MGT TEESSIDE LTD

ENVIRONMENTAL STATEMENT ADDENDUM
ASSESSMENT OF MINOR ALTERATION TO DEVELOPMENT

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SECTION 1

EXECUTIVE SUMMARY

1 EXECUTIVE SUMMARY

1.1.1 In July 2009 MGT Teesside Ltd. (MGT) received planning consent under Section 36 of the Electricity Act 1989, to build the Tees Renewable Energy Plant, a 295MW biomass fired power station development. MGT have also applied for and received an Environmental Permit from the Environment Agency (EA) to operate the proposed plant. Since July 2009 MGT Teesside's engineering advisors have carried out a front end engineering design (FEED) study, as is normal industry practice, which has led to a number of revisions to the design of Tees REP. These design revisions primarily consist of changes to the physical proportions and layout of some of the plant buildings, although the height of the tallest structure, the stack, remains unchanged. In fact, because some buildings have increased in size and some decreased, the overall change to the development size is virtually zero. There have also been alterations to flue gas exit temperature and discharge velocity.

1.1.2 The site's red-line boundary remains unchanged. A plan showing the boundary can be seen in Appendix A.

1.1.3 The aim of this Addendum to the original Environmental Statement (ES) is to conduct an environmental impact assessment (EIA) of these modifications to the Tees REP design, according to the scope of the original ES.

1.1.4 The following conclusions were reached:

1.1.5 An increase in boiler building height with no commensurate change to stack height (which remains at 95m tall, as per original ES), is likely to increase downwash effect, which can lead to reduced plume dispersion. However, FEED design revisions have also resulted in an increase to plume exit temperature, which counteracts this effect via plume rise. As a result, the amendments to the design proposals were found to have **no significant effect** on **air quality**.

1.1.6 Amendments to the design proposals were found to have **no significant effect** on **water quality**.

1.1.7 Amendments to the design proposals were found to have **no significant effect** on **noise and vibration.**

1.1.8 Amendments to the design proposals were found to have **no significant effect** on **land use and contaminated land.**

1.1.9 Photomontages are presented (in Appendix B) to assess the visual impact of the design modifications. The effects of the amendments to the design proposals on **landscape and visual amenity** are **not significant**.

1.1.10 Amendments to the design proposals were found to have **no significant effect** on **traffic and infrastructure**.

1.1.11 The development is still considered to have a high positive local **socio-economic** effect and this is unaffected by amendments to the design proposals.

1.1.12 Amendments to the design proposals were found to have **no significant effects** on **ecology**.

1.1.13 Amendments to the design proposals were found to have **no significant effects** on **archaeology and cultural heritage**.

1.1.14 A list of the authorities and groups to be consulted as part of this assessment is presented in Appendix C.

SECTION 2

ENVIRONMENTAL IMPACT ASSESSMENT

2 ENVIRONMENTAL IMPACT ASSESSMENT

2.1 Introduction

2.1.1 This Section determines which areas of the environmental assessment would need to be revised as a result of the changes proposed by the completion of the Tees REP FEED study, using the scope of the original environmental impact assessment (EIA)

2.2 Design Modifications

2.2.1 The first design modification, as described by MGT's engineering advisors, Poyry, was that "the original MGT concept detailed the boiler building height as being 55 m and suppliers were instructed to work within this constraint, however following discussions with boiler suppliers during the FEED study it was identified that technically the furnace height of the boiler would need to be increased which has resulted in a max boiler building height of 71 m."

2.2.2 The second of these changes is to plant layouts and the fuel storage buildings. Again, as described by Poyry engineers, "there are two favoured designs which both show the storage building being rotated through 90 degrees to the original layout, in addition, to enable the required storage capacity of 120 000 tonnes to be achieved the building heights have been increased to 30m." This is expected to make no change to the visual impact of the project due to the currently existing Corus Steel Export Terminal on the site with very similar dimensions (270m x 125m x 30m high).

2.2.3 Full Original and Revised building dimensions are displayed in Table 2.1 below and Appendix A presents the unchanged red-line boundary and revised plant design and layout diagrams. While the boiler house height has increased, other building sizes have been reduced, and the overall change in total development size (i.e. volume) is virtually zero.

Table 2.1 – Building Dimensions (m)

	Section 36 Planning Details			Updated Details *		
Building/Plant Item	**Length**	**Width**	**Height**	**Length**	**Width**	**Height**
Turbine House	57	25	35	*60*	*32*	*30*
Electrical Control Room	25	15	21	25	15	21
CFB Boiler House	45	45	55	*50*	*50*	*71*
Fabric Filters	26	40	25	26	40	25
Air Cooled Condenser	75	65	40	*80*	*67*	40
Fin Fan Cooler	45	23	6	45	23	6
Substation	20	20	5	20	20	5
Demineralisation Water Building	16	15	8	16	15	8
Air Compressor Building	8	15	5	8	15	5
Fire Fighting pump Building	14	8	5	14	8	5
Workshop and Stores Building	40	20	12	40	20	12
Office Administration Building	7	23	5	7	23	5
Covered Fuel Store 1	284	65	20	*210*	*46*	*30*
Covered Fuel Store 2,3 and 4	235	65	20	*210*	*46*	*30*
	Diameter		**Height**	**Diameter**		**Height**
CFB Exhaust Stack	5		95	*6*		95
Fly Ash Silos	12		20	12		*26*
Bottom Ash Silos	18		20	18		20
Demin Storage Tank	11		11	11		11
Fire Fighting Water Storage Tank	18		19	18		19
Distillate Fuel Oil Storage Tank	6		4	6		4

* Revised dimensions are in *italics*

2.2.4 In addition, the FEED study has also identified a flue gas exit temperature, velocity and stack diameter that is different to those in the original ES. These changes to the flue gas exit parameters have a positive impact, acting to reduce ground level concentrations of pollutants. This effect is explained in subsequent sections.

2.3 Original Scope

2.3.1 The undertaking of the full environmental impact assessment (EIA) followed the completion of a scoping study in May 2008, during which both statutory and non statutory consultees to the process were consulted. The purpose of this study was to help define the scope of the environmental investigations and terms of reference for the final ES.

2.3.2 The ES discussed the need for the project and methodology with which the full EIA was undertaken. The areas of assessment, as determined by the above scoping study, are discussed below.

2.4 Air Quality

2.4.1 As part of the EIA, a full atmospheric dispersion modelling study was undertaken to predict the process contributions, from the Tees REP, to the local ground level concentrations of various pollutants. The model assumed a series of operating parameters including flue gas temperature, volume and composition that reflected the likely worst case scenario. Changes to these parameters will alter the nature of the dispersion of the flue gas.

2.4.2 In addition, building downwash structures are those which subject the plume from the stack to wake effects. The effect is generally to pull the plume down to the ground closer to the stack and not allow the plume to disperse as effectively in some weather conditions, thus increasing ground level concentrations.

2.4.3 The significant buildings of the proposed Tees REP were considered within the original air dispersion modelling study presented in the ES. The increase in height of the main boiler house has the potential to increase the downwash effect of the flue gases exiting the stack and alter the pattern of the atmospheric dispersion.

2.4.4 A new air dispersion modelling study, using the same methodology as the original study, has been undertaken for the proposed Tees REP to reflect this new information. The impacts on local air quality are expanded upon in Section 3 of this Addendum.

2.5 Water Quality

2.5.1 The change in building sizes identified by the FEED study will not affect the overall water usage requirements of, and potential discharges from, the operation of the proposed Tees REP.

2.5.2 The impact of the Tees REP on **water quality is considered to remain insignificant** and is not considered further in this Addendum.

