Scottish Enterprise

SCOTTISH DEVELOPMENT INTERNATIONAL

RECOMMENDATION REPORT

Building / Site Search For Data Centre Opportunities: Preliminary Proposals For Data Centre Options In Scotland

Final Report Prepared for Scottish Enterprise

FEBRUARY 2013

hurleypalmerflatt
building sustainability

CONTENTS

2

Executive summary

Scottish Enterprise commissioned hurleypalmerflatt in October 2012 to undertake a preliminary review of potential sites for large data centres in Scotland.

The term 'data centre' means many things to many people. It may simply be a small server room located in a corner of the office. More often, and in the context of this report, the term denotes a large dedicated facility that houses ICT systems. These may be dedicated to a single organisation or operated by service providers who provide secure environments for multiple organisations. These large data centres are sometimes referred to as the repository of 'Big Data'.

On a global scale the trend is for fewer larger facilities. A recent report by the International Data Corporation in September 2012 highlighted the trend to fewer but larger data centres. The trend is attributable to a number of factors including the dramatic increase in the use of server virtualization; the movement of in-house data and applications to larger central data centres; rising storage requirements to handle growing volumes of files and rich content, as well as the general shift toward a cloud model for application, platforms, and infrastructure delivery. 'Big data' is getting bigger and driving the need for bigger platform to lower total cost of ownership by gaining economies of scale.

The Scottish Government's strategy for delivering Scotland's digital ambition is set out in *Scotland's Digital Future - A Strategy for Scotland.* Scotland as a data centre location is identified as an essential component of both Scotland's digital connectivity and the strategy to grow a digital economy.

The purpose of this report is to identify a range of potential sites in Scotland that may be suitable for development for 'Big Data'. While the provision of power and data capacity are the key requirements for a large data centre site, there are other influencing factors including accessibility, planning, security and availability of financial support mechanisms.

Our aim was to have a robust methodology for screening potential sites. From an initial pool of over 200 consultee organisations we received over 70 responses (although there were 2 duplicate sites from different consultees and so a total of 69 returns were evaluated).

From the returns we sought clarification and further information from respondents and from this we were able to progress 27 buildings and sites to this preliminary screening exercise.

We used a draft scoring matrix prepared by Scottish Enterprise and developed it to refine the interpretation of scores and the weights to represent current commercial priorities across the identified range of influencing factors. These were weighted in accordance with our experience and judgement. (These factors, weights and rationale for selecting them are described in the report).

The sites are grouped into one of four categories *(Ref. Appendix 2 Criteria p26)*:

» Potential large new build site
» Potential very large new build site
» Existing large building
» Existing very large building

Where, a 'large' site is 5-10 acres and a 'large' existing building 5.500m^2 to 14,000m^2 and 'very large site' >10 acres and 'very large building' >14,000m^2.

We have identified the top eleven most favourable potential sites, (The brief called for identification of the top ten however two sites received the same score). This is not to say that the other sites reviewed are unsuitable but the methodology allows us to rank the sites in order from most favourable to least favourable.

On the basis of the information received we believe that at least these eleven most favourable sites are suitable for large data centres, as potentially so could the next seven. At the site level Scotland is well served with potential sites.

As a competitive location, Hurleyplamerflatt publish an annual Data Centre Index, this looks at the country level (Ref1). This does not disaggregate Scotland from the rest of the UK, but the UK is ranked highly because it is major world economy and an important Financial hub. Overall however it is acknowledged that the UK scores poorly on taxation, energy and labour costs and that there is a risk that owners and operators could begin to look elsewhere to reduce overheads. Scotland may however score better than the UK as a whole on the basis of lower carbon electricity and higher potential for free-cooling, and financial incentives, but lower on financial sector as this is very London centric

The most favourable sites by category are:

Very large site
» Riverside Business Park, Irvine
» Johnstone Bank Farm, Ecclefechan
» Springhill Parkway, Glasgow
» Lomondgate Business Park, Dumbarton

Very large existing building
» Valley Park, Greenock
» Freescale, East Kilbride

Large site
» Dundee Business Park, Dundee
» Sites A&B Lothian Park, Edinburgh

Large existing building
» Units G3 and G4, Telford Road, Glenrothes
» Former Strand Building, Kircaldy Fife

Within the report we present the ranking of all 27 sites and identify the positive and negative features of the 11 most favourable sites (based on the information received)

Following this screening exercise the next stage is to take these 11 most favourable sites through more detailed due diligence. Before a site can be presented to the market as suitable for a large data centre we would recommend that site owners or their agents prepare the following:

Potential new build site
» Site survey information
» Site environmental due diligence covering, mining report, contaminated geology, flood risk assessment, etc.
» Site sensitivity – environmental noise and local air pollution
» Site security
» Construction access and site accessibility
» Confirmation of electricity capacity and resilience of supply
» Confirmation of fibre / data connectivity
» Verify planning consents

Existing building
» Building due diligence (structural and services provision)
» Site environmental due diligence
» Identify any planning constraints
» Site sensitivity – environmental noise and local air pollution
» Site security
» Construction access and site accessibility
» Confirmation of electricity capacity and resilience of supply
» Confirmation of fibre / data connectivity
» Verify planning consents

1. Introduction

In 2011 The Scottish Government set out its strategy for how we intend to achieve our digital ambition for Scotland's digital future: The actions are in four key areas:

» Public service delivery
» The digital economy
» Digital participation
» Broadband connectivity

The aim is to have a co-ordinated and comprehensive approach to ensuring that Scotland is positioned to take full advantage of the opportunities offered by the digital age.

Data centres are a fundamental building block of the digital age. In the context of this report, the term 'data centre' denotes a large dedicated facility that houses ICT systems. These may be dedicated to a single organisation or operated by service providers who provide secure environments for multiple organisations. These large data centres are sometimes referred to as the repository of 'Big Data'

A data centre is a large expensive facility and while with the growth of the internet connectivity these data centres can be (in principle) sited anywhere, there are practical considerations. In the first instance, the sites need access to secure and resilient electrical power and internet fibre.

A large data centre can take as much energy as a medium sized town, access to adequate power is therefore a prime requirement. Similarly if the data centre is to function it needs access to high capacity data fibre. There are other considerations in siting a Data Centre such as site security and access to a labour pool. While Data Centres are not in themselves large employers, (during the operational phase) they can attract around them a business eco-system servicing both the infra-structure and the software requirements.

Data centres are also large employers for the construction and re-fit stage and data centres have short operational life spans, being due for re-fit every 7- 10 years. Scotland is well placed to take a share of the global data centre market. It sits on part of the internet back-bone, joining America and Europe. Scotland has the necessary power infra-structure with a mature and resilient electrical distribution network (and in the future will have an increased proportion of green energy from renewable sources). Scotland also meets many of the criteria for security and access to a skilled labour force and mature supply chain.

