



Proposed Conversion

Tavistock Guildhall, Guildhall Square, Tavistock

Flood Risk Assessment

Final Report for



Tavistock Town Council
Working for the local community

February 2017

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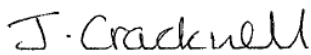
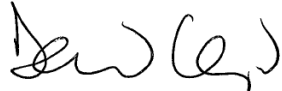
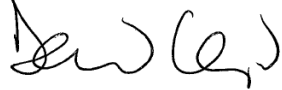
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1.0 INTRODUCTION

This report has been prepared by Hydrock on behalf of Tavistock Town Council in support of a planning application to be submitted to West Devon Borough Council for the proposed conversion of the Tavistock Guildhall, Guildhall Square, Tavistock.

This Flood Risk Assessment report has been prepared to address the requirements of the *National Planning Policy Framework (NPPF)*, through:

- Assessing whether the site is likely to be affected by flooding.
- Assessing whether the proposed scheme is appropriate in the suggested location.
- Presenting any flood risk mitigation measures necessary to ensure that the proposed scheme and occupants will be safe, whilst ensuring flood risk is not increased elsewhere.

The report considers the requirements for undertaking a Flood Risk Assessment as detailed in the *NPPF*.

2.0 SITE INFORMATION

2.1 Existing Situation

2.1.1 Location

Table 1: Site Referencing Information

Site Address	Tavistock Guildhall, Guildhall Square, Tavistock, Devon, PL19 0AE
Grid Reference	248231, 074407 SX 482 744

The site is located in the centre of Tavistock. A site location plan is included below.

Figure 1: Site Location Plan



2.1.2 Existing Land Use

The site currently comprises the Grade II* Listed Tavistock Guildhall. The building formally comprised a Police Station and Courtroom with cells at ground floor level, but is currently unoccupied with the exception of two rooms used as offices, plus a kitchen and WC.

The site is bounded by neighbouring buildings to the northwest and northeast; Market Road to the southeast, beyond which flows the River Tavy; and, Guildhall Square (currently utilised as a public car park) to the southwest.

2.1.3 Topography

The historic nature of the building means that floor levels vary throughout the building. However, the lowest recorded floor level is 79.166m AOD, located in the ground floor cell area.

External ground levels immediately surrounding the building vary between around 80.8m AOD and 79.9m AOD.

Surveys of the building and surrounding area are included in Appendix A.

2.2 Proposed Scheme

With Heritage Lottery Fund support, the Town Council proposes to repair, restore and convert the Guildhall bringing it back into active use. The scheme proposes the creation of a 'Gateway Centre' for information about the Cornwall and West Devon Mining Landscape World Heritage Site (WHS), Council offices and a hub for access to community services. No residential use is proposed.

Proposed scheme drawings are included in Appendix A.

3.0 ASSESSMENT OF FLOOD RISK

3.1 Flood Zone Mapping

The entirety of the site and immediate surrounding area is shown by the Environment Agency's (EA's) Flood Zone Mapping, included in Appendix B, to be within Flood Zone 3, i.e. land assessed as having a high risk of fluvial flooding.

A copy of the EA's mapping is included in Appendix B.

3.2 Fluvial and Tidal Flooding

The River Tavy flows southwestward parallel to the northeastern site boundary. The River is in open channel adjacent to the site, which is defined by stone walls at the top of both banks, which act as a form of flood defence. Immediately downstream of the site the River flows beneath Abbey Bridge, through two stone arches. Just downstream of the Bridge, the River bed falls several metres via a series of weirs.

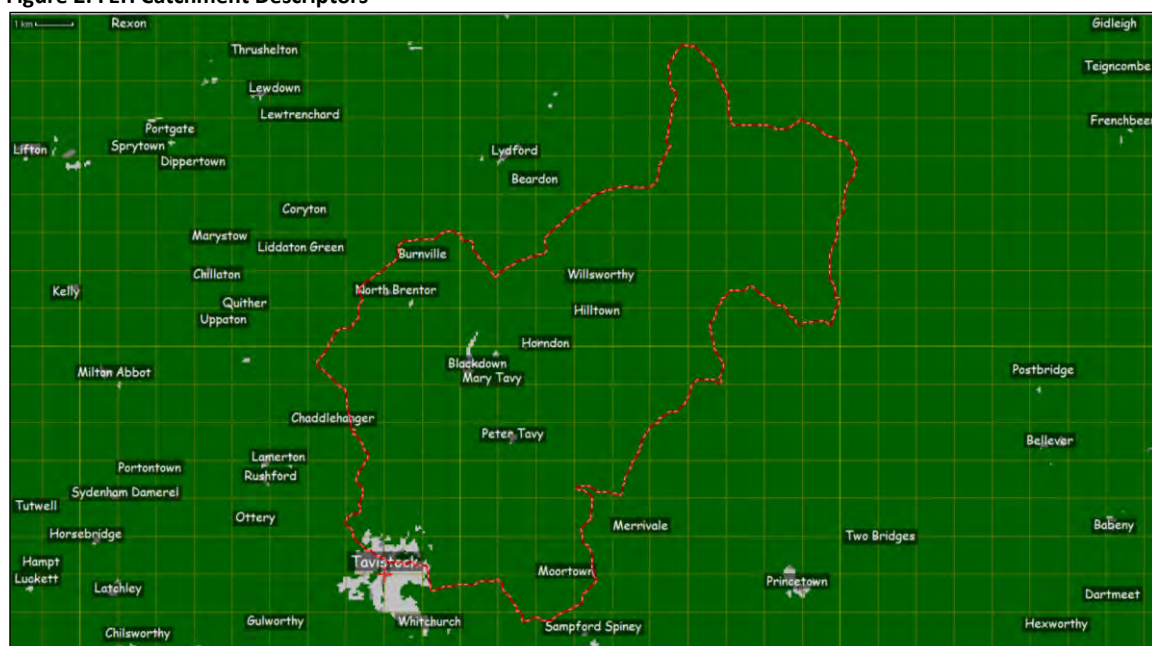
Historical information, provided by the EA and included in Appendix B, suggests that the area has previously flooded, including the site itself. However, the most recent report of flooding affecting the site dates from 1890.

Due to the potential flood risk posed to the site by the River Tavy, a site specific hydrological and hydraulic modelling has been undertaken for the river to confirm site specific flood risk. The modelling approach adopted has been discussed and agreed in principle with the EA's Frank Newell.

3.2.1 Hydrological Modelling

The *Flood Estimation Handbook (FEH)* (2013) has been used to ascertain the Catchment Descriptors of the River Tavy. The catchment has been defined to the downstream boundary of the hydraulic modelling study reach. The catchment area to this point has been confirmed as 97.84km². The Catchment Descriptors generated are shown in Figure 2 below.

Figure 2: FEH Catchment Descriptors



Descriptor	Value	Descriptor	Value	Descriptor	Value
AREA	97.84	RMED-2D	71.1	D2	0.3599
ALTBAR	322	SAAR	1657	D3	0.37914
ASPBAR	243	SAAR4170	1657	E	0.28746
ASPVAR	0.28	SPRHOST	33.01	F	2.61374
BFIHOST	0.519	URBCONC1990	-999999	C(1 km)	-0.025
DPLBAR	10.48	URBEXT1990	0.0036	D1(1 km)	0.441
DPSBAR	104	URBLOC1990	-999999	D2(1 km)	0.336
FARL	0.998	URBCONC2000	0.682	D3(1 km)	0.38
LDP	21.72	URBEXT2000	0.0059	E(1 km)	0.284
PROPWET	0.48	URBLOC2000	0.248	F(1 km)	2.529
RMED-1H	13.1	C	-0.02637		
RMED-1D	53.6	D1	0.48097		

It is noted that EA Gauging Station '47024 - Tavy at Tavistock Abbey Bridge' is located approximately 100m upstream of the site. However, there is only a relatively short period of reliable data available for the Station, from 2010 onwards. The *National River Flow Archive* notes that pre-2010 data '*overestimates high flows and should not currently be used for high flow analysis*'. Therefore, based on the short period of reliable data available for the Station, a WINFAP-FEH 'Single Site Analysis' approach has not been deemed a suitable flow calculation approach in this instance.

Consequently, in line with best practice for a catchment of this nature, a 'Pooled Analysis' approach has been adopted, utilising WINFAP-FEH.

A pooling group has been compiled, comprising 504 years of data, with those stations indicated as being unsuitable for pooling removed, along with those with high discordancy values. A copy of the initial WINFAP-FEH generated and final pooling groups are shown in Figures 3 and 4 below respectively.

Figure 3: WINFAP-FEH Generated Pooling Group

	Station	Distance	Years of data	QMED AM	L-CV	L-SKEW	Discordancy
1	47024 (Tavy @ Tavistock)	0.034	5	130.000	0.339	0.422	2.771
2	46008 (Avon @ Loddiswel)	0.163	34	63.421	0.174	0.060	0.925
3	16003 (Ruchill Water @ Cl	0.263	45	148.085	0.145	0.058	0.303
4	72003 (Hindburn @ Wray)	0.266	23	127.313	0.142	0.094	1.134
5	47020 (Inny @ Bealsmill)	0.294	32	34.422	0.226	0.079	2.552
6	23009 (South Tyne @ Alst	0.322	36	139.185	0.200	0.302	0.725
7	50011 (Okement @ Jacob	0.348	31	59.565	0.224	0.218	0.929
8	60009 (Sawdde @ Felin-y	0.376	38	124.708	0.261	0.357	1.745
9	60006 (Gwili @ Glangwili)	0.414	46	78.452	0.164	0.168	0.197
10	47011 (Plym @ Cam Woo	0.425	25	46.240	0.203	0.233	0.173
11	58012 (Afan @ Marcroft W	0.444	34	98.677	0.148	0.083	0.699
12	55004 (Irfon @ Abermant)	0.458	45	56.542	0.159	0.255	1.206
13	72016 (Wyre @ Scorton W	0.475	18	80.428	0.158	0.060	0.432
14	78004 (Kinnel Water @ Re	0.528	40	78.224	0.118	0.011	0.597
15	79004 (Scar Water @ Cap	0.529	43	132.922	0.087	0.070	1.262
16	47004 (Lynher @ Pillaton h	0.539	53	43.741	0.218	0.283	0.349
17							
18	Total		548				

Key

Short Records

Discordant

No Pooling

No Pooling, No QMED

Figure 4: WINFAP-FEH Final Pooling Group

	Station	Distance	Years of data	QMED AM	L-CV	L-SKEW	Discordancy
1	16003 (Ruchill Water @ Cl	0.263	45	148.085	0.145	0.058	0.643
2	60006 (Gwili @ Glangwili)	0.414	46	78.452	0.164	0.168	0.068
3	55004 (Irfon @ Abermant)	0.458	45	56.542	0.159	0.255	0.977
4	78004 (Kinnel Water @ Re	0.528	40	78.224	0.118	0.011	0.806
5	79004 (Scar Water @ Cap	0.529	43	132.922	0.087	0.070	1.366
6	72015 (Lune @ Lunes Brid	0.575	35	201.714	0.128	0.028	0.852
7	67005 (Ceiriog @ Brynkine	0.654	56	29.780	0.199	0.213	1.131
8	73011 (Mint @ Mint Bridge	0.658	45	54.835	0.193	0.241	2.189
9	203039 (Clogh @ Tullynev	0.676	33	38.100	0.054	-0.060	1.904
10	73017 (Kent @ Bowston)	0.700	15	62.430	0.197	0.277	0.597
11	47005 (Ottery @ Werrington	0.710	50	64.369	0.148	0.105	0.684
12	48003 (Fal @ Tregony)	0.730	51	11.053	0.167	0.253	0.782
13							
14	Total		504				
15	Weighted means		504		0.146	0.132	

Key

Short Records

Discordant

No Pooling

No Pooling, No QMED

The Generalised Extreme Value and Pearson Type III distributions have been shown to offer acceptable growth curve fittings and have been accordingly adopted (the Generalised Extreme Value results have subsequently been used as these offered more conservative flow estimates).

QMED has been estimated based on donor station '47015 - Tavy at Ludbrook'. This donor station has been selected based on its location on the same watercourse as the study catchment / having the closest 'centroid distance' to the study catchment, whilst omitting donor station 47024 - Tavy at Tavistock Abbey Bridge due to the reasons outlined previously.

The impact of climate change on flows has been calculated by multiplying the 1 in 100 year calculated flow by 30% and 40%. This is in line with the EA's latest climate change allowance guidance for 'less vulnerable' proposed developments in Flood Zone 3a in the Southwest over 75 years (i.e. to 2092, which is typically considered the 'design life' for non-residential uses).

Additionally, the EA have advised that a flow of 224m³/s also be assessed. This flow is derived from the *National Rivers Authority Hydrological Assessment of the 1979 Flood Event* and has been advised to be 'greater than a 1 in 75 year event and maybe several hundred years'.

The resulting flows are included in Table 2 below.

Table 2: Flow Calculations

Flood Event (Year)	WINFAP-FEH (m ³ /s)
1 in 20	102.731
1 in 100	122.647
1 in 100 + 30%	159.441
1 in 100 + 40%	171.706
1 in 1,000	147.717
EA	224.000

We note that the above hydrological modelling approach has previously been agreed with the EA (EA ref. DC/2011/110163) in relation to a previous Flood Risk Assessment & Modelling Report prepared in support of the proposed conversion of the Tavistock Guildhall (Hydrock ref. R/C12222/001).

3.2.2 Hydraulic Modelling

A steady state 1 dimensional model of the river has been developed using HEC-RAS.

The upstream limit of the model is set approximately 30m upstream of the site. Given that the channel at this point is open with no structures, this upstream limit is considered a sufficient distance from the site to ascertain any overland flow routes whilst acknowledging that the channel is fairly uniform with no hydraulic structures present.

Cross-sectional data has been obtained from the topographical survey for the area augmented by LiDAR data for un-surveyed areas.

Level data for the hydraulic structures (Abbey Bridge and downstream weirs) has been obtained from the topographical survey for the area. Whilst there is a side weir downstream of Abbey Bridge that feeds the hydro-electric station at Morwelham, the hydrological loss from this structure has

been ignored, given that the inlet structure could be prone to blockage and therefore it has been conservatively assumed that all flows remain within the River Tavy channel.

Cross-sections have been spaced relatively equally along the river, and interpolated to a spacing of 5m where appropriate. Cross-sections have also been extended to such an elevation so as to prevent any 'glass-walling'.

Upstream and downstream boundary conditions have been assumed normal depth, based on an average gradient across the modelled reach.

Roughness coefficient allocation has been based on information obtained during a site walkover survey, and based on the previously approved modelling undertaken in support of the proposed visitors centre and WC facility at Abbey Bridge.

The model has been run in the conservative 'sub-critical' mode, as per typical EA requirements.