2.6 Noise and Vibration

2.6.1 Construction activity inevitably leads to some degree of noise disturbance at locations in close proximity to the construction activities. It is however a temporary source of noise. As described in the original ES, the noise levels generated by construction

activities would have the potential to impact upon nearby noise sensitive receptors. Noise levels at any one location will vary as different combinations of plant machinery are used, and throughout the construction of the proposed plant as the construction activities and locations change. However, these would depend upon a number of variables, the most significant of which include the following:

- the noise generated by plant or equipment used on site, generally expressed as sound power levels;
- the periods of time construction machinery is operational;
- the distance between the noise source and the receptor; and
- the level of attenuation likely due to ground absorption, air absorption and barrier effects.

2.6.2 Some construction activities can be a source of ground-borne vibration, which can be a cause for concern at the nearest receptors. Typical activities that would lead to vibration effects include compaction, breaking and piling.

2.6.3 The change in building sizes will not affect any of the above factors during construction of the Tees REP. Thus, as described in the original ES, the impact of **construction noise is predicted to remain insignificant**.

2.6.4 Similarly, the operational noise is not expected to change as a result of design alterations from the FEED study. The results of the original assessment indicate that complaints would be unlikely at the nearest noise sensitive receptors.

2.6.5 The **noise and vibration** impacts of the Tees REP, taking into account new design proposals, are considered **to remain insignificant** and are not considered further in this Addendum.

2.7 Land Use and Contaminated Land

2.7.1 The impacts on soils and geology of construction were considered negligible in the original EIA, as they will mainly impact made ground. If any other impacts occur, they will be confined to localized, temporary erosion and compaction impacts caused by earthworks and vehicular movements. Due to the relatively small amounts of contamination at the site and the presence of the attenuating alluvial deposits underlying the made ground, it was not anticipated that significant concentrations of contaminant could leach to surface water or groundwater if properly mitigated.

2.7.2 During operation all areas of the site will drain to appropriate drainage systems on site thereby mitigating the potential for contamination of ground or surface waters. Disposal of all waste materials, whether hazardous or not, will only be via appropriate and authorized routes.

2.7.3 The changes to plant size and layout identified in the FEED study will not alter the construction methods to be utilised for the Tees REP or the mitigation measures proposed within the original ES. As such, the potential **land impact is considered to remain insignificant** and is not considered further in this Addendum.

2.8 Landscape and Visual

2.8.1 A landscape and visual impact assessment was undertaken for the Tees REP, including the preparation of photomontages based on the basic design concept. The predicted views from eight viewpoints were identified as being representative of the likely visual impact that would be encountered in the area.

2.8.2 The substantial buildings on site will be the turbine hall, boiler house, air cooled condenser, covered wood storage area and storage tanks. The remaining plant and equipment will, in the main, be housed in relatively low buildings, of the order of 3 to 6 m in height. The tallest structures on site were originally considered to be the 95 m high stack and the 55 m high boiler. Note that currently on the north-west part of the site is the 270m x 125m x 30m high Corus Steel Export Terminal, which will be taken down, prior to development.

2.8.3 It is considered that the locating of the plant in an industrial area designated for industrial development respects the general aims of the local authorities. The plant's industrial location reduces the need for extensive works on water pipelines and transmission lines that might have impacted further on the landscape. The impact of the Tees REP on the **landscape is considered to be insignificant**.

2.8.4 While visual impact was found to be insignificant in the original EIA, the changes in building height and layout have the potential to alter that visual impact. Therefore updated photomontages for a number of viewpoints have been prepared and are fully discussed in Section 4 of this Addendum.

2.9 Traffic and Infrastructure

2.9.1 As described in the original ES, the 32 month construction period for the proposed Tees REP will give rise to additional transport movement on the local transport network. All vehicle movements relating to the proposed development will be required to travel along the A1053 Tees Dock Road.

2.9.2 A green travel plan will be agreed with the local highways officer prior to the commencement of the construction phase to help mitigate the potential impact of the proposed works to local and regional traffic and infrastructure. In addition all vehicle movements associated with the construction of the proposed Tees REP will operate under a Transport Management Plan (TMP). The purpose of the TMP will be to actively manage all potential issues resulting from the increased demand on the local transport infrastructure to ensure that all impacts are minimized or eliminated. A final TMP will be produced to match the final design of the plant.

2.9.3 The transport of abnormal loads, which may lead to delays and cause inconvenience to other road users, would be timed following consultation with the relevant authorities to minimize disruption to the other road users, as originally proposed.

2.9.4 Operation of the proposed plant will naturally result in many fewer traffic movements than those associated with construction. A large proportion of these vehicle movements will be staff operating the plant and the majority of the journeys will therefore be local.

2.9.5 **The changes to the original design concept buildings and layout will not materially affect the level of traffic generated by the construction of the Tees REP**. Staff levels and the number of deliveries during the peak of construction will remain the same. Though the larger buildings will require more raw materials to be

brought to site, the assessment presented within the original ES assumed the worst case peak of the construction which will not change. Note that, while some building sizes have been revised upwards, others have been revised downwards. Note also that any deliveries via water transport will have no impact on local road traffic.

2.9.6 Additional material delivery may extend the duration of the peak construction period, in terms of traffic generation, slightly. However, and according to the worst case assessment presented in the ES, the **impact of traffic on the local infrastructure** during construction **will remain insignificant** and is not considered further in this Addendum.

2.10 Socio-Economics

2.10.1 At its peak, the construction workforce will total about **600 jobs**. It is expected that most of this workforce will be recruited locally, **and MGT has agreed to binding commitments, under Section 106, to maximise the potential for local recruitment, including the development of training programmes**. Approximately **150 staff** will be required for roles and tasks associated with the daily operational and maintenance requirements of the new plant. It is expected that most of this workforce will also be recruited locally.

2.10.2 The changes resulting from the FEED study will not affect either the construction or operational staff requirements of the proposed Tees REP.

2.10.3 As described in the ES, the Tees REP will have a **high positive socio-economic impact**. Any additional materials required will only increase this effect and so is not considered further in this Addendum.

2.11 Ecology

2.11.1 As part of the original EIA, an ecological impact assessment of the proposed Tees REP site was undertaken comprising a detailed desk study, consultation and field studies, including reptile survey.

2.11.2 A dedicated survey carried out under guideline conditions did not record the presence of reptiles or amphibians. Other protected species potential in the immediate area was limited to the presence of terrestrial bird species that may utilize the scrub habitats and buildings on site for breeding. Where potential exists for terrestrial breeding bird presence (scrub vegetation and buildings), removal or demolition will be undertaken outside the bird breeding season (March to late September inclusive for the majority of species) or alternatively, an ecologist will supervise the works. **With these procedures being followed the potential impacts upon birds are considered negligible**.

2.11.3 Through the selection of **air cooled condensers** as a cooling method, Tees REP **completely avoids the issues of thermal discharge and abstraction** of significant quantities of river water. These are typically the major impact a thermal power plant can have on the local water resources and associated fauna.

2.11.4 **An Environmental Management Plan (EMP) will be produced and implemented** for the site prior to any construction works and will include provisions to protect wildlife habitat in the vicinity of the site. It will also include measures for prevention of pollution incidences that might impact upon Kinkerdale Beck or the River Tees.

2.11.5 **The proposed changes to the original design concept will not affect the above conclusions, which were reached in the original ES**. Thus they are not considered further in this Addendum.

2.12 Archaeology and Cultural Heritage

2.12.1 The area proposed for development covers 14 hectares, the majority of which comprises various dockside facilities. The area in which the study site lies is relatively low-lying land reclaimed from the River Tees since the late 19th century. Due to the method of its formation, the general topography of the Teesport Estate is flat or slightly undulating land.

2.12.2 As part of the original EIA, a full archaeological desk based assessment was undertaken for the proposed site. The assessment established that no statutorily protected archaeological or heritage site will be directly affected by the Project. In addition there are no listed buildings within the wider study area, so the development will have no impact on any such buildings or their settings.