About one third of the energy demand of a data centre is for cooling and a cool temperate climate offers potential operational cost reductions from utilisation of free cooling techniques.

As noted in the summary, on a global scale the trend is for fewer larger facilities. The International Data Corporation report in September 2012 highlighted the trend to fewer but larger data centres. The trend is likely to continue and is attributable to a number of factors. These factors include: the dramatic increase in the use of server virtualization to improve productivity of the IT load; companies moving data and applications from smaller in-house facilities out to larger central facilities; the general rise in file sizes and volumes of data requiring larger storage facilities; the general shift toward a cloud model for applications, IT platforms, and infrastructure. 'Big Data' is in effect getting bigger and driving the need for bigger platforms to lower total cost of ownership by gaining economies of scale.

As an example in 2009 Google purchased Summa Mill from Finnish paper company Stora Enso to convert the 60 year old paper mill into a €200 million data center.

Construction for phase I lasted just over 18 months. More than 2,000 individuals, working for 50 companies (almost all of them Finnish, and many of them from the local area) contributed to the project.

In August 2012, Google announced a further €150 million investment in phase II of the data center, which will involve the restoration and conversion of a historic building machine hall. The conversion works will last approximately 18 months and provide work for approximately 500 engineering and construction workers, during the peak construction period.

Today Google have more than 90 people working on site as computer technicians; mechanical, electrical and water (HVAC) engineers; facilities and grounds maintenance staff; catering; and security personnel. When phase II of the data center is fully operational, they expect to add approximately 25 staff in full time and contractor roles.

Over 90% of the staff are Finnish and Google are pledged to continue to hire locally as much as possible as the fit-out proceeds.

Data centre sites can take some time to identify, market and develop and Scotland needs to identify sites for both its own use (in both the private and public sectors) to meet all four areas of the digital strategy and to attract global inward investment in these engines of the digital age.

2. Methodology

Scottish Enterprise commissioned hurleypalmerflatt in October 2012 to undertake a preliminary review of potential sites for large data centres in Scotland. The aim is to identify the most favourable existing and new build sites for large data centres, so that these can be taken forward to both reduce the time to market and to allow the marketing of Scotland as a location for large data centres. On a global stage Scotland is in direct competition with other countries, notably Ireland and other Northern European countries.

The site search concentrated on large data centres for the purpose of definition these were split into 4 categories.

- Potential large new build site (5 to 10 acres)
- Potential very large new build site (>10 acres)
- Existing large building (5,500m^2 to 14,000m^2)
- Existing very large building (>14,000m^2)

For each category of data centre a reference design was considered. This gave parameters for energy demand, and fibre connectivity requirements. We also considered a number of non-essential but desirable features for potential sites . These are described below.

A list of around 200 consultees was prepared by Scottish Enterprise and added to by hurleypalmerflatt where appropriate. This list comprised unitary authorities, urban regeneration companies, Scottish government, significant land owners, developers and property agents and is included at Appendix 1.

Invitations were issued on Wednesday 17th October 2012 with a closing date for response of Friday 2nd November 2012.

The questionnaire was produced by Scottish Enterprise with slight modifications by hurleypalmerflatt.

A copy of the final questionnaire is presented in Appendix 2.

The questionnaire responses were tracked, via activity software to monitor downloads / forwards etc.

An initial panel review was undertaken by hurleypalmerflatt to screen out unsuitable sites. Following this emails were sent to consultees on Monday 26th November that had potentially promising sites / buildings seeking additional information and / or clarification

HIE provided data from a recent site evaluation exercise which they had developed for a differing original purpose. Unfortunately this base data was not compatible with the required information sets for the Data Centre appraisal. Few options emerged in the HIE area as a result of incompatible data provision and subsequent feedback in the timescale available.

Following the return of available information a total of 27 sites provided sufficient data for review. These were split by category as noted below

Category	Number of scorable returns
Potential very large new build site	17 Sites
Potential large new build site	6 Sites
Existing very large building	2 Sites
Existing large building	2 Sites

A second review was undertaken on 10th December 2012 resulting in the confirmed selection of the 27 sites for further analysis

2.1 Scoring matrix

The scoring matrix was developed in conjunction with Scottish Enterprise. The scoring matrix contains a total of 11 topics several of which are multi-facetted and covering both objective and subjective measures.

The score for each topic or facet is normalised to give a score on a 0-10 point scale and then multiplied by a weighting factor to represent the degree of influence that topic or facet has in the overall site selection process.

2.1.1 Electrical supply

Access to electrical supply is a key factor for any data centre. Whilst electricity can be supplied to any location, this could be at a significant cost and if insufficient infra-structure is present could be a prohibitive cost and delay if suitable supplies are considerable distances away. The three facets of electrical supply considered were:

a. **Existing location and availability of supply to meet brief.** In the first instance if the site has sufficient and available supply to meet the brief for the reference design for that category of site.

b. **The costs and timescales to provide additional load and capacity to meet the brief.** This measures the potential of the site to meet the brief.

c. **Resilience of supply,** Not only must the site have access or potential access to sufficient quantities of electricity to meet the load demand of the site. A desirable site is one which has a resilient supply. Ideally a diverse supply fed from independent sources. In data centre design resilience is a key element and there should be no common failure modes where a failure of a single element (like the mains electricity supplied from a single primary sub-station) causes a failure in the data centre operation. A resilient supply feed from multiple independent sources is therefore a desirable and sometimes necessary feature.

a, b and c are independent scores each weighted at 90% so that a site with an existing supply will also have a high potential and if fully resilient dual supplies were available this would give an unweighted score of 30. A site with only the potential for an adequate supply would score 25.

2.1.2 Fibre

A data centre must be connected to data infrastructure of sufficient capacity for its data processing needs. Not only must the connectivity exist but the fibre must have sufficient available capacity, otherwise additional fibre infra-structure must also be constructed.

a. **Existing location and availability of supply to meet brief.** In the first instance if the site has sufficient and available fibre connections to meet the brief for the reference design for that category of site. This facet has a 70% weighting.

b. **The costs and timescales to provide additional fibre and capacity to meet the brief,** this measures the potential of the site to meet the brief and is weighted at 60%.

c. **Resilience of supply,** In a similar way to electricity supplies resilience of fibre supply demands that multiple routes must be available so that the failure of a single connection does not impair the functioning of the data centre. This is highly desirable and is weighted at 70%.

2.1.3 Distance to amenity

This criterion considered the distance to amenity in terms of travel / drive time to ‘site’ from a major city in Scotland. Data centres are generally located near highly populated areas for three reasons.