Similarly to the hydrological modelling, we note that the above hydraulic modelling approach has previously been agreed with the EA (EA ref. DC/2011/110163) in relation to a previous Flood Risk Assessment & Modelling Report prepared in support of the proposed conversion of the Tavistock Guildhall (Hydrock ref. R/C12222/001). This modelling study adopted the geometry unaltered from the previously approved model.

3.2.3 Results

The modelled cross-sections and floodplain extents are included in Appendix B.

Considering the key flood events of a 1 in 20 year, to determine the 'functional floodplain', and 1 in 100 year + 40%, as the 'worst-case' scenario:

The results demonstrate that the 1 in 20 year flood flow effectively remains within channel adjacent to the site due to the presence of the existing stone walls, i.e. the site is shown to be outside the floodplain of such a flood event, and therefore not within the 'functional floodplain'.

There is a small opening in the stone wall on the left bank through which flood waters are shown to flow. However, flood waters emerging from this opening in such an event are predicted to be retained within Dolvin Road / A386.

The 1 in 100 year + 40% flood event is indicated to overtop the existing stone walls which run parallel to the River channel, and as such the entirety of the site and adjacent Guildhall Square are shown to be at risk of flooding in such an event, with the building potentially at risk of flooding to a depth of 2.284m and external areas to 1.55m (based on a 1 in 100 year + 40% flood level adjacent to the site of 81.45m AOD, a lowest recorded internal floor level of 79.166m AOD, and a lowest recorded external ground level of around 79.9m AOD).

Based on the EA supplied hydrology for the 1979 flood event, the entirety of the site and adjacent Guildhall Square are shown to be at an even greater risk of flooding. However, the accurateness of such a potential flow is unclear, given: a) the unreliability of pre-2010 data from the upstream EA Gauging Station, as noted in section 3.2.1, which presumably informed the *National Rivers Authority Hydrological Assessment* from which a flow of 224m³/s is derived; and,

the acknowledgement that the flood extent and depth predicted from such a flow were not recorded in 1979, based on historical information, provided by the EA and included in Appendix B.

3.3 Tidal Flooding

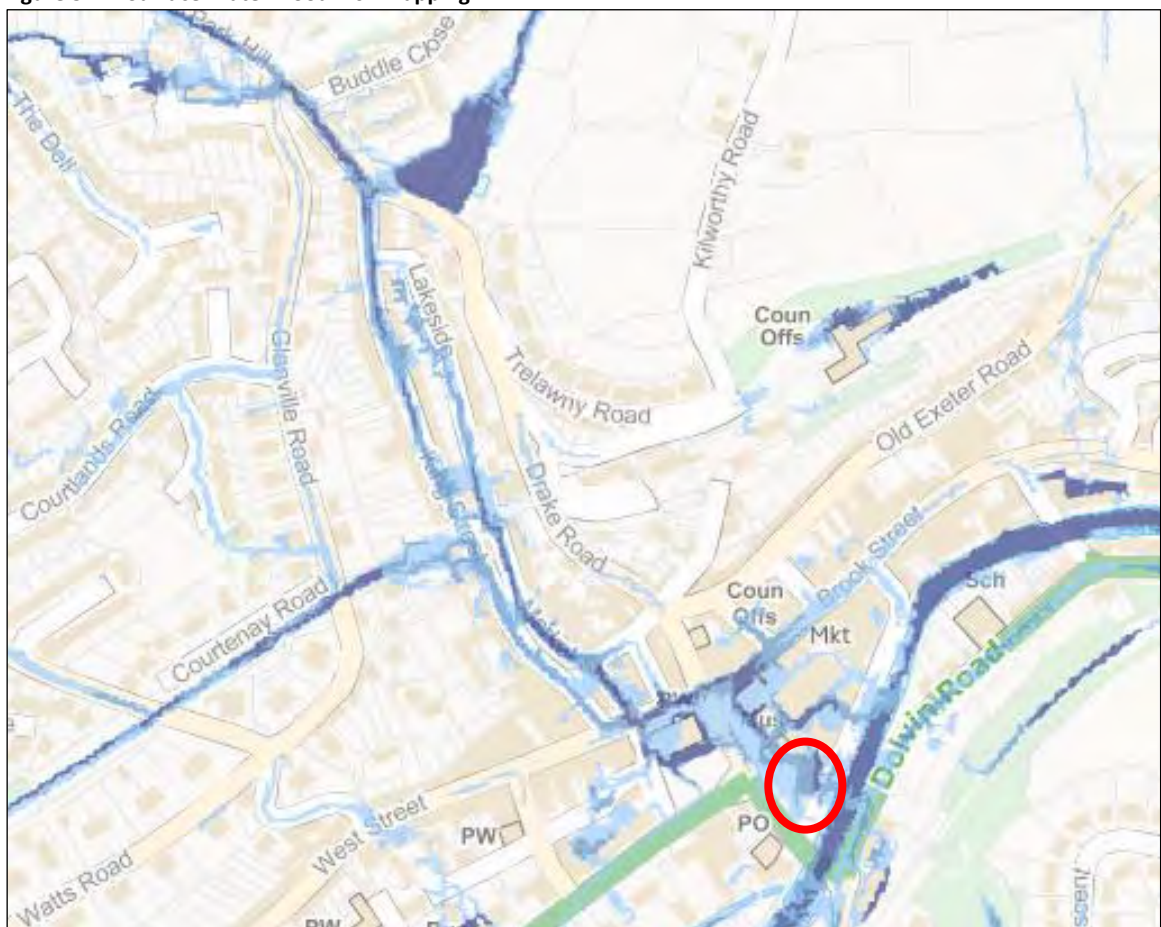
Noting the location and elevation of the area, the site is concluded to be at negligible risk of tidal flooding.

3.4 Surface Water Flooding

West Devon Borough Council's Strategic Flood Risk Assessment (SFRA) notes that the topographically elevated area of Tavistock to the northwest of the site has previously experienced flooding. This is indicated to be the result of a combination of surface water run-off from land above the Town's urban extent, and watercourses, converging into a culvert which runs beneath the Town and discharges into the River Tavy adjacent to the site. The system is reported to have previously surcharged following intense and/or prolonged rainfall resulting in the generation of overland flows.

Given the topography of the area, such flows could eventually be directed towards the site, a potential scenario supported by the EA's Surface Water Flood Risk mapping (as shown in Figure 5 below).

Figure 5: EA Surface Water Flood Risk Mapping



Whilst the surrounding area is served by an existing surface water drainage infrastructure system which will intercept the majority of any overland flows, if such systems were to surcharge, the topography of the areas means that such flows could be directed towards Guildhall Square and the site.

Surface water could 'pond' within the Guildhall Square area before weiring over the footway at the downstream right bank point on Abbey Bridge (which has been identified as the lowest point at which water could weir over and flow away from the site into the River Tavy). The level at this point has been identified as 81.11m AOD, which has consequently been adopted as the 'worst-case' surface water flood risk level at the site.

Comparison of this flood level with existing site levels indicates that the site could be at risk of surface water flooding (noting an existing lowest recorded floor level of 79.166m AOD in the ground floor cell area).

3.5 Groundwater Flooding

British Geological Survey mapping shows the site to be underlain by Alluvium comprising Clay, Silt, Sand and Gravel, which overlies the Milton Abbot Formation comprising Basaltic Lava and Basaltic Tuff.

Such geological conditions could give rise to a perched groundwater table within the superficial deposits and hence groundwater emergence.

The hydrogeological conditions in the area are likely to be controlled by the adjacent channel water levels in the River Tavy, with the 'maximum' channel water levels therefore considered to represent the 'worst-case' scenario with regard groundwater levels. Adopting therefore the 1 in 100 year + 40% flood level of 81.45m AOD as indicative of the 'worst-case' groundwater flooding scenario, indicates that the site could be at risk of groundwater flooding (noting an existing lowest recorded floor level of 79.166m AOD in the ground floor cell area).

3.6 Infrastructure Failure Flooding

Whilst the surrounding developed area is served by an extensive sewerage system, similarly to the assessment of surface water flood risk - if such systems were to surcharge, the topography of the areas means that any overland flows generated could be directed towards Guildhall Square and the site.

Surcharged sewer water could 'pond' within the Guildhall Square area before weiring over the footway at the downstream right bank point on Abbey Bridge (which has been identified as the lowest point at which water could weir over and flow away from the site into the River Tavy). The level at this point has been identified as 81.11m AOD, which has consequently been adopted as the 'worst-case' sewer flood risk level at the site.

Comparison of this flood level with existing site levels indicates that the site could be at risk of sewer flooding (noting an existing lowest recorded floor level of 79.166m AOD in the ground floor cell area).

No other potential sources of infrastructure failure flooding such as canals or reservoirs have been identified uphill and within the immediate vicinity of the site.

4.0 NPPF REQUIREMENTS

4.1 Sequential and Exception Tests

In flood risk policy terms, this planning application is classified as ‘minor development’, being an ‘alteration’ that will not increase the size of the building.

In relation to planning applications for ‘minor development’, Paragraph 104 of the *NPPF* states that,

‘Applications for minor development and changes of use should not be subject to the Sequential or Exception Tests but should still meet the requirements for site-specific flood risk assessments’.

The nature of the planning application means that it can effectively be considered a ‘change of use’ proposal. In relation to the ‘flood risk issues raised by changes of use’, the *NPPF Planning Practice Guidance* states that,

‘A change in use may involve an increase in flood risk if the vulnerability classification of the development is changed. In such cases, the applicant will need to show in their flood risk assessment that future users of the development will not be placed in danger from flood hazards throughout its lifetime. Depending on the risk, mitigation measures may be needed. It is for the applicant to show that the change of use meets the objectives of the Framework’s policy on flood risk’.

In this situation, the proposed scheme will actually result in a reduction in the Flood Risk Vulnerability Classification of the site, noting the former Police Station use of the building (‘highly vulnerable’) compared to the proposed office and community use (‘less vulnerable’).

However, whilst the proposed scheme should not be subject to the Sequential or Exception Tests, and will reduce the Flood Risk Vulnerability Classification of the site, a series of measures have been outlined below to improve the safety of the building and future occupants, whilst ensuring flood risk is not increased elsewhere, for the lifetime of the scheme (generally considered 75 years for non-residential development).

4.2 Mitigation Measures

4.2.1 Resistance and Resilience of Building

The EA’s *Flood Risk Assessments: Climate Change Allowance* guidance requires that for ‘less vulnerable’ proposed developments in Flood Zone 3a in the Southwest over 75 years, such as in this instance, that central and higher central climate change allowances, of 30% and 40% respectively, be used to ‘assess a range of allowances’.

As such, it is proposed that the building be made resistant to flooding up to the 1 in 100 year + 30% flood event + 600mm freeboard, i.e. 81.76m AOD (81.16m AOD + 0.6m). This level is considered to meet current requirements, whilst also ensuring that the building is sufficiently protected from the 1 in 100 year + 40% flood event, at a level of 81.45m AOD. [Consideration of the modelled potential 1979 flood event has not been undertaken, due to the accurateness of such a potential flow being unclear, as noted in section 3.2.3)].

It is proposed that the building be protected up to this level via a 'water exclusion strategy', in line with the guidance contained within *Improving the Flood Performance of New Buildings*.

In light of the limitations imposed on the permissible external alterations given that the building is Grade II* Listed, the following flood resistance and resilience are proposed:

- Existing external walls (building and perimeter) are typically between 450mm – 1,000mm thick and as such are considered likely to provide sufficient 'flood protection' to the building. Accordingly, such structures will be retained and any remedial works undertaken to ensure their resistance to flood water, i.e. mortar joints checked etc.
- Demountable flood barriers to be retrofitted to the two existing rear perimeter wall courtyard accesses, to a minimum level of 81.76m AOD.
- Demountable flood barriers and/or permanent flood doors to be retrofitted to the three existing accesses to the former Police Station portion of the building, to a minimum level of 81.76m AOD. Given that the building is Grade II* Listed, it is unlikely that the existing doors can be replaced. As such, it is more likely that the existing doors be retained, and demountable flood barriers and/or permanent flood doors installed immediately behind the retained existing doors.
- Demountable flood barriers to be retrofitted directly behind / atop the Guildhall Square low perimeter wall / railings, to a minimum level of 81.76m AOD, with demountable flood barriers also retrofitted to the two existing accesses within the wall / railings, to a minimum level of 81.76m AOD. [Given the prominent nature of the existing main access door into the former Courtroom, it is proposed that this be retained unaltered. Whilst it is acknowledged that the small vestibule area within will therefore potentially be at risk of flooding, the existing lowest floor level of the Courtroom (81.823m AOD) is above the proposed flood protection level of 81.76m AOD, and so the potential risk of the solid floored vestibule area flooding is considered acceptable].
- ACO drain, or similar, to be installed across proposed 'Gateway Entrance' where no threshold is currently present, unlike the other ground floor access openings.
- As an additional protection measure, any alteration works to the ground floor level will encompass flood resilience measures, where appropriate. Such measures will include the use of solid floors; any new internal walls constructed of materials with low water penetration, good drying ability, and good retention of pre-flood integrity; use of sealed doors; sensitive services brought in and continued at a high a level as possible; and, non-return valves fitted to drainage services.

Details of the measures to be integrated into the proposed scheme are illustrated in Appendix B.

4.2.2 Warning and Evacuation

In order to ensure the timely and appropriate deployment of the proposed flood resistance measures outlined above, and evacuation of building occupants, Tavistock Town Council (the intended site occupant) will register with the EA's Flood Warning system. Upon receipt of certain

levels of warning, pre-agreed appropriate measures will be undertaken to ensure the safety of the building and evacuation of occupants.

4.2.3 Flood Risk within Catchment

The proposed scheme will not result in any alteration to the site footprint. Whilst it is acknowledged that the scheme proposes the 'infilling' of the existing rear courtyard areas with structures, these areas are currently enclosed by walls and doors and as such are not considered as offering functioning floodplain areas. As such, the proposed conversion will not result in a loss of floodplain storage, and hence a scheme of floodplain compensation is not considered necessary.

4.2.4 Surface Water Management

Currently, surface water from the site is believed to discharge to the existing surrounding sewer system and/or direct to the adjacent River Tavy.

Given that the proposed scheme will not result in any alteration to the building footprint or external areas, it is proposed to retain the existing means of surface water disposal.

As part of the enabling works, the existing systems will be checked, downstream connections ensured, and any necessary remedial works undertaken. The existing systems will be retrofitted with non-return valves, as outlined above.

5.0 CONCLUSIONS

This report has considered the flood risk posed to the proposal site from a variety of sources of flooding.

The assessment has confirmed that the site is shown to be within Flood Zone 3, and at risk of flooding from the adjacent River Tavy, and also potential surface water, groundwater and sewer sources.

Site specific flood risk modelling of the adjacent River Tavy has concluded that the site is at low risk of flooding in the 1 in 20 year flood event (i.e. the building is outside the 'functional floodplain'), but is at risk of flooding in the 'worst-case' modelled scenario of a 1 in 100 year + 40% flood event, with the building potentially at risk of flooding to a depth of 2.284m and external areas to 1.55m in such an event.

