Outline Business Case

Avonmouth Phase 2 Regeneration Summary

Proposition Title	Avonmouth Phase 2 development
Lead	Tony Lawless - Bristol Waste Company
Partners	Bristol Holding Ltd, Bristol City Council

Executive Summary

Bristol Waste Company collect recyclate from over 170,000 properties within Bristol. At present all material collected is tipped into our Albert Road facility where mixed plastic, aluminium and steel cans are automatically separated, then baled along with cardboard before being sold on for processing.

The baler unit at Albert Road is currently 9 years old and breaks down 10 – 12 times per year. A separate business case has been prepared to replace the current baler at Albert Road (funded by BWC reserves) to improve reliability, however, having one baler remains a single point of failure for the business even when replaced.

In line with Bristol Wastes business continuity plan, an additional baler and can sort facility are required to reduce the business risk currently experienced with the single baling facility. As Bristol as a city and recycling volumes continue to grow an additional baler becomes increasingly urgent.

The increased baler capacity will provide additional capacity that we can sell to our neighbours and competitors to provide them with continency facilities.

In addition to a new baling facility, further provision for treatment of materials at our Avonmouth site included in this project will help improve existing material quality and value, increase the cities landfill diversion rate and save on haulage of materials. Due to the scale of proposed works involved, it is our intention to break the development down into a phased approach spread over the next 12 - 18 months.

By carefully selecting and designing the new site to maximise this opportunity, BWC will be significantly better equipped to extract maximum value from our waste through increased segregation of materials, using a 360 vehicle and a dedicated sorting line. There will also be significantly improved commercial opportunities to increase the volumes of material passing through the site.

BWC will include as much operational flexibility in the design as possible to ensure that we are able to adapt to the ever-changing waste and materials markets in the years to come and recognise maximum benefit from this capital investment.

Project Proposal

Bristol Waste plan to break the redevelopment of the site down into 8 separate phases. (see

PLEASE SEE EXEMPT APPENDIX I2 FOR PHASING AND COST TIMELINE)

section 3 Phasing timeline)

By opting for this approach, it spreads the financial outlay and makes each phase easier to manage allowing for any unforeseen delays that may be encountered not to impact on other parts of the project unless there are specific dependencies. (The baler shed needing to be finished before the baler is installed for example).

The design specifications and designated locations on site for all proposed infrastructure are currently still being discussed and designed by BWC with the support of consultancy firm SLR.

Final site designs will be confirmed in the coming months as the project progresses; however, the development is planned to include the following;

A. New Trade Bay area

Expanding on its current location, a new, larger two zone trade bay area will be created with wider bays capable of holding greater volumes of material. Movable bay walls will enable layout redesign(s) in future as the waste industry evolves.

The area will be covered to offer protection from the elements and keep the material moisture content as low as possible, which will greatly increase the quality and value of cardboard and paper**.**

Having two trade bay zones will allow site to rotate each day where material is tipped by trade customer, allowing a 360 material handler to mine these waste streams (bulky waste, fly tip, HRRC), extracting as much value as possible whilst also driving recycling rates higher still. See the appendices at the foot of the document for layout details.

B. Baler and Can Sort Facility

This will provide BWC with a second facility for segregating and baling materials collected by our Recycling fleet. This will remove the negative implications currently seen each time the baler at Albert Road is offline. The financial benefit and reduced operational disruption will save BWC a minimum of £700K per annum.

A second tipping facility will also enable Recycling crews to tip in the North of the city when collecting there, reducing travel time and boosting productivity. Fewer vehicles tipping at Albert Road will also reduce congestion there, with tip times currently often in excess of an hour. Site safety will also improve with less vehicle and people movements during peak times.

The large roof for the new building will also offer an excellent opportunity for solar panelling as we look to further reduce our carbon footprint. The energy generated can be used to offset site running costs and charge vehicles as we move to an ever more electricity fuelled fleet.

In addition, no other kerb sort contracts in the South West have a 2nd baler contingency, so there will also be availability for other local authorities to deliver waste into site when they have baler failure of their own. This will further add to our commercial revenue.