2.12.3 When the archaeology of the site itself was considered it was identified that there was some potential for survival of palaeo-environmental and archaeological remains beneath the site. It was considered however that the remains would mostly be from the modern era (1900 AD - present) and of negligible importance due to the nature of the ground beneath the site (which mostly comprises made ground reclaimed from the River Tees).

2.12.4 The assessment recommended that archaeological evaluation by trial trenching should not be carried out within areas of proposed development impact. However, MGT will make available the results of geotechnical site investigations to an archaeological consultant or the archaeological development control section at Tees Archaeology. It was also proposed that an archaeologist consultant should be invited to the site to inspect any major excavations.

2.12.5 Whilst the building size and layout may have changed following the FEED study, the extent of the site boundary has not and thus the conclusions presented within the original ES will remain valid. **The impact of the Tees REP on archaeology and cultural heritage is considered to remain insignificant** and is not discussed further in this Addendum.

SECTION 3

AIR QUALITY

3 AIR QUALITY

3.1 Introduction

3.1.1 This Section discusses the atmospheric dispersion of the emissions from the Tees REP, and the relevant environmental impacts.

3.1.2 The original air dispersion models have been updated to reflect changes in emissions parameters and the updated sizes of the main REP buildings. Where the FEED study has recommended buildings should be less high than proposed in the original ES, the original, higher heights have been maintained in this modelling study to create a worst case scenario.

3.2 Dispersion Modelling

3.2.1 Atmospheric dispersion modelling can predict the ground level concentration resulting from emissions from an elevated stack point source. This section describes the key aspects of the dispersion modelling process.

3.2.2 When flue gases are discharged from a chimney they have two sources of momentum. One is related to the velocity of discharge. This is usually designed to be in excess of 15 metres per second as this value has been found to be sufficient to avoid immediate downwash of the plume. The Tees REP design, following revisions from the FEED study, incorporates a discharge velocity of 22 – 25 m/s.

3.2.3 This momentum from velocity of discharge is soon dissipated.

3.2.4 The second source of momentum is much more significant and is related to the discharge temperature of the flue gases. The flue gases, being warmer than the surrounding atmosphere into which they are discharged, are buoyant and thus rise. This process continues until the flue gases have cooled to the same temperature as the surrounding air.

3.2.5 Mathematical models calculate the effects of these two sources of momentum and determine the height to which the flue gases will rise. This height plus the height of the chimney gives an effective chimney height. Note that the effective chimney height can be many times greater than the actual chimney height due to the large amount of heat present in the flue gases.

3.2.6 A mathematical model then determines the dispersion pattern of the flue gases from the effective chimney height.

3.2.7 Dispersion occurs as a result of turbulence, and turbulence can result from both buoyancy effects and wind shear (also called mechanical) effects.

3.3 The Dispersion Model

3.3.1 The dispersion models available and accepted by the Environment Agency for point sources are AERMOD and ADMS. Both are second generation models developed in the US and the UK respectively.

3.3.2 In the original Environmental Impact Assessment, ADMS was preferred for the dispersion modelling and this additional study built upon and utilised these previous dispersion modelling files which were accepted by DECC and the Environment

Agency. Emissions parameters and building heights were updated, as shown in Table 3.1 (underlined items are different to the original ES).

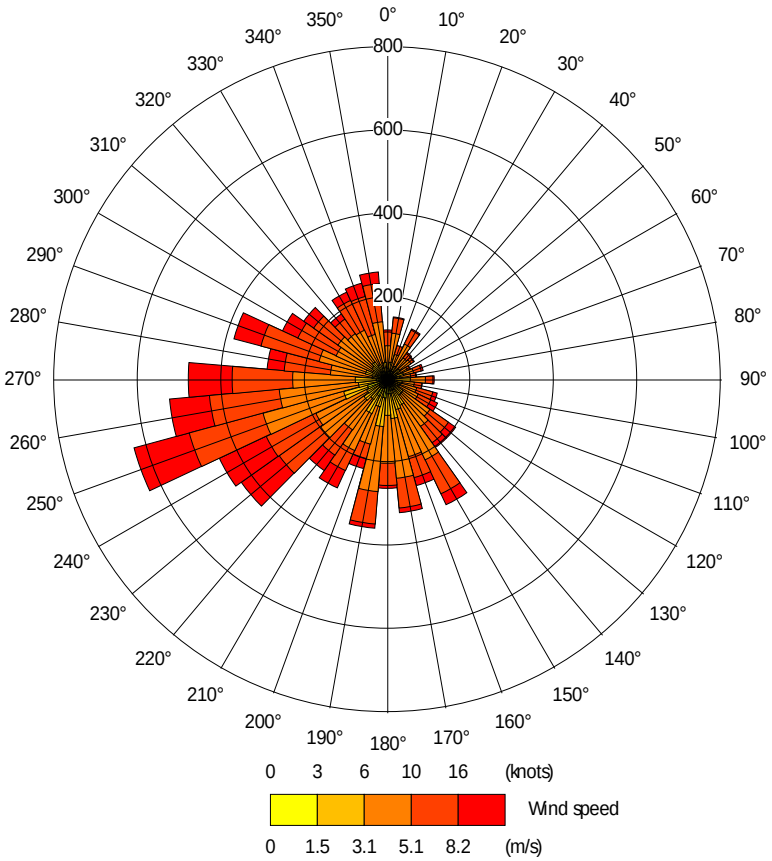
Table 3.1 – Updated Dispersion Model Inputs

Parameter	Units	Parameter
NO_x emission level	mg/Nm^3	150
NO_x flow rate	g/s	48.5
SO_2 emission level	mg/Nm^3	53 / 106 *
SO_2 flow rate	g/s	17.2 / 34.4 *
CO emission level	mg/Nm^3	100
CO flow rate	g/s	32.3
Particulate emission level	mg/Nm^3	20
Particulate flow rate	g/s	6.4
HCl emission level	mg/Nm^3	20
HCl flow rate	g/s	6.4
Temperature	C	140
Actual flue gas volume	m^3/s	561.4
Flue gas velocity	m/s	22
Stack diameter	m	5.7
Stack height	m	95

* average / peak

3.3.3 The meteorological data used for this modelling exercise was that from the station at RAF Boulmer. It is considered that this data will be representative of the conditions experienced at the site. The data period was 2003-2007, inclusive. For each year, the predominant wind direction was from the southwest and southeast. The wind rose for 2004 can be seen in Figure 3.1.

Figure 3.1 – Wind Rose 2004



3.3.4 Terrain effects have not been included in the dispersion modelling exercise, as per previous models.

3.3.5 Building downwash structures are those which subject the plume from the stack to wake effects. The effect is generally to pull the plume down to the ground closer to the stack and not allow the plume to disperse as effectively thus increasing ground level concentrations. The buildings included in the modelling exercise, as per the previous models, are shown in the Table 3.2 (underlined items are different to the original ES).

Table 3.2 – Significant Buildings Input Data

Building	Height (m)	Width (m)	Length (m)
Main Boiler House	71	50	50
Air Cooled Condenser	40	67	80
Fabric Filters	25	40	26

3.3.6 The updated model used a 20 km by 20 km Cartesian grid with 1000 m spacing and an 11.2 km by 11.2 km Cartesian grid with 112 m spacing to predict the ground level concentrations associated with the scenarios identified. These grids were both centred on the proposed site centre 454112, 523149.

3.3.7 The data presented in Table 3.1 was modelled for 8760 hours per year to ensure that all potential meteorological conditions were considered within the assessment and a worst case result presented.

3.3.8 In the original modelling study, the proposed REP was also modelled in conjunction with the proposed Thor Cogeneration (Px) and the proposed Teesside CGP (ConocoPhillips). Cumulative modelling has not been undertaken for this Addendum as the study intended to show the likely effects of the increase in height of the main boiler unit only; the downwash effects of the proposed amendments on the other proposals are considered negligible.