In flood risk policy terms, the proposed scheme should not be subject to the Sequential or Exception Tests, and will reduce the Flood Risk Vulnerability Classification of the site.

A series of flood resistance and resilience measures have also been outlined to offer protection to the building up to the 1 in 100 year + 40% flood event, via a 'water exclusion strategy', along with a means of flood warning and evacuation to ensure the timely and appropriate deployment of the proposed flood resistance measures, and evacuation of building occupants.

It has also been demonstrated that the proposed scheme will not result in a loss of floodplain storage, and the existing means of surface water drainage will be retained.

In summary therefore, provided the proposed measures outlined within this report are integrated within the proposed conversion of the building, this report therefore demonstrates that the proposed scheme:

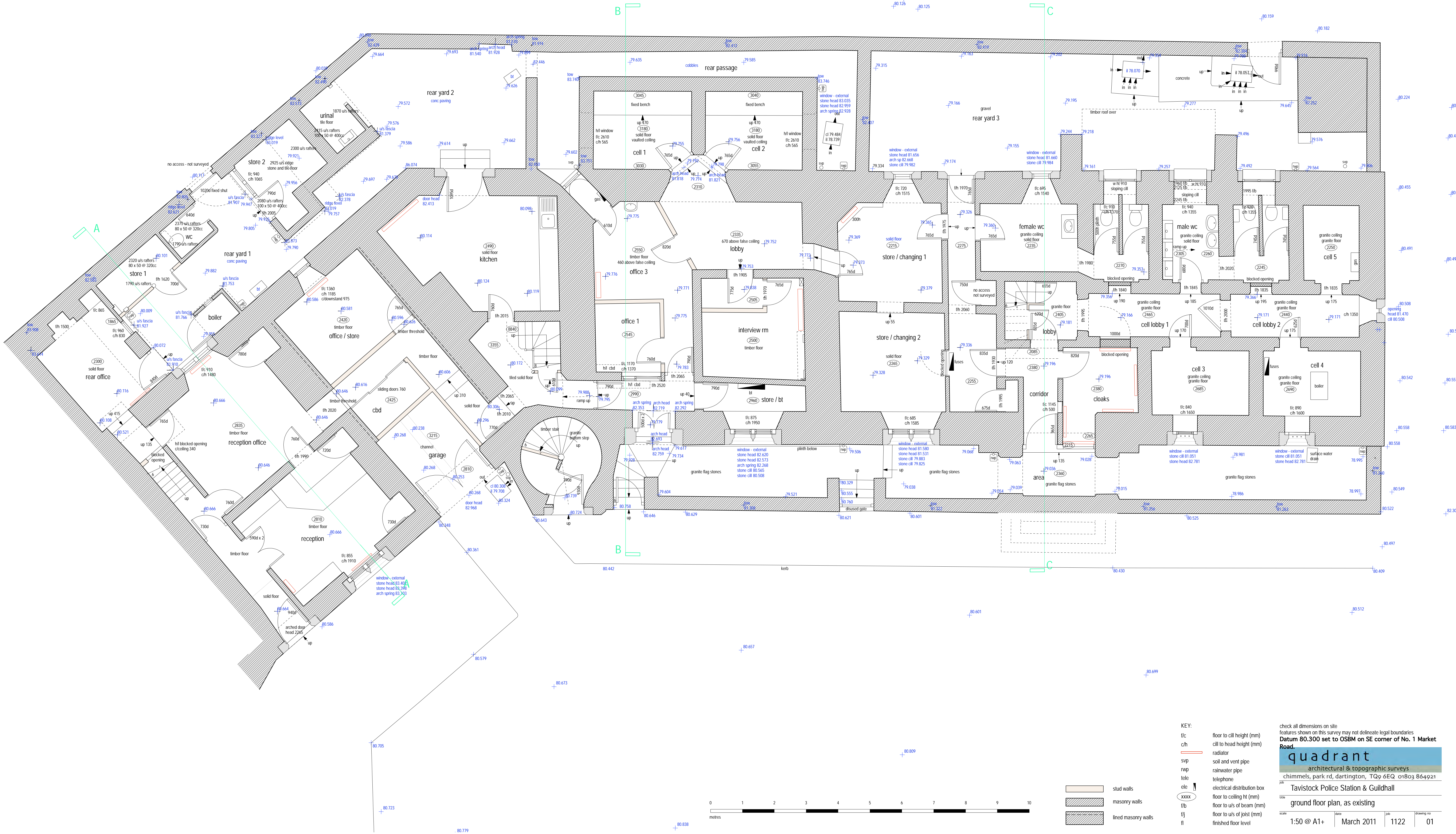
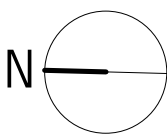
- Is suitable in the location proposed.
- Will be adequately flood resistant and resilient.
- Will not place additional persons at risk of flooding, and will offer a means of warning and evacuation.
- Will not increase flood risk elsewhere as a result of the proposed conversion through the loss of floodplain storage or impedance of flood flows.
- Will put in place measures to ensure surface water is appropriately managed.

As such, the application is concluded to meet the flood risk requirements of the *NPPF*.

Hydrock Consultants Limited

APPENDIX A – SITE DRAWINGS

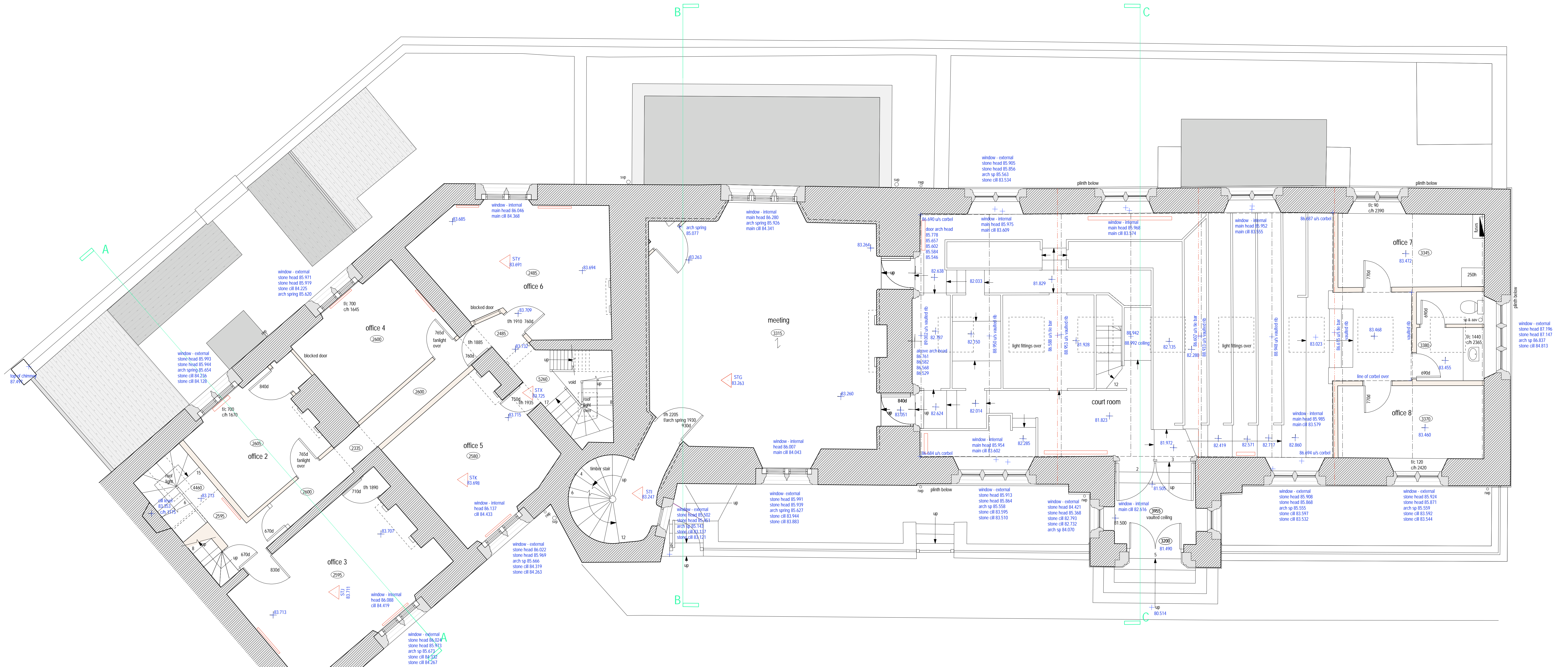
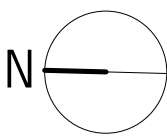
Drawing No.	Title
1122-01	Ground Floor Plan, as Existing
1122-02	First Floor Plan, as Existing
1122-03	Second Floor Plan & Section B-B, as Existing
1122-04	Roof Plan, as Existing
1122-05	Section C-C & South Elevation, as Existing
1122-06	West Elevation, as Existing
1122-07	East Elevation, as Existing
1122-08	Section A-A & Outbuildings Elevation, as Existing
12/4289GYA	Site Survey
1041-SK-302	Ground / Lwr Ground Floors
1041-SK-304	1 st Floor Plan as Proposed
1041-SK-306	2 nd Floor as Proposed



- KEY:
- f/c floor to cill height (mm)
 - ch cill to head height (mm)
 - radiator
 - s/vp soil and vent pipe
 - rwp rainwater pipe
 - tele telephone
 - ele electrical distribution box
 - floor to ceiling ht (mm)
 - f/b floor to u/s of beam (mm)
 - fl floor to u/s of joist (mm)
 - finished floor level

- stud walls
- masonry walls
- lined masonry walls

check all dimensions on site
features shown on this survey may not delineate legal boundaries
Datum 80.300 set to OSBM on SE corner of No. 1 Market Road.
quadrant
architectural & topographic surveys
chimmels, park rd, dartington, TQ9 6EQ 01803 864921
Tavistock Police Station & Guildhall
ground floor plan, as existing
scale 1:50 @ A1+ date March 2011 job 1122 drawing no 01



KEY:

- f/c floor to cill height (mm)
- c/h cill to head height (mm)
- radiator
- s/vp soil and vent pipe
- rwp rainwater pipe
- tele telephone
- ele electrical distribution box
- floor to ceiling ht (mm)
- f/b floor to u/s of beam (mm)
- f/l floor to u/s of joist (mm)
- finished floor level

- stud walls
- masonry walls
- lined masonry walls

check all dimensions on site
features shown on this survey may not delineate legal boundaries
Datum 80.300 set to OSBM on SE corner of No. 1 Market Road.

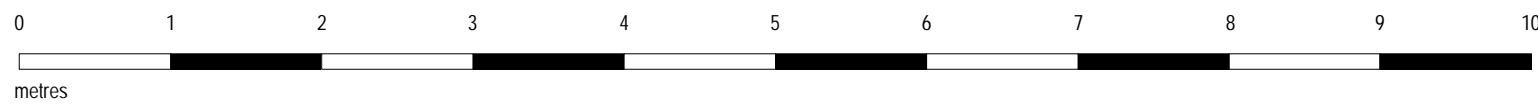
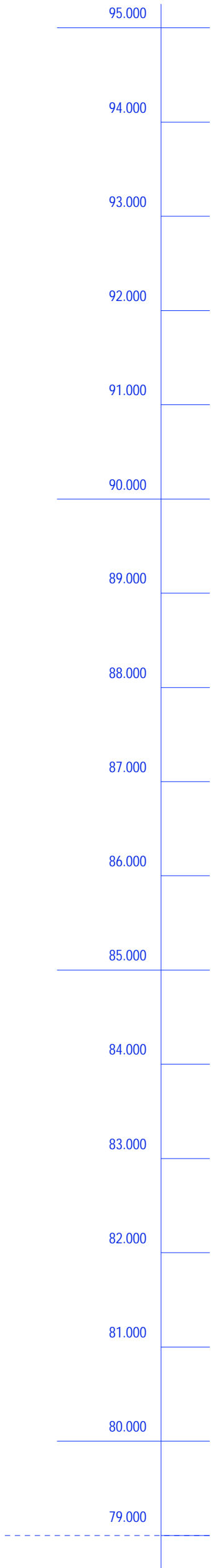
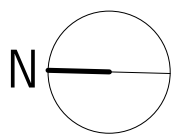
quadrant
architectural & topographic surveys

chimmels, park rd, dartington, TQ9 6EQ 01803 864921

Tavistock Police Station & Guildhall

first floor plan, as existing

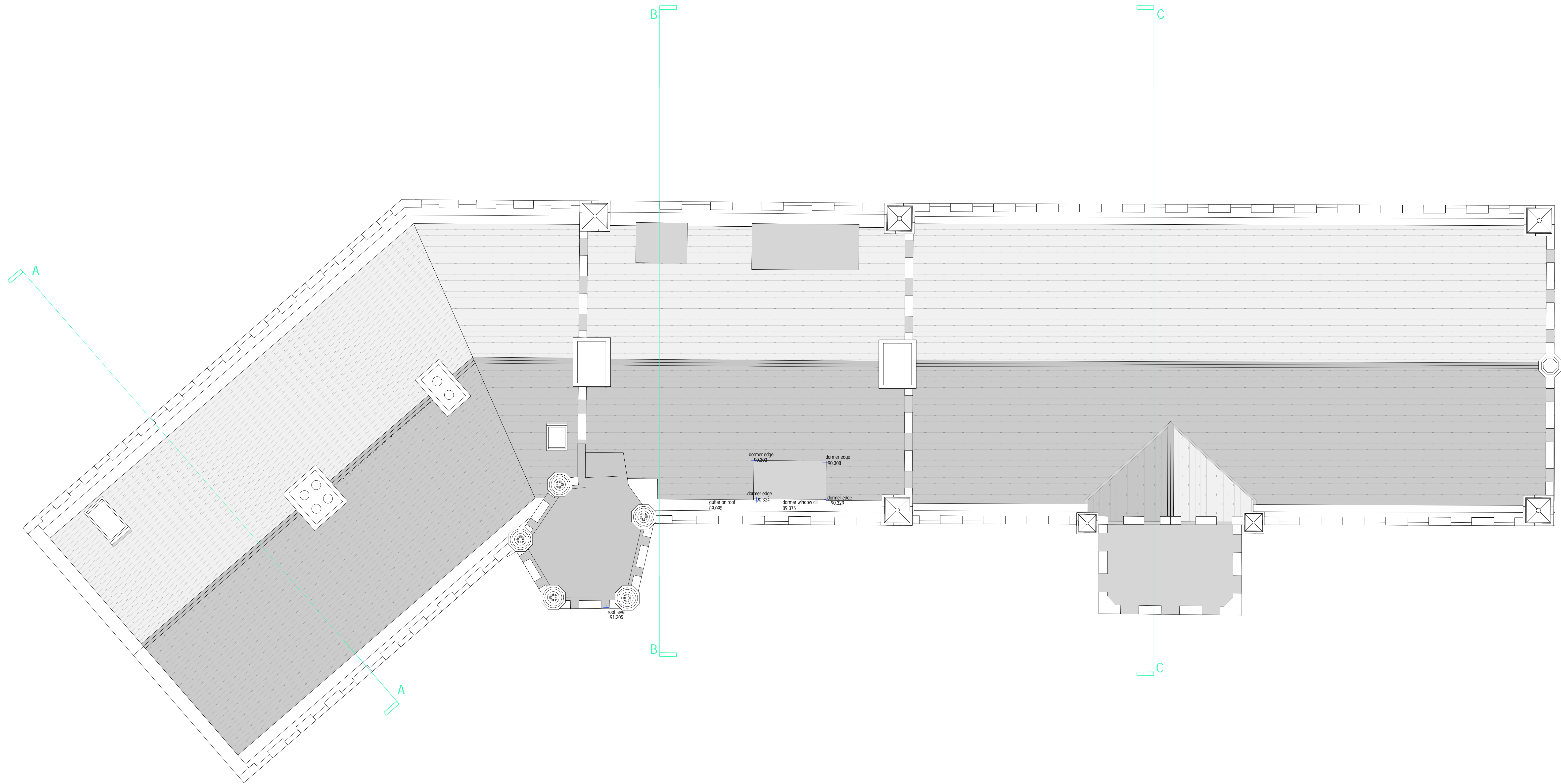
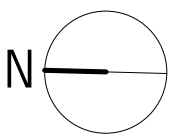
scale 1:50 @ A1+ date March 2011 job 1122 drawing no 02