C. Material Sorting Line

Recycling collected from MRC (mini recycling centres) sites currently poses a number of issues, in most part because the communal bin areas enable much easier bin contamination. This means at present between 15 & 40% of these bins have incorrect / non recyclable waste in which continues to reduce the overall quality of BWC's materials when they are sold on for recycling. The inclusion of a new material sorting line at Avonmouth will enable this mixed material to be cleansed and will also enable BWC to further segregate additional waste streams in future, as BWC continue to roll out recycling to flat communities. In doing so contamination is likely to rise, however, cleaning the material will further reduce "black bag" waste.

In addition to resolving this long standing MRC contamination issue, existing, already segregated and baled recyclates such as cardboard, paper and plastics can be further sorted. Fully segregated cardboard demands a substantially higher price vs mixed card which includes tetra paks, OCC and cartons.

An intelligent, agile design of the sorting line and bay locations will enable greater flexibility when sorting multiple waste streams on the same day in future as BWC look to process as much of our own waste in house as possible. A sorting line will also enable other wastes to be screened before disposal, such as black bag waste (over 50% recoverable) and other materials collected at the HRRC on site. This will not only deliver financial benefits but also increase Bristol's recycling rates.

D. Roof for the HRRC site

A roof will be installed to cover the recently opened HRRC site. This will offer the currently exposed raised part of the site and the materials deposited protection during adverse weather and improve the working environment for BWC staff as well as a more pleasant experience for visiting members of the public.

This will also include an element of wind protection which when combined with the new treeline at the rear of site will further improve the Health and Safety rating of the site. BWC are looking to install solar panelling to the roof, to cover as much of the sites energy requirements on site as possible through renewable energy.

The Solar installation at Avonmouth will make a significant contribution to support the commitment that the Council and the Mayor have made within the Climate and Ecological Emergency Programme to ensuring that Bristol City Council (BCC) is carbon neutral for direct emissions by 2025.

E. Additional Office Space and Welfare Facilities

A redevelopment and minor extension to the existing office block on site will provide additional office space and Welfare facilities for the increase in site staffing. The extra office space will offer hot desking areas to support office based BWC staff with proposed site moves / department

relocations in future.

F. Creation of transport hub

BWC plan to increase the number of operational vehicles running out of the site as part of the wider development. This additional parking will cover Refuse, Recycling and Street Cleansing vehicles as well as MRC and narrow access vehicles. These crews will be based in Avonmouth and will therefore increase the fleet presence on site. This will improve the geographical spread of BWC crews thus further reducing travel times and emissions when servicing the North of the city.

This will also increase the need for crew welfare facilities and additional support services. To reduce pedestrian movements on site a transport hub is planned for the top field that will include LGV parking, a workshop and washbay, a welfare block, bin store area and the relocation of the GTL tank. This will concentrate all non-processing staff in this area and reduce unnecessary interaction between crews and plant operating on site.

Strategic Case

The redevelopment of the site in Avonmouth will allow BWC to take multiple steps towards meeting long term business aims. A number of the benefits will be financial, but the development will also help address additional long-term risks and challenges;

BCC Strategic Alignment

The secondary processing of the waste and the increased bailer capacity will support the targets of the One City Plan to:

- increase recycling
- reduce waste and the aspirations of Zero Waste within Bristol
- reduced vehicle movements and carbon neutrality

Second material baling facility

Bristol's reliance on Albert Road as its only operational baling facility has been highlighted as the key risk to the business for a number of years. The baling machine at Albert Road is now nine years old and is becoming increasingly prone to breakdowns. With each breakdown costing in the region of £70k per week when considering loss of material revenues and massive additional haulage costs, having a second facility capable of processing this material offers a ready-made contingency in the event of further breakdowns. The fact that the Albert Road baler breaks down between 8 and 10 times a year further amplifies the need for a second facility.

Processing Bristol's waste in Bristol

BWC understand that there are some real benefits to processing as much of the cities waste in house as possible. Not only are we taking ownership for the waste we as a city have produced, but are also continuing to look for new ways to maximise landfill diversion rates and extraction of maximum value from the waste. By utilising a sorting line for kerbside collected materials, and a 360 material handler for bulkier waste types, this offers real flexibility to adapt to changing market forces.