Data centres are technically challenging buildings from an engineering maintenance perspective so it is generally important to be nearby populated areas to access skilled contractors and labour.

Data centre operators need access to a pool of specialist staff and would prefer a site with a short commute to a major city.

End user ICT clients require access to servers and their ICT equipment located in their data centres and it is therefore convenient to be located near to the data centres.

The influence weight adopted for scoring is 40% because distance to a major city is a factor with only a medium influence on site selection. This is a relatively low weight as operators may also specifically look for a more remote site for diversity against a wide range of risks.

2.1.4 Ownership and legal conditions

We considered the ownership and legal condition in two separate facets The first is the ownership of the land or site. In particular a single owner with clear title is a preferred condition as complex ownership involving multiple parties can significantly delay a development. The time from initial enquiry to secure the site is a significant factor and we have weighted this at 70%.

In addition the site location boundaries are important from the point of view of neighbour sensitivity. Sensitive neighbours for either the build or operational phases can be an issue influencing the desirability of a site. This covers a range of potential neighbours including residential housing and while data centres are very unobtrusive neighbours in operation, sensitive neighbours may increase the difficulty in obtaining statutory approvals. For example those sensitive to noise may necessitate additional environmental noise controls on air handling plant, while other uses may impact on site security or restriction on permissible access times.

While desirable, experience has shown that sensitive neighbours can be accommodated so this has a low weighting at 10%.

2.1.5 Planning status

Planning is a major cause of uncertainty and hence potential delay. In reviewing this criterion we took a judgment call not only on the current planning status, ranging from no status, outline approval through to full planning permission, but also considered the site in relation to planning policy to score it on the basis of how compatible a data centre located at the target site was with the local plan of the area.

In terms of degree of influence this was weighted at 60%.

2.1.6 Pollution / hazards / chemicals / contamination

While a green field site or an existing building with low probability of historical pollution/ contamination is preferred as one less parameter to worry about, it is not a major concern as brown field sites can be overcome in design and construction. The influence / weighting factor was therefore weighted at 20%.

2.1.7 Ground conditions

Data centres do require large items of plant and therefore secure foundations, poor ground conditions will influence the civil structural costs. Level sites are preferred to avoid excessive civil ground works and the site should not be at risk from flooding. However many site limitations can be overcome in design and construction.

The influence / weighting factor was therefore set at 20%.

2.1.8 Accessibility

Accessibility of the site was gauged in the locality and the region it is located. Regional accessibility was determined from the distance to

a. Motorway

b. International airport

d. Railway †

Railway and motorways important and significant as fibre connectivity generally follows major infrastructure nodes and routes.

† C) Section 8 page 25 "nearest town, nearest residential" was considered under the scored section "Distance to Amenity"

Under 'accessibility' we also considered the physical accessibility of the site for large items of plant and equipment. This criterion was estimated as the additional costs for upgrading the site access road and can be a significant component of developing the site. These criteria are therefore weighted at 20% each.

2.1.9 Physical security / site access

Physical security is important for data centre as the operators need the ability to secure their site from various potential threats due to the highly secure nature of the data held.

This includes being able to provide secure access, prevention of casual theft through to protection from more structured attacks. Operators prefer sites where the data centre building blends into the existing environment. Very often they are anonymous buildings in existing industrial estates. Local area considerations will include established risk of potential vandalism and fire via arson.

While physical security is important most sites can be hardened, albeit at additional cost. The influence / weighting factor was therefore scored at 60%.

2.1.10 Aircraft flight path

Data centres also seek security from very low probability events that have potential to have large impacts and as such it is preferred not to locate data centres near or on direct flight paths within a nearby radius of airports.

The influence / weighting factor was scored at 20%.

2.1.11 Financial benefits

As countries compete to attract inward investment in these capital intense facilities, then the sources of financial support are seen as a significantly important influencing factor.

There are a range of potential financial benefits which may be applicable to sites located within Scotland. Measures potentially available include:

Capital allowances
Capital allowances are a long established form of tax relief in the United Kingdom and are given on qualifying capital expenditure. The most common type of capital allowance is given on plant and machinery, which in commercial property relates to fixtures that include but are not limited to the heating and air conditioning installations, electrical systems, sanitary installations, carpets, signage and furniture.

The rate at which plant and machinery allowances are given depends on the category of qualifying expenditure. A significant proportion of the expenditure on the mechanical and electrical installation within a data centre will qualify for the 8% writing down allowance. Therefore, particular focus should be given to the availability of enhanced reliefs which provide 100% allowances in the year the expenditure is incurred rather than over time.

Business Premises Renovation Allowances (BPRA)
BPRA is a 100% tax relief which is given against the cost of certain works in connection with the conversion or renovation of disused business premises in designated assisted areas to bring them back into business use following 12 months of inactivity. A number of the shortlisted sites are within areas that currently qualify for BPRA so there may be considerable scope to claim.

Enhanced Capital Allowances (ECA)
For new build or conversion projects that cannot benefit for BPRA, consideration is given to ECA. This is another 100% tax relief that is currently available on specified energy and water saving technologies. As data centres can consume significant amounts of electricity, consideration is given to the specification of technologies that have scope to qualify for ECA

10

Enterprise areas
The Scottish Government has established enterprise areas which comprise fourteen areas across Scotland. These areas have various incentives to encourage businesses to locate there and have a five year life from April 2012 to 2017.

The incentives offered include;

» Business rate discount or 100% capital allowances on qualifying plant and machinery
» Simplified planning regime
» Super fast broadband

Business rates discount cannot be offered at the same location as 100% capital allowances.

Other reliefs – Land Remediation Relief (LRR)
LRR is not a capital allowance but it is relevant when considering investment in brown field sites or existing buildings. It is a tax relief to incentivise the remediation of contaminated land by offering 150% relief on qualifying expenditure.

An important point is the interaction between LRR and capital allowances. If there is a situation where spend could qualify for either LRR or capital allowances you must claim the lower relief available from capital allowances. This may well occur in a building that qualifies for BPRA but also has contamination that qualifies for LRR. The BPRA should be claimed at 100% rather than the 150% from LRR.

The influence / weighting factor was therefore scored at 100%.

Summary of Influence/ weighting factors (Arranged by weight)

Topic	Facet	Importance as an influencer	Influence/ weight
Financial benefits	All facets	Very important	100%
Electrical supply	Existing location and availability of supply	Very important	90%
Electrical supply	Additional load and capacity	Very important	90%
Electrical supply	Resilience: of supply	Very important	90%
Fibre	Existing location and availability of supply	Important	70%
Fibre	Additional load and capacity	Important	60%
Fibre	Resilience: of supply	Important	70%
Site ownership and legal conditions	Ownership – clarity of title	Important	70%
Planning status	All facets	Important	60%
Physical security / site access	All facets	Important	60%
Distance to amenity	All facets	Medium importance	40%
Pollution/ hazards	All facets	Low importance	20%
Ground conditions	All facets	Low importance	20%
Accessibility	Motorway	Low importance	20%
Accessibility	International airport	Low importance	20%
Accessibility	Railway	Low importance	20%
Accessibility	Site access road	Low importance	20%
Site ownership and legal conditions	Neighbourhood sensitivity	Low importance	10%

Rationale for weightings

The individual influence/ weighting factors were initially classified as 'very important', 'important', 'medium importance' and 'less important'.

