Flood Map (Source: NRW)

Groundwater:

Groundwater flooding occurs as a result of water rising up from the underlying rocks or from water flowing from abnormal springs. This tends to occur after much longer periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas where the ground level is high, to areas where the ground level is low. In low-lying areas the water table is usually at shallower depths anyway, but during very wet periods, with all the additional groundwater flowing towards these areas, the water table can rise up to the surface causing groundwater flooding.

Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in

valley bottoms underlain by less permeable rocks. Groundwater flooding takes longer to dissipate because groundwater moves much more slowly than surface water and will take time to flow away underground.

No information has been provided to suggest that the site is susceptible to groundwater flooding.

Sewer Surcharge:

Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network causing flooding. Temporary problems such as blockages, siltation, collapses and equipment or operational failures can also result in sewer flooding.

All Water Companies have a statutory obligation to maintain a register of properties/areas which have reported records of flooding from the public sewerage system, and this is shown on the DG5 Flood Register. This includes records of flooding from foul sewers, combined sewers and surface water sewers which are deemed to be public and therefore maintained by the Water Company. The DG5 register records of flood incidents resulting in both internal property flooding and external flooding incidents. Once a property is identified on the DG5 register, water companies can typically put funding in place to address the issues and hence enable the property to be removed from the register. It should be noted that flooding from land drainage, highway drainage, rivers/watercourses and private sewers is not recorded within the register.

No information has been provided to suggest that the site is susceptible to sewer surcharge flooding.

Other Sources:

The Natural Resources Wales Risk of Flooding from Reservoirs Map suggests that the site lies at the edge of the "Maximum extent of flooding" from reservoir failure. The Natural Resources Wales also advise on their website that reservoir flooding is extremely unlikely. All major reservoirs have to be inspected by specialist dam and reservoir Engineers. These inspections are monitored and enforced by the Natural Resources Wales themselves. The risk to the site from reservoir flooding is therefore minimal and is far lower than that relating to the potential for fluvial flooding to occur.

There do not appear to be any further artificial (man-made) sources of flood risk (such as raised canals) in the vicinity of the site.



Figure 10: Extract from Natural Resources Wales risk of flooding from reservoirs (Source: NRW)

Flood Risk Management Measures

Vulnerability to flooding:

TAN15 classifies property usage by vulnerability to flooding.

The site comprises of an existing building, which is used for offices.

Post development, the site will remain “less vulnerable development” on the ground floor and become “highly vulnerable development” on the above floors, as the application is for the Demolition of the Eagle House and the construction of 4 retail units, and 20 apartments for social housing.

Particular flooding consequences may not be acceptable for particular types of development. For example, allowing residential development in areas which are subject to high risks of flooding can result in a traumatic impact on people's lives. The precautionary framework identifies the vulnerability of different land uses to flooding, and for this purpose, development has been subdivided into three categories:

Development category	Types
Emergency services	hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood
Highly vulnerable development	all residential premises (including hotels and caravan parks), public buildings (e.g. schools, libraries, leisure centres), especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators), and waste disposal sites
Less vulnerable development	general industrial, employment, commercial and retail development, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites

Table 4: Vulnerability to flooding categories

The Emergency Services category describes facilities which need to be operational and accessible at all times. Highly vulnerable development describes development where the ability of occupants to decide on whether they wish to accept the risks to life and property associated with flooding, or be able to manage the consequences of such a risk, is limited. It also includes those industrial uses where there would be an attendant risk to the public and the water environment should the site be inundated. Less vulnerable development describes development where the ability of occupants to decide on whether they wish to accept such risks is greater than that in the highly vulnerable category. The vulnerability attributed to a mixed use proposal will be defined by the most vulnerable use.

There are uses which are considered to be exceptions to the general rule, and have not been classified above, because they are required in a fluvial, tidal or coastal location by virtue of their nature. These include boatyards, marinas, essential works required at mooring basins, and development associated with canals.

Physical Design Measures:

In accordance with section A1.14 of TAN15 there is a frequency threshold of flooding below which flooding of development should not be allowed. The following table, taken from TAN15, provides indicative guidance as to what the frequency threshold could be for different types of development in terms of annual probability of occurrence:

Type of development	Threshold frequency	
	Fluvial	Tidal
Residential	1%	0.5%
Commercial / retail	1%	0.5%
Industrial	1%	0.5%
Emergency services	0.1%	0.1%
General infrastructure	1%	0.5%

Table 5: TAN15 Flood frequency thresholds

Tan15 requires the development to be flood free in the 1:100 year event (section A1.14).

The site is shown to be entirely outside of the modelled 1:100 year flood extent at the present day. For the present day 1:1000 year scenario the maximum flood depth on site is shown to be 1.00m.

For the 1:100 year event, with allowance for climate change, the maximum flood depth on site is 0.63m.

All residential uses are at first floor level and above, which is 3.45m above ground floor level. Therefore, all residential uses are entirely flood free for the present day 1:1000 year event, and 1:100 year event with allowance for climate change. No habitable residential uses will be located at ground floor level.

It is recommended that the finished ground floor level for the commercial/retail units is raised above the modelled 1:100 year flood level with allowance for climate change (7.79mAOD).

The topographical survey shows that topographic levels in the area of the proposed new building range between approximately 7.48mAOD to 7.69mAOD.

As such, the raising of the ground floor will provide a betterment compared to the existing situation.

To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures into the development, in consultation with the Local Authority building control department.

These measures can include the following:

- Solid concrete ground floor slab, with waterproof membrane;
- Waterproof screed used on floors;
- Closed-cell foam used in wall cavities;
- Waterproof ground floor internal render;
- External walls rendered resistant to flooding to first floor level;
- Exterior ventilation outlets, utility points and air bricks fitted with removable waterproof covers;
- Ground floor electrical main ring run from first floor level; and on separately switched circuit from first floor;
- Electrical incomer and meter situated at first floor level or above;
- Boilers, control and water storage / immersion installed at first floor level or above;
- Gas meter installed at first floor level or above;
- Plumbing insulation of closed-cell design;
- Non-return valves fitted to all drain and sewer outlets;
- Manhole covers secured;
- Anti-syphon fitted to all toilets;
- Built-in furniture units of solid, water resistant material;
- Use of MDF carpentry (i.e. skirting, architrave, built-in storage) avoided at ground floor level;
- Stairs of solid hardwood construction with wood faces treated to resist water penetration.

It is also recommended that flood proof doors are installed for the ground floor commercial / retail units, and the entrance door to the flats and the Plant Room. Demountable flood defence barriers could instead be used to

defend ground level doorways and low windows if flood doors are not practical or other planning constraints prevent it.

Safe Escape:

TAN 15 requires a route of safe escape for all site users to be provided from new development in Flood Zone C.

Type of development	Maximum depth of flooding (mm)	Maximum rate of rise of floodwaters (m/hr)	Maximum speed of inundation of flood risk area (hrs)	Maximum velocity of floodwaters (metres/sec)
	Property Access			Property Access
Residential (habitable rooms)	600 600	0.1	4	0.15 0.3
Commercial & Retail	600 600	0.3	2	0.15 0.3
Industrial	1000 1000	0.3	2	0.3 0.45
Emergency Services	450 600	0.1	4	0.15 0.3
General Infrastructure	600 600	0.3	2	0.3 0.3

Table 6: TAN15 Table A1.15

Table A1.15 shows the threshold frequency beyond which proposed development would be expected to flood under extreme conditions (1:1000 year event). For new commercial / retail and residential development a maximum flood depth of 600mm would be the allowance at the property (residential habitable rooms) and for the site access.

The site is shown to be entirely outside of the modelled 1:100 year flood extent at the present day.

It is recommended that the finished ground floor level for the commercial/retail units is raised above the modelled 1:100 year flood level with allowance for climate change (7.79mAOD).

All residential uses are at first floor level and above, which is 3.45m above ground floor level. Therefore, all residential uses are entirely flood free for the present day 1:1000 year event, and 1:100 year event with allowance for climate change. No habitable residential uses will be located at ground floor level.

For the 1:100 year event with allowance for climate change, Talbot Road to the front of the site is shown to have a Flood Hazard of 'Danger for most'. Safe escape can however be provided during the 1:100 year flood event with allowance for climate change. Site users should exit the site to Oakwood Lane, and travel north along Oakwood Lane. The Flood Hazard along this route is shown to be 'Low Hazard' for approximately 58m, and then entirely outside of the modelled flood extent.

Safe escape will therefore be provided by a formal flood warning and evacuation plan, which will be prepared in liaison with the Emergency Planners and tied in with the existing Emergency Plans for the area.