Flats Recycling

Effective recycling from flats is an ongoing challenge that we have suffered nationally with for many years. BWC have committed to mobilising a full complement of recycling containers to all multiple occupancy sites in order to reduce refuse tonnages and maximise recycling. Unfortunately, due to shared bin areas these sites suffer from high levels of contamination and a lot of the material collected currently is fit only for disposal as general waste. The sorting line will enable BWC to clean up a large percentage of this material to ensure that it is recycled to its maximum and only the small percentage of contamination is treated as general waste. There are examples of the tonnages that can be realised in the next section.

Solar Technology

A developed site will inevitably mean an increase in energy consumption. To minimise this impact on the environment and reduce increasing operational costs, BWC have instructed consultants to draw up proposals to install solar panelling on both the new baler shed roof and also the proposed HRRC canopy. With a life expectancy of 30 years and a payback period of 15 – 18 years, these installations will provide the site with a continual supply of solar energy. BWC are looking at a solar set up capable of producing in the region of 100,000 kWh annually, so roughly a third of the sites energy consumption (post redevelopment) would be self-generated on site.

Move towards an operational 'Village set up'

Having an additional tipping facility in the North will enable a greater spread of BWC Crews across the city. This will reduce travel times for crews and emissions in the city. Being able to spread the fleet across two facilities will also reduce vehicle tip times, reducing time lost to excessive waiting at peak times.

Economic & Financial Case

Reduced Risk of Baler Breakdown

With the Albert Road baler breaking down multiple times per year, a second facility ensures that should this happen BWC are able to divert vehicles and materials to the Avonmouth facility and not incur the financial and operational impacts of a single site. The current baler is out of action roughly 10 times per year due to its age and the strain it is under. At an estimated cost of £70k per week when broken down, plus repair costs, a second baler is clearly business critical.

Financial benefits of an agile waste processing facility

The new sorting line at Avonmouth will afford BWC much greater opportunity to process Bristol's waste in Bristol. By doing so, there are a number of financial benefits that can be realised.

Cardboard collected from flats and high-rise properties (MRC) continues to have significant levels of contamination forcing BWC to dispose of this material as general waste. This is not only damaging to Bristol recycling rates but also

financially. By removing the contamination utilising the sorting line, it is estimated that 90% of the material could be recovered as cardboard with 10% general waste contamination. The below table shows the impact this is having.

Situation	Annual Tonnage	Material	Current Disposal Price	Disposal Cost
Current	1872	Contaminated Card	£90	£168,480
			Total	**£168,480**
Phase 2	1685	Clean card	-£40	-£67,400
	188	General Waste	£90	£16,920
	749	Sorting Hours	£35	£26,215
			Total	**-£24,265**
			Benefit	**-£192,745**

* Cardboard currently attracts a rebate per tonne of £40. Assumed sorting rate of 2.5T per hour. 750 hours would represent approx 25% of sort line capacity, based on 60 hr/wk. 3120 hours annually.

Having multiple additional bays on site for other materials allows BWC complete flexibility using the sorting line. The waste markets fluctuate continuously with the best materials to sort changing from month to month. Once the site is fully operational, BWC management will be able to process the wastes that offer the best margins.

An example of this is mixed plastic waste. As of August 2020 BWC would receive £60 per tonne for baled plastic. If sorted from the main plastic mix, a milk bottle (HDPE) only bale would pay £300 per tonne, similarly PET (Plastic drinks bottles) would be £165 per tonne. Both rebate figures have also been significantly higher (nearly double) within the last 9 months. As BWC currently collect 5,200 tonnes of plastic a year, the sorting line provides BWC with a fantastic opportunity to maximise material values.

The below table shows the calculation of BWC sorting 20% of its plastic waste (1040T) and reclaiming 20% PET and 20% HDPE.

Situation	Plastic Tonnage	Material	Current Disposal Price	Disposal Cost
Unsorted	1040	Mixed Plastic	-£60	-£62,400
			Total	**-£62,400**
Sorted	624	Mixed Plastic	-£60	-£37,440
	208	PET	-£165	-£34,320
	208	HDPE	-£300	-£62,400
	1040	Sorting Hours	£35	£36,400
			Total	**-£97,760**
			Benefit	**-£35,360**

* Mixed plastic currently attracts a rebate per tonne of £60. Assumed sorting rate of 1T per hour. 1040 hours would represent approx 33% of sort line capacity, based on 60 hr/wk. 3120 hours annually.