3.4 Modelling Results

3.4.1 Table 3.3 and Table 3.4 present the worst case ground level concentrations predicted by the updated dispersion modelling. These tables compare the results with those previously reported within the ES and the relevant UK AQS guidelines. There are no guidelines for annual SO_2 in the UK AQS.

Table 3.3 – Annual Ground Level Concentrations due to Proposed REP (µg/m^3)

	Original ES	Updated Modelling	Guideline	Updated Modelling as % of Guideline
NO_2	0.20	0.23	40	0.58
Particulates	0.11	0.17	40	0.43
HCl	0.20	0.17	20	0.85

3.4.2 The original modelling study assumed a maximum emissions concentration of 1 mg/Nm^3 for HCl. Subsequent discussions with the Environment Agency have concluded that 20 mg/Nm^3 would be an appropriate limit for the Tees REP, therefore, the results for HCl from the original ES have been multiplied by 20 for a worst-case comparison within this Section.

Table 3.4 – Short-Term Ground Level Concentrations (µg/m^3)

Pollutant	Averaging Period*	Original ES	Updated Modelling	Guideline	Updated Modelling as % of Guideline
NO_2	Hourly	6.4	8.1	200	4.0
SO_2	Hourly	23.9	30.5	350	8.7
	24-hour	13.3	13.0	125	10.4
	15-minute	28.5	33.2	266	12.5
Particulates	24-hour	1.35	0.6	50	1.2
CO	8-hour running mean	0.02	0.06	10000	0.0

3.5 Analysis of Results

3.5.1 As shown in Tables 3.3 and 3.4, the **impact of overall design changes** on long term and short term pollution increments, and thus on conclusions reached in the original ES, **is very minor**. The predicted process contribution of all pollutants considered within the updated dispersion model are **well within the relevant UK AQS objectives and will cause no exceedance of the guidelines.**

3.5.2 Long term pollution levels are key factors to both human and ecological receptors. As Table 3.4 shows, changes to the annual ground level concentration have been found to be **very minor** and that pollution increments **remain small relative to the UK AQS guidelines, being less than 1% in all cases**.

3.5.3 The emissions limit of 106 mg/Nm^3 stated in the original ES has been re-assessed since the submission of the Section 36 application, with an average emission concentration of 53 mg/Nm^3 (and a peak of 106 mg/Nm^3) now incorporated into MGT's Environmental Permit from the EA. As Table 3.5 shows, it has been found that **changes to short term ground level concentration are also minor**

3.5.4 It can be seen that while the increase in the boiler height does have an effect on the atmospheric dispersion of emissions from the proposed REP stack, acting to reduce local air dispersal, any negative effects are counterbalanced by the increased flue gas discharge velocity and temperature, which create **enhanced plume rise and dispersal**. The **overall impacts** on local air quality of the amended design proposals for the REP can be seen to be **not significant.**

SECTION 4

LANDSCAPE AND VISUAL IMPACT

4 LANDSCAPE AND VISUAL IMPACT

4.1 Introduction

4.1.1 The original ES included a full landscape and visual impact assessment (LVIA) that assessed the impact of the then proposed 55 m boiler, 95 m stack and other associated plant and equipment.

4.1.2 The predicted views from eight viewpoints were identified as being representative of the likely visual impact that would be encountered in the area with the study including visualisations from these locations based on the basic design concept for the project to inform the assessment.

4.1.3 The LVIA found that the associated magnitude of change to the existing landscape and specific viewpoints was not predicted to be significant given the industrial setting of the site which already dominates the wider Teesside industrial area.

4.1.4 This Section details the nature of the changes with regard to the appearance of the Tees REP following the FEED study, and the implications of these to the assessment undertaken for the original ES.

4.2 Changes to the Development

4.2.1 In the time since the original ES was prepared there have been a number of changes to the proposed development that have resulted from the FEED study.

4.2.2 The revised plant design and layout diagrams are included in Appendix A. There have been some changes in terms of the location or footprint of some items of equipment but these are not materially different to those included in the original ES.

4.2.3 The key change to the design of the plant that requires the revisiting of the LVIA relates to the height of the boiler, which has changed from 55 m to 71 m.

4.3 Impact Assessment of Proposed Changes

4.3.1 This assessment seeks to quantify the impacts of the new plant design, and in particular the impact of the increase in the boiler height which is the most notable change to the project design.

4.3.2 As identified by the ES there are two areas that should be considered in undertaking such an assessment, firstly the project's impact on the landscape and its character, and the secondly the impact of the visual amenity.

Landscape impact

4.3.3 The proposed changes to the development design are not predicted to give rise to any more significant landscape impacts than were predicted in the original ES. The landscape that surrounds the proposed development is highly industrial in appearance and as such the addition of the proposed Tess REP to the landscape will note materially impact on this. For example, on the north-west part of the site currently stands the Corus Steel Export Terminal, a 270m x 125m x30m high building. This building will be taken down prior to development.

4.3.4 The impact to the landscape is therefore considered to remain not significant and therefore acceptable.

Visual impact

4.3.5 For the purpose of the original assessment eight viewpoints have been selected in order to illustrate the typical visual impact of the proposed development when viewed from the surrounding area. These viewpoints have been reassessed as part of this supplementary assessment to identify if the impact is likely to be significantly different from that described in the original ES.

4.3.6 The viewpoints are described below and were selected to represent key landscapes and visual receptors in the area of the proposed plant. Photomontages showing the Tees REP as originally proposed and as proposed now set out in Appendix B.

Table 4.1 – Illustrative Viewpoints

No.	Location	Comments	Sensitivity
1	Ledge Near Eston Beacon	Special landscape area/area of historic landscape importance/recreational area	Medium
2	Paddy's Hole – South Gare Breakwater	Special landscape area	Medium
3	Southgate Eston	Residential	Medium
4	Smith's Dock Road	Road users	Low
5	Footbridge Riverside Stadium	Recreational (Middlesbrough football club)	Low
6	Port Clarence	Residential	Low
7	Old Greatham Bridge – A178 Tees Road	Road users/recreational (rspb planned reserve)	Low
8	Teesmouth National Nature Reserve	Recreational (beach users/nature reserve visitors)	Medium

Viewpoint analysis

4.3.7 As noted in the original ES the proposed plant would increase the extent of industrial development, but would not introduce new features or be of a scale which could be considered to be out of keeping with existing development around the site. The discussion below details the predicted impact of the development highlighting the changes with regard to the project as appropriate.

Viewpoint 1

4.3.8 The photomontages included in Figure B.1 shows the view from a location near Easton Beacon. The proposed plant can be seen in the centre of the photomontages in each case but in neither case do does the plant significantly alter views from the

location. Due to the elevated nature of the site it is possible to see the boiler house and air cooled condensers of the plant as well as the 95 m stack.

4.3.9 The plant is barely noticeable against the wider industrial setting of the Tees Estuary.

4.3.10 It is not considered that there is a significantly greater impact associated with the development as now proposed when compared to the photomontage as originally included in the ES for the project.

Receptor sensitivity

4.3.11 As identified in the original ES the receptor is considered to have a ***Medium*** sensitivity given its designation as a Special Landscape Area/Area of Historic Landscape Importance.

Magnitude of change

4.3.12 The magnitude of change to the existing view would be ***Negligible*** given the nature of the existing views which are already dominated by the industrial setting of the Tees Estuary.

Impact

4.3.13 It can be concluded, given the small change to the existing views from the Eston Beacon viewpoint that the impact to receptor would be ***Minor*** and ***not significant.*** The increase in the height of the boiler and other changes to the plant design has not affected the findings of the ES in this regard.

Viewpoint 2

4.3.14 The photomontages included in Figure B.2 show the view from Paddy's Hole near the Marine Club. The proposed plant is barely visible from the viewpoint. Only the 95 m stack and the upper parts of the boiler can be seen on the horizon behind a number of other industrial features in the landscape. The boiler height increase is noticeable from this location but does not materially change the impact from the viewpoint.