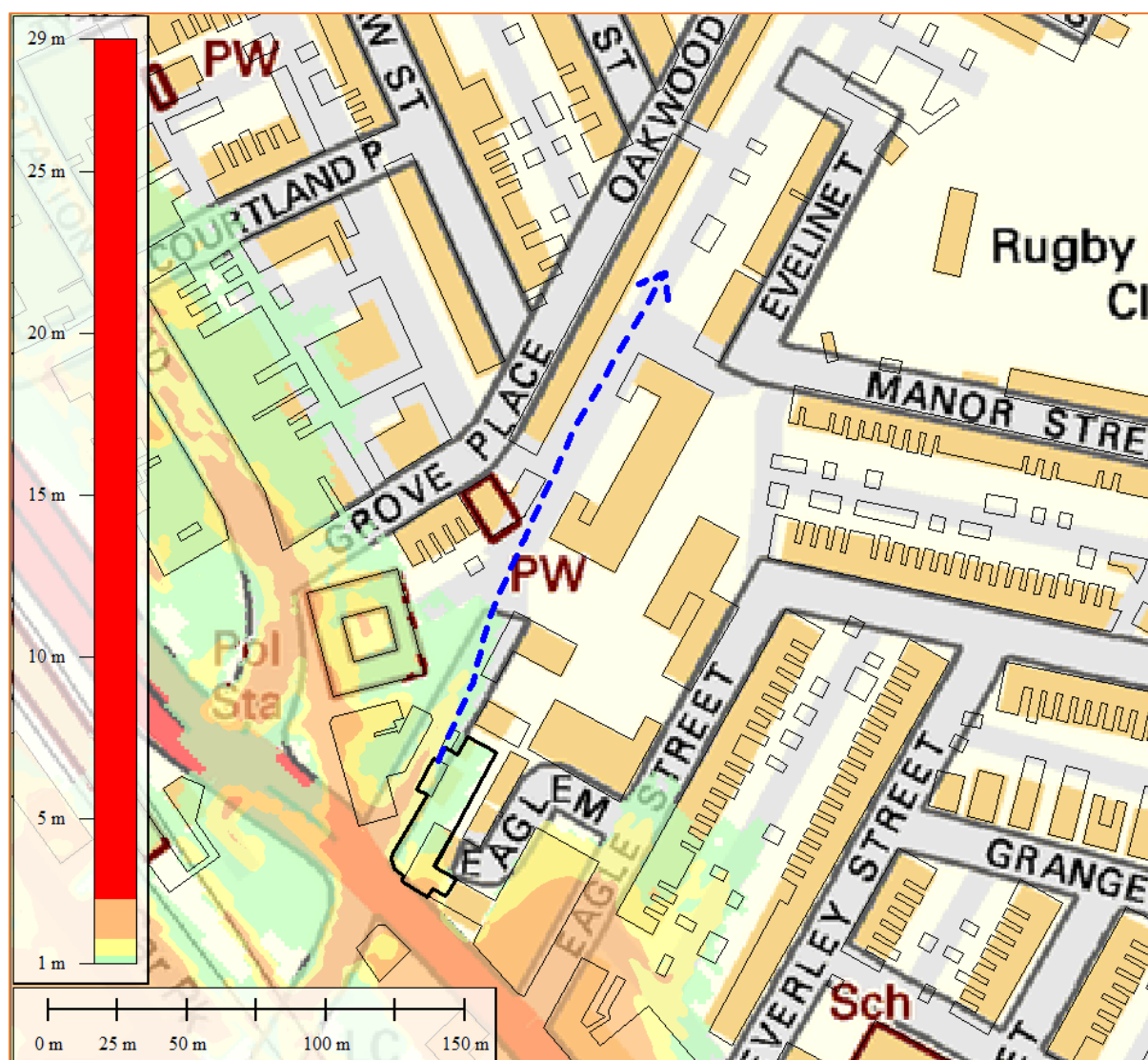


Figure 11: Modelled maximum flood hazard for the 1:100 year flood event with allowance for climate change. Proposed escape route shown by blue dashed line (Source: NRW flood data, OS Mapping)

In the case of an extreme flood event without warning, site users should seek refuge within the building.

It is recommended that the finished ground floor level for the commercial/retail units is raised above the modelled 1:100 year flood level with allowance for climate change (7.79mAOD).

All residential uses are at first floor level and above, which is 3.45m above ground floor level. Therefore, all residential uses are entirely flood free for the present day 1:1000 year event, and 1:100 year event with allowance for climate change. No habitable residential uses will be located at ground floor level.

Owners, occupants and tenants should follow the warning and evacuation procedure detailed in the following section.

Flood Alert/Warnings:

The NRW is responsible for issuing flood warnings. Flood warnings are issued to the emergency services and local authorities. Both private individuals and organisations can sign-up to receive warnings via phone, text or email. This system of receiving warnings is currently voluntary.

Advice regarding severe flood warnings will generally be given during weather forecasts on local radio and TV. In the case of extreme events, warnings can also be disseminated via door to door visits by the police or locally appointed flood wardens.

The applicant has agreed to implement a flood warning and evacuation plan post development, and subscribe to the NRW's flood warning service. The site lies within the River Afan at Port Talbot Flood Warning Area (Quickdial number: 603053).

The site is in a NRW Flood Warning Area. The NRW issue flood warnings to specific areas when flooding is expected. It is recommended that the applicant registers online with the free NRW Floodline Warnings Direct service at <https://www.fws.environment-agency.gov.uk/app/olr/home?style=NRW&lang=en> to receive flood warnings by phone, text or email.

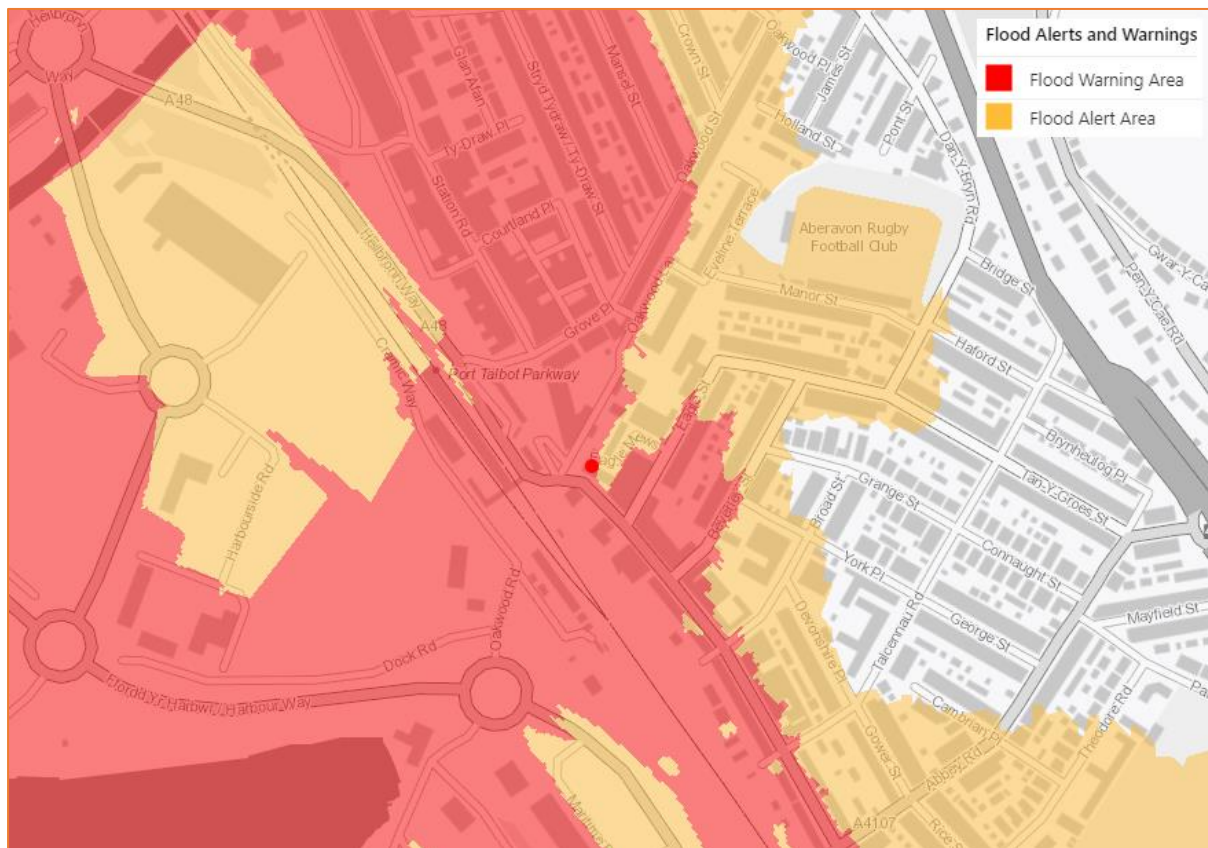


Figure 12: NRW Flood Warning Areas (Source: NRW)

Flood Warning:

The flood warning service has three types of warnings that will help you prepare for flooding and take action:

Flood Warning	Flood Alert	Flood Warning	Severe Flood Warning
			
What it means?	Flooding is possible. Be prepared.	Flooding is expected. Immediate action required.	Severe flooding. Danger to life.
When it's used?	Two hours to two days in advance of flooding.	Half an hour to one day in advance of flooding.	When flooding poses a significant threat to life.
What to do?	Be prepared to act on your flood plan. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast on our website.	Move family, pets and valuables to a safe place. Turn off gas, electricity and water supplies if safe to do so. Put flood protection equipment in place.	Stay in a safe place with a means of escape. Be ready should you need to evacuate from your home. Co-operate with the emergency services. Call 999 if you are in immediate danger.