In addition to the carboard and plastic savings detailed above we forecast further income generation / cost savings from enhanced waste processing and waste mining facilities to be in the range of £200,000 to £400,000 annually.

With Avonmouth offering BWC a second baling facility this removes the risk of damaging losses through baler breakdowns or outages. Recent occurrences have lead to revenue losses for the period of downtime sitting at around 75% due to having to send out loose loads and organise additional transport.

Increase in Material Volumes – Trade Bays

The increase in trade bay capacity will allow BWC to receive more material and therefore revenue into site to process before sending on for recycling. The 360 and sorting line will enable BWC to clean up these waste piles and not only divert as much from landfill as possible but also maximise the profit margins realised on these materials.

Offsetting increased energy costs

Through the use of PV panels, BWC will also look to offset the cost of the increased energy usage on site. Not only will this reduce the carbon footprint of the new operation, but offer BWC a long term energy solution that will continue to offer savings for the next 30 years. Based on an assumed output from the installation of 100,000kWh, this would equate to a third of the redeveloped sites usage and afford the below saving on the supply of electricity. Payback in this example is set to 15 years, so half the life of the panels.

Proposed usage, 100% of solar production annually	
Installation Cost	£200,000
Energy produced and used by site (kWh)	100,000
Price per kWh	0.15
Total	£15,000
Annual OPEX	£2,000
Annual saving	**£13,000**
Payback period	15

Financial Summary

The table below shows the financial benefits over the life of the project of 20 years. It is proposed that the loan is taken for a period of 7 years.

	annual	Life 20 years
	£k	**£k**
Investment		
Capital		2,770
Loan interest – 7 years @3.5%		357
		3,127
Benefits		
Card Income	193	3,855
Plastics Income	36	713
Waste disposal savings	200	4,000
Energy savings	13	260
	441	**8,827**
Net benefit		**5,700**
NPV @ 3.5%		**3,399**
IRR		39%

Assuming the loan from BCC is provided at 1% above PWLB rates (assumed 2.5%) in the same was as existing loans there would be £36k of revenue for BCC over the 7 years of the loan.

Benefits of the project not calculated include reduced vehicle movements, reduced tipping times, business agility and business resilience from having a second baler.

Summary – Benefits and Risks

As detailed in this paper, a second baling facility at Avonmouth would greatly reduce some key risks currently faced by BWC, as well as enabling the maximisation of several financial and environmental benefits.

The facility would enable much more of the waste produced in Bristol to be processed in Bristol itself, ensuring that BWC set the example for others to follow. Diverting as much waste as possible currently going to landfill will provide additional financial incentive and the ability to react to market forces through an agile design methodology will ensure that the site is well set to serve the city of

Bristol for decades to come.

Overview of Benefits to the Business

- Second baling facility – Reduced risks to business
- Increased site operational efficiency – Bespoke site design to suit needs
- Reduced travel time for crews – Boosts productivity, saves fuel, fewer emissions and less overtime required
- Tipping queues at Albert Road transfer station reduced
- Increased Trade capacity – Growth in revenue and materials run through site
- Permanent mining facility (360) – Extracting value
- Improved quality of commodities – Sorting line / Covered bays
- Ability to sort more waste streams – Black Bag, HRRC material
- Reduction in waste sent to landfill, increase in cities recycling rate
- Long term operational flexibility – Site can adapt to the ever-changing waste environment
- Ability to support other West of England authorities with disposal – Added revenue
- Improved site Health and Safety – Walkways, lighting, signage, removal of uneven surfaces
- Renewable energy sources included in design – Solar panelling
- Improved office spaces for BWC staff