Under this classification potential financial benefits are seen as a very important criterion in selecting one site over another (all else being equal).

Electrical supplies are also seen as very important criterion. A site remote from sufficient electrical infrastructure would be almost impossible to promote as a data centre location. There are however three facets to electrical supplies ensuring that these factors (and fibre which have also three facets) dominate the scoring.

Next in importance is fibre. While providing fibre connectivity to a site is expensive it is very much less expensive than providing adequate power. The other important criteria are those pertaining to speed of development, including land ownership and planning status. The anticipated 'natural' security of the site is also seen as important.

Of much less importance are the factors that on a cumulative basis may lead to a desirable or undesirable site, but any one of which is of lesser importance as these factors can be overcome in design and development.

To allow numerical treatment these were assigned initial weights:

Degree of influence	Initial numerical weight
Very important	100%
Important	70%
Medium importance	40%
Less important	20%

We then adjusted the weights to ensure that the relative importance of influencing factors within each degree of influence was properly represented as shown in the final table of influence / weighting factors above.

2.2 Scoring

Using the information from the returns supported by desk-top research we were able to score the sites against these criteria using a matrix method.

Within each criterion the scores were assigned a development value by the expert panel on a scale of 0 -10, where 10 represents an ideal site.

It is recognised that some of the criteria are subjective and the score represents a judgement call based on the information available. Guidance was prepared for each criterion. Once all sites were assigned values, a second pass through the data was undertaken to ensure that the relative values of the sites were properly represented.

2.3 Ranking

The final site ranking is the weighted sum of the criteria scores.

Score = ∑ (influence / weight) x (criteria score 0-10)

Limitations
While the method used has achieved the study objectives, there are a number of limitations that need to be noted.

The assessment was made on the basis of the data received from the respondents supported by limited desk-top research. The primary data has not been verified by site visit, audit or due diligence.

While a few of the criterion are wholly objective and were checked on the desk top exercise (such as 'distance to amenity', others required more subjective judgements to be made by the panel.

The subjective elements required us to take narrative information of varying quality and produce a score normalised to 0-10. This score was checked by comparing the relative merits of each site and ensuring that the ranking within a criterion was properly represented by the data provided.

The sites are presented ranked in order by site category.

Taking the above limitations into account small differences in weighted scores should not to be taken as significant. However the rankings do show the relative attractiveness of the sites for further investigation as potential data centre sites, which was the aim of the study.

3. Results: site rankings

The sites are presented here in tabular form by site category.

Potential very large new build site (> 10 acres)			
Overall ranking	Category ranking	Score	Site
1	1	674	Riverside Business Park Irvine
4	2	634	Johnstone Bank Farm, Ecclefechan, Dumfriesshire, DG11 3JD
6	3	505	Springhill Parkway, Glasgow Business Park, Glasgow, G69 6GE
8	4	414	Lomondgate Business Park, Lomondgate Avenue, Dumbarton, G82 2QR
9	5	374	Ravenscraig, Motherwell, ML1 1NR / ML1 2TX / ML1 2TZ
12	6	362	Vacant Land at Westerhill Business Park ,Westerhill Road, Bishopbriggs, G64
14	7	347	Darnley Mains, Waukglen Road, Glasgow
15	8	342	Berryhill Business Park, Bridge of Don, Aberdeen
16	9	320	Sheriffhall South, Lasswade, Midlothian, EH18 1AZ (or nearby)
17	10	310	Aberdeen Energy Park, Claymore Drive, Bridge of Don, Aberdeen, AB23 8GW (or nearby)
18	11	300	Salter's Park, Salter's Road, Dalkeith, Midlothian, EH22 2PS (or nearby)
19	12	297	Moorfield North Industrial Park (Phase 2), Kilmarnock, Ayrshire
20	13	269	Green Hills Data Centre, Green Hills, Airdrie, ML6 7NN
22	14	229	Westfield Development Centre Cardenden
25	15	199	Raithhill Farm, East Ayrshire, KA3 6EU
26	16	173	Land adjacent to A703, 1 mile west of Eddlestone and 4km north west of Peebles
27	17	151	Heartlands Business Park, EH47 0LH

Potential large new build site (5 to 10 acres)			
Overall ranking	Category ranking	Score	Site
10	1	373	Dundee Business Park, Kinnoull Road, Dundee, DD2 3QF
11	2	366	Sites A & B, Lothian Park, Old Craighall, EH21 8RE
13	3	358	Shawfair Park, Danderhall, Midlothian, EH22 1FD
21	4	246	Bridgepoint, 21 -25 Longman Drive, Inverness, IV1 1SU
23	5	214	Kerse Road, Millhall, Stirling, FK7 7LT
24	6	204	Plots 17/18, Craigleith Rd, Broadleys Business Park, Stirling, FK7 7LQ

Existing very large building (>14,000m^2)			
Overall ranking	Category ranking	Score	Site
2	1	648	Valley Park, 1 Inverkip Road, Greenock, Inverclyde PA16 OAH
3	2	636	Former Freescale Factory, Colvilles Road, East Kilbride, G75 0TG

Existing large building (5,500m^2 to 14,000m^2)			
Overall ranking	Category ranking	Score	Site
5	1	512	Units G3 & G4, Telford Road, Eastfield Industrial Estate, Glenrothes, KY7 4NX
7	2	434	Former Strand Building, Mitchelston Drive, Mitchelston Industrial Estate, Kirkcaldy, Fife, KY1 3LY

4. Individual site descriptions in 'overall score' ranking order

Site	Overall score
Riverside Business Park Irvine Irvine, Innovation and Industry, formerly the Riverside Business Park, Irvine, Scotland, KA11 4JE OS Ref: NS 34731 37373 Very large site - 82.2 Hectares | 203 acres	**674** **71%**
Positive features	**Negative features**
» Planning status » No contamination environmental issues » Good accessibility » Good physical security » Good power capability » Good fibre capability » Good financial incentives / taxation benefits	» Distance to amenity

Site	Overall score
Valley Park 1 Inverkip Road, Greenock, Inverclyde, PA16 OAH OS Ref: 788 (175) Very large building - 24.28 Hectares	**648** **68%**
Positive features	**Negative features**
» Planning status » Good accessibility » Good physical security » Good power capability » Good fibre capability » Good financial incentives / taxation benefits	» Distance to amenity » Watercourse through part of site