Table 7: Flood Warnings

Flood Plan:

It is recommended that the applicant and future owners, occupiers and Landlords of the property prepare a flood plan to protect life and property during a flood event:

Before a flood:

- Find out if you are at risk of flooding.
- Find out if you can receive flood warnings.
- Prepare and keep a list of all your important contacts to hand or save them on your mobile phone.
- Think about what items you can move now and what you would want to move to safety during a flood such as pets, cars, furniture, and electrical equipment.
- Know how to turn off gas, electricity and water supplies.
- Prepare a flood kit of essential items and keep it handy. It can include copies of important documents, a torch, a battery-powered or wind-up radio, blankets and warm clothing, waterproofs, rubber gloves and a first aid kit including all essential medication.
- Consider buying flood protection products such as flood boards and airbrick covers to help reduce flood water getting into your property.

During a flood:

- Tune into your local radio station on a battery or wind-up radio.
- Fill jugs and saucepans with water.
- Grab your flood kit - if you have prepared one.

- Collect blankets, torch, first aid kit, medication and food.
- Move important documents, personal items, valuables, and lightweight belongings upstairs or to high shelves.
- Raise large items of furniture, or put them in large bags if you have them.
- Move people, outdoor belongings, cars and pets to higher ground.
- Switch off water, gas and electricity at mains when water is about to enter your home. Do not touch sources of electricity when standing in water.
- Fit flood protection products, if you have them, for example flood boards, airbrick covers, sandbags.
- Put plugs in sinks and baths. Weigh them down with a pillowcase or plastic bag filled with soil.
- If you do not have non-return valves fitted, plug water inlet pipes with towels or cloths.
- Move your family and pets upstairs or to a high place with a means of escape.
- Listen to the advice of the emergency service and evacuate if told to do so.
- Avoid walking or driving through flood water. Six inches of fast-flowing water can knock over an adult and two feet of water can move a car.

After a flood:

- If you have flooded, contact your insurance company as soon as possible.
- Take photographs and videos of your damaged property as a record for your insurance company.
- If you don't have insurance, contact your local authority for information on grants and charities that may help you.
- Flood water can contain sewage, chemicals and animal waste. Always wear waterproof outerwear, including gloves, wellington boots and a face mask.
- Have your electrics, central heating and water checked by qualified engineers before switching them back on.

Off-Site Impacts

Floodplain storage:

TAN15 requires that where development is proposed in undefended areas of floodplain, which lie outside of the functional floodplain, the implications of ground raising operations for flood risk elsewhere needs to be considered. Raising existing ground levels may reduce the capacity of the floodplain to accommodate floodwater and increase the risk of flooding by either increasing the depth of flooding to existing properties at risk or by extending the floodplain to cover properties normally outside of the floodplain. Flood storage capacity can be maintained by lowering ground levels either within the curtilage of the development or elsewhere in the floodplain, in order to maintain at least the same volume of flood storage capacity within the floodplain.

In undefended tidal areas, raising ground levels is unlikely to impact on maximum tidal levels so the provision of compensatory storage should not be necessary.

For development in a defended flood risk area, the impact on residual flood risk to other properties needs to be considered. New development behind flood defences can increase the residual risk of flooding if the flood defences are breached or overtopped by changing the conveyance of the flow paths or by displacing flood water elsewhere. If the potential impact on residual risk is unacceptable then mitigation should be provided.

Based on the plans provided, the existing built footprint on site is approximately 337m². Based on the plans provided, the proposed built footprint on site is 364m². As such, a 27m² increase in built footprint, could potentially displace fluvial floodwaters (given that the maximum potential depth of flooding on site is 0.63m for the 1:100 year event with allowance for climate change).

As such, it is therefore recommended that the proposed ground floor cycle store and bin store (for the flats) are rendered floodable. The specification for the areas to be rendered floodable will involve having openings on all

sides, extending from the existing ground level to 300mm above the design flood level. The specification for the openings is:

- The openings will be at least 1m wide at every opening;
- The minimum height of the openings will be from existing ground level to 300mm above the modelled 1:100 year flood level with climate change (a level of 8.09mAOD – which is up to 0.93m above site level);
- There will be an opening at least every 5m, on all sides of the building;
- Vertical bars can be installed at 100mm centres if required for security.

The proposed non-floodable built footprint post development will therefore be 304m², which will be a 33m² reduction in the non-floodable built footprint post development which provides a significant betterment.

Surface Water Drainage Strategy:

From 7 January 2019, all new developments of more than 1 dwelling house or where the construction area is 100m² or more, will require Sustainable Drainage Systems (SuDS) for surface water.

Conclusion

Unda Consulting Limited have been appointed by Castell Construction Ltd to undertake a Site Specific Flood Consequence Assessment (FCA) for Eagle House, Port Talbot, Wales, SA13 1DH. The FCA has been undertaken in accordance with Technical Advice Note 15 (TAN 15) and the associated technical guidance.

The proposed planning application is for the Demolition of the Eagle House and the construction of 4 retail units, and 20 apartments for social housing.

The site comprises of an existing building, which is used for offices.

Post development, the site will remain "less vulnerable development" on the ground floor and become "highly vulnerable development" on the above floors, as the application is for the Demolition of the Eagle House and the construction of 4 retail units, and 20 apartments for social housing.

The site is located within Flood Zone C1 (Risk of flooding from rivers or the sea, served by significant flood defence infrastructure, including flood defences), which means it is defined as land having a 1 in 1000 annual probability of tidal flooding.

The risk would appear to be predominantly fluvial and originate from the River Afan, approximately 550m to the north west of the site at its closest proximity. The Ffrwd Wyllt also flows in a broadly southwesterly direction approximately 700m to the east of the site.

The tidal Swansea Bay is located approximately 2km to the southwest of the site, and the lock-controlled Port Talbot Docks is approximately 300m to the southwest of the site.

Modelled flood levels and flood extents have been received from the NRW as part of a flood data request (NRW ref: ATI-21394a). Modelled flood data has been provided from the Port Talbot Harbourside model (JBA Consulting, 2017).

The site is shown to be entirely outside of the modelled 1:200 year and 1:1000 year tidal flood extents provided for 2116. As such, the site is not considered to be at significant risk from tidal flooding.

The site is shown to be entirely outside of the present day 1:100 year extent, but within the modelled 1:100 year plus climate change and 1:1000 year extents.

The site lies within the West Wales River Basin District, where the Change Factor / Central Estimate climate change allowance is a 30% increase in fluvial flows. The Port Talbot Harbourside model report states that a 30% increase in fluvial flows is used to represent climate change.

For the present day 1:1000 year scenario the maximum flood depth on site is shown to be 1.00m.

For the 1:100 year event, with allowance for climate change, the maximum flood depth on site is 0.63m.

It should be noted that all residential uses – and therefore all habitable rooms are located at first floor level and above – which is entirely above the modelled 1:100 year flood level with allowance for climate change, and the modelled 1:1000 year flood level.

All residential uses are at first floor level and above, which is 3.45m above ground floor level. Therefore, all residential uses are entirely flood free for the present day 1:1000 year event, and 1:100 year event with allowance for climate change. No habitable residential uses will be located at ground floor level.

It is recommended that the finished ground floor level for the commercial/retail units is raised above the modelled 1:100 year flood level with allowance for climate change (7.79mAOD). The topographical survey shows that topographic levels in the area of the proposed new building range between approximately 7.48mAOD to 7.69mAOD. As such, the raising of the ground floor will provide a betterment compared to the existing situation.

For the 1:100 year event with allowance for climate change, Talbot Road to the front of the site is shown to have a Flood Hazard of 'Danger for most'. Safe escape can however be provided during the 1:100 year flood event with allowance for climate change. Site users should exit the site to Oakwood Lane, and travel north along Oakwood Lane. The Flood Hazard along this route is shown to be 'Low Hazard' for approximately 58m, and then entirely outside of the modelled flood extent.

Safe escape will therefore be provided by a formal flood warning and evacuation plan, which will be prepared in liaison with the Emergency Planners and tied in with the existing Emergency Plans for the area.

The Natural Resources Wales Surface Water and Small Watercourses Flood Map suggests that the rounds surrounding site lie partially within areas of "Low", "Medium" and "High" risk of flooding from surface water. Talbot Road / A48 is shown to be at High – Medium risk of flooding from surface water, with Oakwood Lane shown to be at Medium – Low risk of flooding from surface water. The site itself is shown to be predominantly outside of area of Low, Medium and High risk of flooding from surface water and small watercourses.

Additionally, the risk of flooding posed to the site by groundwater, and sewer surcharge flooding would appear to be low.

From 7 January 2019, all new developments of more than 1 dwelling house or where the construction area is 100m² or more, will require Sustainable Drainage Systems (SuDS) for surface water.