- stud walls
- masonry walls
- lined masonry walls

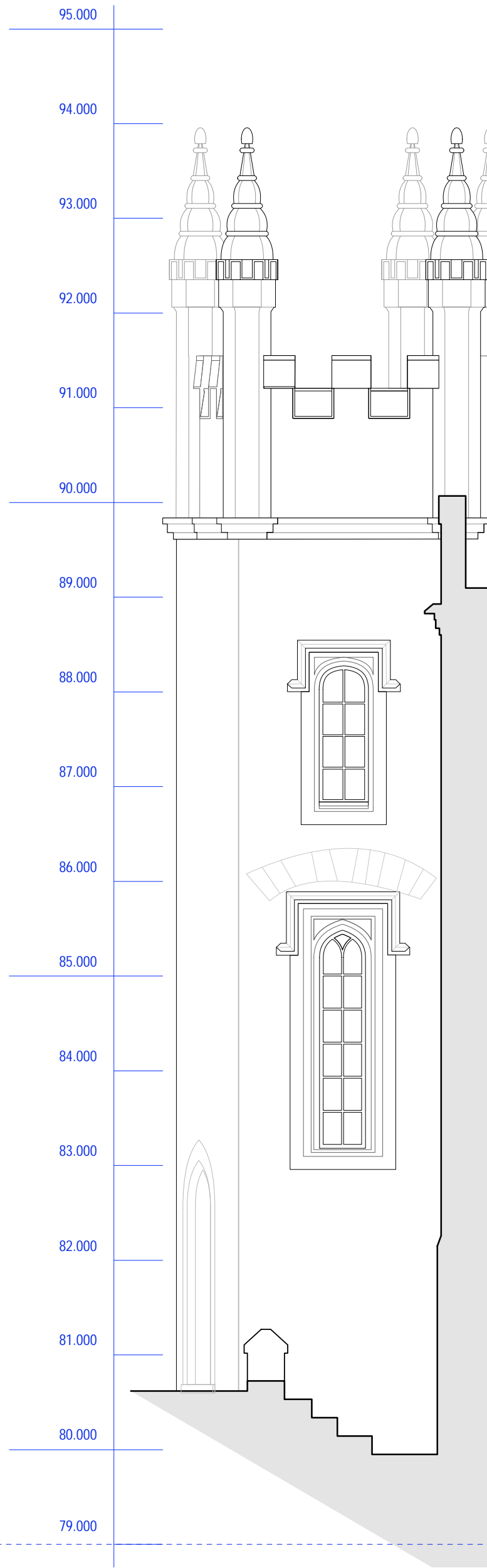
- KEY:
- f/c floor to cill height (mm)
 - ch cill to head height (mm)
 - radiator
 - svp soil and vent pipe
 - rwp rainwater pipe
 - tele telephone
 - ele electrical distribution box
 - xxxx floor to ceiling ht (mm)
 - f/b floor to u/s of beam (mm)
 - f/j floor to u/s of joist (mm)
 - fl finished floor level

check all dimensions on site
features shown on this survey may not delineate legal boundaries
Datum 80.300 set to OSBM on SE corner of No. 1 Market Road.
quadrant
architectural & topographic surveys
chimmels, park rd, dartington, TQ9 6EQ 01803 864921
job: Tavistock Police Station & Guildhall
title: second floor plan & section b-b, as existing
scale: 1:50 @ A1+ date: March 2011 job: 1122 drawing no: 03

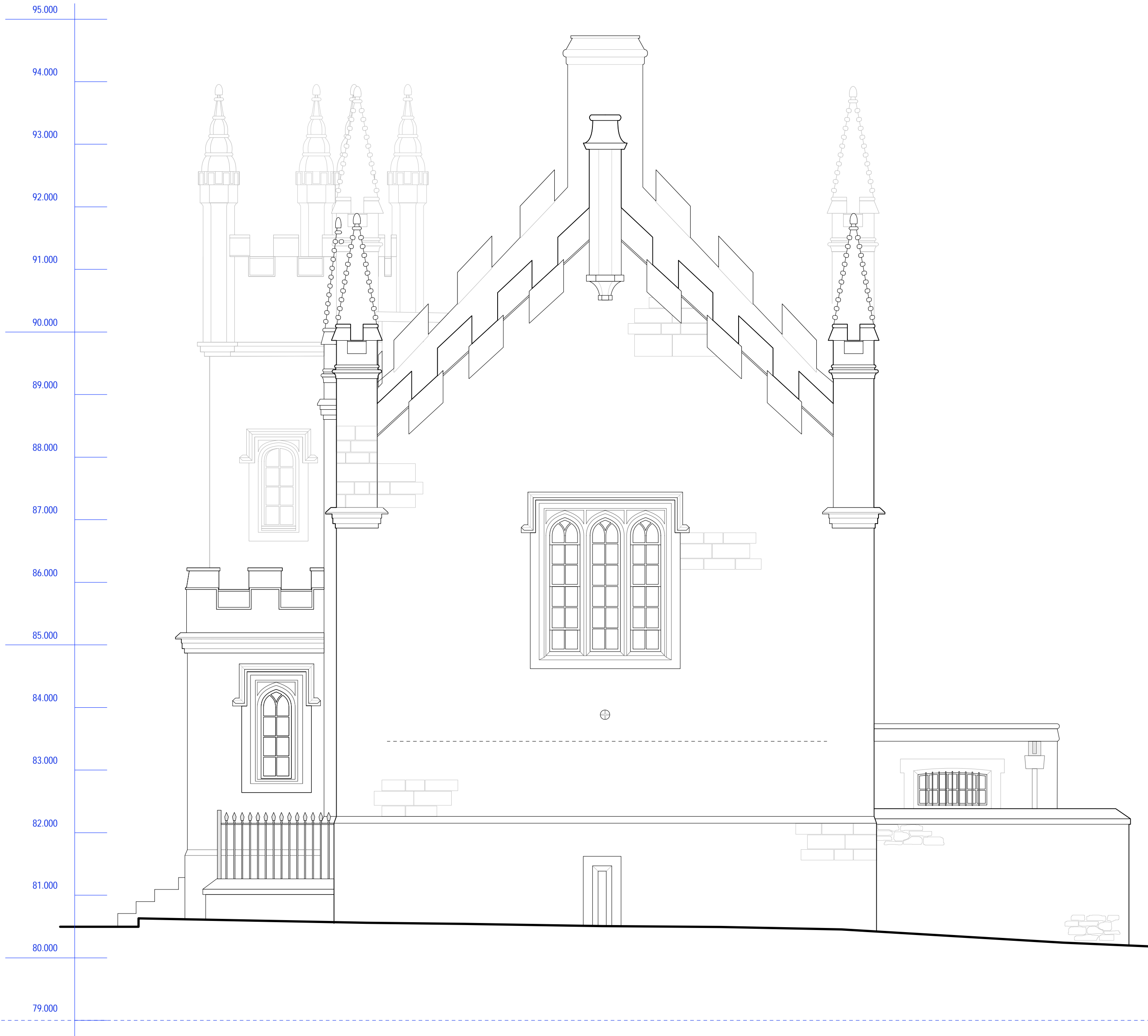


- KEY:
- f/c floor to cill height (mm)
 - ch cill to head height (mm)
 - rwp rainwater pipe
 - tele telephone
 - ele electrical distribution box
 - xxxx floor to ceiling ht (mm)
 - f/b floor to u/s of beam (mm)
 - f/j floor to u/s of joist (mm)
 - fl finished floor level

check all dimensions on site
features shown on this survey may not delineate legal boundaries
Datum 80.300 set to OSBM on SE corner of No. 1 Market Road.
quadrant
architectural & topographic surveys
chimmels, park rd, dartington, TQ9 6EQ 01803 864921
job Tavistock Police Station & Guildhall
title roof plan, as existing
scale 1:50 @ A1+
date March 2011
job 1122
drawing no 04



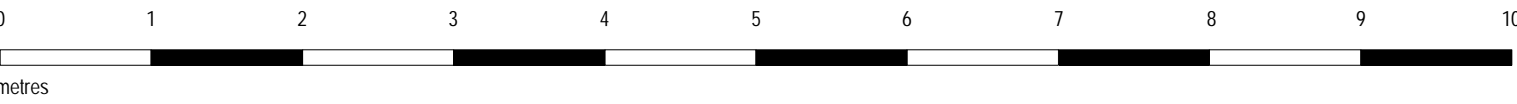
stair tower, south



south



section c-c



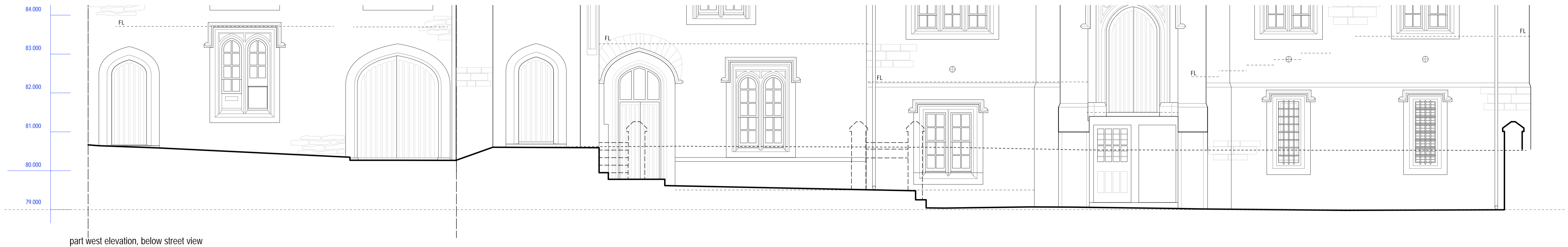
check all dimensions on site
features shown on this survey may not delineate legal boundaries
Datum 80.300 set to OSBM on SE corner of No. 1 Market Road.

quadrant
architectural & topographic surveys
chimmels, park rd, dartington, TQ9 6EQ 01803 864921

Tavistock Police Station & Guildhall

sections c-c & south elevations, as existing

scale: 1:50 @ A1+ | date: March 2011 | job: 1122 | drawing no: 05



check all dimensions on site
features shown on this survey may not delineate legal boundaries
Datum 80.300 set to OSBM on SE corner of No. 1 Market Road.

quadrant
architectural & topographic surveys

chimmels, park rd, dartington, TQ9 6EQ 01803 864921

job
Tavistock Police Station & Guildhall

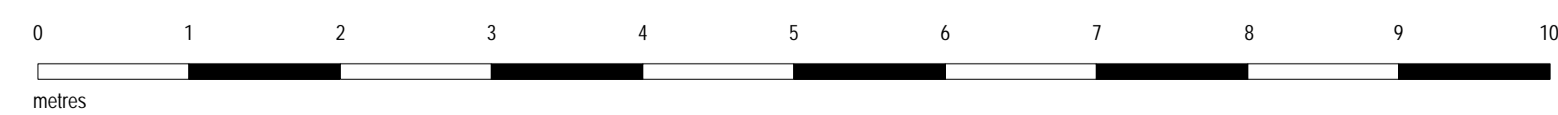
title
west elevation, as existing

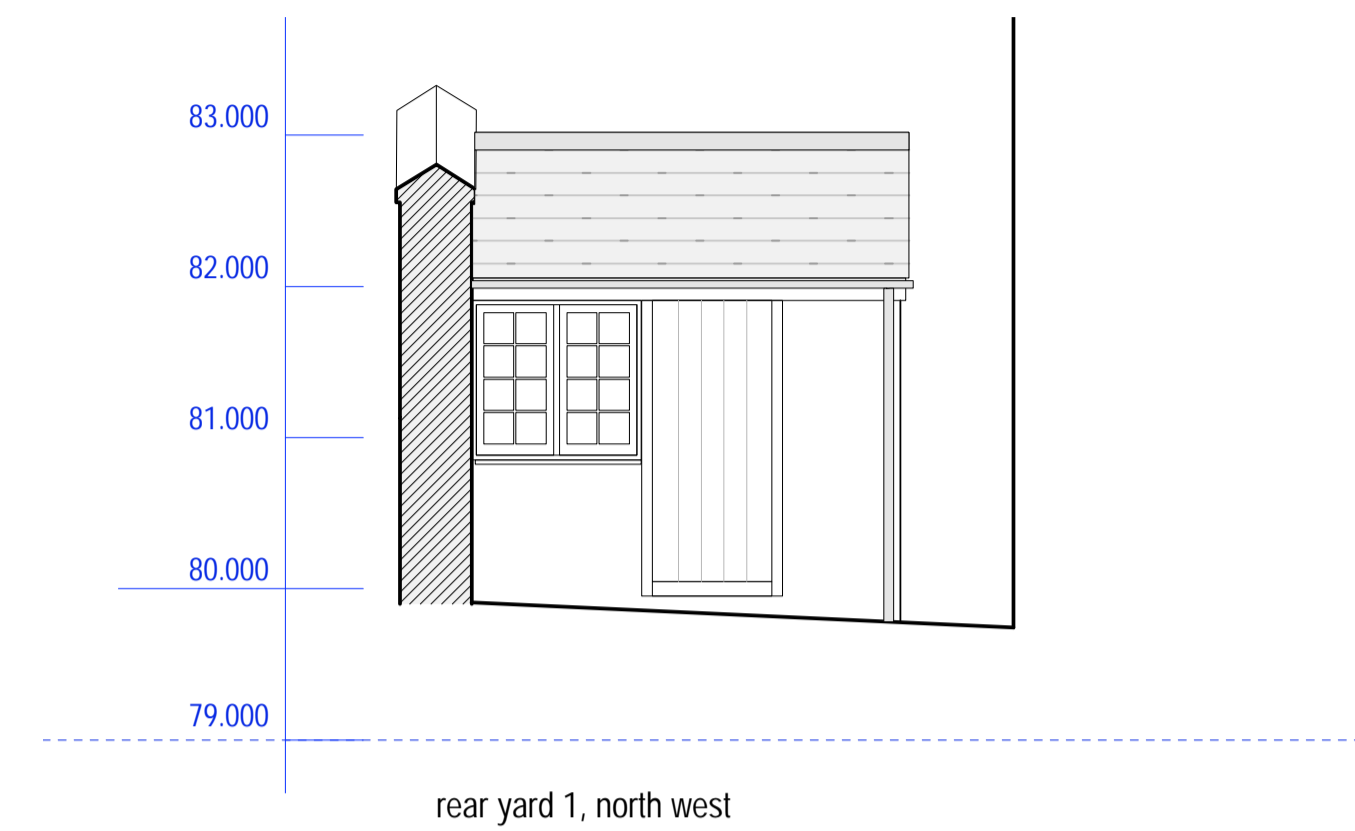
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date
March 2011