Site	Overall score
Freescale East Kilbride Colvilles Road, East Kilbride, G75 0TG OS Ref: E264054 N 652656 Very large building - 10.50 Hectares	**636** **67%**
Positive features	**Negative features**
» Distance to amenity » Planning statue » Good accessibility » Good physical security » Good power capability » Good fibre capability » Good financial incentives / taxation benefits	» Existing buildings / structures need significant redevelopment to accommodate a data centre

Site	Overall score
Ecclefechan Johnstonebank Farm, Ecclefechan, Dumfriesshire, DG11 3JD OS Ref: NY182756 Very large site - 45 Hectares	**634** **67%**
Positive features	**Negative features**
» Planning status » No contamination environmental issues » Good physical security » Good power capability » Good fibre capability	» Distance to amenity » Site accessibility restricted with main access currently via an underpass below the M74 motorway

Site	Overall score
Telford Road Glenrothes Units G3 & G4, Telford Road, Eastfield Industrial Estate, Glenrothes, KY7 4NX OS Ref: NO2900SW/NT2999NW Large building - 2.01 Hectares | 4.97 acres	**512** **54%**
Positive features	**Negative features**
» Planning status » Reasonably good power capacity » Poor physical security » Reasonably good fibre capacity » Good financial incentives / taxation benefits	» Distance to amenity

Site	Overall score
Springhill Parkway Glasgow Business Park, Glasgow, G69 6GE OS Ref: E267545 W665202 Very large site - 11.17 Hectares | 27.6 Acres	**505** **53%**
Positive features	**Negative features**
» Planning status » No contamination environmental issues » Reasonably good accessibility » Reasonably good power capability » Reasonably good fibre capability	» Distance to amenity

Site	Overall score
Strand Building Fife Mitchelston Drive, Mitchelston Industrial Estate, Kirkcaldy, Fife, KY1 3LY OS Ref: 55 degrees 083020 North; 3 degrees 08 5772 west. Large building - 31.84 Hectares	**434** **46%**
Positive features	**Negative features**
» Planning status » Good accessibility » Reasonably good physical security » Reasonably good power and fibre capability » Good financial incentives / taxation benefits	» Distance to amenity » Existing building / structure believed to be in a poor condition

Site	Overall score
Lomondgate Lomondgate Avenue, Dumbarton, G82 2QR OS Ref: 399E 769N Very large site - 8.05 Hectares | 19.89 Acres	**414** **44%**
Positive features	**Negative features**
» Distance to amenity » No contamination environmental issues » Good accessibility » Reasonably good physical security » Reasonably good power and fibre capability	» No financial incentives / benefits

Site	Overall score
Ravenscraig Postcodes: ML1 1NR ML1 2TX ML1 2TZ OS Ref: NS 764 569 Very large site - 3.9 to 26.9 Hectares	**374** **39%**
Positive features	**Negative features**
» Planning status » Distance to amenity » Planning status » Good accessibility » Good power and fibre capability	» No financial incentives / benefits

Site	Overall score
Dundee Business Park Kinnoull Road, Dundee, DD2 3QF OS Ref: 375 327 Large site - 2.93 Hectares	**373** **39%**
Positive features	**Negative features**
» Distance to amenity » Planning status » Good accessibility » Reasonably good power capability » Good fibre capability	» No financial incentives / benefits

Site	Overall score
Sites A & B, Lothian Park Old Craighall, EH21 8RE Site A: NT339709 Site B: NT336706 Large site - 4.85 Hectares for each site	**366** **39%**
Positive features	**Negative features**
» Distance to amenity » Planning status » Good accessibility » Reasonably good physical security » Reasonably good power and fibre capability » No contamination environmental issues	» No financial incentives / benefits

Site	Overall score
Westerhills Business Park Vacant Land at Westerhills Business Park,Westerhill Road, Bishopbriggs, G64 OS Ref: 262420E, 671160N Very large site - 8 Hectares | 40 acres	**362** **38%**

Site	Overall score
Shawfair Park Danderhall, Midlothian, EH22 1FD OS Ref: E: 331123 N: 668829 Large site - up to 4 Hectares	**358** **38%**

Site	Overall score
Darnley Mains Waukglen Road, Glasgow, G53 7RJ OS Ref: NS 533 596 Very large site - 5.0 Hectares	**347** **37%**

Site	Overall score
The CORE Berryhill Aberdeen, Bridge of Don, Aberdeen OS Ref: NJ 953121 Very large site - 36.4 Hectares | 90 Acres	**342** **36%**

Site	Overall score
Sheriffhall South Lasswade, Midlothian, EH18 1AZ (or nearby) OS Ref: E: 331661 N: 667508 Very large site - 8.09 Hectares	**320** **34%**

Site	Overall score
Aberdeen Energy Park Claymore Drive, Bridge of Don, Aberdeen, AB23 8GW (or nearby) OS Ref: E 394976 N: 811314 Very large site - 16.8 Hectares	**310** **33%**

Site	Overall score
Salter's Park Midlothian Salter's Road, Dalkeith, Midlothian, EH22 2PS (or nearby) OS Ref: E: 334720 N: 668578 Very large site - 24 Hectares	**300** **32%**

Site	Overall score
Moorfield Kilmarnock Moorfield North Industrial Park (Phase 2), Kilmarnock, Ayrshire OS Ref: 240276.955 E; 637795.458 N Very large site - 11.49 Hectares | 28.4 Acres	**297** **31%**

Site	Overall score
Greenhills (formerly Drumshangie / Greenhills Data Centre) Ballochney Road, By Plains, Airdrie, ML6 7NY / ML6 7NN OS Ref: North Lanarkshire Planning Consent Ref: N/09/00865/PPP, OS Ref: O.S X (eastings) 278 752, O.S Y (Northings) 667 970 Very large site - 66.4 / 66 Hectares	**269** **28%**

Site	Overall score
Bridgepoint Inverness 21-25 Longman Drive, Inverness, IV1 1SU OS Ref: NH670469 Very large site - 1.98 Hectares	**246** **26%**

Site	Overall score
Westfield, Fife Westfield Development Centre, Cardenden, Glenrothes OS Ref: NT1994599166 Very large site - Total 400 Hectares Agricultural	**229** **24%**

Site	Overall score
Kerse Road Millhall, Stirling, FK7 7LT OS Ref: NS 815 281 Large site - 2.39 Hectares	**214** **23%**

Site	Overall score
Broadleys Business Park Plots 17/18, Craigleith Road, Broadleys Business Park, Stirling, FK7 7LQ OS Ref: NS 808 923 Large site - 2.47 Hectares	**204** **21%**

Site	Overall score
Raithill Farm East Ayrshire, KA3 6EU OS Ref: 247894, 647577 Very large site - 250 Hectares	**199** **21%**

Site	Overall score
Eddlestone Peebles 1 mile West of Eddlestone and 4kn North West of Peebles (land adjacent to A703). OS Ref: 322,642, 647,010 Very large site - 556.9 Hectares	**173** **18%**

Site	Overall score
Heartlands, Heartlands Business Park, EH47 0LH Very large site - up to 100 acres	**151** **16%**

5. Conclusions and recommendations

In this report we have presented a screening exercise which was aimed at identifying the most favourable potential options from a data collection exercise.