In summary:

- Flood Zone C1 as defined by Natural Resource Wales (NRW).
- Demolition of the Eagle House and the construction of 4 retail units, and 20 apartments for social housing
- "Less vulnerable" development on the ground floor, and "More vulnerable" development on the above floors.
- The site itself is shown to be predominantly outside of area of Low, Medium and High risk of flooding from surface water and small watercourses.
- Risk of groundwater and sewer surcharge flooding would appear to be low.
- The site is shown to be entirely outside of the modelled 1:200 year and 1:1000 year tidal flood extents provided for 2116. As such, the site is not considered to be at significant risk from tidal flooding.
- The site is shown to be entirely outside of the present day 1:100 year extent, but within the modelled 1:100 year plus climate change and 1:1000 year extents.
- For the present day 1:1000 year scenario the maximum flood depth on site is shown to be 1.00m.
- For the 1:100 year event, with allowance for climate change, the maximum flood depth on site is 0.63m.
- All residential uses are at first floor level and above, which is 3.45m above ground floor level. Therefore, all residential uses are entirely flood free for the present day 1:1000 year event, and 1:100 year event with allowance for climate change. No habitable residential uses will be located at ground floor level.
- It is recommended that the finished ground floor level for the commercial/retail units is raised above the modelled 1:100 year flood level with allowance for climate change (7.79mAOD).
- It is recommended that the proposed cycle store and bin store are rendered floodable, the specification for the areas to be rendered floodable will involve having openings on all sides, extending from the existing ground level to 300mm above the design flood level.
- Safe escape can however be provided during the 1:100 year flood event with allowance for climate change.
- Flood proofing of the building will be incorporated as appropriate.
- A flood warning and evacuation plan will be implemented post development.

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

Appendix

- Topographic Survey.
- Proposed plans.
- NRW Data email.



Notes:
Tree species is only annotated where known.
Service covers are surveyed where accessible.
Healer Surveys cannot accept liability for missing covers due to them being buried or obscured by parked vehicles at the time of site visit.

Station Table:		
Station	Easting	Northing
S1	276659.054	189650.004
S2	276607.294	189626.318
S3	276814.680	189601.907
S4	276801.189	189637.580

Grid Origin and Level Datum:
Ordnance Survey GPS OSGB36(15) Grid and Levels used.

Revisions:	
A.	
B.	
C.	
D.	
E.	
F.	
G.	
H.	

Client:
CASTELL GROUP

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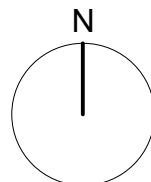
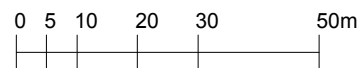
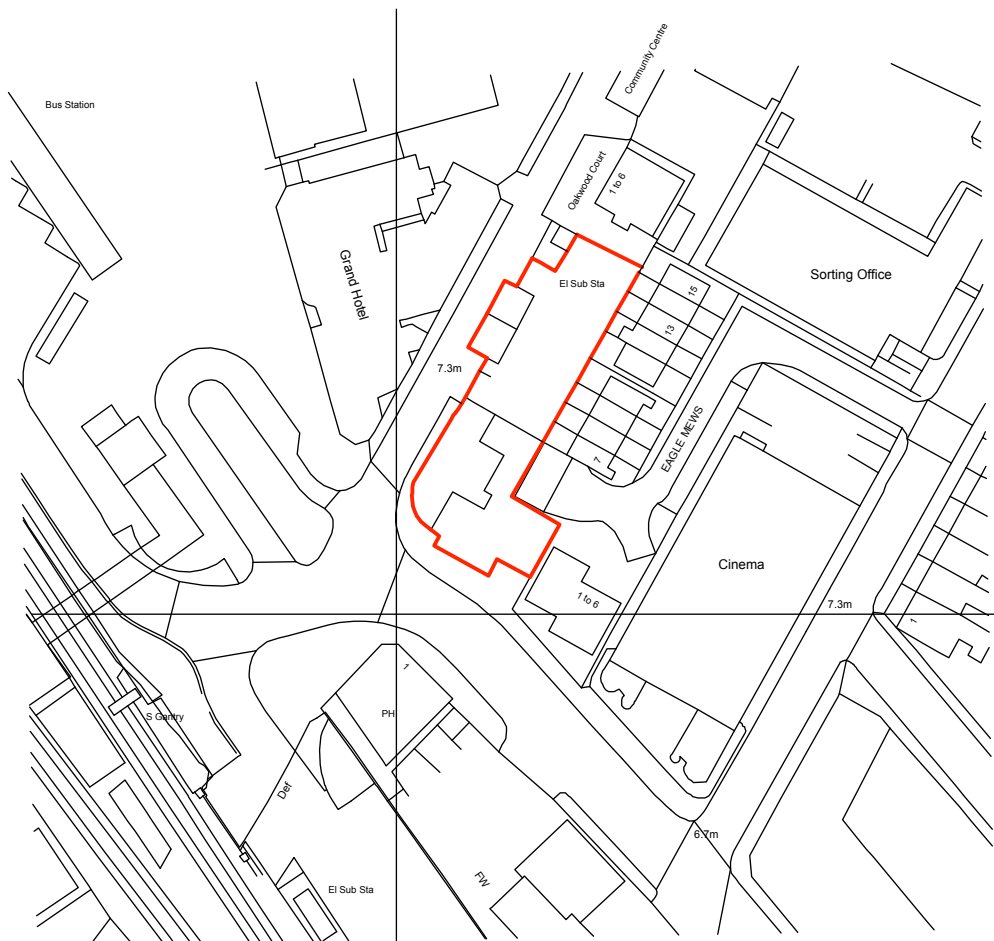


Land Surveyors
8 Oldfield Road, Bocum Park, Penrith, Cumbria, CA35 5LJ
Tel: 01666 865906
Web: www.healersurveys.co.uk

Project:
Eagle House, Talbot Road, Port Talbot

Topographic Survey			
Date:	April 2021		
Surveyed:	JDE		
Drawn:	JDE		
Checked:	RE		
Scale:	1:250	Sheet Size:	A2
		Sheet No.:	1 of 1