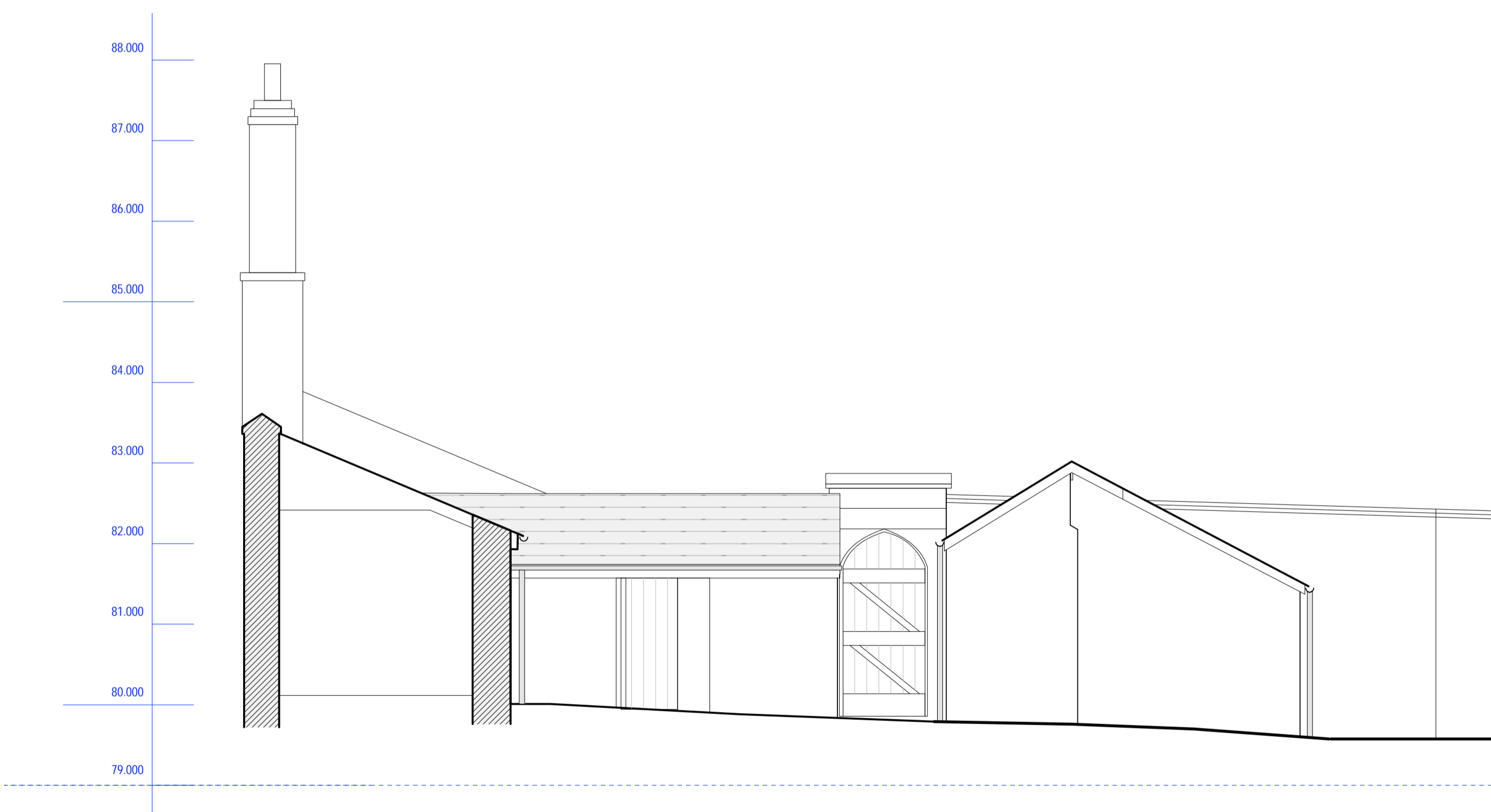
job
1122

drawing no
06

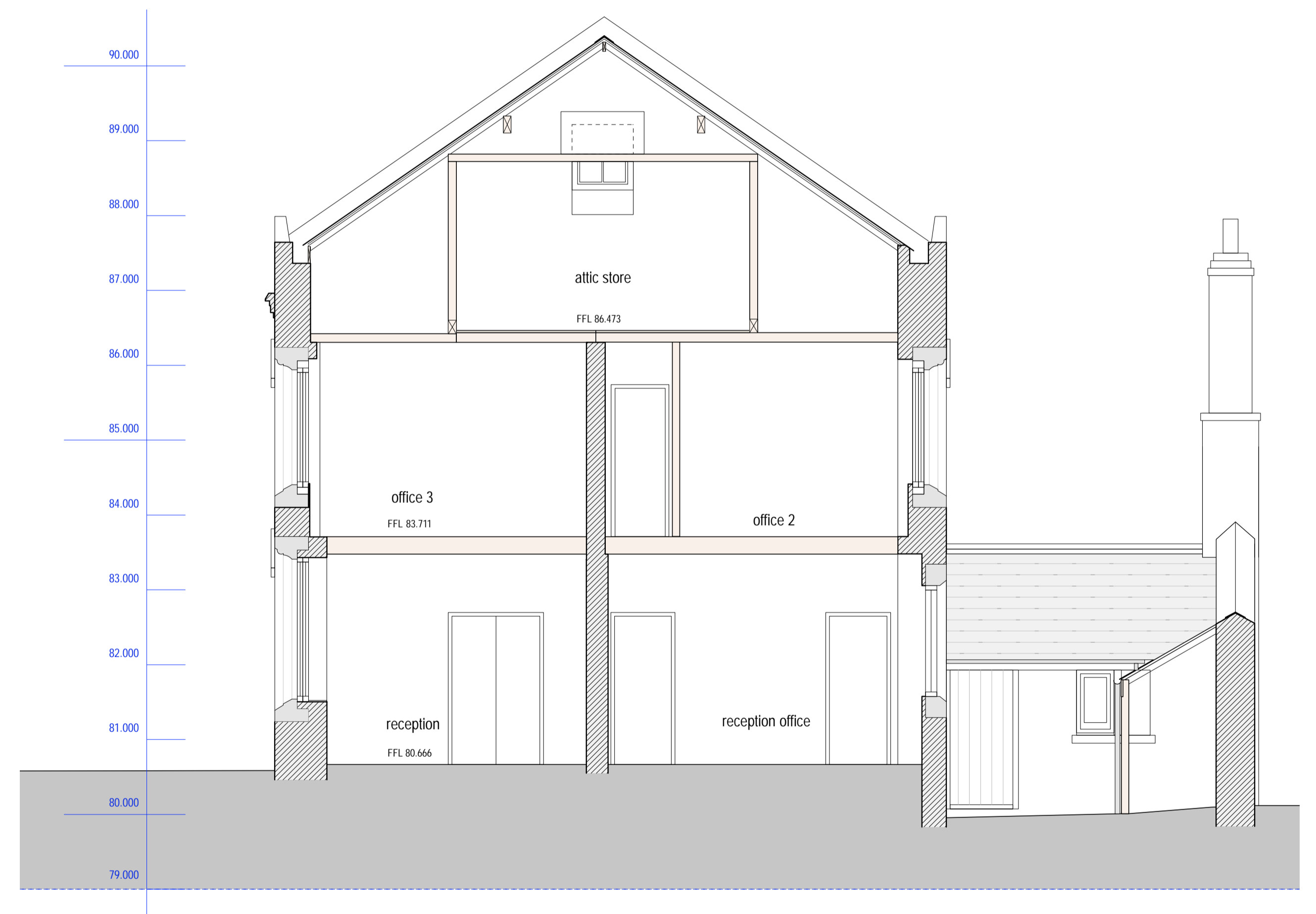




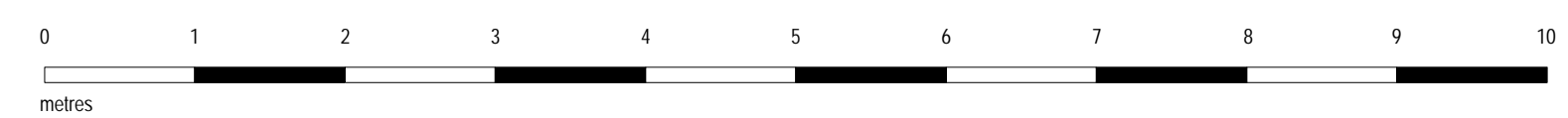
rear yard 1, north west



rear yard 1, north east



section a-a



check all dimensions on site
features shown on this survey may not delineate legal boundaries
Datum 80.300 set to OSBM on SE corner of No. 1 Market Road.

quadrant
architectural & topographic surveys

chimmels, park rd, dartington, TQ9 6EQ 01803 864921

job
Tavistock Police Station & Guildhall

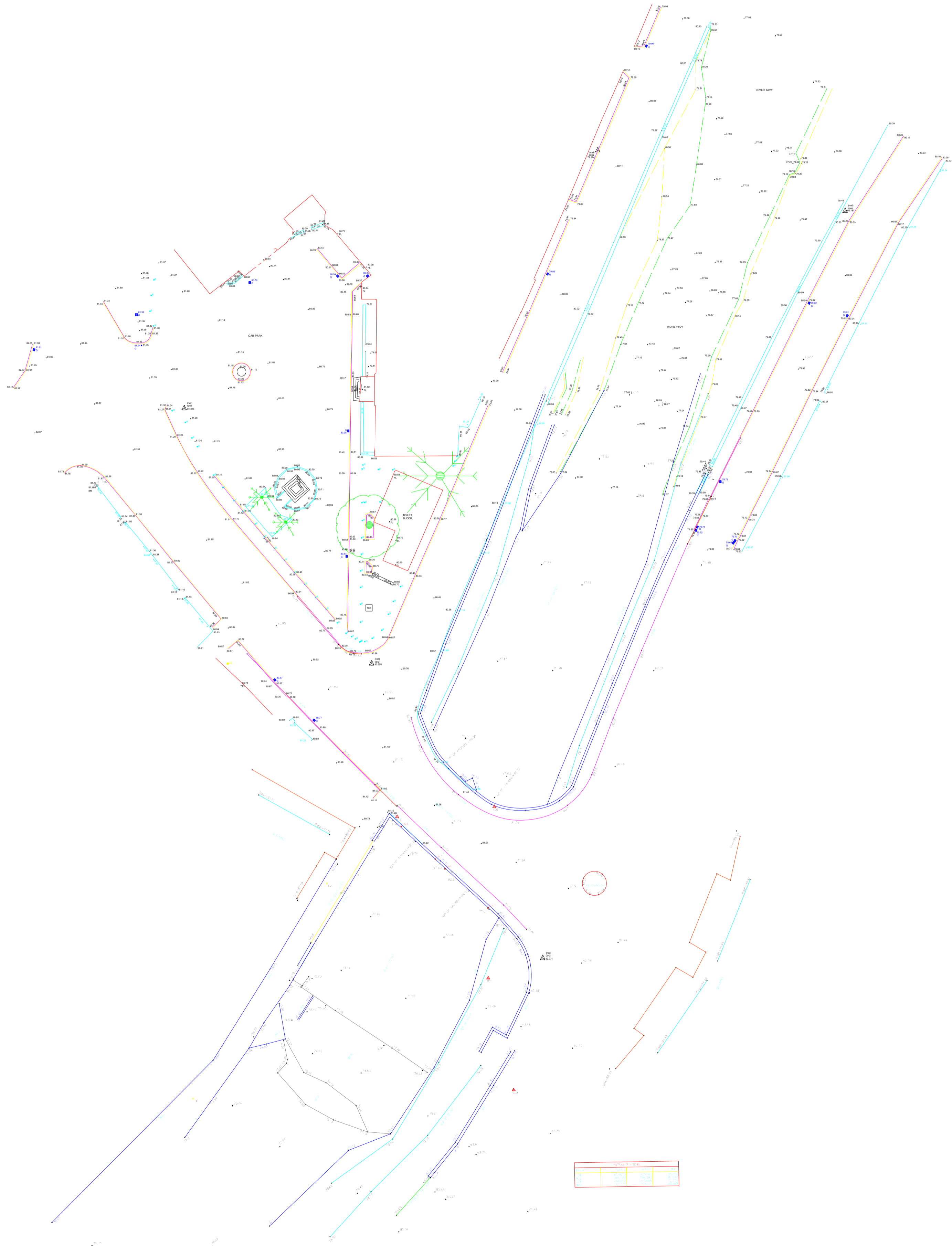
title
section a-a & outbuildings elevations, as existing

scale
1:50 @ A1

date
March 2011

job
1122

drawing no
08



- Notes:**
- 1 Unless stated otherwise all information on this drawing has been surveyed.
 - 2 Whilst every care has been taken no responsibility can be accepted for errors and omissions caused by detail being obscured or not accessible at the time of the survey.
 - 3 Drainage routes, connections and invert levels have been obtained by lifting inspection covers. Where it has been impossible to lift a cover or where the chamber is blocked the assumed route is clearly annotated.
 - 4 All underground utility information shown on this drawing is a combination of public utility records and visible (where surveyed) covers. The main pipe/cable routes have been verified on site using radio detection methods but it should be stressed that actual routes may differ from those shown.
 - 5 Paper prints should not be used for design purposes.