Data was sought from over 200 consultees, split into four categories. 70 initial responses were received from consultess. Sufficient data was received for 27 options to undergo the screening exercise for potential options / buildings identifying and ranking the 11 most favourable options.

The brief called for identification of the top ten however two options received the same score and so we have 11 'most favourable options' based on the information received.

While the method used has achieved the study objectives, there are a number of limitations that have been identified.

Taking the limitations into account small differences in weighted scores should not to be taken as significant. However the rankings clearly demonstrate the relative attractiveness of the options for further investigation as potential data centre locations, which was the aim of the study.

On the basis of the information received we believe that at least these eleven most favourable options are suitable for large data centres, as potentially so could the next seven. At the site level Scotland is well served with potential options.

As a competitive location, Hurleyplamerflatt publish an annual Data Centre Index, this looks at the country level (Ref1). This does not disaggregate Scotland from the rest of the UK, but the UK is ranked highly because it is major world economy and an important Financial hub. Overall however it is acknowledged that the UK scores poorly on taxation, energy and labour costs and that there is a risk that owners and operators could begin to look elsewhere to reduce overheads. Scotland may however score better than the UK as a whole on the basis of lower carbon electricity and higher potential for free-cooling, and financial incentives, but lower on financial sector as this is very London centric

Following this screening exercise the next stage is to take these 11 most favourable options through more detailed due diligence. Before a site can be presented to the market as suitable for a large data centre we would recommend that site owners or their agents prepare the following:

Potential new build site

» Site survey information
» Site environmental due diligence covering, mining report, contaminated geology, flood risk assessment, etc.
» Site sensitivity – environmental noise and local air pollution
» Site security
» Construction access and site accessibility
» Confirmation of electricity capacity and resilience of supply, via Scottish Power or SSE
» Confirmation of fibre / data connectivity, via local telcos
» Verify planning consents

Existing building

» Building due diligence (structural and services provision)
» Site environmental due diligence
» Identify any planning constraints
» Site sensitivity – environmental noise and local air pollution
» Site security
» Construction access and site accessibility
» Confirmation of electricity capacity and resilience of supply
» Confirmation of fibre / data connectivity
» Verify planning consents

Appendix 1 - List of consultees

Scottish Local and Unitary Authorities

Aberdeen City
Aberdeenshire
Angus
Argyle & Bute
Edinburgh
Clackmannanshire
Dumfries and Galloway
Dundee City
East Ayrshire
East Dunbartonshire
East Lothian
East Renfrewshire
Falkirk
Fife
Glasgow
Inverclyde
Midlothian
North Ayrshire
North Lanakshire
Peth and Kinross
Renfrewshire
Scottish Borders
South Ayrshire
South Lanarkshire
Stirling
West Dunbartonshire
West Lothian

Commercial Property Agents and Others

A & G property group
Abbeymill
Abrobb
Alliedsurveyorsscotland
AndrewReilly Associates
Appleton craig
Ardoch Complex
Ashtenne
Atholls
Bellingram Commercial
Bidwells
Bizspace
Blueyonder
BNP Paribas
Broad-group
Burns and Shaw
Cameron Harris
Capita
Cargill property
Castle croft
CBRE
Chaswood
Church of Scotland
Ckd Galbraith
Clowes-Developments
Clydebank Rebuilt
Clydeport
CNC Property Fund Management
Cobban Real Estate
Colliers
Conveyancing Direct
Coulter commercial
Craig Watson Consultants
Credential Holdings
Crichton
Cushman & Wakefield

Cuthbert White
D2 property
Dallas McMillan
Denwolf-am
Derek Young Consultants
DJ Deloitte
DM Hall
Doherty Baines
DP group
DTZ
Edin commercial Property
Edwin-Thompson
Enetrust
Evans easyspace
Eyco
Fg Burnett
Fife group
Firefly uk
Ftlinden
Gapinthemarket
Geraldeve
GL Hearn
Gladman
Glen and co
GLS
Goanm
Gormley property
Govan workspace
Graham and Sibbald
Griffinwebster
GVA
Hamilton Chartered Surveyors
Hardies
Haypark Properties
Highlands and Island Enterprise
In-siteproperty
J A Pollock
J c emslie
James Barr
James McGee
James-Keiller-estates
JH C Interiors
Johnston Waddell
Jones Lang la Salle
Knightfrank
Land Investment
Lickley Proctor
LSH
Managed Office Solutions
Marketing ms
Mathieson-Melrose
Mc Sence
Mckenzie Pollock
Mcmanus Property
McNicol Property
Merchant Commercial
Montagu-Evans
Morris Leslie
Murphy-young
Murray Little and Knox
Neil Munro Property
NPL-estates
O'Conner Kennedy Turtle
Paterson-associates
Phil Reid Associates
Primrose and Gordon
Property-am
Reith Lambert
Richard Callandar
Rock-dcm
Rosemount Trust
Ross-Liddell
RW Hall
Ryden
Sanderson Weatherall
Savills

Savills
Scottish Government
Shepherd
Sim Building
Snowie
Spectrum properties
Speirs gumley
Stelmain
Storeys Edward Symmons
Thomson Property
W Raworth
Westmarch Estates
White and Barries
Whittlejones
Winton Faith

Appendix 2 - Questionnaire

Search for potential data centre opportunities

Consultee organisations are asked to prepare 'preliminary proposal' information for those sites that they feel would be appropriate for consideration as potential 'strategic buildings/sites for data centres'. This consultation is the first stage of a process, following responses to this initial enquiry a shortlist of opportunities will be complied and if successful you may be asked to provide additional information in support of your proposal. The responders whose sites we do not intend to shortlist will be informed accordingly.

Attached is the list of data required by hurleypalmerflatt and Scottish Enterprise to allow determination of submissions to be considered for possible further detailed analysis.

This document should be completed for every site and/or building proposed by the consultee organisation.

A description of the 'building' or 'site' and other principal requirements is detailed in the section titled 'development requirements'.