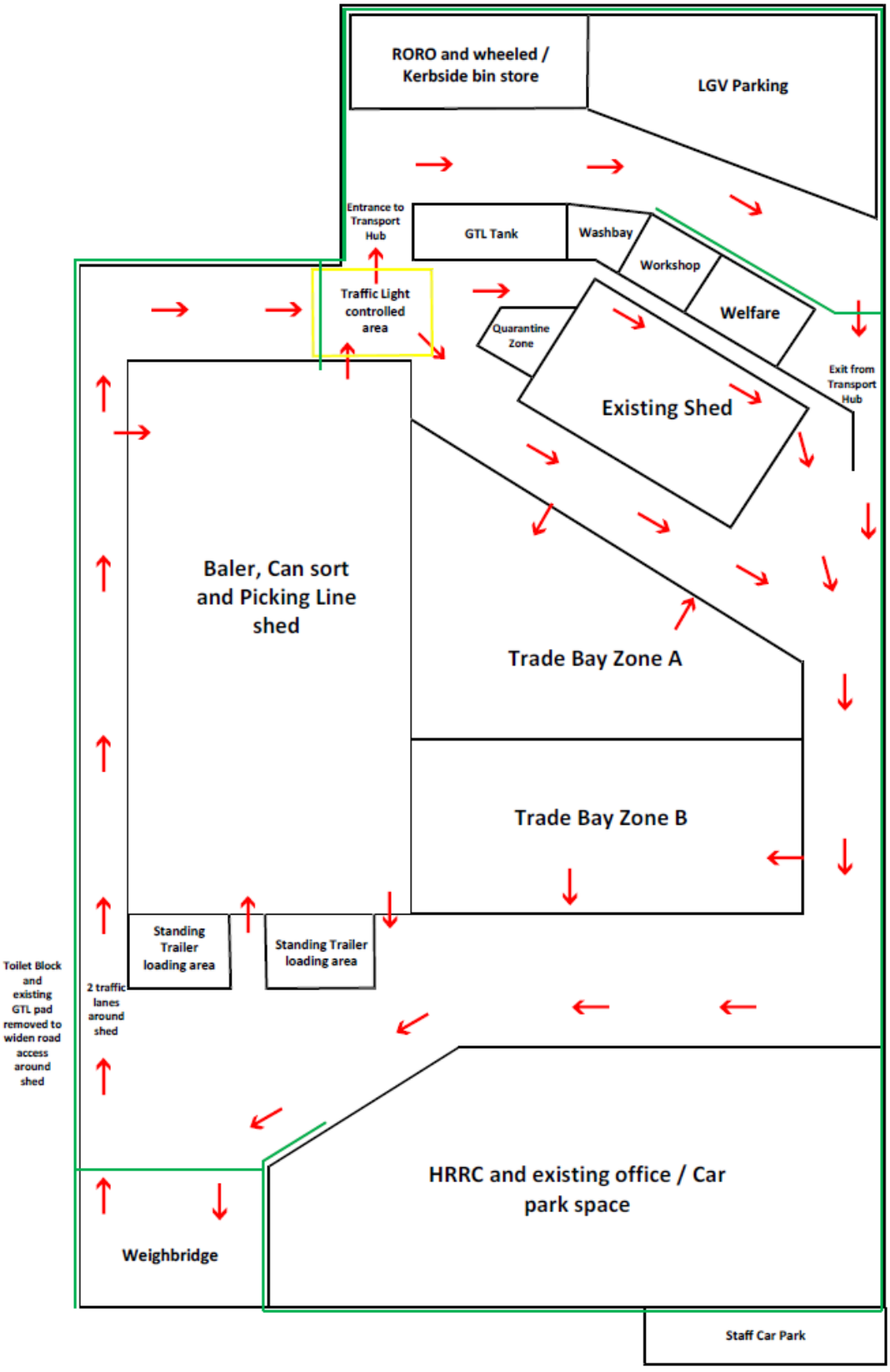
Risks and Mitigation

Risk	Impact	Probability (1-5)	Severity (1-5)	Risk Rating	Mitigation
Planning Refusal - increased flood Risk	Inability to fully utilise the top field	3	4	12	Soil investigations completed to understand site suitability. Consultant advice sought to ensure sufficient drainage to offset reduced land permeability
Further delay to implementation of second baler	Increased business risk to breakdowns from ageing machine at Albert Road	2	5	10	Thorough planning and design of site to ensure identification and removal of potential blockers in good time
Covid 19	Unavailability of contractors to complete works. Social distancing requirements.	4	4	16	Maximise forward planning to ensure project team are primed to commence each phase at the earliest opportunity
Impact to ongoing site operations	Reduced Trade operations and ability to tip at T.S	2	4	8	Works to be phased. Contingences to be agreed for services most at risk of disruption
Large project expenditure	Poor planning may hinder future success of redevelopment	1	5	5	Consultant advice sought. Similar SME sites to be visited to maximise efficiency of design. Operational flexibility to be built in.