Receptor sensitivity

4.3.15 The receptor is considered to have a ***Medium*** sensitivity due to its designation as a Special Landscape Area.

Magnitude of change

4.3.16 The magnitude of change to the existing view would be ***Negligible*** as only the 95 m stack and the upper parts of the boiler would be visible from the viewpoint and even then would be relatively difficult to distinguish from the many existing stack and other industrial features contained within the landscape.

Impact

4.3.17 Given that the plant would barely be visible it can be concluded that the impact to receptor would be ***Minor*** and ***not significant.*** Again the change in the boiler height and other changes to the plant design have not materially affected the findings of the original impact assessment.

Viewpoint 3

4.3.18 The photomontages included in Figure B.3 show the view from Southgate Eston, just to the north of the A174. From the viewpoint the 95 m stack, air cooled condenser and boiler house can just be seen however the plant is easily lost in the wider industrial landscape.

4.3.19 The change in the boiler height is just perceptible from this viewpoint but does not significantly alter the impact of the proposed development.

Receptor sensitivity

4.3.20 The receptor is considered to have a ***Low*** sensitivity due to its already industrial setting.

Magnitude of change

4.3.21 The magnitude of change to the existing view would be ***Negligible*** due to the existing industrial setting in the backdrop of the picture***.***

Impact

4.3.22 It is considered that the impact to receptor would be ***Minor*** and ***not significant***.

Viewpoint 4

4.3.23 The photomontage included in Figure B.4 shows the view from Smith's Dock Road. The proposed plant can be seen in the centre of the photomontage. The stack is located to the left of centre with the boiler house in the centre behind the storage tanks of the Sabic site and the air cooled condensers to the right.

4.3.24 The change in the boiler height is visible from this viewpoint but, as with the other viewpoints, the plant is consistent with the already industrial setting of the wider area.

Receptor sensitivity

4.3.25 The receptor is considered to have a ***Medium*** sensitivity due to its designation as a Special Landscape Area.

Magnitude of change

4.3.26 The magnitude of change to the existing view would be ***Negligible*** as only the 95 m stack and the upper parts of the boiler would be visible from the viewpoint. A significant proportion of the boiler house will be masked by the Sabic storage tanks. The Tees REP will be relatively difficult to distinguish from the many existing stack and other industrial features contained within the landscape.

Impact

4.3.27 Given that the plant would be only partially visible and will not alter the context of the view, it can be concluded that the impact to receptor would be ***Minor*** and ***not significant.*** Again the change in the boiler height and other changes to the plant design have not materially affected the findings of the original impact assessment.

Viewpoint 5

4.3.28 The photomontage included in Figure B.5 shows the view from the Riverside Stadium. Only the 95 m stack is visible from this location, just behind the storage tanks in the foreground (centre left of the photomontage). Given the great number of existing stack and man made features in the landscape however it is considered that the plant would be relatively unnoticed.

4.3.29 The change in the boiler height is just perceptible from this viewpoint but does not significantly alter the impact of the proposed development.

Receptor sensitivity

4.3.30 The receptor is considered to have a ***Low*** sensitivity as the area is surrounded by industrial development to the north and east and by busy roads to the south and west.

Magnitude of change

4.3.31 The magnitude of change to the existing view would be ***Negligible*** as the plant will barely be visible from the location.

Impact

4.3.32 It can be concluded that the impact to receptor would be ***Minor*** and ***not significant*** given the visibility of the plant will be minimal from this location and does not materially affected the findings of the original impact assessment.

Viewpoint 6

4.3.33 The photomontage included in Figure B.6 shows the view from Port Clarence on the north side of the River Tees. The plant can be seen in the centre left of the photomontage with the stack on the left and the top of the boiler house to the right, just behind a couple of existing stack at on the two Billingham refineries.

4.3.34 The boiler height increase is noticeable from this location but does not materially change the impact from the viewpoint.

Receptor sensitivity

4.3.35 The receptor is considered to have a ***Low*** sensitivity as it holds no local or national designation and has existing views of the Billingham industrial area.

Magnitude of change

4.3.36 The magnitude of change to the existing view would be ***Negligible*** as only the stack and the upper parts of the boiler would be visible from the viewpoint and even then would be in keeping with the many existing stack and other industrial features contained within the landscape.

Impact

4.3.37 It can be concluded that the impact to receptor would be ***Minor*** and ***not significant.*** Again the change in the boiler height and other changes to the plant design have not materially affected the findings of the original impact assessment.

Viewpoint 7

4.3.38 The photomontage included in Figure B.7 shows the view from Old Greatham Bridge where the A178 crosses the Greatham Creek. The plant can just be seen in the centre of the photomontage but is almost entirely obscured by the refineries on the Billingham side of the River Tees.

4.3.39 The boiler house remains obscured by the refineries despite the change in height.

Receptor sensitivity

4.3.40 The receptor is considered to have a ***Low*** sensitivity due to its industrial setting.

Magnitude of change

4.3.41 The magnitude of change to the existing view would be ***Negligible.***

Impact

4.3.42 It can therefore be concluded that the impact to receptor would be ***Minor*** and ***not significant***. Again the change in the boiler height and other changes to the plant design have not materially affected the findings of the original impact assessment.

Viewpoint 8

4.3.43 The photomontage included in Figure B.8 shows the view from the Teesmouth National Nature Reserve. The plant can be seen in the centre of the site with all but the stack and the boiler house being obscured by other industrial plant in the foreground. The plant can be seen as being consistent with the industrial setting of the area.

Receptor sensitivity

4.3.44 The receptor is considered to have a ***Medium*** sensitivity given its status as a National Nature Reserve and as an area used by members of the general public for recreational purposes.

Magnitude of change

4.3.45 The profile of the boiler house is such that there is little difference to the existing buildings/storage tanks either side of the site. The magnitude of change to the existing view would be ***Negligible*** due to the separation distance from the site and the existing developments that also serve to mask views of the REP***.***

Impact

4.3.46 Given that the plant would barely be visible it can be concluded that the impact to receptor would be ***Minor*** and ***not significant.*** Again the change in the boiler height and other changes to the plant design have not materially affected the findings of the original impact assessment.