Job No:
P3404



Kennedy James Griffiths
Chartered Architects and Project Managers
Project



T 02920 545100
10 Victoria Park Court
516 Cowbridge Road East
Cardiff
CF5 1DB

Eagle House Port Talbot

Title	Date
Location Plan	15 06 2020

Status	Scale @ A4
Pre App Submission	1:1250

Job Number	Revision	Drawn by
1487-PA-01		DJ

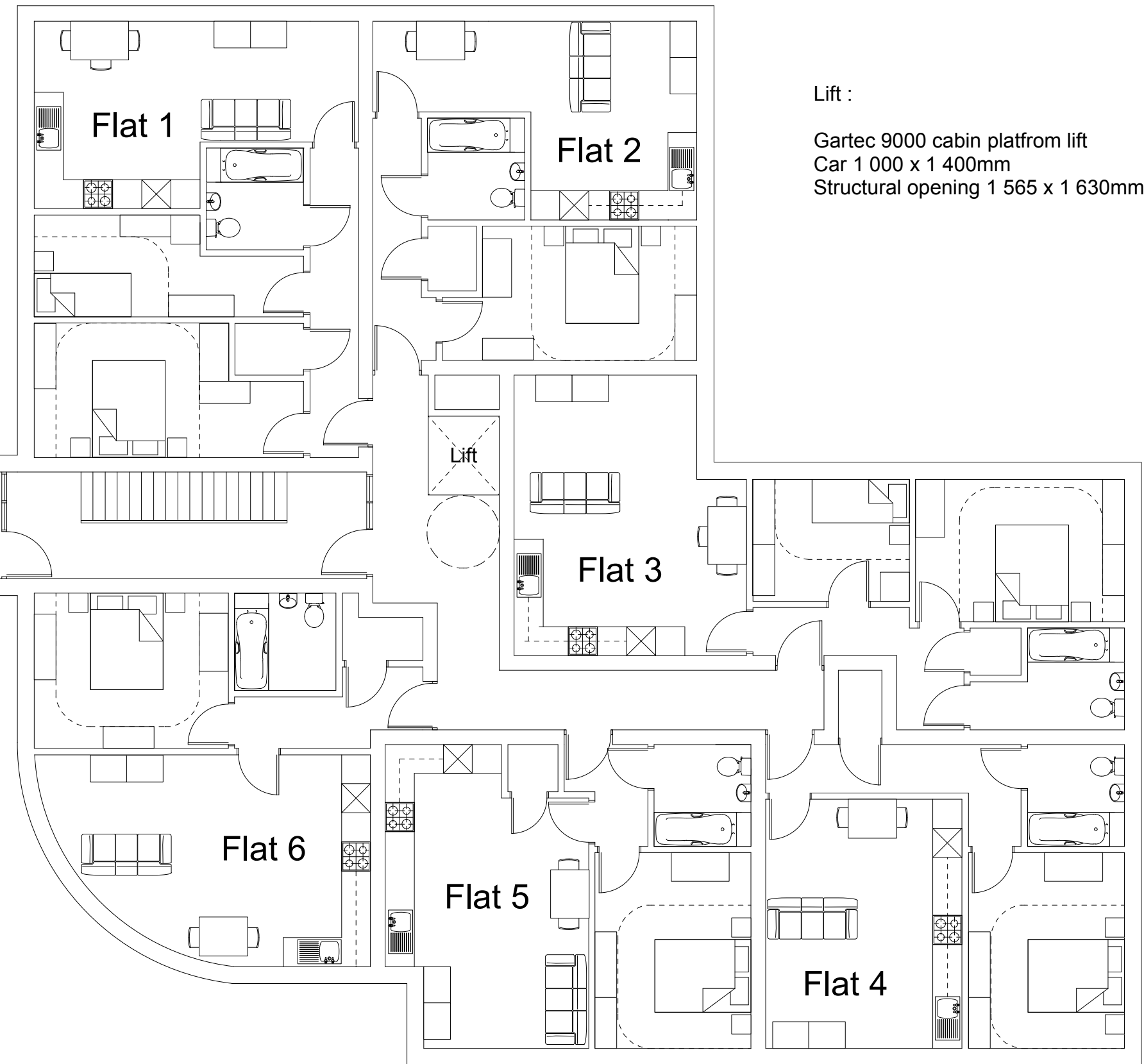
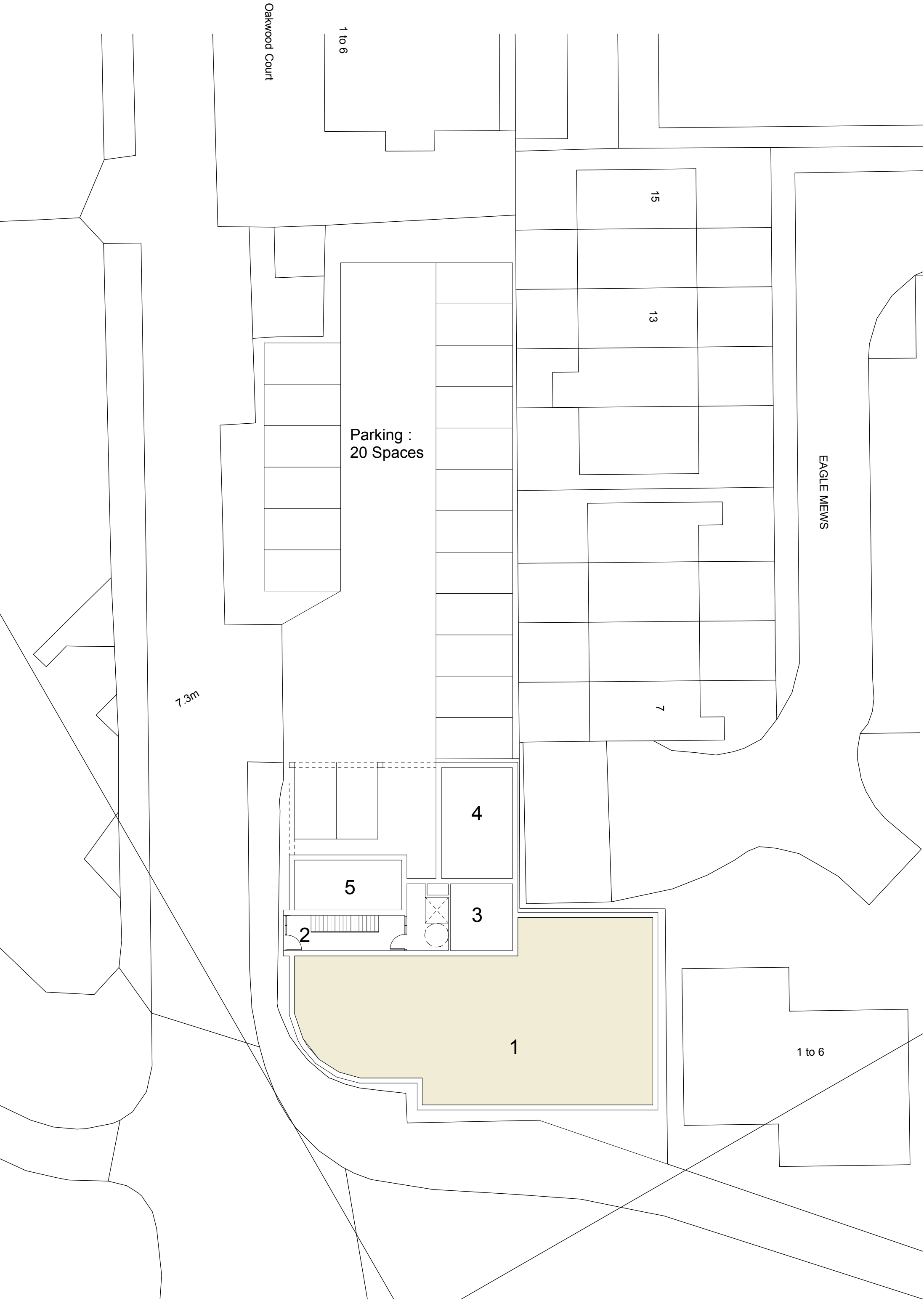
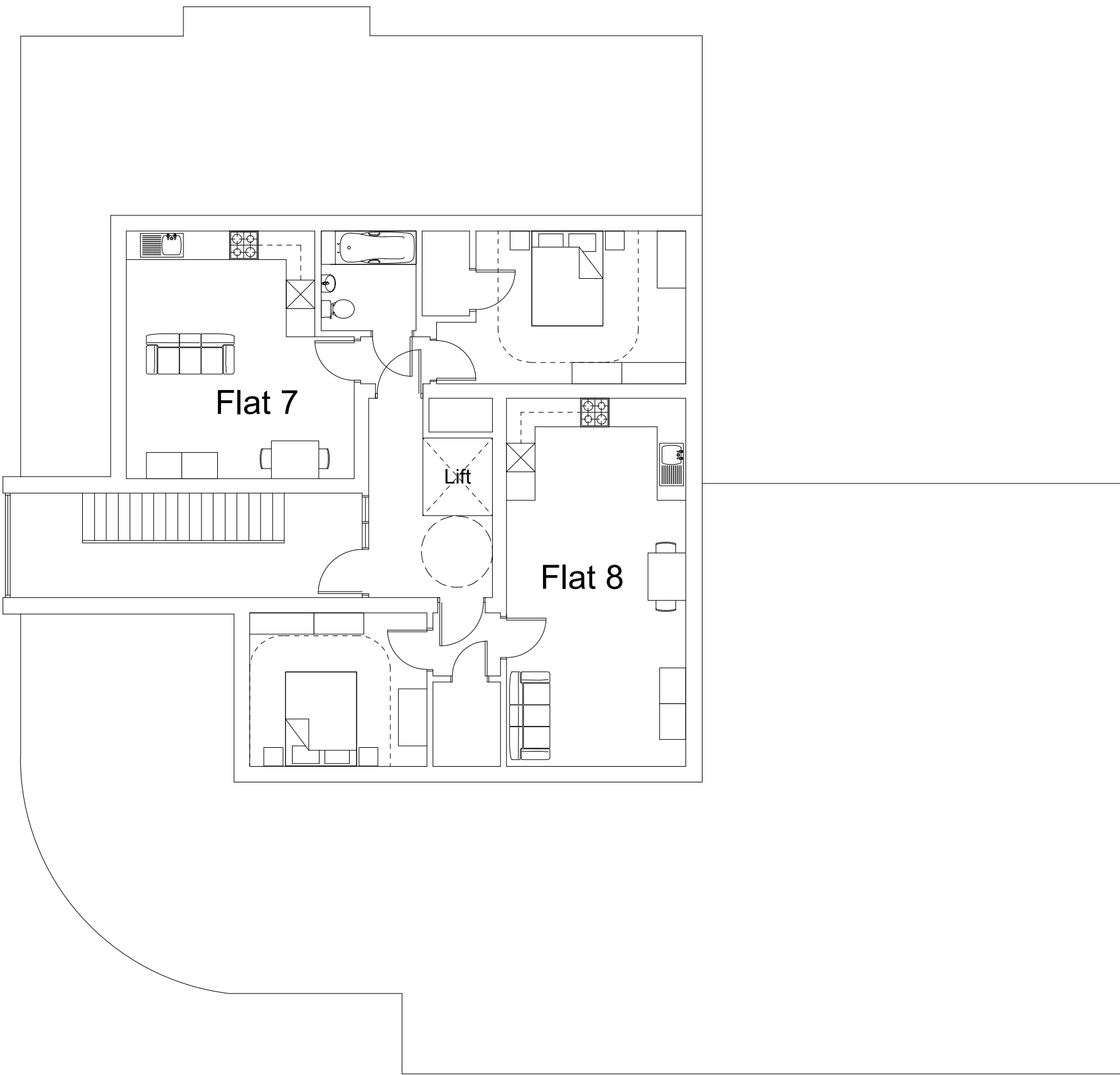
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- Flat 1 : 3P 2B : 60 sq m
- Flat 2 : 2P 1B : 46 sq m
- Flat 3 : 3P 2B : 60 sq m
- Flat 4 : 2P 1B : 47 sq m
- Flat 5 : 2P 1B : 46 sq m
- Flat 6 : 2P 1B : 50 sq m
- Flat 7 : 2P 1B : 47 sq m
- Flat 8 : 2P 1B : 48 sq m