Appendices

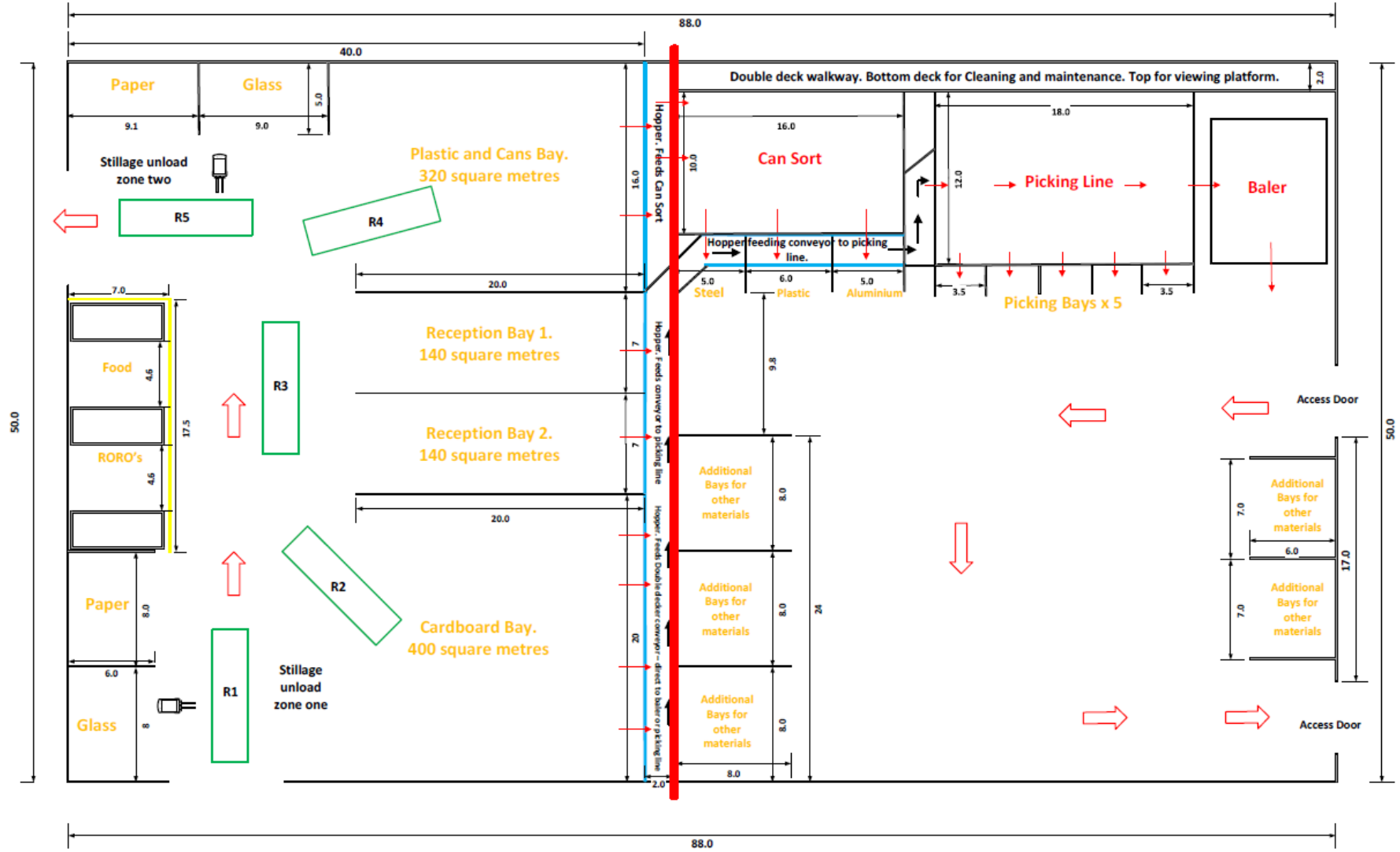
Appendix B – Proposed Site Layout

The below site design shows how the new site could look. This is subject to change and not to scale.



Appendix C – Trade Bay Layout

Appendix D – Baler shed Layout



BRISTOL waste