All responses should be sent electronically to the following: scottish.dc@hurleypalmerflatt.com by noon 2nd November 2012. All information including multiple sites shall be sent in a single PDF file clearly marked with the responders name in the file name.

No additional information shall be sent other than that requested within this document.

1.) Preliminary proposal
The following topics should be covered within the preliminary proposal in order to provide quick, factual answers to the potential of a building/site and are listed below:

Descriptor	Required input	Proposer input
1.) Address of site / building	The postal address of the site / building should be given together with its local name and postcode.	Address: Postcode:
2.) Ordnance survey co-ordinates	The os 6-figure reference shall be given, identifying approximately the centre of the site.	Os ref:
3.) Building category/size / site area	Building/site category (see description at end) Building size in sq metres Building configuration / dimensions; multiple / single storey). Manufacturing / factory area (sq m) and office accommodation sq m). Gross land area of site in both hectares.	1/2/3/4 Building internal area: m^2 (sq ft): Metres (length) Metres (width) Metres (height to eaves) Site area: ha
4.) Ownership and legal conditions	Name of owner to be stated together with tenancies and other rights where known.	Name(s):
5.) Planning status and current or last known use of building / site	Brief description of planning use class and current use or, if the building / site is 'vacant', previous use where known.	Description:
6.) Security /aircraft flight path (military / commercial)	Ability to secure the perimeter of the site. Is the building / site on an arriving/departing 'flight path' to a commercial or military airport?	Description: Yes / no:

Descriptor	Required input	Proposer input
7.) Hazards / environmental conditions / ground conditions.	(I) falls within area of tidal/river flooding as defined by sepa flood map (Ii) distance to nearest top tier comah site (Iii) brief description of subsoil conditions if known, together with reference to availability of ground reports.	Description: (I) (Ii) (Iii)
8.) Accessibility	(I) capability of site to receive large prefabricated 'building modules' should be confirmed. Access constraints and any 'way leaves / easements' in place at the site. (Ii) the character of the site should be described as a distance and 'drive time' to the nearest : A) motorway B) international airport C) nearest town; nearest residential D) railway	(I) confirm and describe site access; 'geometry' / 'capability' from 'major roadway': (Ii) drive time (minutes) to: A) motorway B) international airport C) nearest town; housing D) railway
Descriptor	Required input	Proposer input
9.) Electricity	Describe the proximity, location and availability of existing electricity infrastructure together with any limitations of supply and influence on the development. (Any indicative' costs and timescales' to provide relevant supply as defined should be confirmed if available).	Distance to sub-stations (ess) (in metres) Distance to primary sub stations (pss) (in kilometres) : Distance to grid points (in kilometres) : Supply availability description (mva)
10.) Fibre	Describe the proximity, location and availability of existing telecoms fibre infrastructure together with any limitations of supply and influence on the development. (Any indicative' costs and timescales' to provide relevant supply as defined in the 'technical requirements' should be confirmed if available).	Distance to 'fibre' connections (and carrier names) (in kilometres) : Supply availability description (gbps)
11.) Additional information	Any additional information / special points which are obvious from a visual inspection should be given.	Description:
12.) Costs (if available)	If possible, approximate cost ranges should be given. In particular extraordinary 'site development costs' should be identified, together with any features which might lead to higher than normal building costs.	Costs: £
13.) Conclusions / summary	The significant technical factors identified in the 'study' should be summarised, together with the identification of further assessment work required.	Description:

As a **minimum** the preliminary proposal should be accompanied by:

1) A **'site plan'**: a drawing (scale 1: 2,500 **or** 1: 1,250) showing the boundaries of the site (and building) and any other main features, if practical.

2) A **'location plan'**: outlining the **site boundaries** should also accompany the report (scale 1: 50,000)

Development requirements

Data centre proposal: technical criteria requirements

'New build' site size	Existing building size	Electrical requirement	Data requirement
1. Large: 4 to 10 acres (1.5Ha to 4ha)	3. Large 60,000 Sq ft to 150,000 sq ft gia (5,500M^2 to 14,000m^2)	6 – 15 Mva Two independent grid feeds	2 Carriers min, Diverse fibre entry points, gigabit data rates
2. Very large: >10+ acres (>4+Ha)	4. Very large 150,000Sq ft to 500,000 sq ft gia (14,000 M^2 to 46,450m^2)	15 - 50Mva Two independent grid feeds	4 Carriers min, Diverse fibre entry points, multi- gigabit data rates

Appendix 3 List of Sites not Progressed to Evaluation

Sites not evaluated and reasons why are noted below:

Potential very large new build site	
Site	Reason
Inchgreen / Great Harbour Greenock	Close to water source and undesirable neighbourhood uses.
Cartsdyke, Greenock	Site to small at 1.44 hectares and irregular shape.
Bandeath Industrial Estate, Throsk, Stirling, FK7 7NP	Site situated on bend of river and therefore deemed to be in a flood risk area (from a data centre persepective as greater than 1:1000 year flood event plus 20%
Kildean Business Park, Stirling, FK9 4UH	SEPA shows site as being a flood risk after being checked on the SEPA website.
Beachmenach, Land adjacent to A83, East of Gigha, PA29 6XF (approx.)	Remote location and potential land ownership issues and lack of clarity on security of electrical supply and fibre provision.
Kilmartin, Argyll & Bute, PA31	Remote location and potential land ownership issues and lack of clarity on security of electrical supply and fibre provision.
Hayfield Farm, Kirkpatrick Fleming, DG11 3BA	Current use as farm land undesirable when compared with other submissions and lack of clarity on power and fibre capacity.
Inverness Airport Business Park, Dalcross, Inverness, IV2 7JB	Site located at airport and therefore discounted due to this risk alone.
J4M8 Distribution Park, Strand Drive, Bathgate, West Lothian, EH48 2EA	Discounted due to being on the direct flight path to Edinburgh Airport.
Castlebridge Business Park, Gartlove, Nr Alloa, FK10 3PZ	Site is the former pit head to a deep coal mine and for this reason alone has been discounted.
1 Steadman Place, Riverside Business Park, Irvine, KA11 5DN	Building too small at 34,155 sq ft and the land bank of circa 11.74 hectares is not as attractive as the Irvine Innovation and Industry Park owned by Scottish Enterprise.
Kilpatrick Drive, Erskine, PA8 7AF	Falls within a SEPA flood map.
Newmains, North Lanarkshire, ML2 9BG	No proforma submitted. Only a one page marketing flyer.
James Watt Dock Greenock	Located on the banks of the River Clyde and also an irregular / undesirable shape.
Abbotsford Park Falkirk	Located 3 miles away from tier 1 COMAH site at BP Grangemouth
Glenbervie Larbert	Located 2.4 miles away from Tier I COMAH site at BP Grangemouth and nearest substation with available load of 3MW to 4MW is approximately 1.9 miles away which would be costly to install.
Potential large new building site	
Site	Reason
Langlands Point, Kelvin South, East Kilbride, G75 0RH	Incomplete submission.