Ground Floor Retail

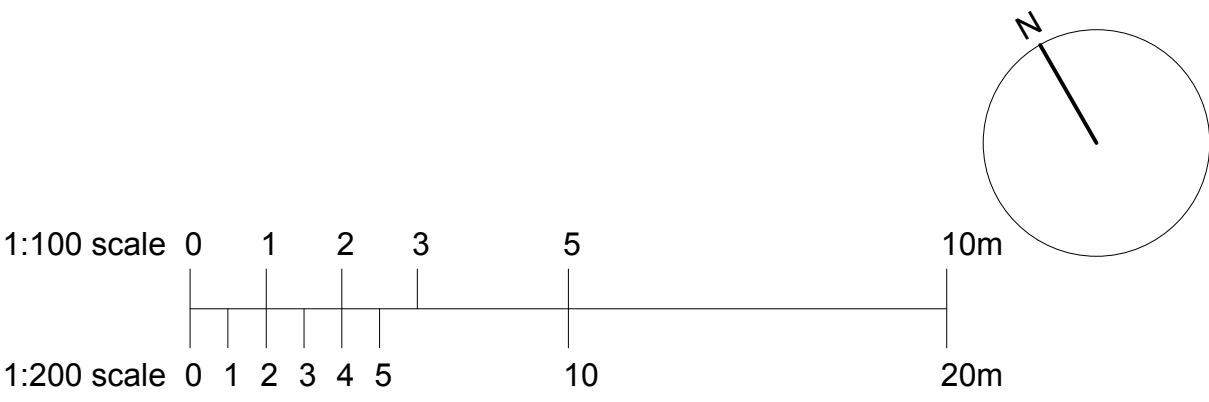
- 1st Floor : 6 Flats
- 2nd Floor : 6 Flats
- 3rd Floor : 6 Flats
- Attic Floor : 2 Flats

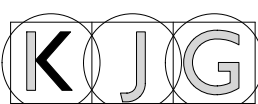
Total : 20 Flats

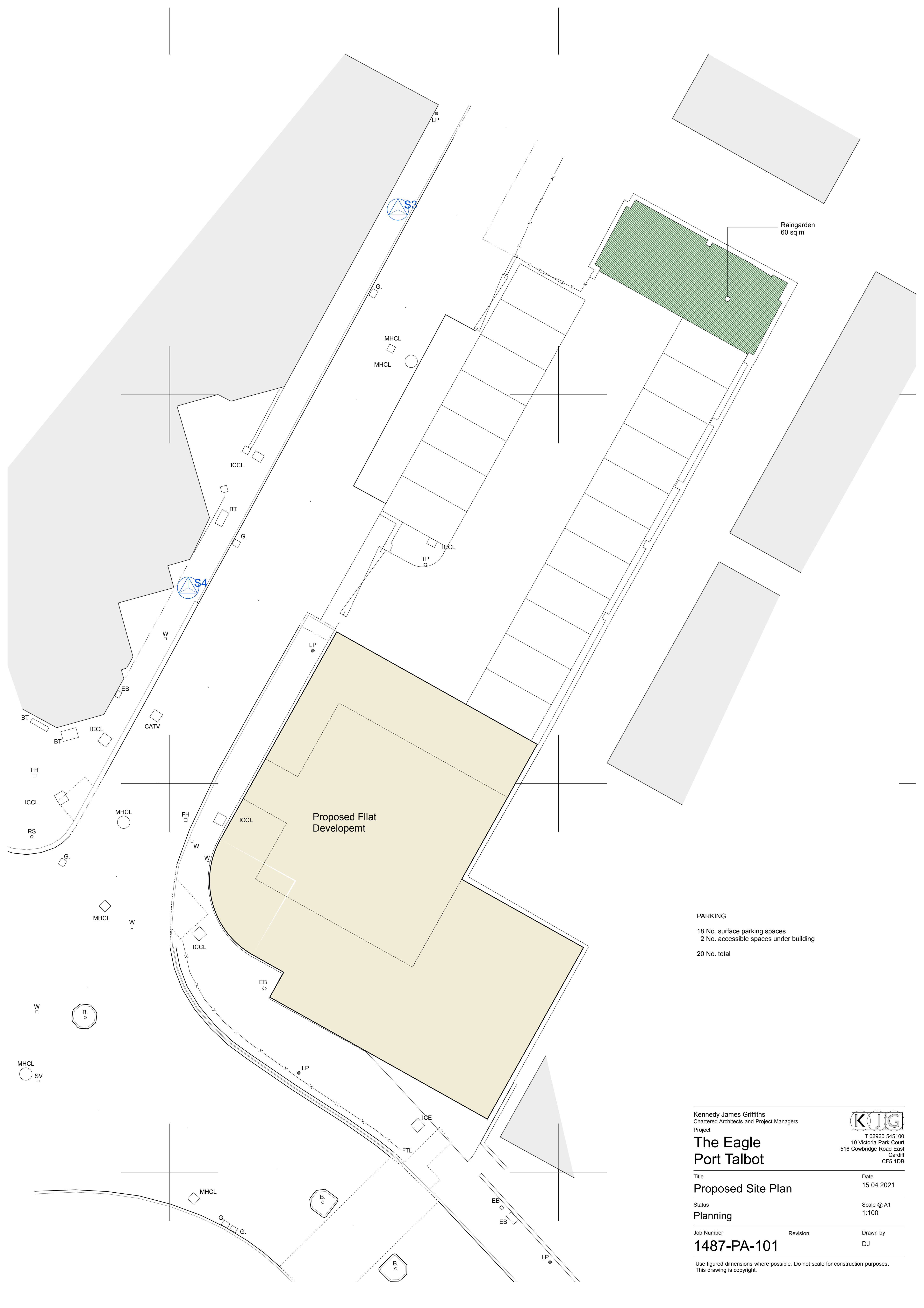


Lift :
Gartec 9000 cabin platform lift
Car 1 000 x 1 400mm
Structural opening 1 565 x 1 630mm

- 1: Retail : 2 300 sq ft
- 2 : Flats entrance
- 3 : Plant Room
- 4 : Bins and Cycles
- 5 : Retail Bins



Kennedy James Griffiths Chartered Architects and Project Managers Project		 T 02920 545100 10 Victoria Park Court 516 Cowbridge Road East Cardiff CF5 1DB
Eagle House Port Talbot		
Title	Date	
Site and Floor Plans	06 05 2020	
Status	Scale @ A1 + A3	
Pre App Submission	1:100 / 1:200 1:200 / 1:400	
Job Number	Revision	Drawn by
1487-SK-4-01		DJ
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PARKING
18 No. surface parking spaces
2 No. accessible spaces under building
20 No. total