Abbreviations			
AQL	Above Ground Level	NP	Street Name Plate
AV	Air Valve	P	Post
B	Bollard	PB	Park Bench
BB	Bellia Beacon	PC	Pedestrian Crossing
BH	Bore Hole	PM	Parking Meter
BL	Basement Light	PE	Reflector Post
BM	O.S Benchmark	RP	Reflector Post
BS	Bus Stop	RS	Road Sign
BT	British Telecom IC	RWP	Rainwater Pipe
CATV	Cable Telecom IC	S	Tree Stump
CB	Control Box	SP	Sign Post
CC	Coal Chute	SC	Stop Cock (water)
Chy	Chimney	SV	Stop Valve (water)
Cone	Concrete	TM	Traffic Machine
CL	Cover Level	TP	Trail Pin
CPS	Concrete Paving Slabs	TS	Traffic Signal
EI	Electricity IC	UC	Under Construction
EP	Electricity Pole	U/L	Unable to Lift
FI	Fire Hydrant	VP	Vent Pipe
FL	Floor Level		
FS	Flag Staff		
G	Gully		
GM	Gas Meter		
GSC	Gas Stop Cock		
DV	Gas Valve		
IC	Inspection Cover		
IL	Invert Level		
LS	Lamp Post		
LP	Lamp Post		
M	Manhole		
Me	Marker		
MS	Me Stone		

Line types			
Fence			
Safety Fence			
Security Fence			
Hedge/Canopy			
Overhead Telecom			
UGround Telecom			
UGround Cable Telecom			
UGround Water			
Overhead Electric			
UGround Electric			
UGround Gas			
Drainage			
Combined/Foul Sewer			
Surface Water Sewer			

Datum adjusted to existing site survey data.
GPS observations has highlighted that there is a 60mm difference between existing datum and OSGPS Datum.

Existing Site Datum	OSGPS Datum
Benchmark value	
81.980m	81.920m

No.	Date	Revision	By	Appd
-----	------	----------	----	------

Surveyed by:

Paul Fassam Geomatics Ltd

Chartered Land Surveyors

Tamar Science Park
1 Davy Road
Plymouth
PL6 8BX
England

Tel: +44(0)1752 764463
Fax: +44(0)1752 764465
E: info@paulfassamgeomatics.co.uk
W: www.paulfassamgeomatics.co.uk

Project
TAVISTOCK GUILDHALL
&
POLICE STATION

Title
SITE SURVEY

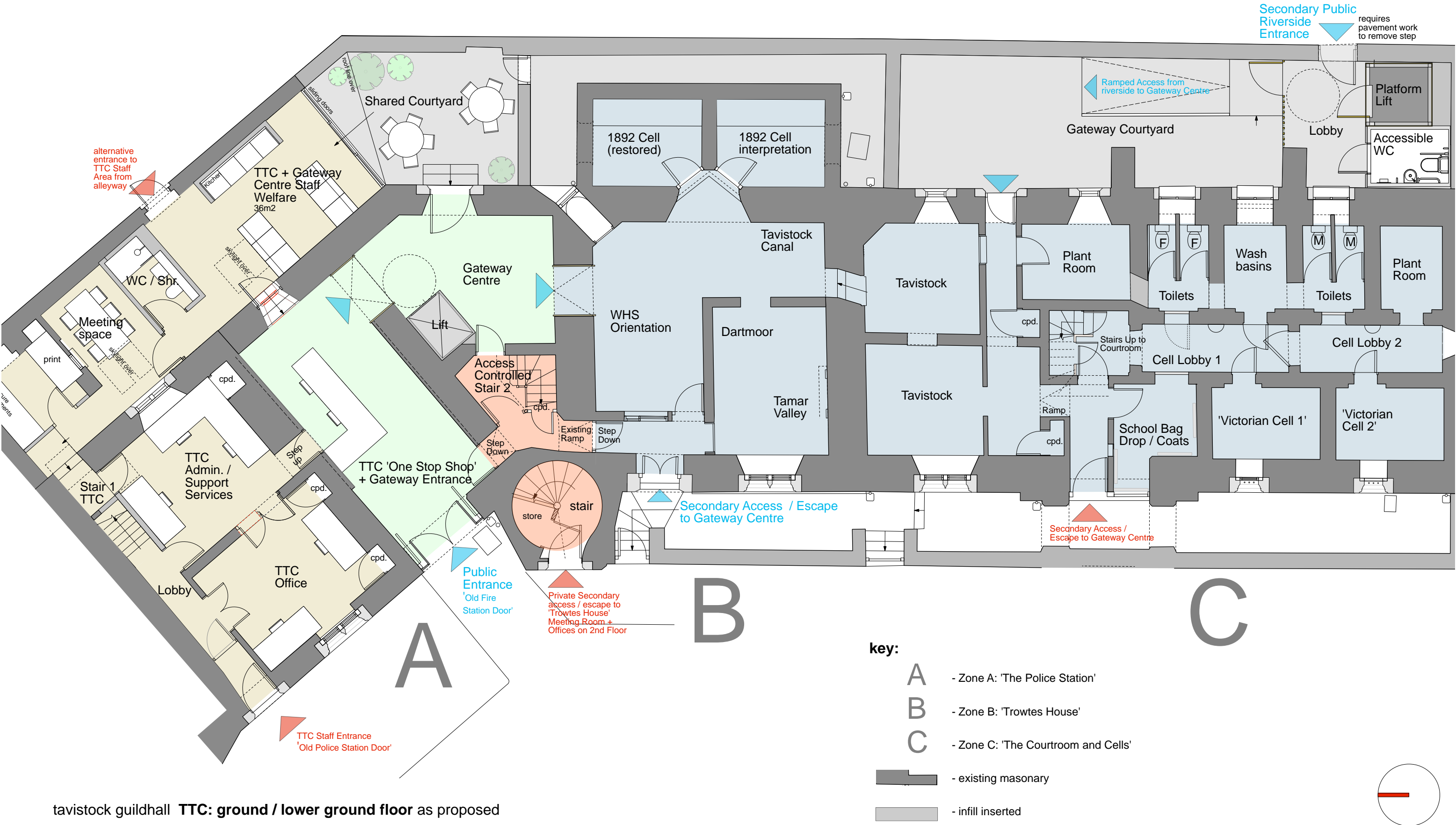
Client
GILLESPIE YUNNIE
ARCHITECTS

Origin	OSGB36 Scale Factor 1	Surveyor	PNC
Datum	OS Newlyn	Drawn	SE
Sheet		Checked	PDF
Layout Dwg		Sheet Size	A1

Scale	1:400	Date	JUN 2012
		Authorised	

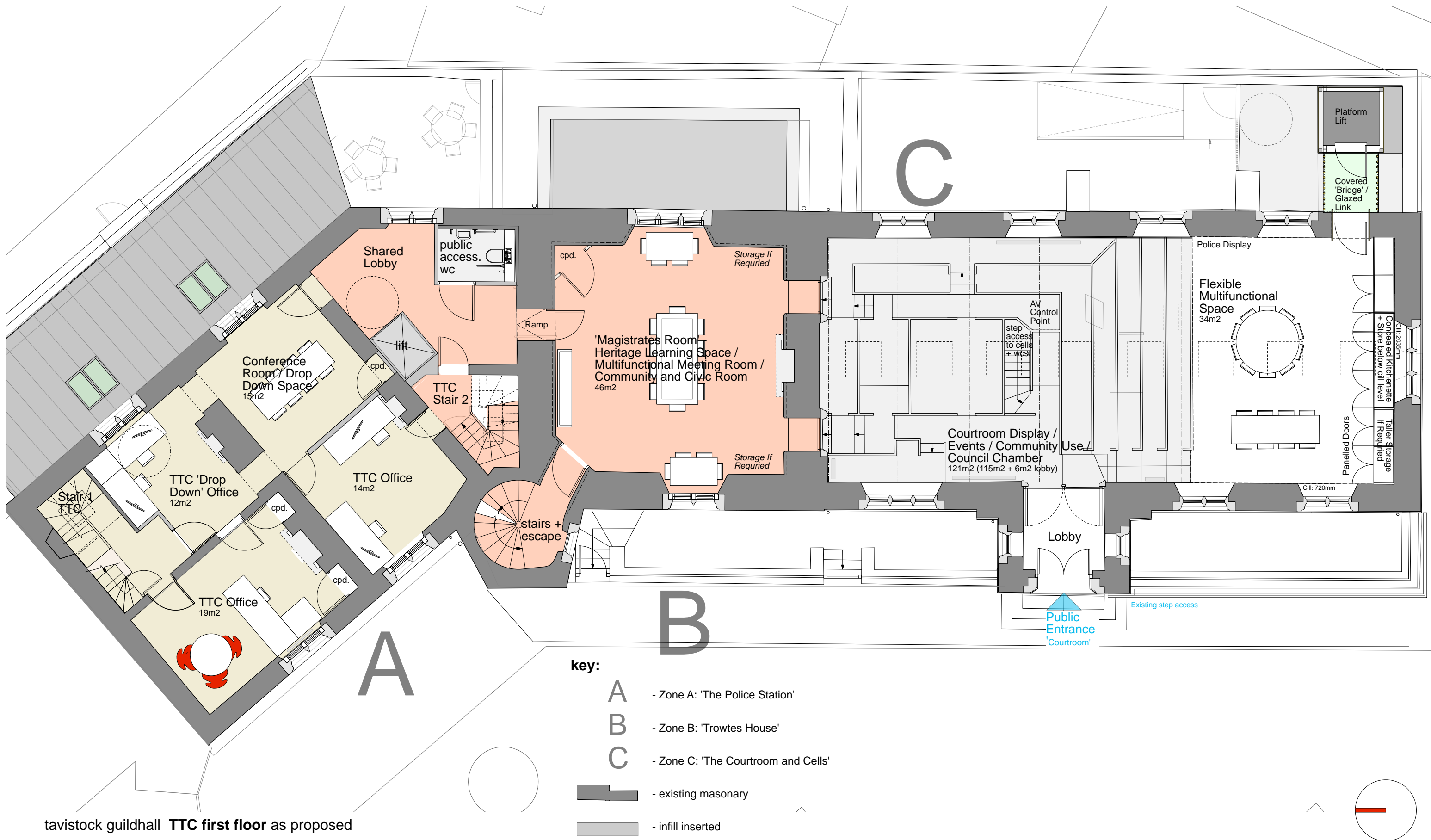
Drawing No	12/4289GYA	Rev	
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CAD Ref: Tavistock Guild Hall Car Park Survey.DWG

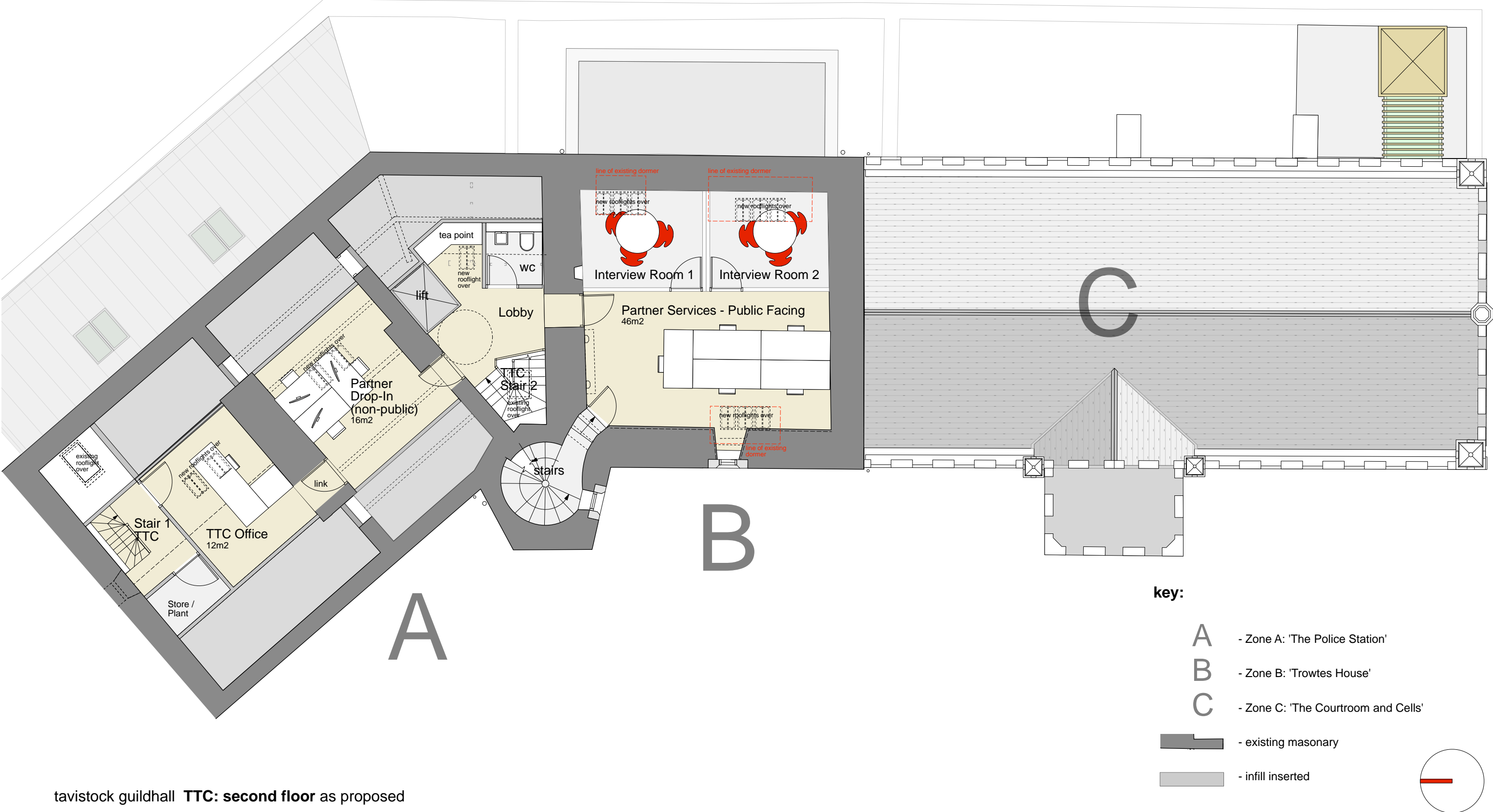


tavistock guildhall **TTC: ground / lower ground floor as proposed**

<div>general</div> <div><ul style="list-style-type: none">all drawings are copyrightdo not scale drawingreport all discrepancies to project administratorall dimensions to be checked on site</div>	<div>key</div>	<div>notes</div> <div>Stage 2 - Draft - LIFT</div>	<div>rev</div> <div>A: 07.02.14 - Minor Amendments following TTC comment B: 13.02.14 - Minor Amendments following Conservation Officer Comment C: 23.01.15 - Sketch following TTC meeting / D: 12.02.15 - HLF Stage 1 Bid E: 01.06.16 - Sketch for Client Comment / F: 24.06.16 - Sketch for Client Comment G: 28.06.16 - Sketch for Client Comment - TTC Stair 1 Flipped / Layout Adjustments H2: 25.10.16 - Stage 2 Draft - LIFT ACCESS H3: 10.11.16 - Draft for Conservation Officer Site Meeting</div>	<table><tr><td>project: Tavistock Guildhall and Police Station</td><td>date: Nov 2013</td><td>scale: 1:50 @ A1 1:100 @ A3</td><td>drawn: if</td></tr><tr><td>drawing title: TTC: Ground / Lwr Ground Floors</td><td>job no: 1041</td><td>drawing no: SK-302</td><td>rev: H3</td></tr><tr><td colspan="4">gillespie yunnie architects</td></tr></table>	project: Tavistock Guildhall and Police Station	date: Nov 2013	scale: 1:50 @ A1 1:100 @ A3	drawn: if	drawing title: TTC: Ground / Lwr Ground Floors	job no: 1041	drawing no: SK-302	rev: H3	gillespie yunnie architects			
project: Tavistock Guildhall and Police Station	date: Nov 2013	scale: 1:50 @ A1 1:100 @ A3	drawn: if													
drawing title: TTC: Ground / Lwr Ground Floors	job no: 1041	drawing no: SK-302	rev: H3													
gillespie yunnie architects																