Table 4.2 – Summary of Visual Impact Assessment from Illustrative Viewpoints

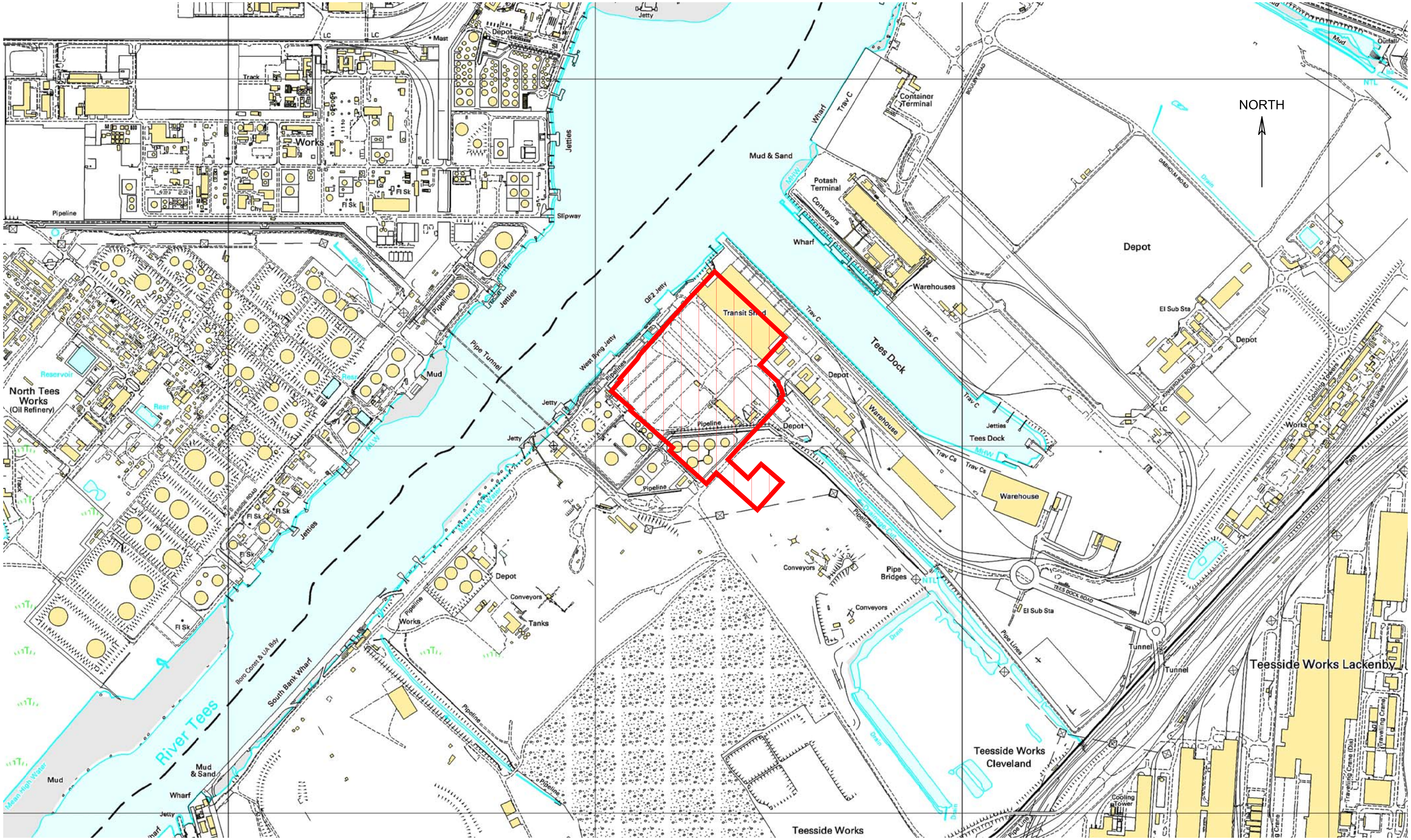
No.	Location	Comments	Sensitivity	Impact
1	Ledge Near Eston Beacon	Special landscape area/area of historic landscape importance/recreational area	Medium	Minor
2	Paddy's Hole – South Gare Breakwater	Special landscape area	Medium	Minor
3	Southgate Eston	Residential	Low	Minor
4	Smith's Dock Road	Road users	Low	Minor
5	Footbridge Riverside Stadium	Recreational (Middlesbrough football club)	Low	Minor
6	Port Clarence	Residential	Low	Minor
7	Old Greatham Bridge – A178 Tees Road	Road users/recreational (rspb planned reserve)	Low	Minor
8	Teesmouth National Nature Reserve	Recreational (beach users/nature reserve visitors)	Medium	Minor

4.4 Conclusion

4.4.1 As described in the original ES the substantial buildings envisaged on site are the boiler house, stack, air cooled condenser, control room and storage tanks. The remaining plant and equipment will, in the main, be housed in relatively low buildings, of the order of 3 to 6 m in height. The tallest structures on site will be the 95 m stack **(unchanged)** and the heightened 71 m boiler (originally proposed to be 55 m).

4.4.2 This Environmental Statement Addendum aimed to evaluate the incremental impact of this change in design parameters by first evaluating the impact on the full broad range of factors then conducting further analysis on the most relevant factors (Air Quality and Landscape and Visual Impact). **The change to the existing baseline established in the original ES was found to be not significant**, which is ultimately explained firstly by the proposed location of the plant and secondly by the relatively minor nature of those design changes. It is considered that the findings of the original ES are still relevant to the project and the assessment included in that document is still representative of the development as now proposed.

APPENDIX A – SITE LAYOUTS



KEY

SITE LOCATION

0 100M 200M 400M 600M

BAR SCALE

TEES RENEWABLE ENERGY PLANT	DETAILED SITE LOCATION	Drawing Number FIGURE 4.1	Drawn: MLC Checked: MW Approved: MW Date: 7/07/08	PB Power

CAD FILE REF:- FIGURE 14.2

WEST BYNG

SITE BOUNDARY

NOTIONAL BOUNDARY

AREA OF QUAY = 9,000m2

SHIP UNLOADING

WORKSHOPS

NO

1. POWER HOUSE (TURBINE & GENERATOR)
2. EL & CONTROL ROOMS
   2a. CABLE PIT , DEPTH APPR. 2m
   2b. EL ROOM
3. BOILER
4. BAG FILTER
5. STACK
6. UNIT TRAFO
7. MAIN TRAFO
8. ACC (5000 M2)
9. AUX. FIN FAN COOLER (ON TG HOUSE ROOF)
10. FUEL CONVEYOR
11. FUEL & SAND SILOS
12. BOTTOM ASH HANDLING
13. FLY ASH SILOS
14. WATER TREATMENT PLANT
15. DEMIN. WATER TANK
16. AIR COMPRESSORS
17. FIRE FIGHTING & RAW WATER PUMPS
18. FIRE FIGHTING & RAW WATER TANK
19. WORKSHOPS
20. COLD STORE BUILDING
21. WARM STORES
22. WASTE WATER TREATMENT PLANT
23. SANITARY WATER TREATMENT PLANT
24. OILY WATER TREATMENT PLANT
25. OFFICES & ADMINISTRATION
27. PARKING
28. FUEL STORE
29. STARTUP FUEL OILS (BIO & FOSSIL)
30. FUEL RECEIVING STATION
31. SCREENING AND CRUSHING
31a. SCREENING
32. GAS INSULATED SWITCHGEAR
33. ACCESS ROAD
34. AUXILIARY UNLOADING FOR FRONTLOADER
35. WEIGHTBRIDGE
36. FLUE GAS FANS
37. SORBENT SILO
38. AMMONIA TANK (OPTION)
39. COOLING WATER TANK
40. MAIN STAIR TOWER & LIFT
41. SITE LIMIT