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Project

KJG

T 02920 545100
10 Victoria Park Court
516 Cowbridge Road East
Cardiff
CF5 1DB

Title

Date

Proposed Site Plan

15 04 2021

Status

Scale @ A1

Planning

1:100

Job Number

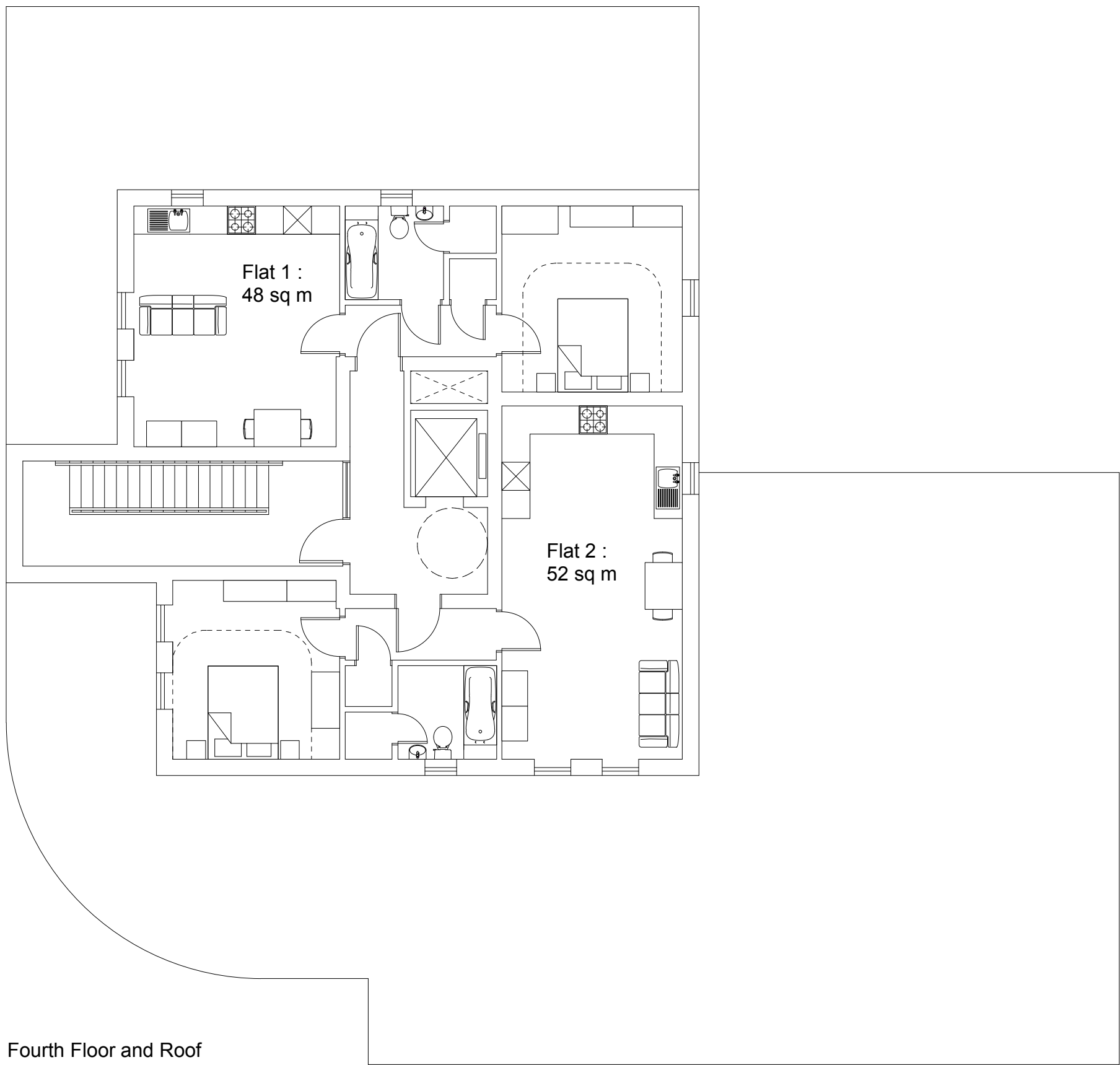
Revision

Drawn by

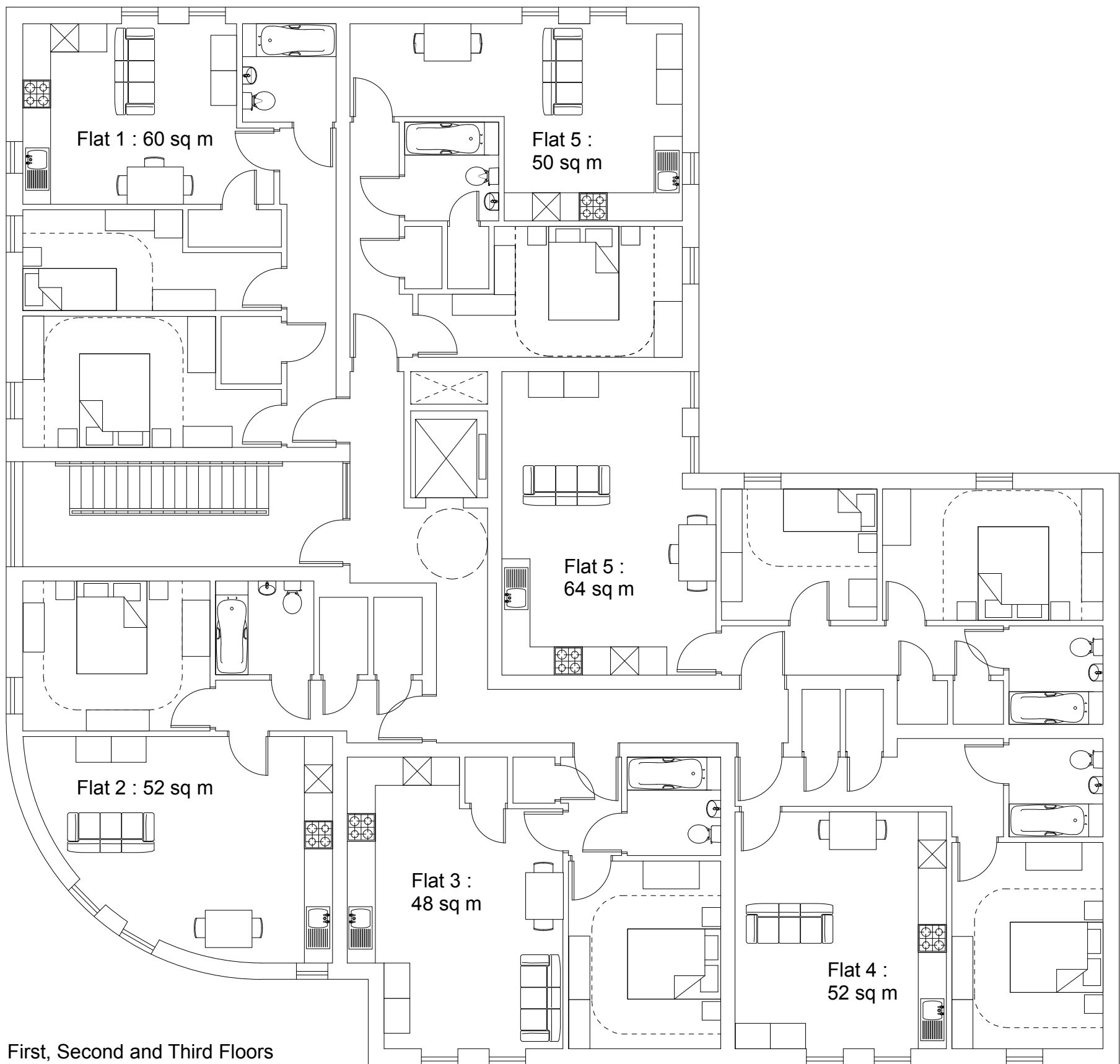
1487-PA-101

DJ

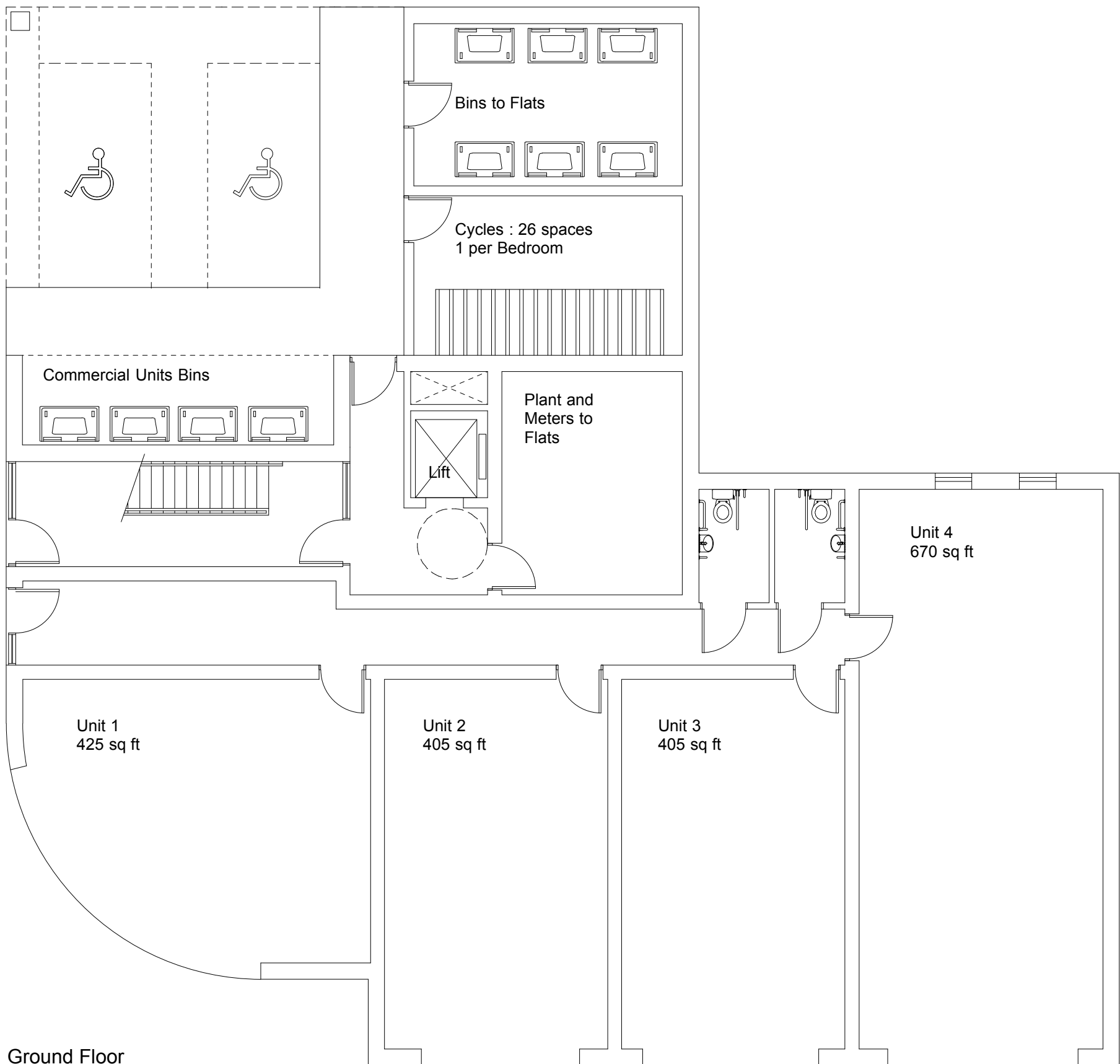
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Fourth Floor and Roof