tavistock guildhall TTC first floor as proposed



tavistock guildhall **TTC: second floor** as proposed

<div>general</div> <div><ul style="list-style-type: none">all drawings are copyrightdo not scale drawingreport all discrepancies to project administratorall dimensions to be checked on site</div>	<div>key</div>	<div>notes</div> <div>HLF Stage 2 - Draft - LIFT</div>	<div>rev</div> <div>A: 07.02.14 - Minor amendments following TTC comment B: 13.02.14 - Minor Amendments following Conservation Officer Comment C: 23.01.15 - Sketch for TTC meeting / D: 12.02.15 - HLF Stage 1 Bid E: 01.06.16 - Sketch for Client Comment / F: 24.06.16 - Sketch for Client Comment G: 28.06.16 - Sketch for Client Comment - TTC Stair 1 Flipped / Layout Adjustments H2: 25.10.16 - Stage 2 Draft - LIFT ACCESS H3: 10.11.16 - Draft for Conservation Officer Site Meeting</div>	<table><tr><td>project: Tavistock Guildhall and Police Station</td><td>date: Nov 2013</td><td>scale: 1:50 @ A1 1:100 @ A3</td><td>drawn: jf</td></tr><tr><td>drawing title: TTC: 2nd Floor as proposed</td><td>job no: 1041</td><td>drawing no: SK-306</td><td>rev: H3</td></tr><tr><td colspan="4">gillespie yunnie architects</td></tr></table>	project: Tavistock Guildhall and Police Station	date: Nov 2013	scale: 1:50 @ A1 1:100 @ A3	drawn: jf	drawing title: TTC: 2nd Floor as proposed	job no: 1041	drawing no: SK-306	rev: H3	gillespie yunnie architects			
project: Tavistock Guildhall and Police Station	date: Nov 2013	scale: 1:50 @ A1 1:100 @ A3	drawn: jf													
drawing title: TTC: 2nd Floor as proposed	job no: 1041	drawing no: SK-306	rev: H3													
gillespie yunnie architects																

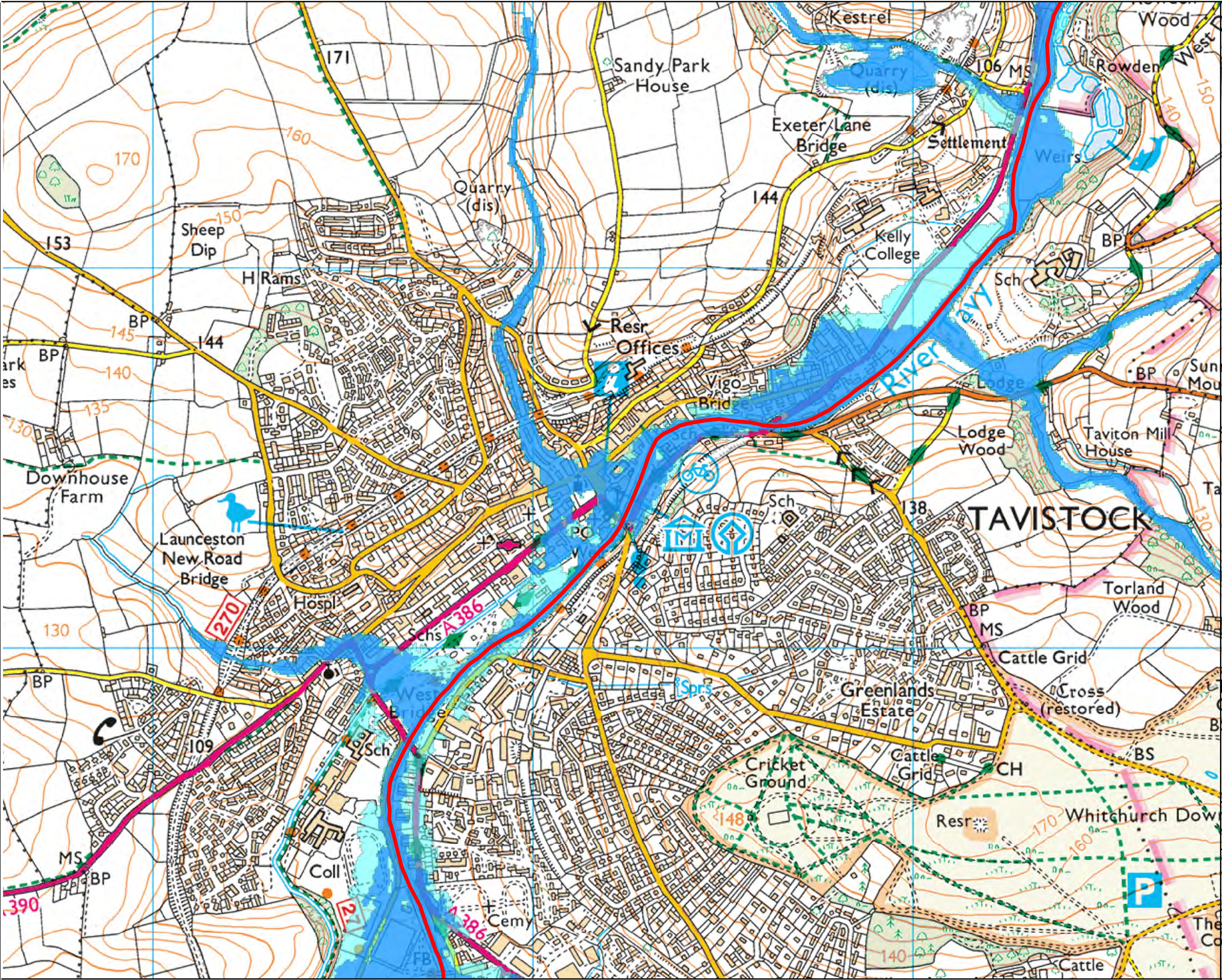
APPENDIX B – FLOOD RISK INFORMATION

Drawing No.	Title
ENQ16/DCIS/30560	Flood Map for Planning (Rivers & Sea)
ENQ16/DCIS/30560	Records of Flooding
ENQ16/DCIS/30560	Historic Flood Map
-	HEC-RAS Cross-Sections
TAV-HYD-XX-XX-DR-D-5001	Modelled Floodplain
TAV-HYD-XX-XX-DR-D-5002	Proposed Flood Resistance & Resilience Measures

ENQ16/DCIS/30560 - Flood map for planning (rivers & sea) centred on Tavistock



Please note that this map is intended only as a guide - it is not accurate at individual property level.



Legend

- Main Rivers
- Flood Zone 3
- Flood Zone 2

Flood Zones are areas, also known as the floodplain, which could be affected in the event of flooding from rivers and the sea. Flood Zones provide a good indication of land at flood risk. Flood Zones are not sufficiently detailed to show whether an individual property is at risk, for example it does not take into account flood defences. Please note that the likelihood of flooding is an assessment based on the information currently available and may change in future due to climate change or other factors.

Flood Zone 3 shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded from the sea by a flood that has a 0.5 per cent (1 in 200) or greater chance of happening each year; or from a river by a flood that has a 1 per cent (1 in 100) or greater chance of happening each year.

Flood Zone 2 shows the additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1 per cent (1 in 1000) chance of occurring each year.

1:10,000 Correct as of the 05th December 2016

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Environment Agency, 100024198, 2013

ENQ16/DCIS/30560 - Records of flooding in the Tavistock area.

Date	Location	Detail	Cause	Estimated Number of Properties Flooded	Flood Source
13/07/1880	Tavistock	Tavistock. Mount Tavy Road, Parkwood Road, Duke Street and Dolvin Road were flooded, including some properties. Homes around Vigo Bridge flooded up to 3ft, and lower portions of houses on south side of Duke Street under water.	Tavy and tributaries swollen and broke banks following extreme rainfall event - no defences	0	Fluvial
17/07/1890	Tavistock	Tavistock. Much of the town centre flooded, causing widespread damage. Properties were flooded on Parkwood Road, Mount Tavy Road, Dolvin Road, Vigo Bridge Road, and Brook Street. The Guildhall and the Police Station were also inundated by the River Tavy.	Extreme rain event upstream, 2 inches of rain overnight. The cause of this has been linked to an upstream extreme rain event at Dartmoor, in which the River Cowsic at Two Bridges was reputed to have risen some 9 1/2 feet in a very short space of time.	0	Fluvial
19/01/1999	Tavistock	Tavistock. Reported that a property in North Street was flooded to a depth of 2 foot.	Unknown	1	Unknown
01/01/2000	Tavistock	Tavistock. One property in Mount Tavy Road reported to have been flooded.	Assumed fluvial from River Tavy following heavy rainfall	1	Fluvial

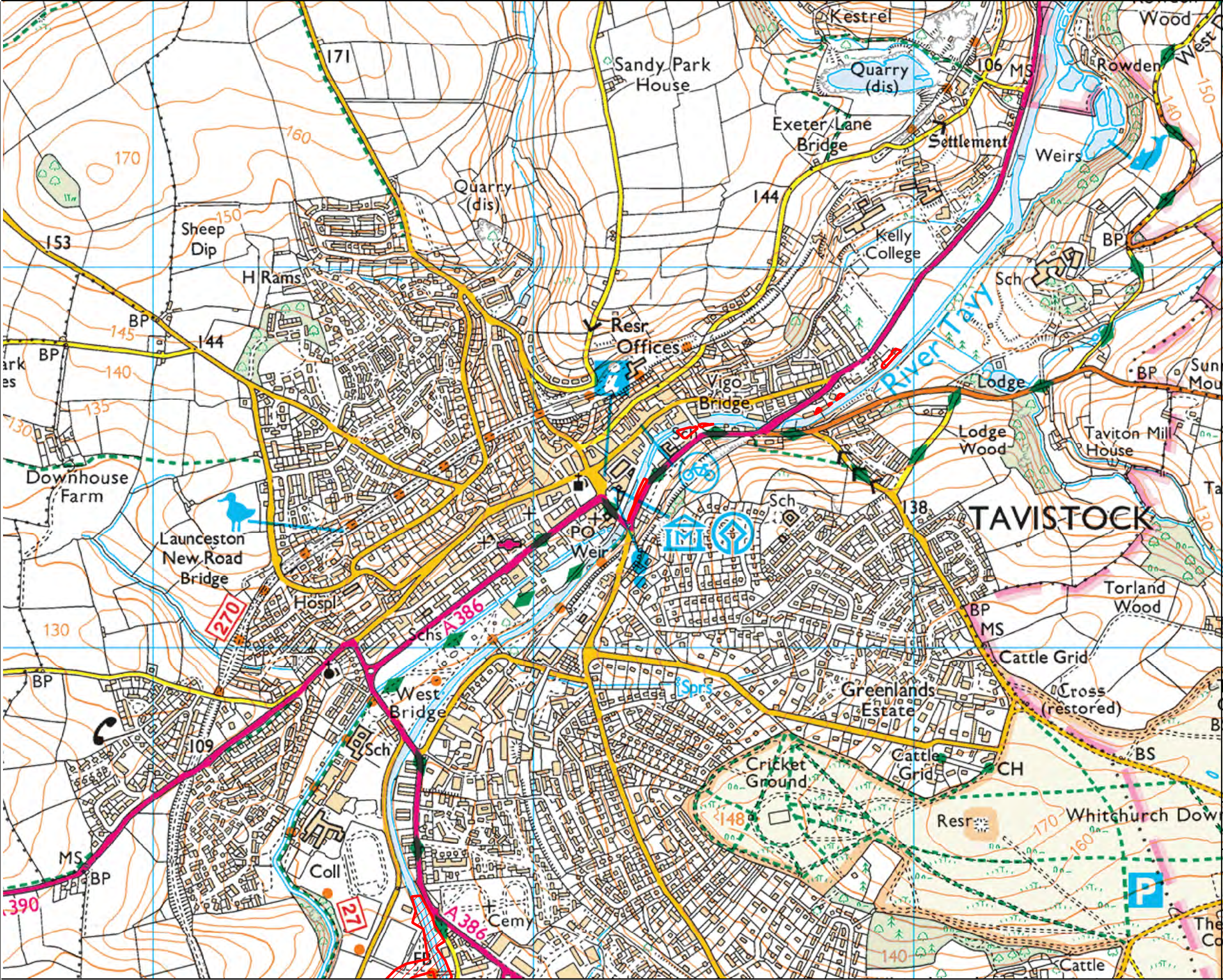
Date	Location	Detail	Cause	Estimated Number of Properties Flooded	Flood Source
01/01/2002	Tavistock	Tavistock. A diverted stream overwhelmed the culvert, flooding the lower part of garden of a property in the Wyatts Lane area.	Inadequate culvert in diverted stream on new housing development.	1	Fluvial
06/02/2016	Tavistock	Tavistock. River Tavy came out of bank following heavy rainfall	Heavy rainfall	0	Fluvial

This list contains all the records of flooding we hold, in a 1km radius of the specified location. Although this information is compiled to the best of our knowledge, the absence of flooding does not mean that an area has not flooded in the past, nor guarantee it will not flood in the future. Our records are updated as more information comes to light, and as flood incidents occur.


Correct as of 05 December 2016

ENQ16/DCIS/30560 - Historic flood map, centred on Tavistock

Please note that this map is intended only as a guide - it is not accurate at individual property level.