35882

100000 2566

0m 20m 40m 60m 80m 100m

ORIGINAL SCALE

JULKAISTU/ISSUED
ENNAKKOKOPIO PRELIMINARY 19.09.2009 VTR

Revision	Quant.	Description	Dsgnd/Appd	Date

MGT POWER
TEES RENEWABLE ENERGY PLANT
TEESPORT ENERGY PROJECT

SITE PLAN

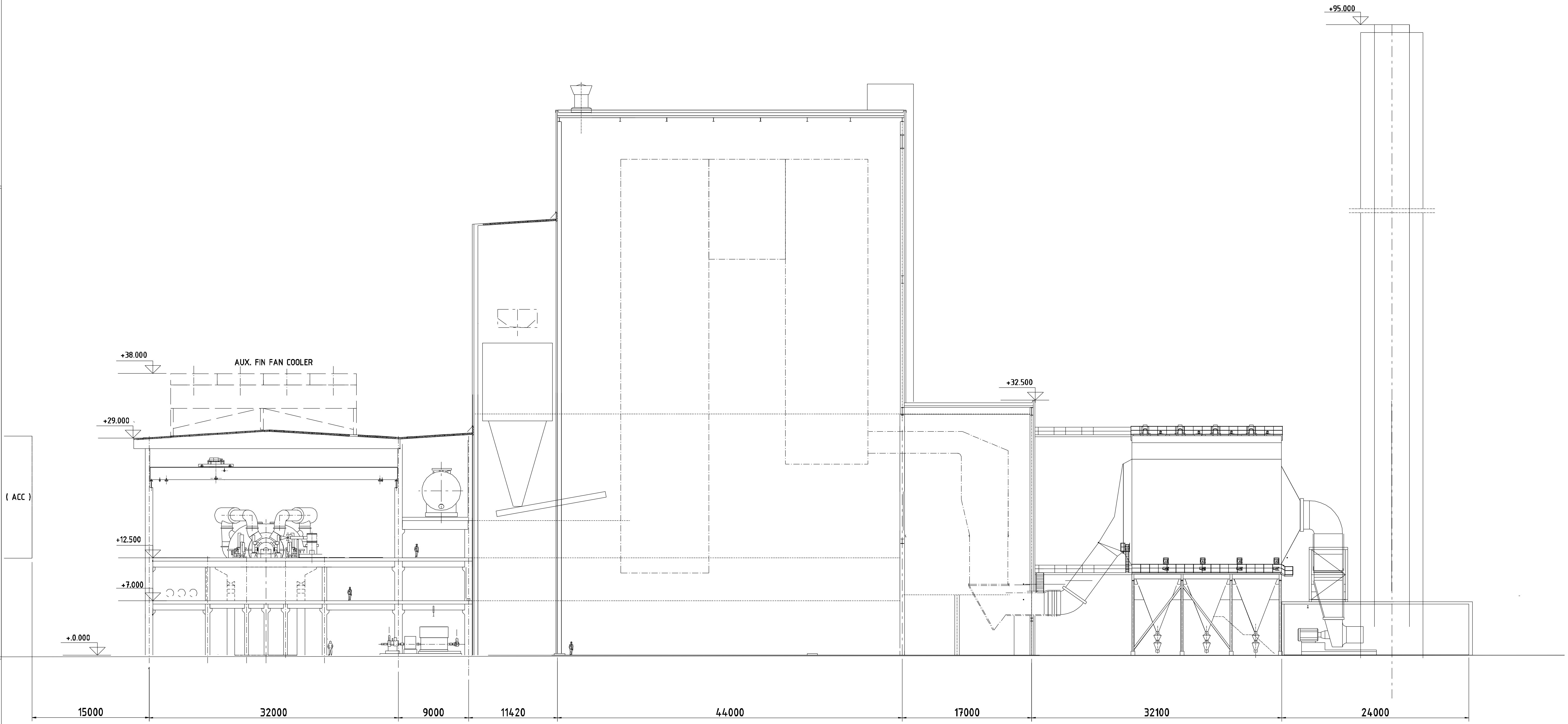
PÖYRY
Pöyry Energy Oy, FI571450-7, www.poyry.com
P.O.Box 93, FI-02151 Espoo, Finland

Drawn	Date/Dsgnd	Date/Chkd	Date/Appd
18.03.2009 / VTR	18.03.2009 / VTR		

Work No. 60N50105.01 Scales A1

Field of planning M201 - 10001 Drawing No.

Drawing No. 390720,0021 Revision E



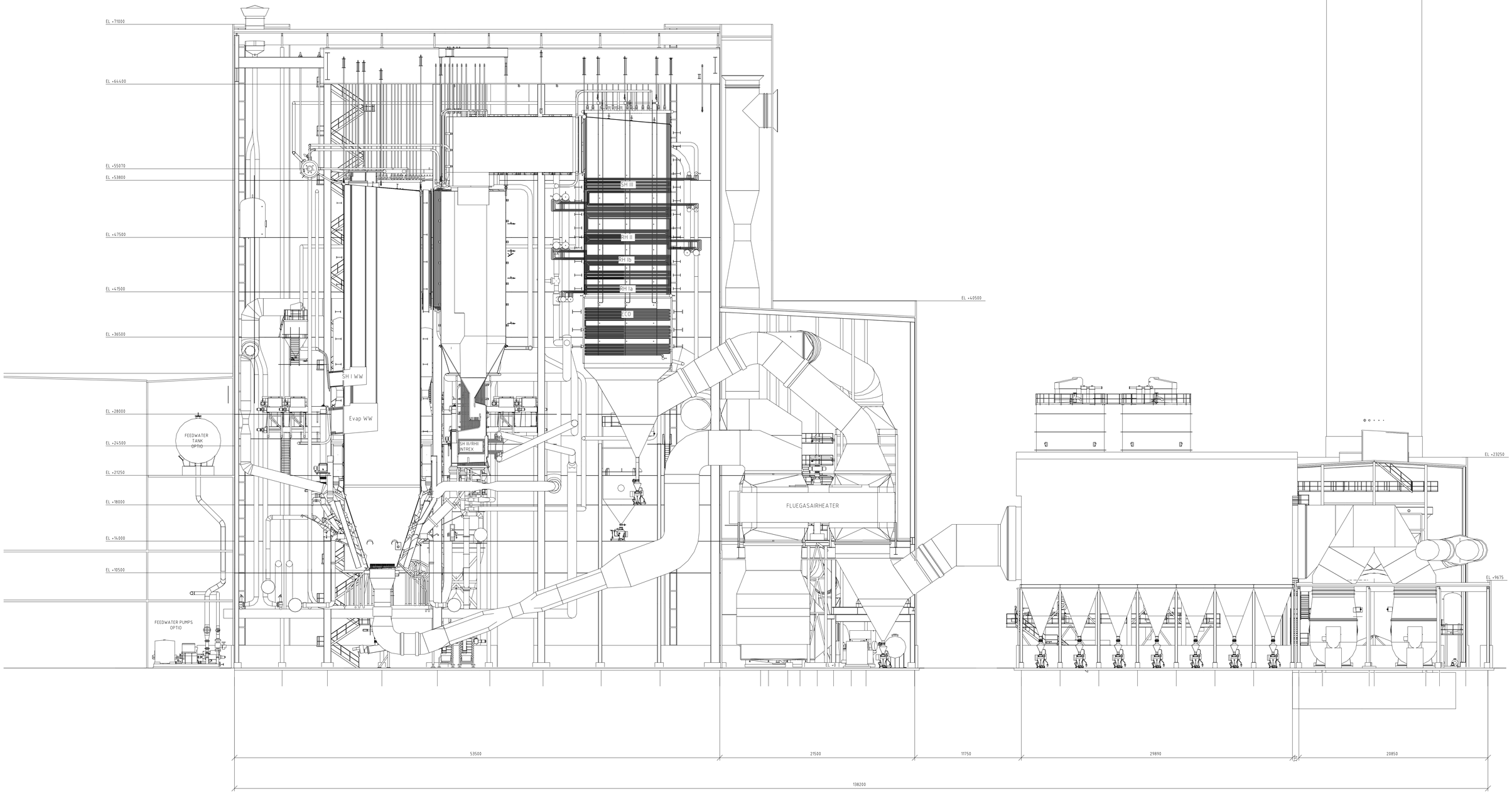
PRELIMINARY COPY 25.02.2009 /VTR

1:200 0 5 10 15 20 25 30 35 40 m

Name and address of object	Contents of drawing
MGT POWER 300 MWe BIOFUEL POWER PLANT	POWER HOUSE LAY-OUT, SECTION A-A
PÖYRY Pöyry Energy Oy, FI577450-7, www.poyry.com P.O.Box 93, FI-02151 Espoo, Finland	Work No. / Scales
Drawn VTR / Date/Dsgnd 16.02.2009 / VTR	Field of planning / Drawing No. / Revision
Date/Chkd / Date/Appd	