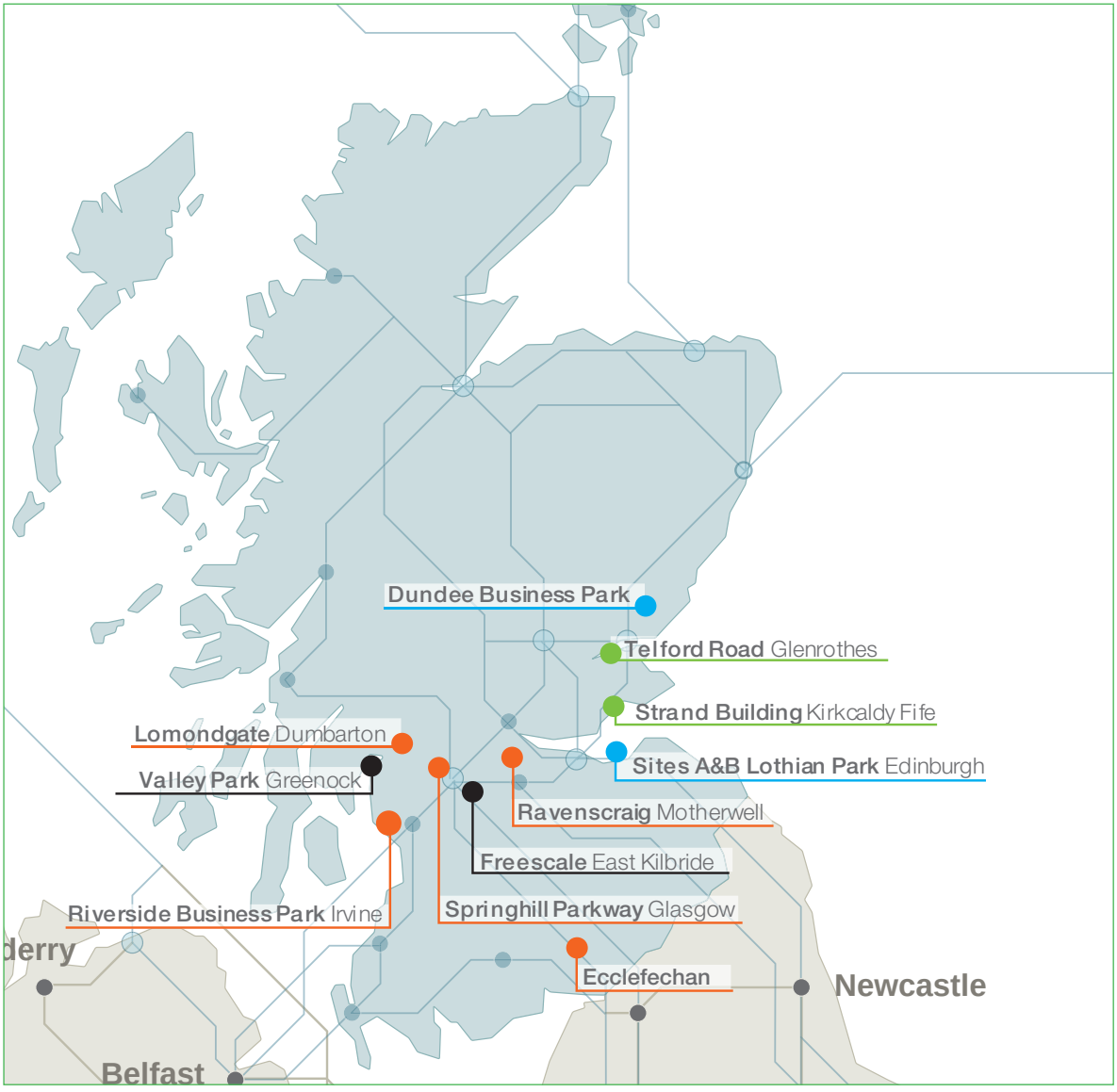
Note - for data centres the flood risk is based on a 1:1000 year flood event plus 20%

Existing very large building	
Site	Reason
419 Balmore Road, Glasgow, G22 6NU	Property located adjacent scrap yard and also the existing building uses would mean major redevelopment works and costs
47 Fairfield Place, East Kilbride, G74 5LP	Incomplete submission.
5 Wardpark Road, Wardpark South Industrial Estate, Cumbernauld, G67 3HW	Incomplete submission.

Existing large building	
Site	Reason
Tennant Avenue, College Milton, Queensway Business Complex, East Kilbride, G74 5NA	Complicated lease and tenancy rights lasting until 2020 in some instances.
Plots 6bi and 6bii, Clyde Gateway East, London Road, Glasgow, G32 8RH	Discounted due to overall size of plots being 2.3 hectares combined and geometry of plots when not combined being undesirable.
9 Central Boulevard, Central Park, Larbert, FK5 4RU	Would appear to be site restrictions in place re tenancy agreements and overall lack of clarity on most of the replies to our questions re - power, fibre, COMAH etc.
1 Simpson Parkway, Livingston, EH54 7BH	Incomplete submission.
120 Springhill Parkway, Glasgow Business Park, Baillieston, G69 6GA	Building currently has a tenant and general lack of information.
85 Fullarton Drive, Cambuslang, G32 8FE	Incomplete submission.
10 Coddington Crescent, Eurocentral, ML4 4YF	Incomplete submission.
The Vision Building, 20 Greenmarket, Dundee, DD1 4QB	Structure not suitable for data centre (office accommodation).

Location without category banding	
Site	Revision
Rosemount Workspace, 141-147 Charles Street, Glasgow, G21 2QA	Building far too small at 9,360 sq. ft.
CalaChem, Earls road, Grangemouth, FK3 8XG (Plots 5&6 Earls Gate Park)	Site too small at 1.6 hectares and close proximity to major 'Control of Major Accidents Hazards' site at Grangemouth.
Bankhead Drive, Sighthill Industrial Estate, Edinburgh	Site too small at 1.7 hectares.
Pyramids Business Park, Easter Inch, Bathgate, EH48 2ET	Site development area too small at 1.22 hectares and extension onto existing building which is not desirable.
4 Gordon Avenue, Hillington Park, Glasgow, G52 4TG	Existing data centre and therefore out with the scope and remit of this commission. Also at 49,000 sq ft falls below 60k sq ft threshold.

Figure 1 - Location of top ranked sites by category and showing fibre connectivity



Scottish Enterprise

SCOTTISH DEVELOPMENT INTERNATIONAL

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