Legend

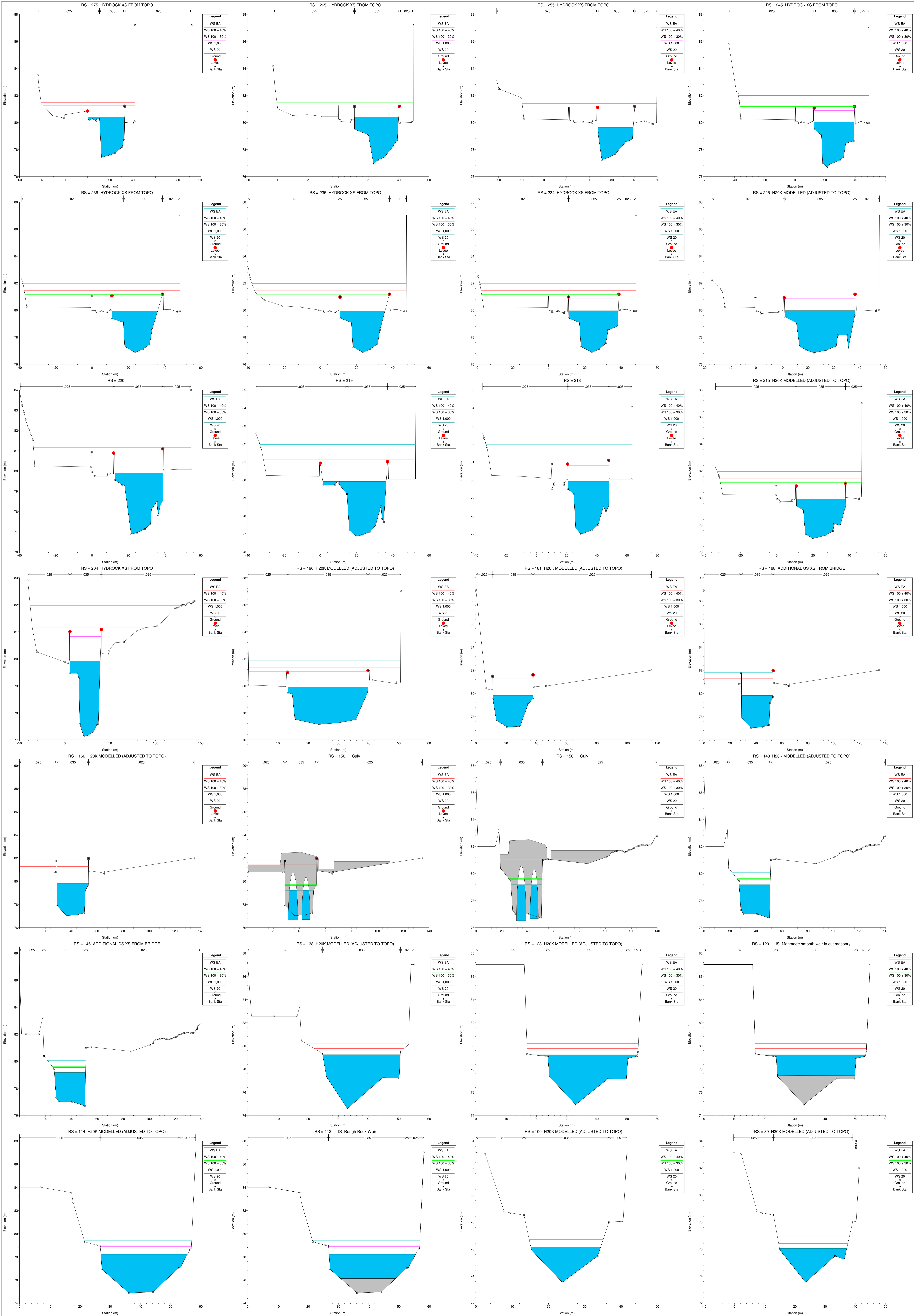
 Recorded Flood Outlines

The Recorded Flood Event Outline, shows the extent of known flooding from rivers and the sea. This outline is indicative of the flood extent, and does not necessarily confirm that a property has flooded internally. If an area is outside the extent of recorded flooding, it does not mean it has never flooded. This will be updated as more data comes to light, and as flood incidents occur.

1:10,000 Correct as of the 05th December 2016 

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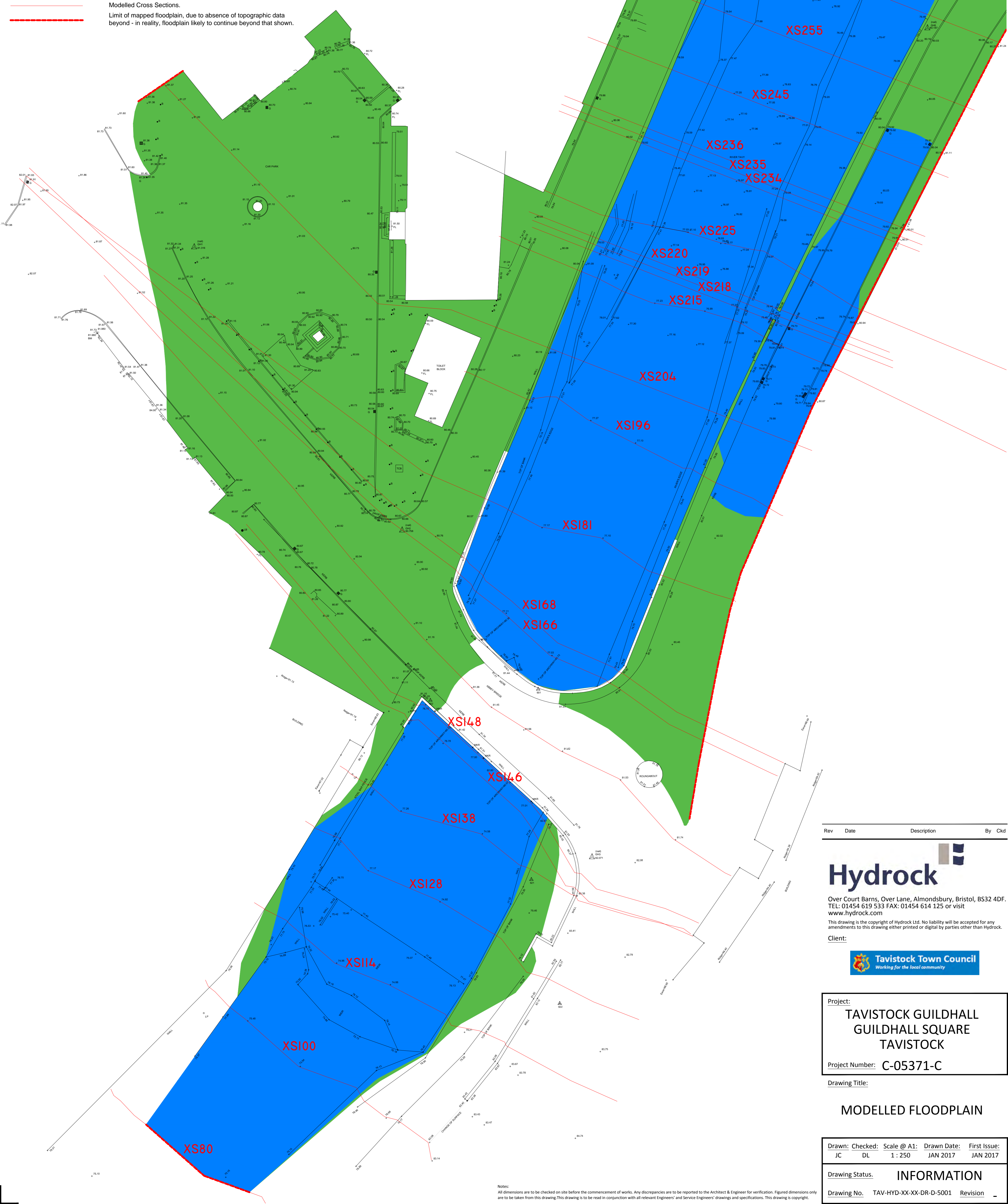
Environment Agency, 100024198, 2013



Cross Section	Modelled Flood Level (m AOD)				EA Hydrology (">1 in 75 Year")
	1 in 20 Year	1 in 100 Year + 30%	1 in 100 Year + 40%	1 in 1,000 Year	
275	80.41	81.45	81.48	81.24	82.02
265	80.41	81.46	81.49	81.16	82.03
255	79.63	80.77	81.41	80.55	81.94
245	80.03	81.18	81.46	80.89	81.99
236	79.93	81.16	81.45	80.83	81.98
235	79.93	81.15	81.44	80.82	81.98
234	79.96	81.16	81.45	80.85	81.98
225	79.97	81.13	81.42	80.85	81.95
220	79.90	81.15	81.44	80.89	81.97
219	79.92	81.15	81.43	80.84	81.97
218	79.92	81.16	81.44	80.81	81.97
215	79.92	81.14	81.42	80.81	81.95
204	79.92	81.14	81.43	80.82	81.97
196	79.90	81.06	81.37	80.78	81.88
181	79.84	80.99	81.27	80.74	81.87
168	79.83	80.98	81.28	80.73	81.82
166	79.82	80.97	81.27	80.73	81.82
148	79.18	79.63	79.67	79.55	80.07
146	79.17	79.62	79.66	79.54	80.05
138	79.24	79.72	79.77	79.63	80.18
128	79.23	79.73	79.78	79.63	80.20
114	78.21	78.99	79.12	78.88	79.40
100	76.15	76.60	76.70	76.50	77.10
80	76.05	76.50	76.59	76.41	76.95

Modelled Cross Sections.

Limit of mapped floodplain, due to absence of topographic data beyond - in reality, floodplain likely to continue beyond that shown.



Rev	Date	Description	By	Ckd
-----	------	-------------	----	-----



Over Court Barns, Over Lane, Almondsbury, Bristol, BS32 4DF.
TEL: 01454 619 533 FAX: 01454 614 125 or visit
www.hydrock.com

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Client:



Project:
**TAVISTOCK GUILDHALL
GUILDHALL SQUARE
TAVISTOCK**

Project Number: **C-05371-C**

Drawing Title:

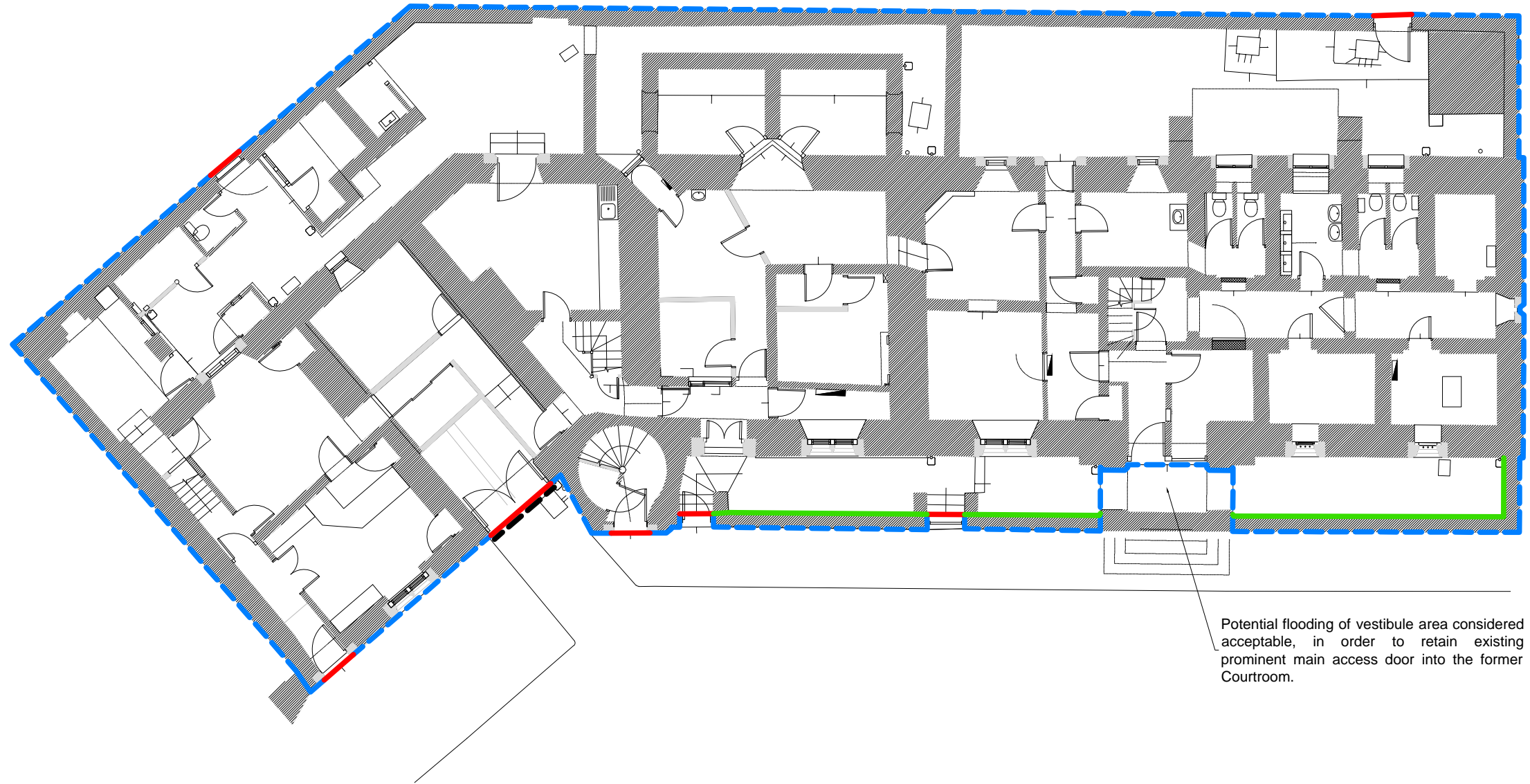
MODELLED FLOODPLAIN

Drawn:	Checked:	Scale @ A1:	Drawn Date:	First Issue:
JC	DL	1 : 250	JAN 2017	JAN 2017

Drawing Status: **INFORMATION**

Drawing No. **TAV-HYD-XX-XX-DR-D-5001** Revision **-**

Notes:
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Potential flooding of vestibule area considered acceptable, in order to retain existing prominent main access door into the former Courtroom.

Existing external walls considered likely to provide sufficient 'flood protection' to the building. Such structures will be retained and any remedial works undertaken to ensure their resistance to flood water, i.e. mortar joints checked etc.

Proposed demountable flood barriers and/or permanent flood doors, to a minimum level of 81.76m AOD. Given that the building is Grade II* Listed, it is likely that the existing doors be retained, and demountable flood barriers and/or permanent flood doors installed immediately behind the retained existing doors.

Proposed demountable flood barriers, to a minimum level of 81.76m AOD.

Proposed ACO drain, or similar.

Additional proposed flood resistance and resilience measures:

- Any alteration works to the ground floor level will encompass flood resilience measures, where appropriate. Such measures will include the use of solid floors; any new internal walls constructed of materials with low water penetration, good drying ability, and good retention of pre-flood integrity; use of sealed doors; sensitive services brought in and continued at a high a level as possible; and, non-return valves fitted to drainage services.

B	Feb 2017	Updated proposals	JC	DL
A	Jan 2017	Updated proposals	JC	DL
Rev	Date	Description	By	Ckd

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Project:
**TAVISTOCK GUILDHALL
GUILDHALL SQUARE
TAVISTOCK**

Client:



Drawing Title:

**PROPOSED FLOOD RESISTANCE
& RESILIENCE MEASURES**

Project Number: **C-05371-C**

Drawn:	Checked:	Scale @ A3:	Drawn Date:	First Issue:
JC	DL	1 : 150	FEB 2017	FEB 2017

Drawing Status: **INFORMATION**

Drawing No.	TAV-HYD-XX-XX-DR-D-5002	Revision	B
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