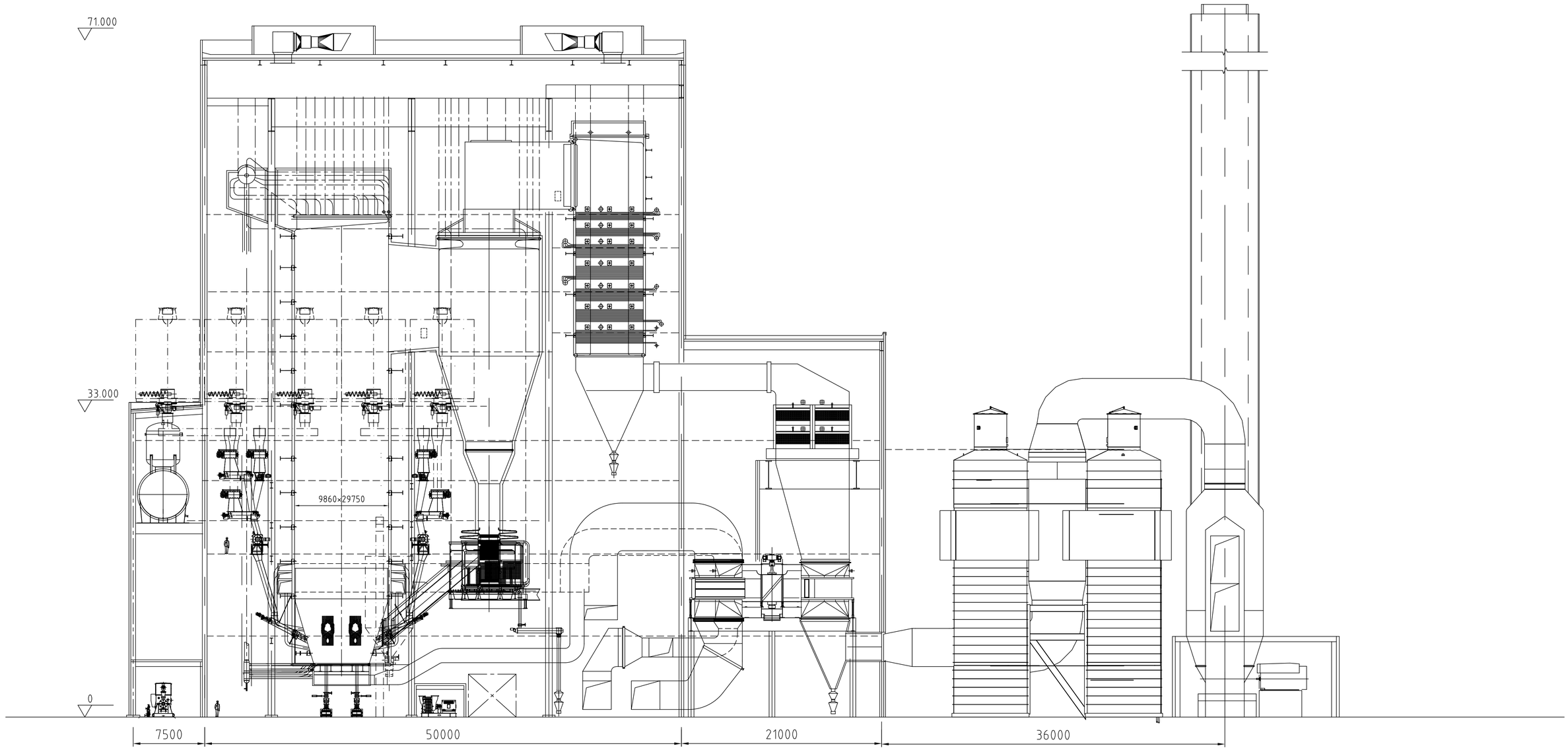
...\15022009\60N50105.01-10003.dgn 27.2.2009 9:51:06

Pvm Date	Muutt. Drawn	Hyv. Appr.	Muutos Revision	Lukum No.	Merkki Mark
15.06.09	KIT		UPDATED		a
26.08.09	KIT		UPDATED,FLY ASH SILOS		b



PRELIMINARY

Nimitys	LAY-OUT SECTIONAL DRAWING				
	FW CFB 723 MWth, 545/545°C, 163/35 bar(a), Tees Renewable Energy Plant 300 MWe, UK				
FOSTER WHEELER	Suunn.	Ico-Tauru Kyösti	Pvm 29.06.2009	Suhde 1:150	Jaos n:o
	Tark.	Hiltunen Veli-Matti	Pvm 19.05.2009	Piir. nro	T385010_b
	Hyv.		Pvm		



Rev	Revision note	Created by	Subcontractor	Checked by	Approved by	Appd Date
1		PSal				07.09.2009
0	First Issue	PSal				12.04.2009

Size: A 2
Scale: 1:300

Proj. no: 09-00031
Proj. name: TEESPORT

Title: LAYOUT SIDE VIEW

Code	Info	Doc.id.	Revision
Status		T80010609	1

APPENDIX B - PHOTOMONTAGES

Previous Montage

Updated Montage

TEES RENEWABLE ENERGY PLANT

PB Power

VIEWPOINT 1 – LEDGE NEAR ESTON BEACON

Drawn:
Checked:
Approved:
Date: 20.01.10

Drawing No: **FIGURE B.1**

TEES RENEWABLE ENERGY PLANT

PB Power

VIEWPOINT 2 – PADDY'S HOLE – SOTH GARE BREAKWATER

Drawn:
Checked:
Approved:
Date: 20.01.10

Drawing No: **FIGURE B.2**

TEES RENEWABLE ENERGY PLANT

PB Power

VIEWPOINT 3 – SOUTHGATE, ESTON

Drawn:
Checked:
Approved:
Date: 20.01.10

Drawing No: **FIGURE B.3**

Previous Montage

Updated Montage

TEES RENEWABLE ENERGY PLANT

PB Power

VIEWPOINT 4 – SMITH'S DOCK ROAD

Drawn:
Checked:
Approved:
Date: 20.01.10

Drawing No:

FIGURE B.4

TEES RENEWABLE ENERGY PLANT

PB Power

VIEWPOINT 5 – FOOTBRIDGE, RIVERSIDE STADIUM

Drawn:
Checked:
Approved:
Date: 20.01.10

Drawing No:

FIGURE B.5

TEES RENEWABLE ENERGY PLANT

PB Power

VIEWPOINT 6 – PORT CLARENCE

Drawn:
Checked:
Approved:
Date: 20.01.10

Drawing No: **FIGURE B.6**

TEES RENEWABLE ENERGY PLANT

PB Power

VIEWPOINT 7 – OLD GREATHAM BRIDGE, A178 TEES ROAD

Drawn:
Checked:
Approved:
Date: 20.01.10

Drawing No: **FIGURE B.7**

TEES RENEWABLE ENERGY PLANT

PB Power

VIEWPOINT 8 – TEESMOUTH NATIONAL NATURE RESERVE

Drawn:
Checked:
Approved:
Date: 20.01.10

Drawing No: **FIGURE B.8**

APPENDIX C – LIST OF CONSULTEES

- Civil Aviation Authority
  CAA House
  45-59 Kingsway
  London
  WC2B 6TE

- Durham Tees Valley Airport
  Darlington
  Tees Valley
  DL2 1LU

- English Heritage
  North East Region
  Bessie Surtees House
  41-44 Sandhill
  Newcastle-Upon-Tyne
  NE1 3JF

- Environment Agency
  Tyneside House
  Skinnerburn Road
  Newcastle Business Park
  Newcastle
  NE4 7AR

- Health and Safety Executive
  HID CI 1C, Arden House
  Regent Centre
  Regent Farm Road
  Newcastle-upon-Tyne
  NE3 3JN

- Highways Agency
  Tees Wing
  Lateral, 8 City Walk
  Leeds
  LS11 9AT

- Natural England
  North East Region
  The Quadrant
  Newburn Riverside
  Newcastle upon Tyne
  NE15 8NZ

- NATS – CTC
  Mailbox 25
  4000 Parkway
  Solent Business Park
  Whiteley
  Hampshire

- Redcar & Cleveland Borough Council
  Belmont House
  Rectory Lane
  Guisborough
  TS14 7FD