First, Second and Third Floors



Ground Floor

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KJG

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516 Cowbridge Road East
Cardiff
CF5 1DB

Title

Proposed Floor Plans

Status

Planning

Job Number

1487-PA-102

Revision

Drawn by

DJ

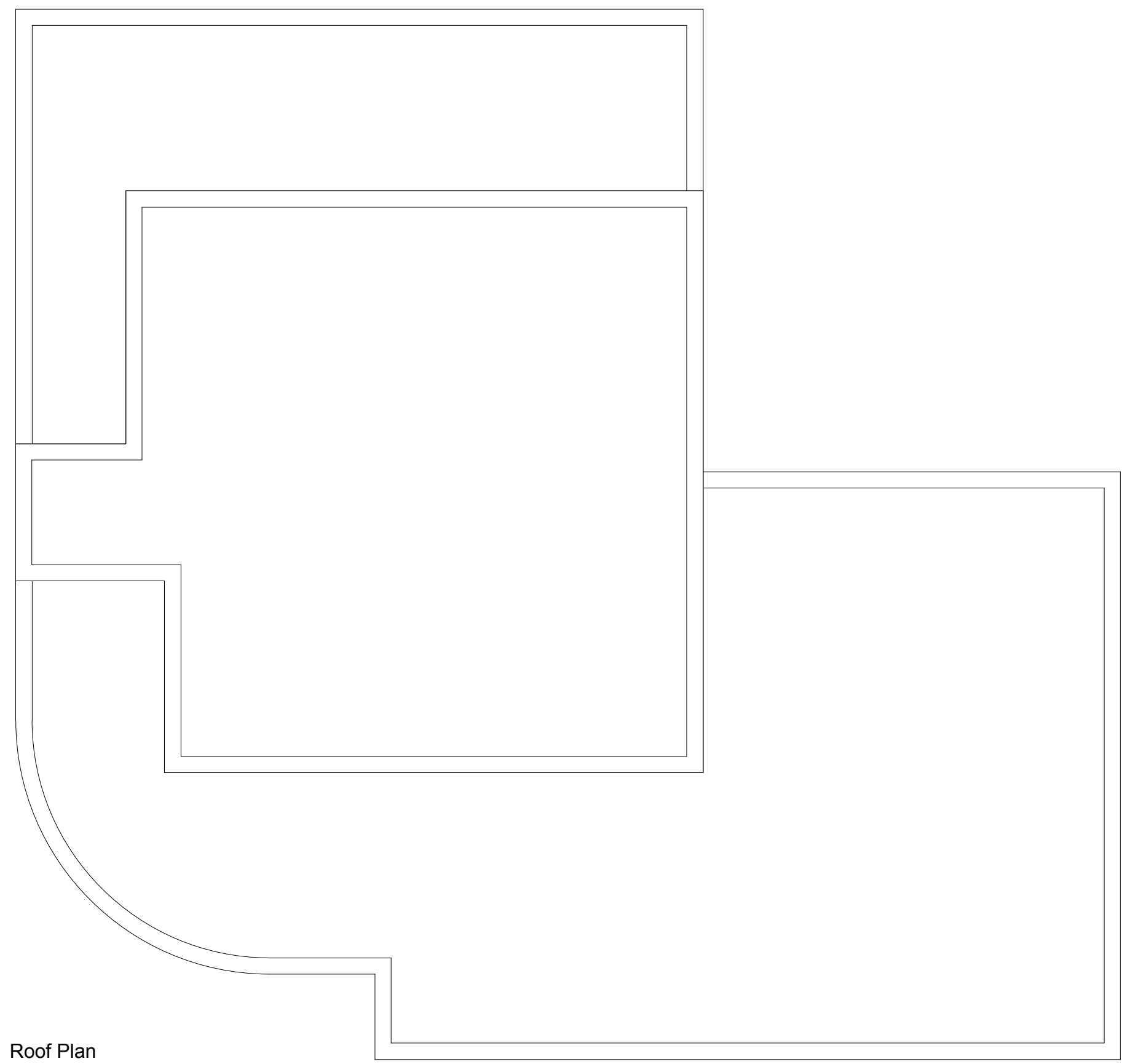
Date

15 04 2021

Scale @ A1

1:100

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T 02920 545100
10 Victoria Park Court
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Cardiff
CF5 1DB

KJG

The Eagle
Port Talbot

Title
Elevation and Roof Plan

Date
15 04 2021

Status
Planning

Scale @ A1
1:100

Job Number
1487-PA-103

Revision

Drawn by
DJ

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Emma Jeffery

From: Data Distribution <datadistribution@cyfoethnaturiolcymru.gov.uk>
Sent: 29 April 2021 12:18
To: Admin @ Unda
Subject: ATI-21394a : NRW Basic Flood Model Report request - Eagle House, Port Talbot, Wales, SA13 1DH - Our ref: 90617

Follow Up Flag: Follow up
Flag Status: Completed

Good Afternoon,

Please see the links below to the Model Reports and Outputs.

It should be noted that, due to the age of the model, the results may be out of date so you will need to determine if the data is still relevant.

Reports

<https://cyfoethnaturiolcymru.sharefile.eu/d-sa4b2be44c97f4625ba248ef48f84fe14>

Model Outputs

<https://cyfoethnaturiolcymru.sharefile.eu/d-s0eaac4af33f84257a15d029a4b152278>

<https://cyfoethnaturiolcymru.sharefile.eu/d-sac516f17b5264f23b4b8e0a0187b901f>

<https://cyfoethnaturiolcymru.sharefile.eu/d-s8e1d78d0151d40fc893dfd147ce154fa>

You should use 7-zip to open the files.

Due to security reasons, please ensure to download the data within 30 calendar days. Otherwise, the link will expire.

Please find a link to our Open Government Licence (OGL) here -

<http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Please also include the attribution statement: "Contains Natural Resources Wales information © Natural Resources Wales and database right. All rights reserved."

Kind Regards

Owen Jones

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Cwsmer, Cyfarthrebu a Masnach / Customer Communications and Commercial
Cyfoeth Naturiol Cymru/Natural Resources Wales
Ffôn/Tel: 0300 065 3000

E-bost/E-mail: owen.jones@cyfoethnaturiolcymru.gov.uk / owen.jones@naturalresourceswales.gov.uk

Gwefan/Website: <http://www.cyfoethnaturiolcymru.gov.uk/> / www.naturalresourceswales.gov.uk

Twitter: twitter.com/NatResWales

Facebook: facebook.com/nNatResWales

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Ein diben yw sicrhau bod adnoddau naturiol Cymru yn cael eu cynnal, eu gwella a'u defnyddio yn gynaliadwy, yn awr ac yn y dyfodol.

Our purpose is to ensure that the natural resources of Wales are sustainably maintained, enhanced and used, now and in the future

Siaradwr Cymraeg

Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay

From: Admin @ Unda <administrator@unda.co.uk>

Sent: 22 April 2021 13:47

To: Data Distribution <datadistribution@cyfoethnaturiolcymru.gov.uk>; Data Distribution <datadistribution@cyfoethnaturiolcymru.gov.uk>

Cc: Admin @ Unda <administrator@unda.co.uk>

Subject: NRW Basic Flood Model Report request - Eagle House, Port Talbot, Wales, SA13 1DH - Our ref: 90617

Dear Sir/Madam,

I would like to request a "Breach and Blockage, Product 5 and Product 6" flood data package for the following site, for use within a Flood Consequence Assessment for planning;

- Eagle House, Port Talbot, Wales, SA13 1DH.
- Grid Ref: 276817,189614
- Please acknowledge receipt of this email and provide the NRW logged reference number for this site by email.
- Please quote our reference **on all correspondence** (including emails and Product 4 data): Our ref: 90617
- Please email the Basic Model Report to administrator@unda.co.uk
- Please ensure that the data covers the entire application area (as indicated with a red line).

Unda Consulting Limited

W: www.unda.co.uk

T: +44 (0) 1293 214 444

E: jackie.stone@unda.co.uk

L: <https://uk.linkedin.com/pub/jackie-stone/3/728/942>

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LinkedIn: <https://uk.linkedin.com/company/unda-consulting-ltd>

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